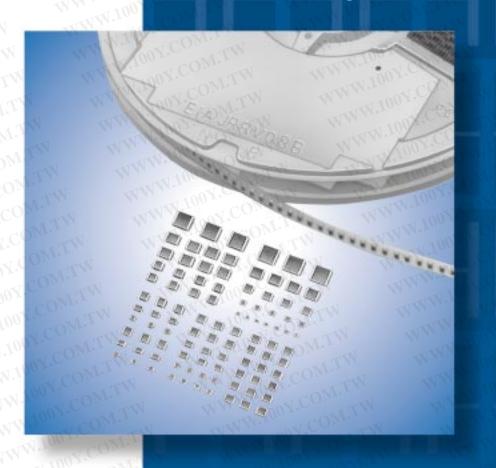
Chip Monolithic Ceramic Capacitors



muRata

Innovator in Electronics

Murata Manufacturing Co., Ltd.

CONTENTS

D 111 WWW.			_
Part Numbering —	OON.CON.TW	WWW.100Y.COM.TW	2
Selection Guide —	100X.COM.TW	WWW.100Y.COM.TW	7
1 for General Purp	ose GRM Series ———	MAM. 100 J. COW. LA	8
1 Specifications	and Test Methods	WWW.100Y.COM.TW	51
●GRM Series Data	AN TOO TOWN	WWW.TOOY.COM.TW	60
2 Capacitor Array	GNM Series —	WWW.100Y.COM.T	63
2 Specifications	and Test Methods	M. MAM. 100 T. COM.	68
3 Low ESL LLL/LLA/	/LLM Series —	EM MAIN TOOK COM	74
3 Specifications	and Test Methods	TW WWW.100Y.CO	81
4 High-Q Type GJN	M Series	NIA MAM'TOOK'C	OM. 1 V 85
4 Specifications	and Test Methods	OM.TW WWW.100X	CON-TY 95
5 High Frequency (GQM Series	CON.TW WWW.100Y	98
5 Specifications	and Test Methods	CONTA MAN-100	105
●GQM Series Data	1W WWW.100	V.COMITW WWW.	108
6 High Frequency 1	Type ERB Series ———	OY.COM.TW WWW	109
6 Specifications	and Test Methods	TOON CONTINUE WAY	116
●ERB Series Data	ONITH WWW	N.100X COM.TW WW	119
7 Monolithic Micro	chip GMA Series —	W.100Y.COM.TW WY	121
7 Specifications	and Test Methods	M. 100 Y. COM. TW	123
8 for Bonding GME	O Series —	WW.100Y.COM.TW	127
8 Specifications	and Test Methods	WWW.100Y.COM.TW	132
Package	100 Y. COM. I	MANA TOON CON TAN	136
⚠Caution	N.100Y.COM.TW	WWW.100Y.COM.TW	140
Notice	W.100Y.COM.TW	MAN'1001'COW'IA	152
Reference Data	NW.1004 COM.TW	MMM. TO A COM. TA	159
9 Medium Voltage	Low Dissipation Factor —	WWW.100Y.COM.T	166
10 Medium Voltage	High Capacitance for Ger	neral Use	171
Only for LCD Back	cklight Inverter Circuit —	IN WWW.In	176
12 Only for Informa	tion Devices	r.TW	179

	Only for Comore Floch Circuit
3	Only for Camera Flash Circuit
1	AC250V (r.m.s.) Type (Which Meet Japanese Law)
5	Safety Standard Recognized Type GC (UL, IEC60384-14 Class X1/Y2)
6	Safety Standard Recognized Type GD (IEC60384-14 Class Y3)
7	Safety Standard Recognized Type GF (IEC60384-14 Class Y2, X1/Y2)
8	Safety Standard Recognized Type GB (IEC60384-14 Class X2)
3A3	Series Specifications and Test Methods
3RN	//GR4/GR7/GA2/GA3 Series Data (Typical Example)
Pac	kage
 1 Ca	aution The state of the state o
Voti	CE ON THE WWW.TO COM. TW WWW.TOOY.COM
	9001 Certifications

 Please refer to "Specifications and Test Methods" at the end of each chapter of WWW.100Y.COM

for EU RoHS Compliant

- · All the products in this catalog comply with EU RoHS.
- · EU RoHS is "the European Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment".
- For more details, please refer to our website 'Murata's Approach for EU RoHS' (http://www.murata.com/info/rohs.html).



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Part Numbering

Chip Monolithic Ceramic Capacitors

(Part Number)

GR M 18 8 B1 1H 102 K A01 D 0

Product ID

2Series

Product ID	Code	Series		
WII	М	Tin Plated Layer		
GR	4	Only for Information Devices / Tip & Ring		
	7	Only for Camera Flash Circuit		
ER	В	High Frequency Type		
CO GQ	М	High Frequency for Flow/Reflow Soldering		
COM.	A	Monolithic Microchip		
GM	D	for Bonding		
GN	М	Capacitor Array		
ON COL	TVI L	Low ESL Wide Width Type		
LL OM	Α	Eight-termination Low ESL Type		
1007.	M	Ten-termination Low ESL Type		
GJ	M	High Frequency Low Loss Type		
1.10° CO	2	for AC250V (r.m.s.)		
GA	3	Safety Standard Recognized Type		

3Dimension (LXW)

Code	Dimension (LXW)	EIA
02	0.4×0.2mm	01005
03	0.6×0.3mm	0201
05	0.5×0.5mm	0202
08	0.8×0.8mm	0303
0D	0.38×0.38mm	015015
OM	0.9×0.6mm	0302
11	1.25×1.0mm	0504
15	1.0×0.5mm	0402
18	1.6×0.8mm	0603
1M	1.37×1.0mm	0504
21	2.0×1.25mm	0805
22	2.8×2.8mm	1111
31	3.2×1.6mm	1206
32	3.2×2.5mm	1210
42	4.5×2.0mm	1808
43	4.5×3.2mm	1812
52	5.7×2.8mm	2211
55	5.7×5.0mm	2220

4 Dimension (T)

Code	Dimension (T)
2	0.2mm
2	2-elements (Array Type)
3	0.3mm
4	4-elements (Array Type)
5	0.5mm
6	0.6mm
7	0.7mm
8	0.8mm
9	0.85mm
Α	1.0mm
В	1.25mm
C	1.6mm
D	2.0mm
N E	2.5mm
TV F	3.2mm
M	1.15mm
N	1.35mm
Q	1.5mm
R	1.8mm
S	2.8mm
X	Depends on individual standards.

With the array type GNM series, "Dimension(T)" indicates the number of elements. N.100Y.COM.TW

WWW.100Y.COM.TW WWW.100Y.COM.TW Continued on the following page. WWW.100Y.COM.T



WW.100Y.COM



Femperature Characteristic Codes		Codes	1.71	Temperature Characteristics		
Code	Public STD	Code	Reference Temperature	Temperature Range	Capacitance Change or Temperature Coefficient	Temperature Ran
1X	SL *1	JIS	20°C	20 to 85°C	+350 to -1000ppm/°C	-55 to 125°C
2C	CH *1	JIS	20°C	20 to 125°C	0±60ppm/°C	-55 to 125°C
2P	PH *1	JIS	20°C	20 to 85°C	-150±60ppm/°C	-25 to 85°C
2R	RH *1	JIS	20°C	20 to 85°C	-220±60ppm/°C	-25 to 85°C
28	SH *1	JIS	20°C	20 to 85°C	-330±60ppm/°C	-25 to 85°C
2T	TH *1	JIS	20°C	20 to 85°C	-470±60ppm/°C	-25 to 85°C
3C	CJ *1	JIS	20°C	20 to 125°C	0±120ppm/°C	-55 to 125°C
3P	PJ *1	JIS	20°C	20 to 85°C	-150±120ppm/°C	-25 to 85°C
3R	RJ *1	JIS	20°C	20 to 85°C	-220±120ppm/°C	-25 to 85°C
35	SJ *1	JIS	20°C	20 to 85°C	-330±120ppm/°C	-25 to 85°C
3T	TJ *1	JIS	20°C	20 to 85°C	-470±120ppm/°C	-25 to 85°C
3U	UJ *1	JIS	20°C	20 to 85°C	-750±120ppm/°C	-25 to 85°C
4C	CK *1	JIS	20°C	20 to 125°C	0±250ppm/°C	-55 to 125°C
5C	C0G *1	EIA	25°C	25 to 125°C	0±30ppm/°C	-55 to 125°C
5G	X8G *1	EIA	25°C	25 to 150°C	0±30ppm/°C	-55 to 150°C
6C	C0H *1	EIA	25°C	25 to 125°C	0±60ppm/°C	-55 to 125°C
6P (P2H *1	EIA	25°C	25 to 85°C	-150±60ppm/°C	-55 to 125°C
6R	R2H *1	EIA	25°C	25 to 85°C	-220±60ppm/°C	-55 to 125°C
6S	S2H *1	EIA	25°C	25 to 85°C	-330±60ppm/°C	-55 to 125°C
6T	T2H *1	EIA	25°C	25 to 85°C	-470±60ppm/°C	-55 to 125°C
7U	U2J*1	EIA	25°C	25 to 125°C *6	-750±120ppm/°C	-55 to 125°C
B1 ()	B *2	JIS	20°C	-25 to 85°C	±10%	-25 to 85°C
В3	В	JIS	20°C	-25 to 85°C	±10%	-25 to 85°C
C7	X7S	EIA	25°C	-55 to 125°C	±22%	-55 to 125°C
C8	X6S	EIA	25°C	-55 to 105°C	±22%	-55 to 105°C
D7	X7T	EIA	25°C	-55 to 125°C	+22, -33%	-55 to 125°C
D8	X6T	EIA	25°C	-55 to 105°C	+22, -33%	-55 to 105°C
E7	X7U	EIA	25°C	-55 to 125°C	+22, -56%	-55 to 125°C
F1	10\F *2	JIS	20°C	-25 to 85°C	+30, -80%	-25 to 85°C
F5	Y5V	EIA	25°C	-30 to 85°C	+22, -82%	-30 to 85°C
L8	X8L	*3	25°C	-55 to 150°C	+15, -40%	-55 to 150°C
R1	R *2	JIS	20°C	-55 to 125°C	±15%	-55 to 125°C
R3	R	JIS	20°C	-55 to 125°C	±15%	-55 to 125°C
R6	X5R	EIA	25°C	-55 to 85°C	±15%	-55 to 85°C
R7	X7R	EIA	25°C	-55 to 125°C	±15%	-55 to 125°C
R9	X8R	EIA	25°C	-55 to 150°C	±15%	-55 to 150°C
	WWW	N.C.		V 10500	±10% *4	55. 4551.3
W0	TWW.I	′	25°C	-55 to 125°C	+22, -33% *5	-55 to 125°C

^{*1} Please refer to table for Capacitance Change under reference temperature.

WWW.100Y.COM.TW Continued on the following page. WWW.100Y.COM.TW



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^{*2} Capacitance change is specified with 50% rated voltage applied.

^{*3} Murata Temperature Characteristic Code.

ง เพย DC bias. *6 Rated Voltage 100Vdc max : 25 to 85°C WWW.100Y.COM.TW WWW.100Y.COM.TW

JIS Code

WW.100 Y.COM

VWW.100Y.COM

WWW 100Y.C WWW.100Y.C WWW.100Y

JIS Code	om each temperatur					
JIJ COUC						
WIE	V.100 P. CO	A.I.	Capacitance Char	nge from 20°C (%		
Murata Code	-55	55°C –25°C		-10°C		
	Max.	Min.	Max.	Min.	Max.	Mii
1X	1-00X.C	= 1		11007	WITH-	_
2C	0.82	-0.45	0.49	-0.27	0.33	-0.
2P	-XXX-100	CONT.	1.32	0.41	0.88	0.2
2R	7 100	TIME	1.70	0.72	1.13	0.4
28	MAA	V.CO.	2.30	1.22	1.54	0.8
2T	TW-W.IO	ONL.	3.07	1.85	2.05	1.2
3C	1.37	-0.90	0.82	-0.54	0.55	-0.3
3P	1/2/	001.	1.65	0.14	1.10	0.0
3R	WW.	CON.	2.03	0.45	1.35	0.3
38	- WW	100 - CON	2.63	0.95	1.76	0.6
3Т	2011	11007	3.40	1.58	2.27	1.0
3U	-011	A. CO	4.94	2.84	3.29	1.8
4C	2.56	-1.88	1.54	-1.13	1.02	-0.7

MY.CO	V V	7 - 4 (111) > 1		nge from 25°C (%)	3 100 X.	- NA - 1
Murata Code	-5	5°C	-30	0°C	VI - C1	0°C
1007.	Max.	Min.	Max.	Min.	Max.	Mi
5C/5G	0.58	-0.24	0.40	-0.17	0.25	-0.
6C (O)	0.87	-0.48	0.59	-0.33	0.38	-0.
6P	2.33	0.72	1.61	0.50	1.02	0.3
6R	3.02	1.28	2.08	0.88	1.32	0.5
6S C	4.09	2.16	2.81	1.49	1.79	0.9
6T	5.46	3.28	3.75	2.26	2.39	1.4
7U	8.78	5.04	6.04	3.47	3.84	2.2

> WWW.100Y.COM WWW.100Y.CO WWW.100Y.CC WWW.100Y.C

WWW.1007

Y.COM

OOY.CO



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Continued from the preceding page

Rated Voltage			ınc
Code	Rated Voltage	Expressed	
0E	DC2.5V	(pF). The fir third figure	
0G	DC4V	numbers.lf	
0J	DC6.3V	letter " R ". I	n t
1A	DC10V	Ex.)	С
1C	DC16V	MM	F
1E	DC25V	TINY	V
YA	DC35V		< X
1H	DC50V	MM	•
2A	DC100V		V
2D	DC200V		
2E	DC250V		
YD	DC300V		
2H	DC500V		
2J	DC630V		
3A	DC1kV		
3D	DC2kV		
3F	DC3.15kV		
BB	DC350V (for Camera Flash Circuit)		
E2 C	AC250V		
GB	X2; AC250V (Safety Standard Recognized Type GB)		
GC	X1/Y2; AC250V (Safety Standard Recognized Type GC)		
GD	Y3; AC250V (Safety Standard Recognized Type GD)		
GF	Y2, X1/Y2; AC250V (Safety Standard Recognized Type GF)		

Capacitance

Expressed by three-digit alphanumerics. The unit is pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two numbers. If there is a decimal point, it is expressed by the capital letter "R". In this case, all figures are significant digits.

Code	Capacitance
R50	0.5pF
1R0	1.0pF
100	10pF
103	10000pF
103	10000pF

WWW.100Y.COM.TW Continued on the following page. WWW.100 WWW.100Y.COM.



WWW.100Y.CO WWW.100Y.C

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WWW.100Y.COM.T

WWW.100Y.COM WWW.100Y.COM WWW.100Y.CO

WWW.100Y.COM.TW

WWW.100Y.C WWW.100Y WWW.100

OM.TW

OOY.CO

WW.100

8 Capacitance Tolerance

Code	Capacitance Tolerance	TC	Series	Ca	pacitance Step
W	±0.05pF	СД	GRM/GJM	≦9.9pF	0.1pF
т	TANN TO TOO	N. T.	GRM/GJM	≦9.9pF	0.1pF
_	±0.1pF	M.T.W	100	≦1pF	0.1pF
В	_0.трі	СΔ	GQM	1.1 to 9.9pF	1pF Step and E24 Serie
	WWW.Io	COM.	ERB	≦9.9pF	1pF Step and E24 Serie
	W.100	СД	GRM/GJM	≦9.9pF	0.1pF
	MM . 1007	except CΔ	GRM	≦5pF	* 1pF
C	±0.25pF	V.CO. TW	ERB	≦9.9pF	1pF Step and E24 Serie
W.T.A.	. WW.100	СД	W. N. Iv	≦1pF	0.1pF
	W V 10	01. OM.1.	GQM	1.1 to 9.9pF	1pF Step and E24 Serie
- T	M MM	СД	GRM/GJM	5.1 to 9.9pF	0.1pF
D	±0.5pF	except C∆	GRM	5.1 to 9.9pF	* 1pF
		СД	ERB/GQM	5.1 to 9.9pF	1pF Step and E24 Serie
- 11	±2%	CA	GJM	≥10pF	E12 Series
G		СД	GQM/ERB	≥10pF	E24 Series
100	1504	CΔ-SL	GRM/GA3	≥10pF	E12 Series
J	±5%	CA	ERB/GQM/GJM	≥10pF	E24 Series
ov.Co	W WITH	B, R, X7R, X5R, ZLM	GRM/GR7/GA3	11007	E6 Series
K	±10%	COG	GNM	11 11.	E6 Series
	JOW. I.	B, R, X7R, X5R, ZLM	GR4, GMD	TWW.Io	E12 Series
100X.	TW	B, R, X7R, X7S	GRM/GMA	1 100	E6 Series
. To av	12004	X5R, X7R, X7S	GNM	11/11/10	E3 Series
MOU	±20%	X7R	GA2	WWW.	E3 Series
	Y.C. OM.TW	X5R, X7R, X7S, X6S	LLL/LLA/LLM	TIVI.	E3 Series
Z	+80%, -20%	F, Y5V	GRM	11111	E3 Series
R	Z COM.	Depends	on individual standards.	MMM	ON.CO
	so available. ecification Code				

^{*} E24 series is also available.

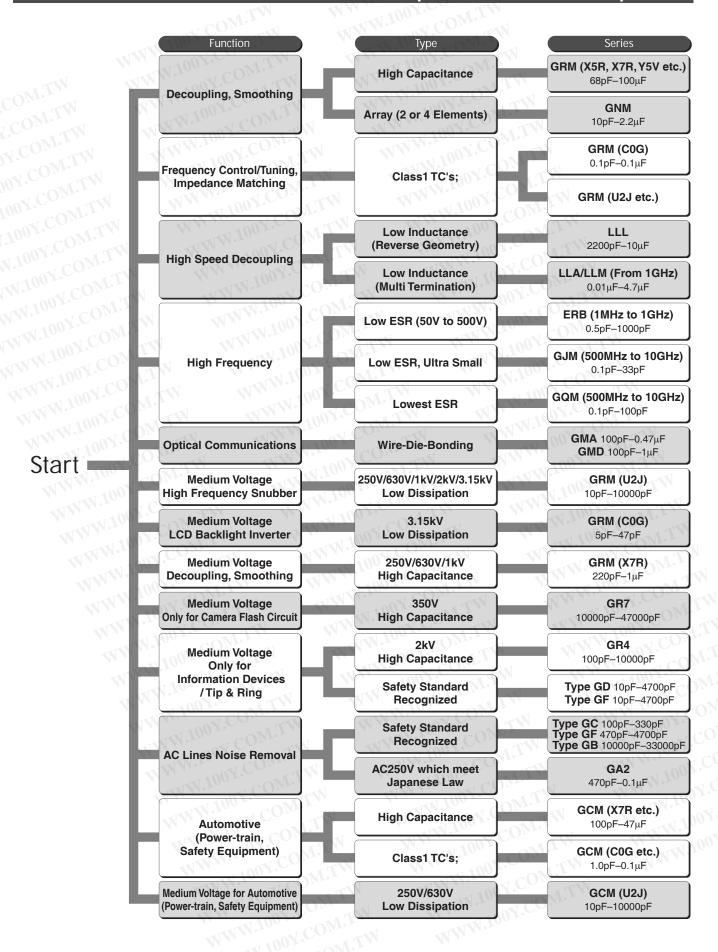
Individual Specification Code

Code	Packaging	
L	ø180mm Embossed Taping	
D	ø180mm Paper Taping	
E	ø180mm Paper Taping (LLL15)	
K	ø330mm Embossed Taping	
J	ø330mm Paper Taping	
F	ø330mm Paper Taping (LLL15)	
В	Bulk	
С	Bulk Case	
Т	Bulk Tray	

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Selection Guide of Chip Monolithic Ceramic Capacitors



Chip Monolithic Ceramic Capacitors



for General Purpose GRM Series

■ Features

- Higher resistance of solder-leaching due to the Ni-barriered termination, applicable for reflow-soldering, and flow-soldering (GRM18/21/31 type only).
- 2. The GRM series is lead free product.
- 3. Smaller size and higher capacitance value.
- 4. High reliability and no polarity.
- 5. Excellent pulse responsibility and noise reduction due to the low impedance at high frequency.
- The GRM series is available in paper or embossed tape and reel packaging for automatic placement.
 Bulk case packaging is also available for GRM15/ 18/21(T=0.6,1.25).
- 7. Ta replacement.

■ Applications

General electronic equipment

1	00 P					
Part Number			nensions	(mm)		
4	_ L\\\	W	T	е	g min.	
GRM022	0.4 ±0.02	0.2 ±0.02	0.2 ±0.02	0.07 to 0.14	0.13	
GRM033	0.6 ±0.03	0.3 ±0.03	0.3 ±0.03	0.1 to 0.2	0.2	
GRM15X	ct 101	1 2	0.25 ±0.05	0.1 to 0.3	0.4	-
GRM153	1.0 ±0.05	0.5 ±0.05	0.3 ±0.03	0.1 10 0.3	0.4	(E)
GRM155	- 46	WX	0.5 ±0.05	0.15 to 0.35	0.3	- (4)
GRM185	1 (10 1	0.0.10.1	0.5 +0/-0.1	0.245.05	0.5	4 (4)
GRM188*	1.6 ±0.1	0.8 ±0.1	0.8 ±0.1	0.2 to 0.5	0.5	
GRM216	-331	no.	0.6 ±0.1	M. F.		
GRM219	20.01	1 05 10 1	0.85 ±0.1	0.2 to 0.7	0.7	
GRM21A	2.0 ±0.1	1.25 ±0.1	1.0 +0/-0.2	0.2 10 0.7	0.7	
GRM21B	- 111	· To	1.25 ±0.1) [Are.		
GRM316	44	. 0	0.6 ±0.1			
GRM319	3.2 ±0.15	1.6 ±0.15	0.85 ±0.1	0.245.00	1 5	
GRM31M		14.0	1.15 ±0.1	0.3 to 0.8	1.5	e g e
GRM31C	3.2 ±0.2	1.6 ±0.2	1.6 ±0.2	100		
GRM329	-111	Mos	0.85 +0.15/-0.05	COL		31
GRM32A	2 N. A.		1.0 +0/-0.2			
GRM32M		TIN.	1.15 ±0.1		7.	
GRM32N	20.00	25.00	1.35 ±0.15	0.0	101	
GRM32C	3.2 ±0.3	2.5 ±0.2	1.6 ±0.2	0.3 min.	1.0	
GRM32R		TIN V	1.8 ±0.2	41 C.U	TAR	I W
GRM32D		4.4	2.0 ±0.2	17.		J. M
GRM32E	1		2.5 ±0.2			

^{*} Bulk Case: 1.6 ±0.07(L) × 0.8 ±0.07(W) × 0.8 ±0.07(T)

勝 特 力 材 料 886-3-5753170 胜特力电子(上海) 86-21-34970699 胜特力电子(深圳) 86-755-83298787 Http://www.100y.com.tw

^{*} The figure indicates typical Specification

Temperature Compensating Type C0G(5C),U2J(7U) Characteristics

TC	-15	WW	To.	=1	C	0G(5C	;)	1		- XIXI	IN.	· Fo	JC	Ohl	J2J(7 l	J)			
LxW	C).4x0.	2		1.0x0.5	1.6x	8.0	2.0x	1.25	3.2x1.6	6 (0.6x0.3		0x0.5	1.6	(0.8	2.0x	1.25	3.2x1.6
[mm]	<	(02) 01005	ō>	(03) <0201>	(15) <0402>	(18 <060		(2 ° < 080		(31) <1206>	> <	(03) <0201>		15) 402>		8) 03>	(2 < 08	05>	(31) <1206>
Rated Voltage	16	10	6.3	50	50	100	50	100	50	100 50) 5	50 25	50	10	50	10	50	10	50
	(1C)	(1A)	(0J)	(1H)	(1H)	(1E)	(1H)	(1E)	(1H)	(1E) (1H	1) (1	(1E	(1H	(1A)	(1H)	(1 A)	(1H)	(1A)	(1H)
0.1pF(R10)		W		3	3, 5		N				11		100		ON				1
0.2pF(R20)	2	V	M)	3	3, 5	I.C	J 2.				N		10						; ;
0.3pF(R30)	2		XIV	3	3, 5	J.				 - -					Co		W		1 1 1
0.4pF(R40)	2		AA.	3	3, 5	7.	cO			T			W.1					×1	1 1 1
0.5pF(R50)	2		W	3	3, 5	10X				N			I N						1
0.6pF(R60)	2			3	3, 5	.00	I.C			N			1		Y.		17	W	1
0.7pF(R70)	2			3	3, 5	700	- 7 (- X X I			WV				Mr.		į
0.8pF(R80)	2			3	3, 5	100	17.			LA	į		L		00 7		M	1	
0.9pF(R90)	2			3	3, 5		\aX			πW	-	3			00.			T	M
1.0pF(1R0)	2	16.T		3	3, 5	N.7.				TV		3	5	W.				_ 11	M
1.1pF(1R1)	2			3	3, 5	TN.	700			1.7					1.70		CO	M	
1.2pF(1R2)	2	W		3	3, 5	1	10			TIM	N		W		J. 1			M	TV
1.3pF(1R3)	2	TAX.	J	3	3, 5	WW	.10			Mr.	V				11.5		Z.C	مالال	1
1.4pF(1R4)	2	1. A.		3	3, 5	- XT	N.1			$O_{M',J}$					W.		*7 C	O	7.7
1.5pF(1R5)	2	T	N	3	3, 5	MAN	11				N						21.		M.
1.6pF(1R6)	2	7.	W	3	3, 5	W				$CO_{M_{\bullet}}$!				M	Co	
1.7pF(1R7)	2	$M_{i,j}$	1	3	3, 5	7				CON	797		1) V	ı C	O_{IV}
1.8pF(1R8)	2	7.0	TV	3	3, 5	W	V .				M.		į				700.	1.	401
1.9pF(1R9)	2	Ω_{Mr}		3	3, 5	1	W	//	00	Y.CU		W	į		WV		400	17.	
2.0pF(2R0)	2	10	1.1	3	3, 5		~1	JW.	Inc	-<1 C	2/4/	3	5		-31	WW	1.70		C
2.1pF(2R1)	2		M.	3	3, 5		W			01.	4						N.1	00 7	
2.2pF(2R2)	2	CO	171	3	3, 5		W			OOY.	4				V			100	N.C
2.3pF(2R3)	2	TC!	ON_I	3	3, 5					- 01	ďC				ļ.,		1111	. 0	N.
2.4pF(2R4)	2	1.		3	3, 5					700 7							WW	1.10	
2.5pF(2R5)	2	MY.		3	3, 5					100								xī 1	00)
2.6pF(2R6)	2		CC	3	3, 5	J				1.7	V.		1				VV	11.	400
2.7pF(2R7)	2	00 r		3	3, 5	-7				W.100			7.,				-11	W	Tor
2.8pF(2R8)	2	00	Y.C	3	3, 5	N				-x11(M.				111		J 19
2.9pF(2R9)	2	70	V.	3	3, 5	TV				N.V	٥٥				İ		W	M A	
3.0pF(3R0)	2	1.30	V -2-	3	3, 5		1			WW.	70	3	5		KI			TW	M_{\odot}
3.1pF(3R1)	2	×1 1	007	3	3, 5	TV					10	10,		17.7					σŃ
3.2pF(3R2)	2	M	. 00	3	3, 5		N			N.M.			1		W			W	
3.3pF(3R3)	2	JW.	700	3	3, 5	17.	-XXI			- XIW	11.							N.	
3.4pF(3R4)	2		J 10	3	3, 5	M.	LAA			// ·	W		1						- XX
3.5pF(3R5)	2	W	1	3	3, 5	- 1	T			WW			N.						
3.6pF(3R6)	2	JW	11.7	3	3, 5	OM				V V			NV.		1		į		W
3.7pF(3R7)	2		TXV	3	3, 5	401	1.7						- (A)		M		i		
3.8pF(3R8)	2	W	N	3	3, 5		71			V			00		M		1		V
3.9pF(3R9)	2	TX.	W	3	3, 5	$\mathbb{C}_{\mathcal{C}}$	1			-	d				On		N		
4.0pF(4R0)	2	4-4		3	3, 5	- T C	ON	1.1		r ! !	4	3	5	~ 1 (407	Ar.	-XXI		
4.1pF(4R1)	2		M	3	3, 5	1.0				! ! !	N	T	119	10 x.	L				1 1 1
4.2pF(4R2)	2		W	3	3, 5	N.					1						TV		!
4.3pF(4R3)	2		11	3	3, 5	×1	C			KÍ			W.		v.C			N	
4.4pF(4R4)	2		1	3	3, 5	001				١			TN				1.7	11	
4.5pF(4R5)	2			3	3, 5	100	y.C			N							NA.	CM	
4.6pF(4R6)	2			3	3, 5	Tag	J			TIN	į		M		LOV		1742		1
4.7pF(4R7)	2			3	3, 5	V.10	OY.			7 41	ĺ				no,		!		
4.8pF(4R8)	2			3	3, 5	1	007			TW	i				1		1		1 1
4.9pF(4R9)	2			3 <	3, 5	M^{*}	_ ^						1 1 1		-		1		1 1 1

6 ex.6: T	Dimen	sion [mm	1]	1.		VIII.		NWW.	100 1.	COM.T			
TC	MY	24.00	101	0000		0G(5C)	00405	0010	000		J2J(7U)	0.0.4.05	20.40
LxW [mm]		0.4x0.2 (02)		(03)	(15)	1.6x0.8 (18)	2.0x1.25 (21)	3.2x1.6 (31)	0.6x0.3 (03)	1.0x0.5 (15)	1.6x0.8 (18)	2.0x1.25 (21)	(31)
Ohil.		01005>	7.	<0201> 50	<0402> 50	<0603> 100 50	<0805> 100 50	<1206> 100 50	<0201> 50 25	<0402> 50 10	<0603> 50 10	<0805> 50 10	<1206> 50
Rated Voltage [Vdc]								(1E) (1H)					
5.0pF(5R0)	2	N VI		3	3, 5	COM			3	5		· / · /	
5.1pF(5R1)	2	WW	N 1	3	3, 5		TW	W		00.	OMT		
5.2pF(5R2)	2	W	W	3	3, 5	I.COM	W	4	MM.	LOOY.	105	W	
5.3pF(5R3)	2			3	3, 5	A CO	VI.		WWW	.10	$CO_{M',j}$	rW.	
5.4pF(5R4)	2			3	3, 5	7	M_{-T}	i i		N.100	I.COM	- XX	
5.5pF(5R5)	2	1	W	3	3, 5	00 X.C.	M.T	1	M.	N.100		LTW	
5.6pF(5R6)	2	-	V	3	3, 5	ONY.C	717	N	WW	10	N.C.	MTM	
5.7pF(5R7) 5.8pF(5R8)	2	-		3	3, 5	TO ON	COM		W	WW.	MY.CO	WT	
5.8pF(5R9)	2	1		3	3, 5 3, 5	.100Y.	COM	1 × 1		WW.1	C C	DMI	
6.0pF(6R0)	2			3	3, 5	7.709		ţ3.XI	3	5	100 r.	OM	1: _x1
6.1pF(6R1)	2	N		3	3, 5	100	Y.Co.	TW		W.	100Y.	COM.	
6.2pF(6R2)	2	W		3	3, 5	111.1	MY.CO	WT		MMA	N.100Y		
6.3pF(6R3)	2	1		3	3, 5	$MM \cdot II$	C C	Mi	N.	WW	N.To	$_{I.COM}$	
6.4pF(6R4)	2	1.11	7	3	3, 5	WW.	007.	OW.I	· - • T		W.100	SI COD	
6.5pF(6R5)	2	VI		3	3, 5	111	1001	T.MO			N.10		
6.6pF(6R6)	2		N	3	3, 5	MMIN	YOUY	CON		W	1	10 Y.C.C	
6.7pF(6R7) 6.8pF(6R8)	2	Mr	-17	3	3, 5	WW	1.10	COM			MW.	ony.C	
6.9pF(6R9)	2	M.	7	3	3, 5 3, 5	-733	W.100	CON	1.1	1	WW.	700 × (
7.0pF(7R0)	2		-1-	3	3, 5		13N 10		3	5		-4-011-1	COMIT
7.1pF(7R1)	2		1 7	3	3, 5	W	1	OY.CO	11.11		MM.	W.100Y	
7.2pF(7R2)	2	$C_{O_{\bar{I}}}$	17.	3	3, 5	V	MM.	LOY.C		N	1		
7.3pF(7R3)	2	7 C.O	M	3	3, 5		WW.	100Y.C			WV	111.1	
7.4pF(7R4)	2			3	3, 5		TAN W	700 2	COM			NN.10	
7.5pF(7R5)	2	21.0		3	3, 5		M.	v.100Y	I.COM	T.	W	W.1	
7.6pF(7R6)	2	MY.	CY	3	3, 5		MM	100		TW		111	
7.7pF(7R7) 7.8pF(7R8)	2	1007	C	3	3, 5 3, 5	N	WW	N.100	Y.CO	WT	1		
7.9pF(7R9)	2	700.	-7	3	3, 5	-XXI		VW.100	CO.CO	Mr.	ĺ	WWV	
8.0pF(8R0)	2	1.700		3	3, 5				3	5		- 1 N	Miton COJ
8.1pF(8R1)	2	W.10	07	3	3, 5	TW	V	TEN !	00,1.		N	11, 1,	100 Y.COM. V.100 Y.COM W.100 Y.COM W.100 Y.CO W.100 Y.CO
8.2pF(8R2)	2	Mirro	oΩ	3	3, 5	MTN	1	NWW.	100X.	ANT!	W	11/1	
8.3pF(8R3)	2	W.1	No	3	3, 5	VI.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		4007		TW	W	
8.4pF(8R4)	2	WW	.10	3	3, 5	M.	1.1	TATAN'	N.Ton	COM: LCOM	TXN.		
8.5pF(8R5)	2			3	3, 5	OM.T		1	W.100	M.COM	1.7		
8.6pF(8R6) 8.7pF(8R7)	2	VVV		3	W 0	COM.T		M	× 10	O.Y.C.	MTW		
8.8pF(8R8)	2	WW	W	3	3, 5 3, 5	CO_{Mr}	W	W			OM.TV	1	
8.9pF(8R9)	2		NV	3	3, 5	COM	TAX I	41	WW.1	Tow.C	O_{Mr}	N	
9.0pF(9R0)	2		- 1	3	3, 5			;	2	5	OMT	- XX	
9.1pF(9R1)	2	W	11	3	3, 5	1.00	WI.IW		1	100			
9.2pF(9R2)	2		N	3	3, 5	OY.CU	MIV		WWV	1007	- ANI	IVI	
9.3pF(9R3)	2		XX	3				N	WW	M.	COM. I.COM IV.COM	WT	
9.4pF(9R4)	2		W	3	3, 5	00 -	OM.T		- 414	W.100	V CO	VI.	
9.5pF(9R5)	2	-	1	3	3, 5	100 X.	COW.	77		WW.10	04.CO	M_{-1}	
9.6pF(9R6) 9.7pF(9R7)	2	-		3	3, 5 3, 5	100Y	$^{1}CO_{M}$ $^{CO_{M}}$	TN	W	N 1	00 X.C.		
9.8pF(9R8)	2			3	3, 5	N. 2	† CO $_{Z_{3}}$	LTW.	_	11 N N	1		

6 ex.6: T [Dimens	sion [m	m] (Y.		LT	N		NWW.	100	17.		11.	11		
TC	NN	1 0	100	0000		0G(5 (00405	00.10	140	07.	4.6	- Th. 17b	2J(7U)	00405	100.40
LxW		0.4x0.2 (02)	<u>2</u> ,32~	(03)	1.0x0.5 (15) <0402>	1.6) (1	8)	2.0x1.25 (21)	(31)	(0	x0.3 (3)	1.0x (1)		1.6x0.8 (18)	2.0x1.25 (21)	(31)
[mm]		01005			47		03>	<0805>	<1206>	<02	201>	<04	/	<0603>	<0805>	<1206>
Rated Voltage	16	10		50	50	100	50	100 50	100 50 (1E) (1H)	50	25	50	10	50 10	50 10	
		(IA)	(00)	4.0	7.7.			(16) (16	(1E) (1H)		(12)		(IA)	(III) (IA)	(III) (IA) (111)
10pF(100)	2			3	3, 5	8	8	TW	1	3	N	5	,CV		N	
12pF(120)	2			3	3, 5	8	8	. 1		3	W.	5	J.G			1
15pF(150) 18pF(180)	2	W		3	3, 5	8	8	LTV		3	3	5	1		1	
22pF(220)	2	4		3	3, 5	8	8	VIII		W	3	5	01		TW	
27pF(270)	2			3	3, 5	8	8	Mr.	Ň	1	3	5	003		W	
33pF(330)	 2			3	3, 5	8	8	$O_{M^{*,r}}$	1		3	5	100		I	1
39pF(390)	2			3	3, 5	8	8	OM.			3	5	700		M_{IJ}	
47pF(470)	2			3	3, 5	8	8		W	į	3	5	-11		TI	N
56pF(560)	XX	2	2	3	3, 5	8	8	CO_{M_I}	I W	1 1 1	3	5	N . 2		DAY	1
68pF(680)	LA	2	2	3	3, 5	8	8	CON		!	3	5	W.		OM.,	
82pF(820)		2	2	3	3, 5	8	8	Y.	WT.I		3	5	74.		MOD	
100pF(101)	, rs	2	2	3	3, 5	8	8	6	W		3	5	M.A.	1007		TW
120pF(121)	M:	_ <1		1	3, 5	8	8	6	Mr.	N		5	W		I.CON	
150pF(151)					3, 5	8	8	6	OMT			5			CO1	Mr. 7
180pF(181)					3, 5	8	8	6				5	MA			M.T.W
220pF(221)					3, 5	8	8	6	$CO_{M',j}$			 	W		V.C	WT
270pF(271)					3, 5	8	8	6	co_{M}			I I			~<7 C	OMP
330pF(331)					3, 5	8	8	6 00	1			 	N		1007.C	COM.TW
390pF(391)				N	3, 5	8 <	8	6	M.Co.	1		 	1		1001	MILMO
470pF(471)				-XXI	3, 5	8	8	6	V.CO	Mr.		! ! !			N.100	COMP TW
560pF(561)					3, 5	8	8	6	10 x.	DM		lic T			W.100	COM
680pF(681)				TV	3, 5	8	8	6	1007.			1			W.100	h. COWIIN
820pF(821)					5	8	8	6	YOUY.			W	i		1	OY.COMITY
1000pF(102)				7. 2	5	8	8	6	1.100	jc0		σM	_	8	NW.19	OV.COM
1200pF(122) 1500pF(152)				M.		8	8	6 6	V.100Y	1		7.	5	8	WW.	100X.COM.
1800pF(182)				- 1	TV	8	8	6 6	9 00				5	8		100 X. COM.
2200pF(222)				$O_{D_{1}}$		N	8	6 6	9	Y.		1	5	5, 8		100X.Co
2700pF(272)				0	17.7		8	6 6	9			Mr.	5	5, 8	WW	M. T. COM
3300pF(332)					M.	LAN	8	6 6	9	10,7		M	5	5, 8	1	W.100 - CO
3900pF(392)					- 1	TY	8	6	9	100			5	5, 8	W.	M.100X.CO
4700pF(472)				V.C	O_{N_1}		W	6	9 9	100		$\mathcal{M}_{\mathbb{Z}}$		5, 8	W	MAN. TOOX.CC
5600pF(562)				27	-01	1:1		9	9 9	γ_{0}		CO	Mr.	8 5	< 1	WW. To V.C
6800pF(682)				9.		M		9	9 9	N.1		. ~(M	8 5		100 r
8200pF(822)				005	C.) 1. T		9	9 9			7. C		8 5		1007
10000pF(103)		W	11.7	1000	V.C	$O_{\tilde{M}_1}$	~	9	9 9	M.	, n	V.C	JO P	8 5	6	WWW
12000pF(123)				700				9	9	NV		J = 1	cO	8	6	MM.In
15000pF(153)				110	01.			9	9			90 x		8	6	W . 100
18000pF(183)				N	001	C		В	9	W		00	Y.C	8	6	WW 110
22000pF(223)				W.	IVV.	J C		В	9	NV		To	1.	8	9	MAM
27000pF(273)				TN	100	1.		Wir	9	1		10	7		9	TINN!
33000pF(333)				N Y	10	OY.		VIIV	9	W		xī 1(001		A	MMM.
39000pF(393)				W	1.2	001			9			11.	.00		В	MM
47000pF(473)					W.	na,		OW.	M			W.	Ino		В	
56000pF(563)						100		Low!	M				1.10		9	9
68000pF(683)				1	1				C	1					В	M

The part number code is shown in () and Unit is shown in []. $\,$ < >: EIA [inch] Code WWW.1

W.100Y.

Capacitance Table

Continued from the preceding page.

Temperature Compensating Type P2H(6P),R2H(6R),S2H(6S),T2H(6T) Characteristics WWW.100Y

тс	P2H (6P)	(6	2H R)	(6	2H S)	(6	2H T)
LxW [mm]	(15)	(03)	(15)	(03)	1.0x0.5 (15) <0402>	(03)	1.0x0.5 (15) <0402>
Rated Voltage [Vdc]		25 (1E)	50 (1H)	25 (1E)	50 (1H)	25 (1E)	50 (1H)
1.0pF(1R0)	5	3	5	3	5	3	5
2.0pF(2R0)	5	3	5	3	5	3	5
3.0pF(3R0)	5	3	5	3	5	3	5
4.0pF(4R0)	5	3	5	3	5	3	5
5.0pF(5R0)	5	3	5	3	5	3	5
6.0pF(6R0)	5	3	5	3	5	3	5
7.0pF(7R0)	5	3	5	3	5	3	5
8.0pF(8R0)	5	3	5	3	5	3	5
9.0pF(9R0)	5	3	5	3	5	3	5
10pF(100)	5	3	5	3	5	3	5
12pF(120)	5	3	5	3	5	3	5
15pF(150)	5	3	5	3	5	3	5
18pF(180)	5	3	5	3	5	3	5
22pF(220)	5	3	5	3	5	3	5
27pF(270)	5	3	5	3	5	3	5
33pF(330)	\mathbb{C}_{O}	3	5	3	5	3	5
39pF(390)	7 (1	3	. 7	3	5	3	5
47pF(470)	Y.	3	T	3		3	5
56pF(560)	V.	3	W 17	3		3	5
68pF(680)	×1	3	Mr.	3		3	5
82pF(820)	00 x	3	Me	3		3	5
100pF(101)	. 001	3	<i>J</i> -	3	N	3	5 <

WWW.100Y.COM.TW WWW.100Y.COM.TW The part number code is shown in $\,$ () and Unit is shown in []. WWW.100Y.COM

WWW.100Y.COM.TW DOY.COM.TW Continued on the following page. $\begin{tabular}{|c|c|c|c|} \hline \end{tabular}$ WWW.100 WWW.100Y.COM.



Continued from the preceding page.

High Dielectric Constant Type X7R(R7)/X7S(C7)/X7T(D7)/X7U(E7) Characteristics

5	ex.5: T		-	-:01					_		7/1		11	0.0	2 0 (11/					0.4	0.5		
	LxW [mm]	0.4x0.2 (02) <01005>		0.6x0. (03) <0201		CO	OM	.0x0. (15) :0402	5 >		W	W N	v 2	.6x0. (18) :0603	8	ON	LT.	N -si			.0x1. (21) :080	25 5>		
Rated Capacitance	Voltage [Vdc]	10 (1A)	25 (1E)	16 (1C)	10 (1A)	100 (2A)		25 (1E)	16 (1C)	10 (1A)	100 (2A)		25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	100 (2A)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	
68p	F(680)	2	44	-11/	70	3	CC.	$M \cdot$		7				1.7		7 (DIVI		* 1					
100p	F(101)	2	3		1	201		~ 1						1	00	7			(3)					
150p	F(151)	2	3							N														
220p	F(221)	2	3			5	X, 5	10			8	8						11.						
330p	F(331)	2	3	MA		5	X, 5			LM	8	8	M.					M						
470p	F(471)	2	3	NT.		5	X, 5	CC			8	8	1/1											
680p	F(681)	-7	3			5	X, 5	70		L. L.	8	8						OD						
1000p	F(102)		3	V		5	X, 5	1.0		Λ . \mathbf{T}	8	8												
1500p	F(152)		3			5	X, 5	N.			8	8												
2200p	F(222)		1	3		5	5	X	CC	M.	8	8						7 1						
3300p	F(332)	I_{M}	!	3	1	5	5	002	X	M	8	8												
4700p	F(472)		N		3	5	5	5	X	Or.	8	8						7.						
6800p	F(682)	7.7	r 1		3	-13	5	5	Х		8	8						9	CC					
10000p	F(103)	1.7	111		3	M.	5	5	X	40	8	8	8		- ///	-«1°	N.1	В		OM	11.	-1		
15000p	F(153)	TA P				W	5	5	5	.Cc	, ,	8	8					В						
22000p	F(223)	DM					5	5	5	ST C	$O_{J_{A}}$	8	8					В	-7					
33000p	F(333)		T				M 4.	5	5	7.0	- O	8	8					В	9	CC				
47000p	F(473)	Ω_{R}	- 11					5	5	o V.		8	8					В	В					
68000p	F(683)	co	M.). 	1			WN	5	5	C	8	8	KI		<0	JVV.	M·z	В	9	Ω_{M}		M	
0.10µ	F(104)		1	T.A.				-4	5	5	8	8	8				7	W.	В	В	-01	1.	- 1	
0.15µ	ıF(154)	C	ديدل						41.	100	X.C		8	8					В	В				
0.22µ	F(224)	-7 (O							To			8	8		_		A	В	В	.C			
0.33µ	ıF(334)	0%.								N.10	0 7.		Me	8	8			A	9	В	- 0			
0.47μ	ıF(474)	M	Cr							-7 1	007		8	8	8			В	В	9	1.0	- 0		
	ıF(684)	00	a.C	O_{J_i}					s I SN	<i>M</i> .,		×1. C	Ob). ·	8	l		an N	MA	9	9	ÇΨ		
	ıF(105)	700								TW	707		8	8	5, 8				В	9, B	В	C(\mathcal{D}_{MT}	
	ıF(225)	100	M.			W				14	- 1C				8	8	8	111		В	В	В		
	ıF(475)	1.70		.c.0). 		<u> </u>		43	nΝ	N - >		<u>1.C</u>	Dix		M			VV	77.	В	В	Or.	- E
	F(106)	N.1	90 s			7.7					W.											В	В	N
22µ	ıF(226)	-31	100	Y.U	. 0	1.1	V		1	N	138	100	17.		MI	. W		<u> </u>	111	- 1 V	4.1 9	10 x	. C(T
	LxW [mm]	NV	1.10	013	3.2x1. (31) :1206	6	LA	N		W	3	3.2x2. (32) :1210	501	i.C	OM	TV								
Dated	Voltage	100	50	25	16	10	6.3	4	100	50	35	- 18 D	16	10	6.3	7. 7								

	111			_`\U.		< 1			_417			-57		
LxW [mm]	NV	1.10		3.2x1. (31) :1206			N		V		3.2x2. (32) :1210		y.C	OM
Rated Voltage	100	50	25	16	10	6.3	4	100	50	35	25	16	10	6.3
Capacitance [Vdc]	(2A)	(1H)	(1E)	(1C)	(1A)	(0J)	(0G)	(2A)	(1H)	(YA)	(1E)	(1C)	(1A)	(OJ
15000pF(153)	9	4	- 10	OY.		21	TW			M.	44	×1.1	001	
22000pF(223)	M	W						N						
33000pF(333)	M	- T												
47000pF(473)	M	111												
68000pF(683)	M	w V						M						
0.10μF(104)	9			1.11	Q 7-	. (M	135 Jan	- 7		4	- 1	N.Y	00
0.15μF(154)	М	M	M.					T						
0.22μF(224)	М	M	W											
0.33μF(334)		9						$M_{i,j}$						
0.47μF(474)	M	М	W					LAK						
0.68μF(684)	M	М	* * * *					С	N	N				
1.0μF(105)	С	М			W.1	Ia_{α}	- 0	C	1. 1	«1				
2.2μF(225)		С	M	M				E	13					
4.7μF(475)]	С	С	C	VW			Co	E					
10μF(106)			С	С	С	4.77	20	. ((DIVI	E	D]		-11
22μF(226)	1			V	С	С	00			TI	E	Е		
47μF(476)]				NV	AA.	С	V.C			W		Е	Е

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100

Capacitance Table

LxW [mm	(03)		.0x0. (15)		.co	(603>	N .			0x1.2 (21) 0805		002			.2x1. (31) 1206				3.2x2. (32) <1210	
Rated Voltage [Vdc	6.3 (0J)	25 (1E)	6.3 (0J)	4 (0G)	10 (1A)	6.3 (0J)	4 (0G)	2.5 (0E)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	25 (1E)	10 (1A)	6.: (0.
15000pF(153)	3	1	σV	70	-7	c	M.	- 1	İ			W	1.77	~	C)Mr.		X	1		
22000pF(223)	3	W		xi 1										00							
33000pF(333)	3			11.					N					100					1		
47000pF(473)	3			M.															l		
68000pF(683)		5		-111	10	0 2.		M.					ANN.	1.77	JO -	z (C)	\mathcal{M}_{I}		 		
0.10μF(104)	N	5	W	A4 .					TV					×XI 1							
0.15μF(154)	k N	i 1 1	5	5										44.							
0.22μF(224)		1	5	5					17. 7					NW							
0.33μF(334)	111	1 1 1	5	5					M												
0.47μF(474)	TV	ĺ	5	5										77							
0.68μF(684)		M		5	TW	W.	10	v C	O_{N_1}		M.			MM		A.	X.	۲۷۷	1	cM.	
1.0μF(105)	1.7	1			5	5	8		-01	6				- 41	W				į.		
2.2μF(225)	17				8	8	110	07.		9	LM			M	6				M		
4.7μF(475)) NA		<u> </u>	!	ΔŃ		8	کمہ	В	В	9	9		V	9		200	Į.U		$\Delta \Delta$	M
10μF(106)	OM							8	J C	OM	В	9, B	9	С	NV	M.	7.0	V.	D	1320	
22μF(226)									7.				В		1	C	C	U P	E	M) ·
47μF(476)	(CO)	1	rW.			W	M 4.	40			. 4.1.	IN.		; 			C	C		E	E
100μF(107)	- CO	717-		1					ĺ					!				С	J.C		

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100Y.COM.TW

Continued on the following page. WWW.100Y.C WWW.100Y.COM.T



High Dielectric Constant Type X5R(R6) Characteristics

ligh Dielectric Co				1	(0)					X7R(F	R7) etc	Chara	acteris	tics.						
LxW [mm]	0.4x (0 <010	(0.2 2))05>	N.10	0.6x (0 : <02	0.3 3) 01>	OM Mr	TV	V	1	1.0x0. (15) :0402	5	W.)	1002		OM		(18) (18) (0603			
Rated Voltage [Vdc]	10 (1A)	6.3 (0J)	25 (1E)	16	10	6.3 (0J)	100 (2A)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	100 (2A)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	
68pF(680)	2		-111	70			M.		-				1.7		7 (M		« 1		
100pF(101)	2	W	MA.	- 10	101		- 1				W	44-	1	00			1.7.	[
150pF(151)	2		W				$O_{Z_{1}}$													
220pF(221)	2							1.1						Ja.						
330pF(331)	2		NV					- 15 1	W					-110	101					
470pF(471)	2						CC	Mr.						N. P	- 03					
680pF(681)		2	A					M	7.1					W.	100					
1000pF(102)	N	2	1	M	4422	. 00	Y.C	5	(T	W.		4	MA.		8	N.	911	17	LAN.	
1500pF(152)		2			3	Too	* 7 (17					NV	0.32					
2200pF(222)		2		M A	3	10	0 x.	5	M.	1.11					8					
3300pF(332)	TV	2		W	3		003	i.C		TY	N			AA						
4700pF(472)	7	2	·		3	$N_{\rm J}$	00	5	ON.		cos I			~TV	8					
6800pF(682)		2			3	- 1	100	J.		Λ .T	N.			44.	-TXX					
10000pF(103)		2			3	114		N.	CO	- 1	ďΝ			W	8	. 4 (M	Co		TI
15000pF(153)	$M_{i,j}$					3	1.70	0	C(Mr.	1				W	11.7				
22000pF(223)	~ 1				W	3	×1 1	00)		5	T			N	8	XXI.	100.			
33000pF(333)	Dir		N			3	M.	- 00	V.C	5	5	W		4	WW	44.				
47000pF(473)						3	TW			5	5	_ 1				VV	To.			
68000pF(683)		1.1				M	Ĺ	.z.4S	5	5	5	L_M			W	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	xī 1(00x		M_{α}
0.10μF(104)	CO	Mrs					W		5	5	5	T	N		1	8	8	. 00	y.C	O P
0.15μF(154)	. ~1						1				5	- 5	-×1			-41	W.	8	* 7 (
0.22μF(224)	1.0		T								5	5	M	1	1	8	8	8	2.	
0.33μF(334)	₹ 7 (1.								5	5		1		N.	MA	0-	00	
0.47μF(474)	7.		$M_{i,j}$								5	5	7.	1		8	8	8	00.	
0.68μF(684)	X	C		πV			M			کمم	5	5		<u>N</u>			111		202	7.0
1.0μF(105)	00		O_{N_I}								5	OD		W		8	5, 8	5	_	OV.
2.2μF(225)	100						1						M.				8	8	1.70	JU -
4.7μF(475)			ΓO_{r}				1 1						5				11	11.	8	NOV

LxW [mm]	1. N	100		.0x1.2 (21) :0805		W		1	NN	W 3	3.2x1. (31) :1206	6 >	CO:	M.T	W	ĺ	3	3.2x2. (32) <1210	5	N.10	07.
Rated Voltage Capacitance [Vdc]	100 (2A)		25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	100 (2A)		25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	100 (2A)	50 (1H)	35 (YA)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)
6800pF(682)	TXX	1.1	00	C	O_{D_i}		«XI			TIN	W.	10	V (OL		M			W	MAA	
10000pF(103)	,	-xXI					44-								M.						
15000pF(153)	WW	111.					TW								- 1						
22000pF(223)	4		1.70					CT .							\mathfrak{D}_{M}						
33000pF(333)	W	41	xī 1				T	1							10						
47000pF(473)	4	W	11	. 00			- 1	W													
68000pF(683)			IVI	700		cO	M.,) 1	ΝŃ	1.70	<1	c0	Mr.		í			W
0.10μF(104)		MI	,	110			.1/	LM													
0.15μF(154)		< X.	W	1.5											V.C						
0.22μF(224)			_ S T	$\propto 1.1$	00		ON	. 1	-1						* 7 (
0.33μF(334)				В	100		1	AT	7						9.7.						
0.47μF(474)			-XTX	В			CO	Nr.	XX						Va	Cr	, ,				
0.68μF(684)				-75	1139)O 7.	ام.	M	7				-41	$\sqrt{1}$	00 -	- C	O[V]	1.5	ا بالنادر		
1.0μF(105)			6	В		.00			T			. 1			100	1.0					
2.2μF(225)			9, B	9, B	В		√J C		С	6					» ·	V	$C_{\mathbf{O}_{i}}$				
4.7μF(475)			В	9, B	9	100) 7.	امما	1	9,C	9,C			-411	1.10	U ×	dC	M \cdot	<i>y</i> - `		
10μF(106)				В	9, B	9	oy.		- 1	C	9, C	9	W	Ad .	-11		E	D		_	
22μF(226)						В	9				С	С	С	JW	M.			E			
47μF(476)	l			N		-31	00.			$U_{J_{i}}$	11		С		L				E	E	
100μF(107)				1	NV	14.	. 00	V.C	, O :		W		С	С							

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100



LxW [mm]		0.4x0.2(02)<01005>	0.6x0.3 (03) <0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc]	WWW	16(1C)	50(1H)	50(1H)
Capacitance	Tolerance	N.In. COM.	Part Number	N.COM.
0.1pF(R10)	±0.05pF(W)	~ 100 ~ 0 M_{\odot}	GRM0335C1HR10WD01D	GRM1555C1HR10WA01D
WIL	±0.1pF(B)	1007.	GRM0335C1HR10BD01D	GRM1555C1HR10BA01D
0.2pF(R20)	±0.05pF(W)	GRM0225C1CR20WD05L	GRM0335C1HR20WD01D	GRM1555C1HR20WA01D
T.Mor	±0.1pF(B)	GRM0225C1CR20BD05L	GRM0335C1HR20BD01D	GRM1555C1HR20BA01D
0.3pF(R30)	±0.05pF(W)	GRM0225C1CR30WD05L	GRM0335C1HR30WD01D	GRM1555C1HR30WA01D
COM	±0.1pF(B)	GRM0225C1CR30BD05L	GRM0335C1HR30BD01D	GRM1555C1HR30BA01D
0.4pF(R40)	±0.05pF(W)	GRM0225C1CR40WD05L	GRM0335C1HR40WD01D	GRM1555C1HR40WA01D
Y.Co	±0.1pF(B)	GRM0225C1CR40BD05L	GRM0335C1HR40BD01D	GRM1555C1HR40BA01D
0.5pF(R50)	±0.05pF(W)	GRM0225C1CR50WD05L	GRM0335C1HR50WD01D	GRM1555C1HR50WA01D
Mor.	±0.1pF(B)	GRM0225C1CR50BD05L	GRM0335C1HR50BD01D	GRM1555C1HR50BA01D
0.6pF(R60)	±0.05pF(W)	GRM0225C1CR60WD05L	GRM0335C1HR60WD01D	GRM1555C1HR60WA01D
CON	±0.1pF(B)	GRM0225C1CR60BD05L	GRM0335C1HR60BD01D	GRM1555C1HR60BA01D
0.7pF(R70)	±0.05pF(W)	GRM0225C1CR70WD05L	GRM0335C1HR70WD01D	GRM1555C1HR70WA01D
100X.CO	±0.1pF(B)	GRM0225C1CR70BD05L	GRM0335C1HR70BD01D	GRM1555C1HR70BA01D
0.8pF(R80)	±0.05pF(W)	GRM0225C1CR80WD05L	GRM0335C1HR80WD01D	GRM1555C1HR80WA01D
M.100,7.	±0.1pF(B)	GRM0225C1CR80BD05L	GRM0335C1HR80BD01D	GRM1555C1HR80BA01D
0.9pF(R90)	±0.05pF(W)	GRM0225C1CR90WD05L	GRM0335C1HR90WD01D	GRM1555C1HR90WA01D
NW. John	±0.1pF(B)	GRM0225C1CR90BD05L	GRM0335C1HR90BD01D	GRM1555C1HR90BA01D
1.0pF(1R0)	±0.05pF(W)	GRM0225C1C1R0WD05L	GRM0335C1H1R0WD01D	GRM1555C1H1R0WA01D
1.001 (1110)	±0.1pF(B)	GRM0225C1C1R0BD05L	GRM0335C1H1R0BD01D	GRM1555C1H1R0BA01D
WW.Lo	±0.15F(C)	GRM0225C1C1R0CD05L	GRM0335C1H1R0CD01D	GRM1555C1H1R0CA01D
1.1pF(1R1)	±0.05pF(W)	GRM0225C1C1R1WD05L	GRM0335C1H1R1WD01D	GRM1555C1H1R1WA01D
(III)	±0.03pr (V)	GRM0225C1C1R1BD05L	GRM0335C1H1R1BD01D	GRM1555C1H1R1BA01D
71 WW.1	±0.1pr (b) ±0.25pF(C)	GRM0225C1C1R1CD05L	GRM0335C1H1R1CD01D	GRM1555C1H1R1CA01D
1.2pF(1R2)	±0.05pF(W)	GRM0225C1C1R2WD05L	GRM0335C1H1R2WD01D	GRM1555C1H1R2WA01D
1.2 ρ Γ(1n2)		GRM0225C1C1R2WD05L		
WWW	±0.1pF(B) ±0.25pF(C)	GRM0225C1C1R2CD05L	GRM0335C1H1R2BD01D	GRM1555C1H1R2BA01D
1.2pF/ 1D2 \			GRM0335C1H1R2CD01D	GRM1555C1H1R2CA01D
1.3pF(1R3)	±0.05pF(W)	GRM0225C1C1R3WD05L GRM0225C1C1R3BD05L	GRM0335C1H1R3WD01D	GRM1555C1H1R3WA01D
VV	±0.1pF(B)		GRM0335C1H1R3BD01D	GRM1555C1H1R3BA01D
4.4.5(4.0.4)	±0.25pF(C)	GRM0225C1C1R3CD05L	GRM0335C1H1R3CD01D	GRM1555C1H1R3CA01D
1.4pF(1R4)	±0.05pF(W)	GRM0225C1C1R4WD05L	GRM0335C1H1R4WD01D	GRM1555C1H1R4WA01D
<1	±0.1pF(B)	GRM0225C1C1R4BD05L	GRM0335C1H1R4BD01D	GRM1555C1H1R4BA01D
	±0.25pF(C)	GRM0225C1C1R4CD05L	GRM0335C1H1R4CD01D	GRM1555C1H1R4CA01D
1.5pF(1R5)	±0.05pF(W)	GRM0225C1C1R5WD05L	GRM0335C1H1R5WD01D	GRM1555C1H1R5WA01D
	±0.1pF(B)	GRM0225C1C1R5BD05L	GRM0335C1H1R5BD01D	GRM1555C1H1R5BA01D
	±0.25pF(C)	GRM0225C1C1R5CD05L	GRM0335C1H1R5CD01D	GRM1555C1H1R5CA01D
1.6pF(1R6)	±0.05pF(W)	GRM0225C1C1R6WD05L	GRM0335C1H1R6WD01D	GRM1555C1H1R6WA01D
	±0.1pF(B)	GRM0225C1C1R6BD05L	GRM0335C1H1R6BD01D	GRM1555C1H1R6BA01D
	±0.25pF(C)	GRM0225C1C1R6CD05L	GRM0335C1H1R6CD01D	GRM1555C1H1R6CA01D
1.7pF(1R7)	±0.05pF(W)	GRM0225C1C1R7WD05L	GRM0335C1H1R7WD01D	GRM1555C1H1R7WA01D
	±0.1pF(B)	GRM0225C1C1R7BD05L	GRM0335C1H1R7BD01D	GRM1555C1H1R7BA01D
	±0.25pF(C)	GRM0225C1C1R7CD05L	GRM0335C1H1R7CD01D	GRM1555C1H1R7CA01D
1.8pF(1R8)	±0.05pF(W)	GRM0225C1C1R8WD05L	GRM0335C1H1R8WD01D	GRM1555C1H1R8WA01D
	±0.1pF(B)	GRM0225C1C1R8BD05L	GRM0335C1H1R8BD01D	GRM1555C1H1R8BA01D
	±0.25pF(C)	GRM0225C1C1R8CD05L	GRM0335C1H1R8CD01D	GRM1555C1H1R8CA01D
1.9pF(1R9)	±0.05pF(W)	GRM0225C1C1R9WD05L	GRM0335C1H1R9WD01D	GRM1555C1H1R9WA01D
	±0.1pF(B)	GRM0225C1C1R9BD05L	GRM0335C1H1R9BD01D	GRM1555C1H1R9BA01D
ļ	±0.25pF(C)	GRM0225C1C1R9CD05L	GRM0335C1H1R9CD01D	GRM1555C1H1R9CA01D
2.0pF(2R0)	±0.05pF(W)	GRM0225C1C2R0WD05L	GRM0335C1H2R0WD01D	GRM1555C1H2R0WA01D
, (2.10)	±0.03pr (11)	GRM0225C1C2R0BD05L	GRM0335C1H2R0BD01D	GRM1555C1H2R0BA01D
	±0.1pr(b) ±0.25pF(C)	GRM0225C1C2R0CD05L	GRM0335C1H2R0CD01D	GRM1555C1H2R0CA01D

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

2Series 1 Product ID (Part Number) | GR | M | 02 | 2 | 5C | 1C | R20 | W | D05 | L **5**Temperature Characteristics 2 3 4 5 6 7 8 9 0 8 Capacitance Tolerance

3Dimension (LxW) 6 Rated Voltage

4 Dimension (T) Capacitance

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

*GRM022: D is applicable.

xW [mm] Rated Volt. [Vdc		0.4x0.2(02)<01005> 16(1C)	0.6x0.3(03)<0201> 50(1H)	1.0x0.5(15)<0402> 50(1H)
Capacitance	Tolerance	10(10)	Part Number	30(11)
2.1pF(2R1)	±0.05pF(W)	GRM0225C1C2R1WD05L	GRM0335C1H2R1WD01D	GRM1555C1H2R1WA01D
WY TO THE	±0.1pF(B)	GRM0225C1C2R1BD05L	GRM0335C1H2R1BD01D	GRM1555C1H2R1BA01D
Mil	±0.25pF(C)	GRM0225C1C2R1CD05L	GRM0335C1H2R1CD01D	GRM1555C1H2R1CA01D
2.2pF(2R2)	±0.05pF(W)	GRM0225C1C2R2WD05L	GRM0335C1H2R2WD01D	GRM1555C1H2R2WA01D
	±0.1pF(B)	GRM0225C1C2R2BD05L	GRM0335C1H2R2BD01D	GRM1555C1H2R2BA01D
$CO_{M^{1}}$	±0.25pF(C)	GRM0225C1C2R2CD05L	GRM0335C1H2R2CD01D	GRM1555C1H2R2CA01D
2.3pF(2R3)	±0.05pF(W)	GRM0225C1C2R3WD05L	GRM0335C1H2R3WD01D	GRM1555C1H2R3WA01D
1.000,000	±0.1pF(B)	GRM0225C1C2R3BD05L	GRM0335C1H2R3BD01D	GRM1555C1H2R3BA01D
A'COM.	±0.25pF(C)	GRM0225C1C2R3CD05L	GRM0335C1H2R3CD01D	GRM1555C1H2R3CA01D
2.4pF(2R4)	±0.05pF(W)	GRM0225C1C2R4WD05L	GRM0335C1H2R4WD01D	GRM1555C1H2R4WA01D
101.00	±0.1pF(B)	GRM0225C1C2R4BD05L	GRM0335C1H2R4BD01D	GRM1555C1H2R4BA01D
W.Con	±0.25pF(C)	GRM0225C1C2R4CD05L	GRM0335C1H2R4CD01D	GRM1555C1H2R4CA01D
2.5pF(2R5)	±0.05pF(W)	GRM0225C1C2R5WD05L	GRM0335C1H2R5WD01D	GRM1555C1H2R5WA01D
1005 (200)	±0.1pF(B)	GRM0225C1C2R5BD05L	GRM0335C1H2R5BD01D	GRM1555C1H2R5BA01D
100 X.C.	±0.25pF(C)	GRM0225C1C2R5CD05L	GRM0335C1H2R5CD01D	GRM1555C1H2R5CA01D
2.6pF(2R6)	±0.05pF(W)	GRM0225C1C2R6WD05L	GRM0335C1H2R6WD01D	GRM1555C1H2R6WA01D
	±0.1pF(B)	GRM0225C1C2R6BD05L	GRM0335C1H2R6BD01D	GRM1555C1H2R6BA01D
	±0.25pF(C)	GRM0225C1C2R6CD05L	GRM0335C1H2R6CD01D	GRM1555C1H2R6CA01D
2.7pF(2R7)	±0.05pF(W)	GRM0225C1C2R7WD05L	GRM0335C1H2R7WD01D	GRM1555C1H2R7WA01D
Milas	±0.1pF(B)	GRM0225C1C2R7BD05L	GRM0335C1H2R7BD01D	GRM1555C1H2R7BA01D
10	±0.25pF(C)	GRM0225C1C2R7CD05L	GRM0335C1H2R7CD01D	GRM1555C1H2R7CA01D
2.8pF(2R8)	±0.05pF(W)	GRM0225C1C2R8WD05L	GRM0335C1H2R8WD01D	GRM1555C1H2R8WA01D
2.001 (2.10)	±0.1pF(B)	GRM0225C1C2R8BD05L	GRM0335C1H2R8BD01D	GRM1555C1H2R8BA01D
W.	±0.25pF(C)	GRM0225C1C2R8CD05L	GRM0335C1H2R8CD01D	GRM1555C1H2R8CA01D
2.9pF(2R9)	±0.05pF(W)	GRM0225C1C2R9WD05L	GRM0335C1H2R9WD01D	GRM1555C1H2R9WA01D
2.761 (2110)	±0.1pF(B)	GRM0225C1C2R9BD05L	GRM0335C1H2R9BD01D	GRM1555C1H2R9BA01D
	±0.25pF(C)	GRM0225C1C2R9CD05L	GRM0335C1H2R9CD01D	GRM1555C1H2R9CA01D
3.0pF(3R0)	±0.05pF(W)	GRM0225C1C3R0WD05L	GRM0335C1H3R0WD01D	GRM1555C1H3R0WA01D
о.орт (отто)	±0.1pF(B)	GRM0225C1C3R0BD05L	GRM0335C1H3R0BD01D	GRM1555C1H3R0BA01D
XX	±0.25pF(C)	GRM0225C1C3R0CD05L	GRM0335C1H3R0CD01D	GRM1555C1H3R0CA01D
3.1pF(3R1)	±0.05pF(W)	GRM0225C1C3R1WD05L	GRM0335C1H3R1WD01D	GRM1555C1H3R1WA01D
от гр. (Стт.)	±0.1pF(B)	GRM0225C1C3R1BD05L	GRM0335C1H3R1BD01D	GRM1555C1H3R1BA01D
	±0.25pF(C)	GRM0225C1C3R1CD05L	GRM0335C1H3R1CD01D	GRM1555C1H3R1CA01D
3.2pF(3R2)	±0.05pF(W)	GRM0225C1C3R2WD05L	GRM0335C1H3R2WD01D	GRM1555C1H3R2WA01D
o.zp. (•11 <u>-</u>)	±0.1pF(B)	GRM0225C1C3R2BD05L	GRM0335C1H3R2BD01D	GRM1555C1H3R2BA01D
	±0.25pF(C)	GRM0225C1C3R2CD05L	GRM0335C1H3R2CD01D	GRM1555C1H3R2CA01D
3.3pF(3R3)	±0.05pF(W)	GRM0225C1C3R3WD05L	GRM0335C1H3R3WD01D	GRM1555C1H3R3WA01D
0.0p1 (0110)	±0.1pF(B)	GRM0225C1C3R3BD05L	GRM0335C1H3R3BD01D	GRM1555C1H3R3BA01D
	±0.25pF(C)	GRM0225C1C3R3CD05L	GRM0335C1H3R3CD01D	GRM1555C1H3R3CA01D
3.4pF(3R4)	±0.05pF(W)	GRM0225C1C3R4WD05L	GRM0335C1H3R4WD01D	GRM1555C1H3R4WA01D
op. (e,	±0.1pF(B)	GRM0225C1C3R4BD05L	GRM0335C1H3R4BD01D	GRM1555C1H3R4BA01D
	±0.25pF(C)	GRM0225C1C3R4CD05L	GRM0335C1H3R4CD01D	GRM1555C1H3R4CA01D
3.5pF(3R5)	±0.05pF(W)	GRM0225C1C3R5WD05L	GRM0335C1H3R5WD01D	GRM1555C1H3R5WA01D
о.орт (отто)	±0.1pF(B)	GRM0225C1C3R5BD05L	GRM0335C1H3R5BD01D	GRM1555C1H3R5BA01D
	±0.25pF(C)	GRM0225C1C3R5CD05L	GRM0335C1H3R5CD01D	GRM1555C1H3R5CA01D
3.6pF(3R6)	±0.05pF(W)	GRM0225C1C3R6WD05L	GRM0335C1H3R6WD01D	GRM1555C1H3R6WA01D
0.0pr (0110)	±0.1pF(B)	GRM0225C1C3R6BD05L	GRM0335C1H3R6BD01D	GRM1555C1H3R6BA01D
	±0.25pF(C)	GRM0225C1C3R6CD05L	GRM0335C1H3R6CD01D	GRM1555C1H3R6CA01D
3.7pF(3R7)	±0.25pf (V)	GRM0225C1C3R7WD05L	GRM0335C1H3R7WD01D	GRM1555C1H3R7WA01D
3.7pi (3117)	±0.1pF(B)	GRM0225C1C3R7BD05L	GRM0335C1H3R7BD01D	GRM1555C1H3R7BA01D
	±0.1pr (b) ±0.25pF(C)	GRM0225C1C3R7CD05L	GRM0335C1H3R7CD01D	GRM1555C1H3R7CA01D
		ALTINUEES CICSD/CDUSL	- ALTINIOUSSO ILISIA/CDUID	- ALIMITOSSO HIST/CAUID

LxW [mm]		0.4x0.2(02)<01005>	0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc		16(1C)	50(1H)	50(1H)
Capacitance	Tolerance	N. Inn T. COM.	Part Number	CONT.
3.8pF(3R8)	±0.05pF(W)	GRM0225C1C3R8WD05L	GRM0335C1H3R8WD01D	GRM1555C1H3R8WA01D
W	±0.1pF(B)	GRM0225C1C3R8BD05L	GRM0335C1H3R8BD01D	GRM1555C1H3R8BA01D
	±0.25pF(C)	GRM0225C1C3R8CD05L	GRM0335C1H3R8CD01D	GRM1555C1H3R8CA01D
3.9pF(3R9)	±0.05pF(W)	GRM0225C1C3R9WD05L	GRM0335C1H3R9WD01D	GRM1555C1H3R9WA01D
	±0.1pF(B)	GRM0225C1C3R9BD05L	GRM0335C1H3R9BD01D	GRM1555C1H3R9BA01D
	±0.25pF(C)	GRM0225C1C3R9CD05L	GRM0335C1H3R9CD01D	GRM1555C1H3R9CA01D
4.0pF(4R0)	±0.05pF(W)	GRM0225C1C4R0WD05L	GRM0335C1H4R0WD01D	GRM1555C1H4R0WA01D
	±0.1pF(B)	GRM0225C1C4R0BD05L	GRM0335C1H4R0BD01D	GRM1555C1H4R0BA01D
	±0.25pF(C)	GRM0225C1C4R0CD05L	GRM0335C1H4R0CD01D	GRM1555C1H4R0CA01D
4.1pF(4R1)	±0.05pF(W)	GRM0225C1C4R1WD05L	GRM0335C1H4R1WD01D	GRM1555C1H4R1WA01D
	±0.1pF(B)	GRM0225C1C4R1BD05L	GRM0335C1H4R1BD01D	GRM1555C1H4R1BA01D
	±0.25pF(C)	GRM0225C1C4R1CD05L	GRM0335C1H4R1CD01D	GRM1555C1H4R1CA01D
4.2pF(4R2)	±0.05pF(W)	GRM0225C1C4R2WD05L	GRM0335C1H4R2WD01D	GRM1555C1H4R2WA01D
	±0.1pF(B)	GRM0225C1C4R2BD05L	GRM0335C1H4R2BD01D	GRM1555C1H4R2BA01D
	±0.25pF(C)	GRM0225C1C4R2CD05L	GRM0335C1H4R2CD01D	GRM1555C1H4R2CA01D
4.3pF(4R3)	±0.05pF(W)	GRM0225C1C4R3WD05L	GRM0335C1H4R3WD01D	GRM1555C1H4R3WA01D
	±0.1pF(B)	GRM0225C1C4R3BD05L	GRM0335C1H4R3BD01D	GRM1555C1H4R3BA01D
100 X	±0.25pF(C)	GRM0225C1C4R3CD05L	GRM0335C1H4R3CD01D	GRM1555C1H4R3CA01D
4.4pF(4R4)	±0.05pF(W)	GRM0225C1C4R4WD05L	GRM0335C1H4R4WD01D	GRM1555C1H4R4WA01D
	±0.1pF(B)	GRM0225C1C4R4BD05L	GRM0335C1H4R4BD01D	GRM1555C1H4R4BA01D
WW.10	±0.25pF(C)	GRM0225C1C4R4CD05L	GRM0335C1H4R4CD01D	GRM1555C1H4R4CA01D
4.5pF(4R5)	±0.05pF(W)	GRM0225C1C4R5WD05L	GRM0335C1H4R5WD01D	GRM1555C1H4R5WA01D
	±0.1pF(B)	GRM0225C1C4R5BD05L	GRM0335C1H4R5BD01D	GRM1555C1H4R5BA01D
WW	±0.25pF(C)	GRM0225C1C4R5CD05L	GRM0335C1H4R5CD01D	GRM1555C1H4R5CA01D
4.6pF(4R6)	±0.05pF(W)	GRM0225C1C4R6WD05L	GRM0335C1H4R6WD01D	GRM1555C1H4R6WA01D
	±0.1pF(B)	GRM0225C1C4R6BD05L	GRM0335C1H4R6BD01D	GRM1555C1H4R6BA01D
WW	±0.25pF(C)	GRM0225C1C4R6CD05L	GRM0335C1H4R6CD01D	GRM1555C1H4R6CA01D
4.7pF(4R7)	±0.05pF(W)	GRM0225C1C4R7WD05L	GRM0335C1H4R7WD01D	GRM1555C1H4R7WA01D
	±0.1pF(B)	GRM0225C1C4R7BD05L	GRM0335C1H4R7BD01D	GRM1555C1H4R7BA01D
W.	±0.25pF(C)	GRM0225C1C4R7CD05L	GRM0335C1H4R7CD01D	GRM1555C1H4R7CA01D
4.8pF(4R8)	±0.05pF(W)	GRM0225C1C4R8WD05L	GRM0335C1H4R8WD01D	GRM1555C1H4R8WA01D
	±0.1pF(B)	GRM0225C1C4R8BD05L	GRM0335C1H4R8BD01D	GRM1555C1H4R8BA01D
	±0.25pF(C)	GRM0225C1C4R8CD05L	GRM0335C1H4R8CD01D	GRM1555C1H4R8CA01D
4.9pF(4R9)	±0.05pF(W)	GRM0225C1C4R9WD05L	GRM0335C1H4R9WD01D	GRM1555C1H4R9WA01D
	±0.1pF(B)	GRM0225C1C4R9BD05L	GRM0335C1H4R9BD01D	GRM1555C1H4R9BA01D
	±0.25pF(C)	GRM0225C1C4R9CD05L	GRM0335C1H4R9CD01D	GRM1555C1H4R9CA01D
5.0pF(5R0)	±0.05pF(W)	GRM0225C1C5R0WD05L	GRM0335C1H5R0WD01D	GRM1555C1H5R0WA01D
	±0.1pF(B)	GRM0225C1C5R0BD05L	GRM0335C1H5R0BD01D	GRM1555C1H5R0BA01D
	±0.25pF(C)	GRM0225C1C5R0CD05L	GRM0335C1H5R0CD01D	GRM1555C1H5R0CA01D
5.1pF(5R1)	±0.05pF(W)	GRM0225C1C5R1WD05L	GRM0335C1H5R1WD01D	GRM1555C1H5R1WA01D
	±0.1pF(B)	GRM0225C1C5R1BD05L	GRM0335C1H5R1BD01D	GRM1555C1H5R1BA01D
	±0.25pF(C)	GRM0225C1C5R1CD05L	GRM0335C1H5R1CD01D	GRM1555C1H5R1CA01D
	±0.5pF(D)	GRM0225C1C5R1DD05L	GRM0335C1H5R1DD01D	GRM1555C1H5R1DA01D
5.2pF(5R2)	±0.05pF(W)	GRM0225C1C5R2WD05L	GRM0335C1H5R2WD01D	GRM1555C1H5R2WA01D
	±0.1pF(B)	GRM0225C1C5R2BD05L	GRM0335C1H5R2BD01D	GRM1555C1H5R2BA01D
	±0.25pF(C)	GRM0225C1C5R2CD05L	GRM0335C1H5R2CD01D	GRM1555C1H5R2CA01D
	±0.5pF(D)	GRM0225C1C5R2DD05L	GRM0335C1H5R2DD01D	GRM1555C1H5R2DA01D

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

(Part Number) | GR | M | 02 | 2 | 5C | 1C | 3R8 | W | D05 | L 0 2 3 4 5 6 0 8 9 0

●Product ID **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) **6**Rated Voltage

4 Dimension (T) Capacitance

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

*GRM022: D is applicable.



LxW [mm]	-151	0.4x0.2(02)<01005>	0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc		16(1C)	50(1H)	50(1H)
Capacitance	Tolerance	N.10. COM.	Part Number	N.COm
5.3pF(5R3)	±0.05pF(W)	GRM0225C1C5R3WD05L	GRM0335C1H5R3WD01D	GRM1555C1H5R3WA01D
	±0.1pF(B)	GRM0225C1C5R3BD05L	GRM0335C1H5R3BD01D	GRM1555C1H5R3BA01D
	±0.25pF(C)	GRM0225C1C5R3CD05L	GRM0335C1H5R3CD01D	GRM1555C1H5R3CA01D
OMIL	±0.5pF(D)	GRM0225C1C5R3DD05L	GRM0335C1H5R3DD01D	GRM1555C1H5R3DA01D
5.4pF(5R4)	±0.05pF(W)	GRM0225C1C5R4WD05L	GRM0335C1H5R4WD01D	GRM1555C1H5R4WA01D
	±0.1pF(B)	GRM0225C1C5R4BD05L	GRM0335C1H5R4BD01D	GRM1555C1H5R4BA01D
	±0.25pF(C)	GRM0225C1C5R4CD05L	GRM0335C1H5R4CD01D	GRM1555C1H5R4CA01D
·Moz	±0.5pF(D)	GRM0225C1C5R4DD05L	GRM0335C1H5R4DD01D	GRM1555C1H5R4DA01D
5.5pF(5R5)	±0.05pF(W)	GRM0225C1C5R5WD05L	GRM0335C1H5R5WD01D	GRM1555C1H5R5WA01D
	±0.1pF(B)	GRM0225C1C5R5BD05L	GRM0335C1H5R5BD01D	GRM1555C1H5R5BA01D
	±0.25pF(C)	GRM0225C1C5R5CD05L	GRM0335C1H5R5CD01D	GRM1555C1H5R5CA01D
100 X.	±0.5pF(D)	GRM0225C1C5R5DD05L	GRM0335C1H5R5DD01D	GRM1555C1H5R5DA01D
5.6pF(5R6)	±0.05pF(W)	GRM0225C1C5R6WD05L	GRM0335C1H5R6WD01D	GRM1555C1H5R6WA01D
	±0.1pF(B)	GRM0225C1C5R6BD05L	GRM0335C1H5R6BD01D	GRM1555C1H5R6BA01D
	±0.25pF(C)	GRM0225C1C5R6CD05L	GRM0335C1H5R6CD01D	GRM1555C1H5R6CA01D
100 Y.	±0.5pF(D)	GRM0225C1C5R6DD05L	GRM0335C1H5R6DD01D	GRM1555C1H5R6DA01D
5.7pF(5R7)	±0.05pF(W)	GRM0225C1C5R7WD05L	GRM0335C1H5R7WD01D	GRM1555C1H5R7WA01D
	±0.1pF(B)	GRM0225C1C5R7BD05L	GRM0335C1H5R7BD01D	GRM1555C1H5R7BA01D
	±0.25pF(C)	GRM0225C1C5R7CD05L	GRM0335C1H5R7CD01D	GRM1555C1H5R7CA01D
MAN	±0.5pF(D)	GRM0225C1C5R7DD05L	GRM0335C1H5R7DD01D	GRM1555C1H5R7DA01D
5.8pF(5R8)	±0.05pF(W)	GRM0225C1C5R8WD05L	GRM0335C1H5R8WD01D	GRM1555C1H5R8WA01D
	±0.1pF(B)	GRM0225C1C5R8BD05L	GRM0335C1H5R8BD01D	GRM1555C1H5R8BA01D
	±0.25pF(C)	GRM0225C1C5R8CD05L	GRM0335C1H5R8CD01D	GRM1555C1H5R8CA01D
WW.	±0.5pF(D)	GRM0225C1C5R8DD05L	GRM0335C1H5R8DD01D	GRM1555C1H5R8DA01D
5.9pF(5R9)	±0.05pF(W)	GRM0225C1C5R9WD05L	GRM0335C1H5R9WD01D	GRM1555C1H5R9WA01D
	±0.1pF(B)	GRM0225C1C5R9BD05L	GRM0335C1H5R9BD01D	GRM1555C1H5R9BA01D
	±0.25pF(C)	GRM0225C1C5R9CD05L	GRM0335C1H5R9CD01D	GRM1555C1H5R9CA01D
	±0.5pF(D)	GRM0225C1C5R9DD05L	GRM0335C1H5R9DD01D	GRM1555C1H5R9DA01D
6.0pF(6R0)	±0.05pF(W)	GRM0225C1C6R0WD05L	GRM0335C1H6R0WD01D	GRM1555C1H6R0WA01D
	±0.1pF(B)	GRM0225C1C6R0BD05L	GRM0335C1H6R0BD01D	GRM1555C1H6R0BA01D
	±0.25pF(C)	GRM0225C1C6R0CD05L	GRM0335C1H6R0CD01D	GRM1555C1H6R0CA01D
	±0.5pF(D)	GRM0225C1C6R0DD05L	GRM0335C1H6R0DD01D	GRM1555C1H6R0DA01D
6.1pF(6R1)	±0.05pF(W)	GRM0225C1C6R1WD05L	GRM0335C1H6R1WD01D	GRM1555C1H6R1WA01D
	±0.1pF(B)	GRM0225C1C6R1BD05L	GRM0335C1H6R1BD01D	GRM1555C1H6R1BA01D
	±0.25pF(C)	GRM0225C1C6R1CD05L	GRM0335C1H6R1CD01D	GRM1555C1H6R1CA01D
	±0.5pF(D)	GRM0225C1C6R1DD05L	GRM0335C1H6R1DD01D	GRM1555C1H6R1DA01D
6.2pF(6R2)	±0.05pF(W)	GRM0225C1C6R2WD05L	GRM0335C1H6R2WD01D	GRM1555C1H6R2WA01D
	±0.1pF(B)	GRM0225C1C6R2BD05L	GRM0335C1H6R2BD01D	GRM1555C1H6R2BA01D
	±0.25pF(C)	GRM0225C1C6R2CD05L	GRM0335C1H6R2CD01D	GRM1555C1H6R2CA01D
	±0.5pF(D)	GRM0225C1C6R2DD05L	GRM0335C1H6R2DD01D	GRM1555C1H6R2DA01D
6.3pF(6R3)	±0.05pF(W)	GRM0225C1C6R3WD05L	GRM0335C1H6R3WD01D	GRM1555C1H6R3WA01D
	±0.1pF(B)	GRM0225C1C6R3BD05L	GRM0335C1H6R3BD01D	GRM1555C1H6R3BA01D
	±0.25pF(C)	GRM0225C1C6R3CD05L	GRM0335C1H6R3CD01D	GRM1555C1H6R3CA01D
	±0.5pF(D)	GRM0225C1C6R3DD05L	GRM0335C1H6R3DD01D	GRM1555C1H6R3DA01D
6.4pF(6R4)	±0.05pF(W)	GRM0225C1C6R4WD05L	GRM0335C1H6R4WD01D	GRM1555C1H6R4WA01D
	±0.1pF(B)	GRM0225C1C6R4BD05L	GRM0335C1H6R4BD01D	GRM1555C1H6R4BA01D
	±0.25pF(C)	GRM0225C1C6R4CD05L	GRM0335C1H6R4CD01D	GRM1555C1H6R4CA01D
	±0.5pF(D)	GRM0225C1C6R4DD05L	GRM0335C1H6R4DD01D	GRM1555C1H6R4DA01D
6.5pF(6R5)	±0.05pF(W)	GRM0225C1C6R5WD05L	GRM0335C1H6R5WD01D	GRM1555C1H6R5WA01D
	±0.1pF(B)	GRM0225C1C6R5BD05L	GRM0335C1H6R5BD01D	GRM1555C1H6R5BA01D
	±0.25pF(C)	GRM0225C1C6R5CD05L	GRM0335C1H6R5CD01D	GRM1555C1H6R5CA01D
	±0.5pF(D)	GRM0225C1C6R5DD05L	GRM0335C1H6R5DD01D	GRM1555C1H6R5DA01D

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100



LxW [mm]		0.4x0.2(02)<01005>	0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc	MALA	16(1C)	50(1H)	50(1H)
Capacitance	Tolerance	M. To. COM.	Part N	lumber
6.6pF(6R6)	±0.05pF(W)	GRM0225C1C6R6WD05L	GRM0335C1H6R6WD01D	GRM1555C1H6R6WA01D
WILL	±0.1pF(B)	GRM0225C1C6R6BD05L	GRM0335C1H6R6BD01D	GRM1555C1H6R6BA01D
Divi	±0.25pF(C)	GRM0225C1C6R6CD05L	GRM0335C1H6R6CD01D	GRM1555C1H6R6CA01D
OMIL	±0.5pF(D)	GRM0225C1C6R6DD05L	GRM0335C1H6R6DD01D	GRM1555C1H6R6DA01D
6.7pF(6R7)	±0.05pF(W)	GRM0225C1C6R7WD05L	GRM0335C1H6R7WD01D	GRM1555C1H6R7WA01D
COn	±0.1pF(B)	GRM0225C1C6R7BD05L	GRM0335C1H6R7BD01D	GRM1555C1H6R7BA01D
1 COM.	±0.25pF(C)	GRM0225C1C6R7CD05L	GRM0335C1H6R7CD01D	GRM1555C1H6R7CA01D
·······································	±0.5pF(D)	GRM0225C1C6R7DD05L	GRM0335C1H6R7DD01D	GRM1555C1H6R7DA01D
6.8pF(6R8)	±0.05pF(W)	GRM0225C1C6R8WD05L	GRM0335C1H6R8WD01D	GRM1555C1H6R8WA01D
ON.COM	±0.1pF(B)	GRM0225C1C6R8BD05L	GRM0335C1H6R8BD01D	GRM1555C1H6R8BA01D
OD	±0.25pF(C)	GRM0225C1C6R8CD05L	GRM0335C1H6R8CD01D	GRM1555C1H6R8CA01D
100 X.	±0.5pF(D)	GRM0225C1C6R8DD05L	GRM0335C1H6R8DD01D	GRM1555C1H6R8DA01D
6.9pF(6R9)	±0.05pF(W)	GRM0225C1C6R9WD05L	GRM0335C1H6R9WD01D	GRM1555C1H6R9WA01D
1.100 T C	±0.1pF(B)	GRM0225C1C6R9BD05L	GRM0335C1H6R9BD01D	GRM1555C1H6R9BA01D
N 100Y.	±0.25pF(C)	GRM0225C1C6R9CD05L	GRM0335C1H6R9CD01D	GRM1555C1H6R9CA01D
Y COOK	±0.5pF(D)	GRM0225C1C6R9DD05L	GRM0335C1H6R9DD01D	GRM1555C1H6R9DA01D
7.0pF(7R0)	±0.05pF(W)	GRM0225C1C7R0WD05L	GRM0335C1H7R0WD01D	GRM1555C1H7R0WA01D
	±0.1pF(B)	GRM0225C1C7R0BD05L	GRM0335C1H7R0BD01D	GRM1555C1H7R0BA01D
100	±0.25pF(C)	GRM0225C1C7R0CD05L	GRM0335C1H7R0CD01D	GRM1555C1H7R0CA01D
M.	±0.5pF(D)	GRM0225C1C7R0DD05L	GRM0335C1H7R0DD01D	GRM1555C1H7R0DA01D
7.1pF(7R1)	±0.05pF(W)	GRM0225C1C7R1WD05L	GRM0335C1H7R1WD01D	GRM1555C1H7R1WA01D
N W	±0.1pF(B)	GRM0225C1C7R1BD05L	GRM0335C1H7R1BD01D	GRM1555C1H7R1BA01D
MM	±0.25pF(C)	GRM0225C1C7R1CD05L	GRM0335C1H7R1CD01D	GRM1555C1H7R1CA01D
WW.	±0.5pF(D)	GRM0225C1C7R1DD05L	GRM0335C1H7R1DD01D	GRM1555C1H7R1DA01D
7.2pF(7R2)	±0.05pF(W)	GRM0225C1C7R2WD05L	GRM0335C1H7R2WD01D	GRM1555C1H7R2WA01D
	±0.1pF(B)	GRM0225C1C7R2BD05L	GRM0335C1H7R2BD01D	GRM1555C1H7R2BA01D
WW	±0.25pF(C)	GRM0225C1C7R2CD05L	GRM0335C1H7R2CD01D	GRM1555C1H7R2CA01D
-13	±0.5pF(D)	GRM0225C1C7R2DD05L	GRM0335C1H7R2DD01D	GRM1555C1H7R2DA01D
7.3pF(7R3)	±0.05pF(W)	GRM0225C1C7R3WD05L	GRM0335C1H7R3WD01D	GRM1555C1H7R3WA01D
W	±0.1pF(B)	GRM0225C1C7R3BD05L	GRM0335C1H7R3BD01D	GRM1555C1H7R3BA01D
	±0.25pF(C)	GRM0225C1C7R3CD05L	GRM0335C1H7R3CD01D	GRM1555C1H7R3CA01D
	±0.5pF(D)	GRM0225C1C7R3DD05L	GRM0335C1H7R3DD01D	GRM1555C1H7R3DA01D
7.4pF(7R4)	±0.05pF(W)	GRM0225C1C7R4WD05L	GRM0335C1H7R4WD01D	GRM1555C1H7R4WA01D
	±0.1pF(B)	GRM0225C1C7R4BD05L	GRM0335C1H7R4BD01D	GRM1555C1H7R4BA01D
	±0.25pF(C)	GRM0225C1C7R4CD05L	GRM0335C1H7R4CD01D	GRM1555C1H7R4CA01D
	±0.5pF(D)	GRM0225C1C7R4DD05L	GRM0335C1H7R4DD01D	GRM1555C1H7R4DA01D
7.5pF(7R5)	±0.05pF(W)	GRM0225C1C7R5WD05L	GRM0335C1H7R5WD01D	GRM1555C1H7R5WA01D
,	±0.1pF(B)	GRM0225C1C7R5BD05L	GRM0335C1H7R5BD01D	GRM1555C1H7R5BA01D
	±0.25pF(C)	GRM0225C1C7R5CD05L	GRM0335C1H7R5CD01D	GRM1555C1H7R5CA01D
	±0.5pF(D)	GRM0225C1C7R5DD05L	GRM0335C1H7R5DD01D	GRM1555C1H7R5DA01D
7.6pF(7R6)	±0.05pF(W)	GRM0225C1C7R6WD05L	GRM0335C1H7R6WD01D	GRM1555C1H7R6WA01D
, (-)	±0.1pF(B)	GRM0225C1C7R6BD05L	GRM0335C1H7R6BD01D	GRM1555C1H7R6BA01D
	±0.25pF(C)	GRM0225C1C7R6CD05L	GRM0335C1H7R6CD01D	GRM1555C1H7R6CA01D
	±0.5pF(D)	GRM0225C1C7R6DD05L	GRM0335C1H7R6DD01D	GRM1555C1H7R6DA01D
7.7pF(7R7)	±0.05pF(W)	GRM0225C1C7R7WD05L	GRM0335C1H7R7WD01D	GRM1555C1H7R7WA01D
p. (1111)	±0.1pF(B)	GRM0225C1C7R7BD05L	GRM0335C1H7R7BD01D	GRM1555C1H7R7BA01D
	±0.1pr(B) ±0.25pF(C)	GRM0225C1C7R7CD05L	GRM0335C1H7R7CD01D	GRM1555C1H7R7CA01D
	±0.5pF(D)	GRM0225C1C7R7DD05L	GRM0335C1H7R7DD01D	GRM1555C1H7R7DA01D

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code

(Part Number) | GR | M | 02 | 2 | 5C | 1C | 6R6 | W | D05 | L 0 2 3 4 5 6 0 8 **9 0**

1 Product ID 2Series **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) **6**Rated Voltage

4 Dimension (T) Capacitance

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

*GRM022: D is applicable.

LxW [mm]	-150	0.4x0.2(02)<01005>	0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc]	MWA	16(1C)	50(1H)	50(1H)
Capacitance	Tolerance	N.T. COM.	Part Number	N.COm
7.8pF(7R8)	±0.05pF(W)	GRM0225C1C7R8WD05L	GRM0335C1H7R8WD01D	GRM1555C1H7R8WA01D
WIIM	±0.1pF(B)	GRM0225C1C7R8BD05L	GRM0335C1H7R8BD01D	GRM1555C1H7R8BA01D
) III	±0.25pF(C)	GRM0225C1C7R8CD05L	GRM0335C1H7R8CD01D	GRM1555C1H7R8CA01D
OWIT	±0.5pF(D)	GRM0225C1C7R8DD05L	GRM0335C1H7R8DD01D	GRM1555C1H7R8DA01D
7.9pF(7R9)	±0.05pF(W)	GRM0225C1C7R9WD05L	GRM0335C1H7R9WD01D	GRM1555C1H7R9WA01D
CO	±0.1pF(B)	GRM0225C1C7R9BD05L	GRM0335C1H7R9BD01D	GRM1555C1H7R9BA01D
COM.	±0.25pF(C)	GRM0225C1C7R9CD05L	GRM0335C1H7R9CD01D	GRM1555C1H7R9CA01D
MO	±0.5pF(D)	GRM0225C1C7R9DD05L	GRM0335C1H7R9DD01D	GRM1555C1H7R9DA01D
8.0pF(8R0)	±0.05pF(W)	GRM0225C1C8R0WD05L	GRM0335C1H8R0WD01D	GRM1555C1H8R0WA01D
V.COM	±0.1pF(B)	GRM0225C1C8R0BD05L	GRM0335C1H8R0BD01D	GRM1555C1H8R0BA01D
1 CON	±0.25pF(C)	GRM0225C1C8R0CD05L	GRM0335C1H8R0CD01D	GRM1555C1H8R0CA01D
1007.	±0.5pF(D)	GRM0225C1C8R0DD05L	GRM0335C1H8R0DD01D	GRM1555C1H8R0DA01D
8.1pF(8R1)	±0.05pF(W)	GRM0225C1C8R1WD05L	GRM0335C1H8R1WD01D	GRM1555C1H8R1WA01D
· Too of C	±0.1pF(B)	GRM0225C1C8R1BD05L	GRM0335C1H8R1BD01D	GRM1555C1H8R1BA01D
N.100 1.	±0.25pF(C)	GRM0225C1C8R1CD05L	GRM0335C1H8R1CD01D	GRM1555C1H8R1CA01D
1007.	±0.5pF(D)	GRM0225C1C8R1DD05L	GRM0335C1H8R1DD01D	GRM1555C1H8R1DA01D
8.2pF(8R2)	±0.05pF(W)	GRM0225C1C8R2WD05L	GRM0335C1H8R2WD01D	GRM1555C1H8R2WA01D
VW.100	±0.1pF(B)	GRM0225C1C8R2BD05L	GRM0335C1H8R2BD01D	GRM1555C1H8R2BA01D
100	±0.25pF(C)	GRM0225C1C8R2CD05L	GRM0335C1H8R2CD01D	GRM1555C1H8R2CA01D
M. M.	±0.5pF(D)	GRM0225C1C8R2DD05L	GRM0335C1H8R2DD01D	GRM1555C1H8R2DA01D
8.3pF(8R3)	±0.05pF(W)	GRM0225C1C8R3WD05L	GRM0335C1H8R3WD01D	GRM1555C1H8R3WA01D
W	±0.1pF(B)	GRM0225C1C8R3BD05L	GRM0335C1H8R3BD01D	GRM1555C1H8R3BA01D
MM	±0.25pF(C)	GRM0225C1C8R3CD05L	GRM0335C1H8R3CD01D	GRM1555C1H8R3CA01D
WWW.	±0.5pF(D)	GRM0225C1C8R3DD05L	GRM0335C1H8R3DD01D	GRM1555C1H8R3DA01D
8.4pF(8R4)	±0.05pF(W)	GRM0225C1C8R4WD05L	GRM0335C1H8R4WD01D	GRM1555C1H8R4WA01D
M. A.	±0.1pF(B)	GRM0225C1C8R4BD05L	GRM0335C1H8R4BD01D	GRM1555C1H8R4BA01D
WW	±0.25pF(C)	GRM0225C1C8R4CD05L	GRM0335C1H8R4CD01D	GRM1555C1H8R4CA01D
· V	±0.5pF(D)	GRM0225C1C8R4DD05L	GRM0335C1H8R4DD01D	GRM1555C1H8R4DA01D
8.5pF(8R5)	±0.05pF(W)	GRM0225C1C8R5WD05L	GRM0335C1H8R5WD01D	GRM1555C1H8R5WA01D
W	±0.1pF(B)	GRM0225C1C8R5BD05L	GRM0335C1H8R5BD01D	GRM1555C1H8R5BA01D
<	±0.25pF(C)	GRM0225C1C8R5CD05L	GRM0335C1H8R5CD01D	GRM1555C1H8R5CA01D
	±0.5pF(D)	GRM0225C1C8R5DD05L	GRM0335C1H8R5DD01D	GRM1555C1H8R5DA01D
8.6pF(8R6)	±0.05pF(W)	GRM0225C1C8R6WD05L	GRM0335C1H8R6WD01D	GRM1555C1H8R6WA01D
	±0.1pF(B)	GRM0225C1C8R6BD05L	GRM0335C1H8R6BD01D	GRM1555C1H8R6BA01D
	±0.25pF(C)	GRM0225C1C8R6CD05L	GRM0335C1H8R6CD01D	GRM1555C1H8R6CA01D
	±0.5pF(D)	GRM0225C1C8R6DD05L	GRM0335C1H8R6DD01D	GRM1555C1H8R6DA01D
8.7pF(8R7)	±0.05pF(W)	GRM0225C1C8R7WD05L	GRM0335C1H8R7WD01D	GRM1555C1H8R7WA01D
	±0.1pF(B)	GRM0225C1C8R7BD05L	GRM0335C1H8R7BD01D	GRM1555C1H8R7BA01D
	±0.25pF(C)	GRM0225C1C8R7CD05L	GRM0335C1H8R7CD01D	GRM1555C1H8R7CA01D
	±0.5pF(D)	GRM0225C1C8R7DD05L	GRM0335C1H8R7DD01D	GRM1555C1H8R7DA01D
8.8pF(8R8)	±0.05pF(W)	GRM0225C1C8R8WD05L	GRM0335C1H8R8WD01D	GRM1555C1H8R8WA01D
	±0.1pF(B)	GRM0225C1C8R8BD05L	GRM0335C1H8R8BD01D	GRM1555C1H8R8BA01D
	±0.25pF(C)	GRM0225C1C8R8CD05L	GRM0335C1H8R8CD01D	GRM1555C1H8R8CA01D
	±0.5pF(D)	GRM0225C1C8R8DD05L	GRM0335C1H8R8DD01D	GRM1555C1H8R8DA01D
8.9pF(8R9)	±0.05pF(W)	GRM0225C1C8R9WD05L	GRM0335C1H8R9WD01D	GRM1555C1H8R9WA01D
	±0.1pF(B)	GRM0225C1C8R9BD05L	GRM0335C1H8R9BD01D	GRM1555C1H8R9BA01D
	±0.25pF(C)	GRM0225C1C8R9CD05L	GRM0335C1H8R9CD01D	GRM1555C1H8R9CA01D
	±0.5pF(D)	GRM0225C1C8R9DD05L	GRM0335C1H8R9DD01D	GRM1555C1H8R9DA01D
9.0pF(9R0)	±0.05pF(W)	GRM0225C1C9R0WD05L	GRM0335C1H9R0WD01D	GRM1555C1H9R0WA01D
	±0.1pF(B)	GRM0225C1C9R0BD05L	GRM0335C1H9R0BD01D	GRM1555C1H9R0BA01D
	±0.25pF(C)	GRM0225C1C9R0CD05L	GRM0335C1H9R0CD01D	GRM1555C1H9R0CA01D
	±0.5pF(D)	GRM0225C1C9R0DD05L	GRM0335C1H9R0DD01D	GRM1555C1H9R0DA01D

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100



LxW [mm]	· · · · · · · · · · · · · · · · · · ·	0.4x0.2(02)<01005>	0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc]		16(1C)	50(1H)	50(1H)
Capacitance	Tolerance	N. 2 CON	Part Number	OX.CO.
9.1pF(9R1)	±0.05pF(W)	GRM0225C1C9R1WD05L	GRM0335C1H9R1WD01D	GRM1555C1H9R1WA01D
WIIM	±0.1pF(B)	GRM0225C1C9R1BD05L	GRM0335C1H9R1BD01D	GRM1555C1H9R1BA01D
ON	±0.25pF(C)	GRM0225C1C9R1CD05L	GRM0335C1H9R1CD01D	GRM1555C1H9R1CA01D
COM.	±0.5pF(D)	GRM0225C1C9R1DD05L	GRM0335C1H9R1DD01D	GRM1555C1H9R1DA01D
9.2pF(9R2)	±0.05pF(W)	GRM0225C1C9R2WD05L	GRM0335C1H9R2WD01D	GRM1555C1H9R2WA01D
I.COM	√ ±0.1pF(B)	GRM0225C1C9R2BD05L	GRM0335C1H9R2BD01D	GRM1555C1H9R2BA01D
-1 COM.	±0.25pF(C)	GRM0225C1C9R2CD05L	GRM0335C1H9R2CD01D	GRM1555C1H9R2CA01D
Y. TOM!	±0.5pF(D)	GRM0225C1C9R2DD05L	GRM0335C1H9R2DD01D	GRM1555C1H9R2DA01D
9.3pF(9R3)	±0.05pF(W)	GRM0225C1C9R3WD05L	GRM0335C1H9R3WD01D	GRM1555C1H9R3WA01D
	±0.1pF(B)	GRM0225C1C9R3BD05L	GRM0335C1H9R3BD01D	GRM1555C1H9R3BA01D
001.	±0.25pF(C)	GRM0225C1C9R3CD05L	GRM0335C1H9R3CD01D	GRM1555C1H9R3CA01D
100 X.CO.	±0.5pF(D)	GRM0225C1C9R3DD05L	GRM0335C1H9R3DD01D	GRM1555C1H9R3DA01D
9.4pF(9R4)	±0.05pF(W)	GRM0225C1C9R4WD05L	GRM0335C1H9R4WD01D	GRM1555C1H9R4WA01D
V.100 1	±0.1pF(B)	GRM0225C1C9R4BD05L	GRM0335C1H9R4BD01D	GRM1555C1H9R4BA01D
100Y.	±0.25pF(C)	GRM0225C1C9R4CD05L	GRM0335C1H9R4CD01D	GRM1555C1H9R4CA01D
W. Pagy	±0.5pF(D)	GRM0225C1C9R4DD05L	GRM0335C1H9R4DD01D	GRM1555C1H9R4DA01D
9.5pF(9R5)	±0.05pF(W)	GRM0225C1C9R5WD05L	GRM0335C1H9R5WD01D	GRM1555C1H9R5WA01D
1007	±0.1pF(B)	GRM0225C1C9R5BD05L	GRM0335C1H9R5BD01D	GRM1555C1H9R5BA01D
WWW	±0.25pF(C)	GRM0225C1C9R5CD05L	GRM0335C1H9R5CD01D	GRM1555C1H9R5CA01D
TWW.Io.	±0.5pF(D)	GRM0225C1C9R5DD05L	GRM0335C1H9R5DD01D	GRM1555C1H9R5DA01D
9.6pF(9R6)	±0.05pF(W)	GRM0225C1C9R6WD05L	GRM0335C1H9R6WD01D	GRM1555C1H9R6WA01D
	±0.1pF(B)	GRM0225C1C9R6BD05L	GRM0335C1H9R6BD01D	GRM1555C1H9R6BA01D
MW.7	±0.25pF(C)	GRM0225C1C9R6CD05L	GRM0335C1H9R6CD01D	GRM1555C1H9R6CA01D
TIN.	±0.5pF(D)	GRM0225C1C9R6DD05L	GRM0335C1H9R6DD01D	GRM1555C1H9R6DA01D
9.7pF(9R7)	±0.05pF(W)	GRM0225C1C9R7WD05L	GRM0335C1H9R7WD01D	GRM1555C1H9R7WA01D
7.7 pr (3117)	±0.1pF(B)	GRM0225C1C9R7BD05L	GRM0335C1H9R7BD01D	GRM1555C1H9R7BA01D
-TXXI	±0.1pr (b)	GRM0225C1C9R7CD05L	GRM0335C1H9R7CD01D	GRM1555C1H9R7CA01D
Al a.	±0.5pF(D)		**************************************	
0.055(000)		GRM0225C1C9R7DD05L	GRM0335C1H9R7DD01D	GRM1555C1H9R7DA01D
9.8pF(9R8)	±0.05pF(W)	GRM0225C1C9R8WD05L	GRM0335C1H9R8WD01D	GRM1555C1H9R8WA01D
	±0.1pF(B)	GRM0225C1C9R8BD05L	GRM0335C1H9R8BD01D	GRM1555C1H9R8BA01D
	±0.25pF(C)	GRM0225C1C9R8CD05L	GRM0335C1H9R8CD01D	GRM1555C1H9R8CA01D
()	±0.5pF(D)	GRM0225C1C9R8DD05L	GRM0335C1H9R8DD01D	GRM1555C1H9R8DA01D
9.9pF(9R9)	±0.05pF(W)	GRM0225C1C9R9WD05L	GRM0335C1H9R9WD01D	GRM1555C1H9R9WA01D
	±0.1pF(B)	GRM0225C1C9R9BD05L	GRM0335C1H9R9BD01D	GRM1555C1H9R9BA01D
	±0.25pF(C)	GRM0225C1C9R9CD05L	GRM0335C1H9R9CD01D	GRM1555C1H9R9CA01D
	±0.5pF(D)	GRM0225C1C9R9DD05L	GRM0335C1H9R9DD01D	GRM1555C1H9R9DA01D

WWW.100Y.C WWW.100Y.COM.TW

4 Dimension (T) Capacitance

Individual Specification Code Packaging*



²Series ●Product ID **5**Temperature Characteristics 8 Capacitance Tolerance

³Dimension (LxW) 6 Rated Voltage

	1001. OM.T.	0.4x0.2(02)<01005>		0.6x0.3(03)<0201>
WWW	16(1C)	10(1A)	6.3(0J)	50(1H)
Tolerance	M.In. COM.	Part N	umber	
±2%(G)	GRM0225C1C100GD05L	1.10	COM	GRM0335C1H100GD01E
±5%(J)	GRM0225C1C100JD05L	W WW	001:0 M.I.M.	GRM0335C1H100JD01E
±2%(G)	GRM0225C1C120GD05L		ON CONTRACTION	GRM0335C1H120GD01I
±5%(J)	GRM0225C1C120JD05L	WW	in COM.	GRM0335C1H120JD01I
±2%(G)	GRM0225C1C150GD05L	In M.	1.100 J. COM. I.A.	GRM0335C1H150GD01I
±5%(J)	GRM0225C1C150JD05L	WW WY	1007.00	GRM0335C1H150JD01I
±2%(G)	GRM0225C1C180GD05L	W. W.	M. In COM.	GRM0335C1H180GD01
±5%(J)	GRM0225C1C180JD05L	Will	TN.Im. COM.	GRM0335C1H180JD01I
±2%(G)	GRM0225C1C220GD05L	WILL	1100Y.	GRM0335C1H220GD01
±5%(J)	GRM0225C1C220JD05L	OF THE	MAL	GRM0335C1H220JD01I
±2%(G)	GRM0225C1C270GD05L	COM	TANN TOO TOOM	GRM0335C1H270GD01
±5%(J)	GRM0225C1C270JD05L	W.TW	W 100 201	GRM0335C1H270JD01
±2%(G)	GRM0225C1C330GD05L	CONTRACTOR	MM 100X.CO.	GRM0335C1H330GD01
±5%(J)	GRM0225C1C330JD05L	COM.	MANN ON CO	GRM0335C1H330JD01I
±2%(G)	GRM0225C1C390GD05L	J. COM.T.	100	GRM0335C1H390GD01
±5%(J)	GRM0225C1C390JD05L	07.C T.TW	MM, 11002:0	GRM0335C1H390JD01I
±2%(G)	GRM0225C1C470GD05L	ON COM	MANA. OUT.	GRM0335C1H470GD01
±5%(J)	GRM0225C1C470JD05L	no, com.		GRM0335C1H470JD01I
±2%(G)	IN WAR	GRM0225C1A560GD05L	GRM0225C0J560GD05L	GRM0335C1H560GD01
±5%(J)	THE WAY	GRM0225C1A560JD05L	GRM0225C0J560JD05L	GRM0335C1H560JD01I
±2%(G)		GRM0225C1A680GD05L	GRM0225C0J680GD05L	GRM0335C1H680GD01
±5%(J)		GRM0225C1A680JD05L	GRM0225C0J680JD05L	GRM0335C1H680JD01I
±2%(G)	WW WITH	GRM0225C1A820GD05L	GRM0225C0J820GD05L	GRM0335C1H820GD01
±5%(J)		GRM0225C1A820JD05L	GRM0225C0J820JD05L	GRM0335C1H820JD01I
±2%(G)	OM:	GRM0225C1A101GD05L	GRM0225C0J101GD05L	GRM0335C1H101GD01
±5%(J)	V VIII	GRM0225C1A101JD05L	GRM0225C0J101JD05L	GRM0335C1H101JD01I
	±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J)	Tolerance ±2%(G) GRM0225C1C100GD05L ±5%(J) GRM0225C1C100JD05L ±2%(G) GRM0225C1C120GD05L ±5%(J) GRM0225C1C120GD05L ±5%(J) GRM0225C1C120JD05L ±5%(J) GRM0225C1C150GD05L ±5%(J) GRM0225C1C150JD05L ±2%(G) GRM0225C1C180GD05L ±5%(J) GRM0225C1C180JD05L ±5%(J) GRM0225C1C220GD05L ±5%(J) GRM0225C1C220JD05L ±5%(J) GRM0225C1C220JD05L ±5%(J) GRM0225C1C270JD05L ±5%(J) GRM0225C1C330GD05L ±5%(J) GRM0225C1C330JD05L ±5%(J) GRM0225C1C330JD05L ±5%(J) GRM0225C1C390JD05L ±5%(J) GRM0225C1C390JD05L ±5%(J) GRM0225C1C470GD05L ±5%(J) GRM0225C1C470D05L ±5%(J) GRM0225C1C470D05L ±5%(J) GRM0225C1C470JD05L ±5%(J) GRM0225C1C470JD05L ±5%(J) ±5%(J) ±2%(G) ±5%(J) ±2%(G) ±5%(J) ±2%(G)	Tolerance	Tolerance

WWW.100Y.COM.T The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code WWW.100X.COM WWW.100Y.COM.TW WWW.100Y.COM.TW

Temperature Compensating Type C0G(5C) Characteristics

		CONT	
LxW [mm]		1.0x0.5(15)<0402>	
Rated Volt. [Vdc]		50(1H)	
TC		C0G(5C)	
Capacitance	Tolerance	Part Number	
10pF(100)	±2%(G)	GRM1555C1H100GA01D	
ONL	±5%(J)	GRM1555C1H100JA01D	
12pF(120)	±2%(G)	GRM1555C1H120GA01D	
.CO	±5%(J)	GRM1555C1H120JA01D	
15pF(150)	±2%(G)	GRM1555C1H150GA01D	
COM.1	±5%(J)	GRM1555C1H150JA01D	
18pF(180)	±2%(G)	GRM1555C1H180GA01D	
V.COn	±5%(J)	GRM1555C1H180JA01D	
22pF(220)	±2%(G)	GRM1555C1H220GA01D	
1007.	±5%(J)	GRM1555C1H220JA01D	
27pF(270)	±2%(G)	GRM1555C1H270GA01D	
1.100	±5%(J)	GRM1555C1H270JA01D	
33pF(330)	±2%(G)	GRM1555C1H330GA01D	
V. C.	±5%(J)	GRM1555C1H330JA01D	
39pF(390)	±2%(G)	GRM1555C1H390GA01D	
1007.	±5%(J)	GRM1555C1H390JA01D	
47pF(470)	±2%(G)	GRM1555C1H470GA01D	
TWW.Io	±5%(J)	GRM1555C1H470JA01D	
56pF(560)	±2%(G)	GRM1555C1H560GA01D	
WWW	±5%(J)	GRM1555C1H560JA01D	
68pF(680)	±2%(G)	GRM1555C1H680GA01D	
W.1	±5%(J)	GRM1555C1H680JA01D	
82pF(820)	±2%(G)	GRM1555C1H820GA01D	
WWW.	±5%(J)	GRM1555C1H820JA01D	
100pF(101)	±2%(G)	GRM1555C1H101GA01D	
W.	±5%(J)	GRM1555C1H101JA01D	
120pF(121)	±2%(G)	GRM1555C1H121GA01D	
	±5%(J)	GRM1555C1H121JA01D	
150pF(151)	±2%(G)	GRM1555C1H151GA01D	
W	±5%(J)	GRM1555C1H151JA01D	
180pF(181)	±2%(G)	GRM1555C1H181GA01D	
	±5%(J)	GRM1555C1H181JA01D	
220pF(221)	±2%(G)	GRM1555C1H221GA01D	
	±5%(J)	GRM1555C1H221JA01D	
270pF(271)	±2%(G)	GRM1555C1H271GA01D	
	±5%(J)	GRM1555C1H271JA01D	
330pF(331)	±2%(G)	GRM1555C1H331GA01D	
	±5%(J)	GRM1555C1H331JA01D	
390pF(391)	±2%(G)	GRM1555C1H391GA01D	
	±5%(J)	GRM1555C1H391JA01D	
470pF(471)	±2%(G)	GRM1555C1H471GA01D	
	±5%(J)	GRM1555C1H471JA01D	
560pF(561)	±2%(G)	GRM1555C1H561GA01D	
	±5%(J)	GRM1555C1H561JA01D	
680pF(681)	±2%(G)	GRM1555C1H681GA01D	
	±5%(J)	GRM1555C1H681JA01D	
820pF(821)	±2%(G)	GRM1555C1H821GA01D	
	±5%(J)	GRM1555C1H821JA01D	
1000pF(102)	±2%(G)	GRM1555C1H102GA01D	
	±5%(J)	GRM1555C1H102JA01D	

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

Product IDSeriesTemperature CharacteristicsCapacitance Tolerance

3 Dimension (LxW) 6 Rated Voltage

Individual Specification Code

4 Dimension (T)7 Capacitance10 Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

Temperature Compensating Type C0G(5C) Characteristics

Rated Volt. [Vdc] Capacitance	-733	1.6x0.8(18)<0603>		
Capacitance	4// // /	100(2A)	50(1H)	
	Tolerance	Part N	umber	
10pF(100)	±5%(J)	GRM1885C2A100JA01D	GRM1885C1H100JA01D	
12pF(120)	±5%(J)	GRM1885C2A120JA01D	GRM1885C1H120JA01D	
15pF(150)	±5%(J)	GRM1885C2A150JA01D	GRM1885C1H150JA01D	
18pF(180)	±5%(J)	GRM1885C2A180JA01D	GRM1885C1H180JA01D	
22pF(220)	±5%(J)	GRM1885C2A220JA01D	GRM1885C1H220JA01D	
27pF(270)	±5%(J)	GRM1885C2A270JA01D	GRM1885C1H270JA01D	
33pF(330)	±5%(J)	GRM1885C2A330JA01D	GRM1885C1H330JA01D	
39pF(390)	±5%(J)	GRM1885C2A390JA01D	GRM1885C1H390JA01D	
47pF(470)	±5%(J)	GRM1885C2A470JA01D	GRM1885C1H470JA01D	
56pF(560)	±5%(J)	GRM1885C2A560JA01D	GRM1885C1H560JA01D	
68pF(680)	±5%(J)	GRM1885C2A680JA01D	GRM1885C1H680JA01D	
82pF(820)	±5%(J)	GRM1885C2A820JA01D	GRM1885C1H820JA01D	
100pF(101)	±5%(J)	GRM1885C2A101JA01D	GRM1885C1H101JA01D	
120pF(121)	±5%(J)	GRM1885C2A121JA01D	GRM1885C1H121JA01D	
150pF(151)	±5%(J)	GRM1885C2A151JA01D	GRM1885C1H151JA01D	
180pF(181)	±5%(J)	GRM1885C2A181JA01D	GRM1885C1H181JA01D	
220pF(221)	±5%(J)	GRM1885C2A221JA01D	GRM1885C1H221JA01D	
270pF(271)	±5%(J)	GRM1885C2A271JA01D	GRM1885C1H271JA01D	
330pF(331)	±5%(J)	GRM1885C2A331JA01D	GRM1885C1H331JA01D	
390pF(391)	±5%(J)	GRM1885C2A391JA01D	GRM1885C1H391JA01D	
470pF(471)	±5%(J)	GRM1885C2A471JA01D	GRM1885C1H471JA01D	
560pF(561)	±5%(J)	GRM1885C2A561JA01D	GRM1885C1H561JA01D	
680pF(681)	±5%(J)	GRM1885C2A681JA01D	GRM1885C1H681JA01D	
820pF(821)	±5%(J)	GRM1885C2A821JA01D	GRM1885C1H821JA01D	
1000pF(102)	±5%(J)	GRM1885C2A102JA01D	GRM1885C1H102JA01D	
1200pF(122)	±5%(J)	GRM1885C2A122JA01D	GRM1885C1H122JA01D	
1500pF(152)	±5%(J)	GRM1885C2A152JA01D	GRM1885C1H152JA01D	
1800pF(182)	±5%(J)	COM	GRM1885C1H182JA01D	
2200pF(222)	±5%(J)	. WITH	GRM1885C1H222JA01D	
2700pF(272)	±5%(J)	V.CO. CTW	GRM1885C1H272JA01D	
2200 5(000)	±5%(J)	CON-	GRM1885C1H332JA01D	
3300pF(332)	±5%(J)	Dr. OWILL	GRM1885C1H392JA01D	

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code WWW.100Y.COM.TW WWW.100Y.COM.TW

Rated Volt. [Vdc	1 -111	2.0x1.25 (2 100(2A)	50(1H)	100(2A)	1)<1206> 50(1H)
Capacitance	Tolerance	100(2A)		Jumber) JU(III)
100pF(101)	±5%(J)	GRM2165C2A101JA01D	Parti	Number -	
120pF(121)	±5%(J)	GRM2165C2A121JA01D	N NAMA.	ON COM	
150pF(151)	±5%(J)	GRM2165C2A151JA01D		TOM.	
		100		1001. UNITY	
180pF(181)	±5%(J)	GRM2165C2A181JA01D	TH WWW	TONY CO.	
220pF(221)	±5%(J)	GRM2165C2A221JA01D	. T. Y	V.In. COM.	
270pF(271)	±5%(J)	GRM2165C2A271JA01D	The Marie	W.1001.	-4
330pF(331)	±5%(J)	GRM2165C2A331JA01D	THE WIN	1107.00	N
390pF(391)	±5%(J)	GRM2165C2A391JA01D		M. COM	N .
470pF(471)	±5%(J)	GRM2165C2A471JA01D	M. I.	WW.100 - COM.	· '
560pF(561)	±5%(J)	GRM2165C2A561JA01D	THE T	1007.001	
680pF(681)	±5%(J)	GRM2165C2A681JA01D	COM	MAN M. COL	CTW
820pF(821)	±5%(J)	GRM2165C2A821JA01D	COM.	COL	1 XX
1000pF(102)	±5%(J)	GRM2165C2A102JA01D		W. 1007.	W.J.A.
1200pF(122)	±5%(J)	GRM2165C2A122JA01D	GRM2165C1H122JA01D	MM M. TOOX.CO	Win
1500pF(152)	±5%(J)	GRM2165C2A152JA01D	GRM2165C1H152JA01D	WW. IO	Divi
1800pF(182)	±5%(J)	GRM2165C2A182JA01D	GRM2165C1H182JA01D	GRM3195C2A182JA01D	OM:1
2200pF(222)	±5%(J)	GRM2165C2A222JA01D	GRM2165C1H222JA01D	GRM3195C2A222JA01D	TI
2700pF(272)	±5%(J)	GRM2165C2A272JA01D	GRM2165C1H272JA01D	GRM3195C2A272JA01D	COM
3300pF(332)	±5%(J)	GRM2165C2A332JA01D	GRM2165C1H332JA01D	GRM3195C2A332JA01D	COM.
3900pF(392)	±5%(J)	TW WW	GRM2165C1H392JA01D	GRM3195C2A392JA01D	I. OMITW
4700pF(472)	±5%(J)	WW WW	GRM2165C1H472JA01D	GRM3195C2A472JA01D	GRM3195C1H472JA01D
5600pF(562)	±5%(J)	1.7	GRM2195C1H562JA01D	GRM3195C2A562JA01D	GRM3195C1H562JA01D
6800pF(682)	±5%(J)	TW WW	GRM2195C1H682JA01D	GRM3195C2A682JA01D	GRM3195C1H682JA01D
8200pF(822)	±5%(J)	JIM. WI	GRM2195C1H822JA01D	GRM3195C2A822JA01D	GRM3195C1H822JA01D
10000pF(103)	±5%(J)	OWIL	GRM2195C1H103JA01D	GRM3195C2A103JA01D	GRM3195C1H103JA01D
12000pF(123)	±5%(J)	T.M.	GRM2195C1H123JA01D	J. V.	GRM3195C1H123JA01D
15000pF(153)	±5%(J)	CONTIN	GRM2195C1H153JA01D	TW WW	GRM3195C1H153JA01D
18000pF(183)	±5%(J)	COM	GRM21B5C1H183JA01L	WW WW	GRM3195C1H183JA01D
22000pF(223)	±5%(J)	. OM.TV	GRM21B5C1H223JA01L	M.I.	GRM3195C1H223JA01D
27000pF(273)	±5%(J)	Y.CO. TW	111111111111111111111111111111111111111	M.TW W	GRM3195C1H273JA01D
33000pF(333)	±5%(J)	ON COMP	WWW. OX.C	UL WILL	GRM3195C1H333JA01D
39000pF(393)	±5%(J)	COM	TANN TOO	ONL	GRM3195C1H393JA01D
47000pF(473)	±5%(J)	100X.	M. 100x.	CONTIN	GRM31M5C1H473JA01L
56000pF(563)	±5%(J)	CON.CO	WWW. 100X	TTV	GRM31M5C1H563JA01L
68000pF(683)	±5%(J)	In COM.	MANN. IN	COM.	GRM31C5C1H683JA01L
82000pF(823)	±5%(J)	11001. OM.TH	W 100	COM	GRM31C5C1H823JA01L
100000pF(104)	±5%(J)	ON CONTRACTOR	WW	D. C. TIN	GRM31C5C1H104JA01L

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

²Series ●Product ID **6**Temperature Characteristics 8 Capacitance Tolerance

³Dimension (LxW) **6**Rated Voltage 9Individual Specification Code

Temperature Compensating Type C0G(5C) Characteristics Low Profile

xW [mm]		1.0x0.5(15)<0402>
Rated Volt. [Vdc		50(1H)
Capacitance	Tolerance	Part Number
0.1pF(R10)	±0.1pF(B)	GRM1535C1HR10BDD5D
0.2pF(R20)	±0.1pF(B)	GRM1535C1HR20BDD5D
0.3pF(R30)	±0.1pF(B)	GRM1535C1HR30BDD5D
0.4pF(R40)	±0.1pF(B)	GRM1535C1HR40BDD5D
0.5pF(R50)	±0.1pF(B)	GRM1535C1HR50BDD5D
0.6pF(R60)	±0.1pF(B)	GRM1535C1HR60BDD5D
0.7pF(R70)	±0.1pF(B)	GRM1535C1HR70BDD5D
0.8pF(R80)	±0.1pF(B)	GRM1535C1HR80BDD5D
0.9pF(R90)	±0.1pF(B)	GRM1535C1HR90BDD5D
1.0pF(1R0)	±0.25pF(C)	GRM1535C1H1R0CDD5D
1.1pF(1R1)	±0.25pF(C)	GRM1535C1H1R1CDD5D
1.2pF(1R2)	±0.25pF(C)	GRM1535C1H1R2CDD5D
1.3pF(1R3)	±0.25pF(C)	GRM1535C1H1R3CDD5D
1.4pF(1R4)	±0.25pF(C)	GRM1535C1H1R4CDD5D
1.5pF(1R5)	±0.25pF(C)	GRM1535C1H1R5CDD5D
1.6pF(1R6)	±0.25pF(C)	GRM1535C1H1R6CDD5D
1.7pF(1R7)	±0.25pF(C)	GRM1535C1H1R7CDD5D
1.8pF(1R8)	±0.25pF(C)	GRM1535C1H1R8CDD5D
1.9pF(1R9)	±0.25pF(C)	GRM1535C1H1R9CDD5D
2.0pF(2R0)	±0.25pF(C)	GRM1535C1H2R0CDD5D
2.1pF(2R1)	±0.25pF(C)	GRM1535C1H2R1CDD5D
2.2pF(2R2)	±0.25pF(C)	GRM1535C1H2R2CDD5D
2.3pF(2R3)	±0.25pF(C)	GRM1535C1H2R3CDD5D
2.4pF(2R4)	±0.25pF(C)	GRM1535C1H2R4CDD5D
2.5pF(2R5)	±0.25pF(C)	GRM1535C1H2R5CDD5D
2.6pF(2R6)	±0.25pF(C)	GRM1535C1H2R6CDD5D
2.7pF(2R7)	±0.25pF(C)	GRM1535C1H2R7CDD5D
2.7pr (2R7)	±0.25pF(C)	GRM1535C1H2R8CDD5D
2.9pF(2R9)	±0.25pF(C)	COMM
	-1110	GRM1535C1H2R9CDD5D
3.0pF(3R0)	±0.25pF(C)	GRM1535C1H3R0CDD5D
3.1pF(3R1)	±0.25pF(C)	GRM1535C1H3R1CDD5D GRM1535C1H3R2CDD5D
3.2pF(3R2)	±0.25pF(C)	0.5
3.3pF(3R3)	±0.25pF(C)	GRM1535C1H3R3CDD5D
3.4pF(3R4)	±0.25pF(C)	GRM1535C1H3R4CDD5D
3.5pF(3R5)	±0.25pF(C)	GRM1535C1H3R5CDD5D
3.6pF(3R6)	±0.25pF(C)	GRM1535C1H3R6CDD5D
3.7pF(3R7)	±0.25pF(C)	GRM1535C1H3R7CDD5D
3.8pF(3R8)	±0.25pF(C)	GRM1535C1H3R8CDD5D
3.9pF(3R9)	±0.25pF(C)	GRM1535C1H3R9CDD5D
4.0pF(4R0)	±0.25pF(C)	GRM1535C1H4R0CDD5D
4.1pF(4R1)	±0.25pF(C)	GRM1535C1H4R1CDD5D
4.2pF(4R2)	±0.25pF(C)	GRM1535C1H4R2CDD5D
4.3pF(4R3)	±0.25pF(C)	GRM1535C1H4R3CDD5D
4.4pF(4R4)	±0.25pF(C)	GRM1535C1H4R4CDD5D
4.5pF(4R5)	±0.25pF(C)	GRM1535C1H4R5CDD5D
4.6pF(4R6)	±0.25pF(C)	GRM1535C1H4R6CDD5D
4.0pi (4110)		
4.7pF(4R7)	±0.25pF(C)	GRM1535C1H4R7CDD5D
	±0.25pF(C) ±0.25pF(C)	GRM1535C1H4R7CDD5D GRM1535C1H4R8CDD5D
4.7pF(4R7)		31111

Tolerance ±0.5pF(D)	50(1H) Part Number
13.	Part Number
±0.5pF(D)	
	GRM1535C1H5R1DDD5D
±0.5pF(D)	GRM1535C1H5R2DDD5D
±0.5pF(D)	GRM1535C1H5R3DDD5D
±0.5pF(D)	GRM1535C1H5R4DDD5D
±0.5pF(D)	GRM1535C1H5R5DDD5D
±0.5pF(D)	GRM1535C1H5R6DDD5D
±0.5pF(D)	GRM1535C1H5R7DDD5D
±0.5pF(D)	GRM1535C1H5R8DDD5D
±0.5pF(D)	GRM1535C1H5R9DDD5D
±0.5pF(D)	GRM1535C1H6R0DDD5D
±0.5pF(D)	GRM1535C1H6R1DDD5D
±0.5pF(D)	GRM1535C1H6R2DDD5D
±0.5pF(D)	GRM1535C1H6R3DDD5D
±0.5pF(D)	GRM1535C1H6R4DDD5D
±0.5pF(D)	GRM1535C1H6R5DDD5D
±0.5pF(D)	GRM1535C1H6R6DDD5D
±0.5pF(D)	GRM1535C1H6R7DDD5D
±0.5pF(D)	GRM1535C1H6R8DDD5D
±0.5pF(D)	GRM1535C1H6R9DDD5D
±0.5pF(D)	GRM1535C1H7R0DDD5D
±0.5pF(D)	GRM1535C1H7R1DDD5D
±0.5pF(D)	GRM1535C1H7R2DDD5D
±0.5pF(D)	GRM1535C1H7R3DDD5D
±0.5pF(D)	GRM1535C1H7R4DDD5D
±0.5pF(D)	GRM1535C1H7R5DDD5D
±0.5pF(D)	GRM1535C1H7R6DDD5D
±0.5pF(D)	GRM1535C1H7R7DDD5D
±0.5pF(D)	GRM1535C1H7R8DDD5D
±0.5pF(D)	GRM1535C1H7R9DDD5D
±0.5pF(D)	GRM1535C1H8R0DDD5D
±0.5pF(D)	GRM1535C1H8R1DDD5D
±0.5pF(D)	GRM1535C1H8R2DDD5D
±0.5pF(D)	GRM1535C1H8R3DDD5D
±0.5pF(D)	GRM1535C1H8R4DDD5D
±0.5pF(D)	GRM1535C1H8R5DDD5D
±0.5pF(D)	GRM1535C1H8R6DDD5D
±0.5pF(D)	GRM1535C1H8R7DDD5D
±0.5pF(D)	GRM1535C1H8R8DDD5D
±0.5pF(D)	GRM1535C1H8R9DDD5D
±0.5pF(D)	GRM1535C1H9R0DDD5D
±0.5pF(D)	GRM1535C1H9R1DDD5D
±0.5pF(D)	GRM1535C1H9R2DDD5D
±0.5pF(D)	GRM1535C1H9R3DDD5D
±0.5pF(D)	GRM1535C1H9R4DDD5D
±0.5pF(D)	GRM1535C1H9R5DDD5D
±0.5pF(D)	GRM1535C1H9R6DDD5D
±0.5pF(D)	GRM1535C1H9R7DDD5D
±0.5pF(D)	GRM1535C1H9R8DDD5D
±0.5pF(D)	GRM1535C1H9R9DDD5D
	±0.5pF(D) ±0.5pF(D)

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100Y.COM.TW WWW.100X.

Temperature Compensating Type C0G(5C) Characteristics Low Profile

		COMP	
LxW [mm]		1.0x0.5(15)<0402>	
Rated Volt. [Vdc]		50(1H)	
Capacitance	Tolerance	Part Number	
10pF(100)	±5%(J)	GRM1535C1H100JDD5D	
12pF(120)	±5%(J)	GRM1535C1H120JDD5D	
15pF(150)	±5%(J)	GRM1535C1H150JDD5D	
18pF(180)	±5%(J)	GRM1535C1H180JDD5D	
22pF(220)	±5%(J)	GRM1535C1H220JDD5D	
27pF(270)	±5%(J)	GRM1535C1H270JDD5D	
33pF(330)	±5%(J)	GRM1535C1H330JDD5D	
39pF(390)	±5%(J)	GRM1535C1H390JDD5D	
47pF(470)	±5%(J)	GRM1535C1H470JDD5D	
56pF(560)	±5%(J)	GRM1535C1H560JDD5D	
68pF(680)	±5%(J)	GRM1535C1H680JDD5D	
82pF(820)	±5%(J)	GRM1535C1H820JDD5D	
100pF(101)	±5%(J)	GRM1535C1H101JDD5D	
120pF(121)	±5%(J)	GRM1535C1H121JDD5D	
150pF(151)	±5%(J)	GRM1535C1H151JDD5D	
180pF(181)	±5%(J)	GRM1535C1H181JDD5D	
220pF(221)	±5%(J)	GRM1535C1H221JDD5D	
270pF(271)	±5%(J)	GRM1535C1H271JDD5D	
330pF(331)	±5%(J)	GRM1535C1H331JDD5D	
390pF(391)	±5%(J)	GRM1535C1H391JDD5D	
470pF(471)	±5%(J)	GRM1535C1H471JDD5D	
560pF(561)	±5%(J)	GRM1535C1H561JDD5D	
680pF(681)	±5%(J)	GRM1535C1H681JDD5D	

100Y.COM.TW <>: EIA [inch] Code WWW.100Y.COM.TW The part number code is shown in () and Unit is shown in []. WWW.100X.CON

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

Product ID 2Series **5**Temperature Characteristics 8 Capacitance Tolerance

³Dimension (LxW) 6 Rated Voltage 9Individual Specification Code

Temperature Compensating Type C0G(5C) Characteristics Low Profile

Rated Volt. [Vdc		100(2A)	50(1H)	100(2A)	50(1H)
Capacitance	Tolerance	N.Ton TCOMP.		umber	
100pF(101)	±5%(J)	GRM2165C2A101JA01D	W.10	ON:IV	
120pF(121)	±5%(J)	GRM2165C2A121JA01D	M MM	OOY.	
150pF(151)	±5%(J)	GRM2165C2A151JA01D	W WWW.	COM. TW	
180pF(181)	±5%(J)	GRM2165C2A181JA01D	WW	Too COM.	
220pF(221)	±5%(J)	GRM2165C2A221JA01D	In was	1001. ON'IN	
270pF(271)	±5%(J)	GRM2165C2A271JA01D	WW WW	TV CONTRACTOR	
330pF(331)	±5%(J)	GRM2165C2A331JA01D	ALVA CALM	M. In COM.	N
390pF(391)	±5%(J)	GRM2165C2A391JA01D	William	W.100 COM.1	_1
470pF(471)	±5%(J)	GRM2165C2A471JA01D	WITH	1100Y.	
560pF(561)	±5%(J)	GRM2165C2A561JA01D	Ohn.	MM. OOK.CO.	TW
680pF(681)	±5%(J)	GRM2165C2A681JA01D	COM	TANN TOO T COM	-50
820pF(821)	±5%(J)	GRM2165C2A821JA01D	-oM.TW	M., 1001.	UL
1000pF(102)	±5%(J)	GRM2165C2A102JA01D	CONTRACTOR	MMA	VIII
1200pF(122)	±5%(J)	GRM2165C2A122JA01D	GRM2165C1H122JA01D	WWW. CO	NY.
1500pF(152)	±5%(J)	GRM2165C2A152JA01D	GRM2165C1H152JA01D	111.100	DM:
1800pF(182)	±5%(J)	GRM2165C2A182JA01D	GRM2165C1H182JA01D	GRM3195C2A182JA01D	MIN
2200pF(222)	±5%(J)	GRM2165C2A222JA01D	GRM2165C1H222JA01D	GRM3195C2A222JA01D	TW
2700pF(272)	±5%(J)	GRM2165C2A272JA01D	GRM2165C1H272JA01D	GRM3195C2A272JA01D	COMP.
3300pF(332)	±5%(J)	GRM2165C2A332JA01D	GRM2165C1H332JA01D	GRM3195C2A332JA01D	COMIT
3900pF(392)	±5%(J)	THE WAY	GRM2165C1H392JA01D	GRM3195C2A392JA01D	Y.Co. TIN
4700pF(472)	±5%(J)		GRM2165C1H472JA01D	GRM3195C2A472JA01D	GRM3195C1H472JA01D
5600pF(562)	±5%(J)	1.77	GRM2195C1H562JA01D	GRM3195C2A562JA01D	GRM3195C1H562JA01D
6800pF(682)	±5%(J)	WITH WITH	GRM2195C1H682JA01D	GRM3195C2A682JA01D	GRM3195C1H682JA01D
8200pF(822)	±5%(J)	JIM.	GRM2195C1H822JA01D	GRM3195C2A822JA01D	GRM3195C1H822JA01D
10000pF(103)	±5%(J)	OWIT	GRM2195C1H103JA01D	GRM3195C2A103JA01D	GRM3195C1H103JA01D
12000pF(123)	±5%(J)	TIME	GRM2195C1H123JA01D	LA.	GRM3195C1H123JA01D
15000pF(153)	±5%(J)	COMMENT	GRM2195C1H153JA01D	TH WW	GRM3195C1H153JA01D
18000pF(183)	±5%(J)	COM	MINN TO CON	WW W	GRM3195C1H183JA01D
22000pF(223)	±5%(J)	CONITY	W.1003	Wir	GRM3195C1H223JA01D
27000pF(273)	±5%(J)	Y.Co. TW	MM. 1007.00	MIN	GRM3195C1H273JA01D
33000pF(333)	±5%(J)	CON.	WWW.	W Write	GRM3195C1H333JA01D
39000pF(393)	±5%(J)	In . COM'I	11/1/100 -1 C	OM	GRM3195C1H393JA01D
47000pF(473)	±5%(J)	1007.0 MITH	1001.	CONT.TA	GRM31M5C1H473JA01L
56000pF(563)	±5%(J)	ON COM TW	MANA	CO TIN	GRM31M5C1H563JA01L
The part number of		() and Unit is shown in []. <>: E	EIA [inch] Code	Y.COM.TW DY.COM.TW DOY.COM.TW	WWW.100X.C

Rated Volt. [Vdc]	TAIN V	0.6x0.3(0) 50(1H)	25(1E)	1.0x0.5(1 50(1H)	10(1A)
Capacitance	Tolerance	N.100 COM	- 11	lumber	.5()
1.0pF(1R0)	±0.25pF(C)	GRM0337U1H1R0CD01D	W.19	GRM1557U1H1R0CZ01D	
2.0pF(2R0)	±0.25pF(C)	GRM0337U1H2R0CD01D	W WWW	GRM1557U1H2R0CZ01D	
3.0pF(3R0)	±0.25pF(C)	GRM0337U1H3R0CD01D	WWW.	GRM1557U1H3R0CZ01D	
4.0pF(4R0)	±0.25pF(C)	GRM0337U1H4R0CD01D	VIXIV	GRM1557U1H4R0CZ01D	
5.0pF(5R0)	±0.25pF(C)	GRM0337U1H5R0CD01D	IN MM	GRM1557U1H5R0CZ01D	
6.0pF(6R0)	√ ±0.5pF(D)	GRM0337U1H6R0DD01D	WW WIT.	GRM1557U1H6R0DZ01D	
7.0pF(7R0)	±0.5pF(D)	GRM0337U1H7R0DD01D	VI.	GRM1557U1H7R0DZ01D	N
8.0pF(8R0)	±0.5pF(D)	GRM0337U1H8R0DD01D	William	GRM1557U1H8R0DZ01D	
9.0pF(9R0)	±0.5pF(D)	GRM0337U1H9R0DD01D	WILL	GRM1557U1H9R0DZ01D	
10pF(100)	±5%(J)	GRM0337U1H100JD01D	Oh.	GRM1557U1H100JZ01D	TVI
12pF(120)	±5%(J)	GRM0337U1H120JD01D	OM.	GRM1557U1H120JZ01D	-XXI
15pF(150)	±5%(J)	GRM0337U1H150JD01D	TOM.TW	GRM1557U1H150JZ01D	CLA
18pF(180)	±5%(J)	MAN. TOO	GRM0337U1E180JD01D	GRM1557U1H180JZ01D	TI
22pF(220)	±5%(J)	TIMN Too	GRM0337U1E220JD01D	GRM1557U1H220JZ01D	
27pF(270)	±5%(J)	1111100	GRM0337U1E270JD01D	GRM1557U1H270JZ01D	OWIT
33pF(330)	±5%(J)	WW.	GRM0337U1E330JD01D	GRM1557U1H330JZ01D	MITW
39pF(390)	±5%(J)	N MMN.	GRM0337U1E390JD01D	GRM1557U1H390JZ01D	TW
47pF(470)	±5%(J)	WW.	GRM0337U1E470JD01D	GRM1557U1H470JZ01D	COMP
56pF(560)	±5%(J)	M MM	GRM0337U1E560JD01D	GRM1557U1H560JZ01D	COM:
68pF(680)	±5%(J)	TW WWW	GRM0337U1E680JD01D	GRM1557U1H680JZ01D	I.C.
82pF(820)	±5%(J)	· V	GRM0337U1E820JD01D	GRM1557U1H820JZ01D	V.CO
100pF(101)	±5%(J)	1.1.1.	GRM0337U1E101JD01D	GRM1557U1H101JZ01D	COM
120pF(121)	±5%(J)	TIN WIN	1100Y.	GRM1557U1H121JZ01D	001. W.I.M.
150pF(151)	±5%(J)	Mr.	M. COL	GRM1557U1H151JZ01D	MY.CO. TW
180pF(181)	±5%(J)	OW.	MAN TON	GRM1557U1H181JZ01D	TO COM.
1200pF(122)	±5%(J)	MII.M	1007. OM	J. M.	GRM1557U1A122JA01D
1500pF(152)	±5%(J)	COL	NN 1 100 Y.Co.	TIN WWW	GRM1557U1A152JA01D
1800pF(182)	±5%(J)	COM	TIMM. TO COL	WW WW	GRM1557U1A182JA01D
2200pF(222)	±5%(J)	. OM.TV	M. 100 . CO	Mil	GRM1557U1A222JA01D
2700pF(272)	±5%(J)	Y.C. TIN	MM. 1007.00	MITH	GRM1557U1A272JA01D
3300pF(332)	±5%(J)	COMP.	WWW. OON.C.	W W	GRM1557U1A332JA01D
3900pF(392)	±5%(J)	COM	TANN TOO	ONL	GRM1557U1A392JA01D
4700pF(472)	±5%(J)	OOX.	1007	CONTIN	GRM1557U1A472JA01D

●Product ID 2Series **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) **6**Rated Voltage 9Individual Specification Code

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

LxW [mm]		1.6x0.8(1	8)<0603>
Rated Volt. [Vdc]	MMA	50(1H)	10(1A)
Capacitance	Tolerance	Part N	umber
1000pF(102)	±5%(J)	GRM1887U1H102JA01D	W. 100 r.
1200pF(122)	±5%(J)	GRM1887U1H122JA01D	N N 1001
1500pF(152)	±5%(J)	GRM1887U1H152JA01D	WWW.
1800pF(182)	±5%(J)	GRM1887U1H182JA01D	100 MW.100
2200pF(222)	±5%(J)	GRM1887U1H222JA01D	TW 10
2700pF(272)	±5%(J)	GRM1887U1H272JA01D	TW WW
3300pF(332)	±5%(J)	GRM1887U1H332JA01D	WWW.I
3900pF(392)	±5%(J)	GRM1887U1H392JA01D	W.I.
4700pF(472)	±5%(J)	GRM1887U1H472JA01D	TITN W
5600pF(562)	±5%(J)	GRM1887U1H562JA01D	OW WWW
6800pF(682)	±5%(J)	GRM1887U1H682JA01D	ON
8200pF(822)	±5%(J)	GRM1887U1H822JA01D	- ON: TW
10000pF(103)	±5%(J)	GRM1887U1H103JA01D	CO. TW
12000pF(123)	±5%(J)	MM.Inc	GRM1887U1A123JA01D
15000pF(153)	±5%(J)	W 100	GRM1887U1A153JA01D
18000pF(183)	±5%(J)	WW	GRM1887U1A183JA01D
22000pF(223)	±5%(J)	N TINN	GRM1887U1A223JA01D

18000pF(183)	±5%(J)	1 10	GRM1887U1A183JA01D	- W 100 1
22000pF(223)	±5%(J)	W WWW.	GRM1887U1A223JA01D	- WWW 1005
W.100 -	COM	N. W.	COMP	WWW.L
LxW [mm]	Mo	2.0x1.25(2	21)<0805>	3.2x1.6(31)<1206>
Rated Volt. [Vdc	CO.	50(1H)	10(1A)	50(1H)
Capacitance	Tolerance	TO THE TAX IN THE TAX	Part Number	WWW.
10000pF(103)	±5%(J)	GRM2167U1H103JA01D	W.100 COM.1	
12000pF(123)	±5%(J)	GRM2167U1H123JA01D	11001.	
15000pF(153)	±5%(J)	GRM2167U1H153JA01D	M. T. COL	W WWW
18000pF(183)	±5%(J)	GRM2167U1H183JA01D	MAN TOOM	WY WY
22000pF(223)	±5%(J)	GRM2197U1H223JA01D	1001. COM	J. 11
27000pF(273)	±5%(J)	GRM2197U1H273JA01D	NA TOOL CO.	TW WW
33000pF(333)	±5%(J)	GRM21A7U1H333JA39L	COL	
39000pF(393)	±5%(J)	GRM21B7U1H393JA01L	M.100	M. I.
47000pF(473)	±5%(J)	GRM21B7U1H473JA01L	MM. 1001:00	MIN
56000pF(563)	±5%(J)	CON TAN	GRM2197U1A563JA01D	GRM3197U1H563JA01E
68000pF(683)	±5%(J)	COM	GRM21B7U1A683JA01L	GRM31M7U1H683JA01I
82000pF(823)	±5%(J)	00Y. C. T. T.	GRM21B7U1A823JA01L	GRM31M7U1H823JA01I
100000pF(104)	±5%(J)	ON COM	GRM21B7U1A104JA01L	GRM31M7U1H104JA01I

Temperature Compensating Type U2J(7U) Characteristics Low Profile

_xW [mm]		1.6x0.8(1	8)<0603>
Rated Volt. [Vdc		50(1H)	10(1A)
Capacitance	Tolerance	Part N	umber
2200pF(222)	±5%(J)	GRM1857U1H222JA44D	
2700pF(272)	±5%(J)	GRM1857U1H272JA44D	M MM.
3300pF(332)	±5%(J)	GRM1857U1H332JA44D	CW WWW
3900pF(392)	±5%(J)	GRM1857U1H392JA44D	
4700pF(472)	±5%(J)	GRM1857U1H472JA44D	III MI
5600pF(562)	±5%(J)	MAM. OUT CO.	GRM1857U1A562JA44D
6800pF(682)	±5%(J)	TANN TOO	GRM1857U1A682JA44D
8200pF(822)	±5%(J)	111,1001.	GRM1857U1A822JA44D
10000pF(103)	±5%(J)	MM	GRM1857U1A103JA44D

LxW [mm] 2.0x1.25(21)<0805> 3.2x1.6(31)<1206: Rated Volt. [Vdc] 50(1H) 10(1A) 50(1H) Capacitance Tolerance Part Number	OM:IN
Capacitance Tolerance Part Number	
10000pF(103) ±5%(J) GRM2167U1H103JA01D	CONT
12000pF(123) ±5%(J) GRM2167U1H123JA01D	COM
15000pF(153) ±5%(J) GRM2167U1H153JA01D	T.M.TW
18000pF(183) ±5%(J) GRM2167U1H183JA01D	OY.CO
22000pF(223) ±5%(J) GRM2197U1H223JA01D	COM
27000pF(273) ±5%(J) GRM2197U1H273JA01D	On r. COWIT
33000pF(333) ±5%(J) GRM21A7U1H333JA39L	100 Y.C.
56000pF(563) ±5%(J) GRM2197U1A563JA01D GRM3197U1H563JA	01D
68000pF(683) ±5%(J) GRM31M7U1H683JA	01L
02000 (000)	01L1
82000pF(823) ±5%(J) GRM31M7U1H823JA	

3Dimension (LxW) 6 Rated Voltage 9Individual Specification Code

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

WWW.100Y.COM.TW

Temperature Compensating Type P2H(6P) Characteristics

		CUP	
LxW [mm]	_<	1.0x0.5(15)<0402>	
Rated Volt. [Vdc		50(1H)	
Capacitance	Tolerance	N. Ind. COM.	
1.0pF(1R0)	±0.25pF(C)	GRM1556P1H1R0CZ01D	
2.0pF(2R0)	±0.25pF(C)	GRM1556P1H2R0CZ01D	
3.0pF(3R0)	±0.25pF(C)	GRM1556P1H3R0CZ01D	
4.0pF(4R0)	±0.25pF(C)	GRM1556P1H4R0CZ01D	
5.0pF(5R0)	±0.25pF(C)	GRM1556P1H5R0CZ01D	
6.0pF(6R0)	±0.5pF(D)	GRM1556P1H6R0DZ01D	
7.0pF(7R0)	±0.5pF(D)	GRM1556P1H7R0DZ01D	
8.0pF(8R0)	±0.5pF(D)	GRM1556P1H8R0DZ01D	
9.0pF(9R0)	±0.5pF(D)	GRM1556P1H9R0DZ01D	
10pF(100)	±5%(J)	GRM1556P1H100JZ01D	
12pF(120)	±5%(J)	GRM1556P1H120JZ01D	
15pF(150)	±5%(J)	GRM1556P1H150JZ01D	
18pF(180)	±5%(J)	GRM1556P1H180JZ01D	
22pF(220)	±5%(J)	GRM1556P1H220JZ01D	
27pF(270)	±5%(J)	GRM1556P1H270JZ01D	

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code

Temperature Compensating Type R2H(6R) Characteristics

LxW [mm]	-1 CON	0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc	$p_{0,1}$	25(1E)	50(1H)
Capacitance	Tolerance	Part N	umber
1.0pF(1R0)	±0.25pF(C)	GRM0336R1E1R0CD01D	GRM1556R1H1R0CD01D
2.0pF(2R0)	±0.25pF(C)	GRM0336R1E2R0CD01D	GRM1556R1H2R0CZ01D
3.0pF(3R0)	±0.25pF(C)	GRM0336R1E3R0CD01D	GRM1556R1H3R0CZ01D
4.0pF(4R0)	±0.25pF(C)	GRM0336R1E4R0CD01D	GRM1556R1H4R0CZ01D
5.0pF(5R0)	±0.25pF(C)	GRM0336R1E5R0CD01D	GRM1556R1H5R0CZ01D
6.0pF(6R0)	±0.5pF(D)	GRM0336R1E6R0DD01D	GRM1556R1H6R0DZ01D
7.0pF(7R0)	±0.5pF(D)	GRM0336R1E7R0DD01D	GRM1556R1H7R0DZ01D
8.0pF(8R0)	±0.5pF(D)	GRM0336R1E8R0DD01D	GRM1556R1H8R0DZ01D
9.0pF(9R0)	±0.5pF(D)	GRM0336R1E9R0DD01D	GRM1556R1H9R0DZ01D
10pF(100)	±5%(J)	GRM0336R1E100JD01D	GRM1556R1H100JZ01D
12pF(120)	±5%(J)	GRM0336R1E120JD01D	GRM1556R1H120JZ01D
15pF(150)	±5%(J)	GRM0336R1E150JD01D	GRM1556R1H150JZ01D
18pF(180)	±5%(J)	GRM0336R1E180JD01D	GRM1556R1H180JZ01D
22pF(220)	±5%(J)	GRM0336R1E220JD01D	GRM1556R1H220JZ01D
27pF(270)	±5%(J)	GRM0336R1E270JD01D	GRM1556R1H270JZ01D
33pF(330)	±5%(J)	GRM0336R1E330JD01D	GRM1556R1H330JZ01D
39pF(390)	±5%(J)	GRM0336R1E390JD01D	M. M.
47pF(470)	±5%(J)	GRM0336R1E470JD01D	TW WWW
56pF(560)	±5%(J)	GRM0336R1E560JD01D	WIX VIW
68pF(680)	±5%(J)	GRM0336R1E680JD01D	1.1.
82pF(820)	±5%(J)	GRM0336R1E820JD01D	TIN WY
100pF(101)	±5%(J)	GRM0336R1E101JD01D	

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100Y.COM. WWW.100

WWW.100Y.COM.TW

		C. C. C. C. C. C. C. C. C. C. C. C. C. C	NAME OF THE OWNER OWNER OF THE OWNER	
LxW [mm]		0.6x0.3(03)<0201>	1.0x0.5(15)<0402>	
Rated Volt. [Vdc]		25(1E)	50(1H)	
Capacitance	Tolerance	Part Number		
1.0pF(1R0)	±0.25pF(C)	GRM0336S1E1R0CD01D	GRM1556S1H1R0CD01D	
2.0pF(2R0)	±0.25pF(C)	GRM0336S1E2R0CD01D	GRM1556S1H2R0CZ01D	
3.0pF(3R0)	±0.25pF(C)	GRM0336S1E3R0CD01D	GRM1556S1H3R0CZ01D	
4.0pF(4R0)	±0.25pF(C)	GRM0336S1E4R0CD01D	GRM1556S1H4R0CZ01D	
5.0pF(5R0)	±0.25pF(C)	GRM0336S1E5R0CD01D	GRM1556S1H5R0CZ01D	
6.0pF(6R0)	√ ±0.5pF(D)	GRM0336S1E6R0DD01D	GRM1556S1H6R0DZ01D	
7.0pF(7R0)	±0.5pF(D)	GRM0336S1E7R0DD01D	GRM1556S1H7R0DZ01D	
8.0pF(8R0)	±0.5pF(D)	GRM0336S1E8R0DD01D	GRM1556S1H8R0DZ01D	
9.0pF(9R0)	±0.5pF(D)	GRM0336S1E9R0DD01D	GRM1556S1H9R0DZ01D	
10pF(100)	±5%(J)	GRM0336S1E100JD01D	GRM1556S1H100JZ01D	
12pF(120)	±5%(J)	GRM0336S1E120JD01D	GRM1556S1H120JZ01D	
15pF(150)	±5%(J)	GRM0336S1E150JD01D	GRM1556S1H150JZ01D	
18pF(180)	±5%(J)	GRM0336S1E180JD01D	GRM1556S1H180JZ01D	
22pF(220)	±5%(J)	GRM0336S1E220JD01D	GRM1556S1H220JZ01D	
27pF(270)	±5%(J)	GRM0336S1E270JD01D	GRM1556S1H270JZ01D	
33pF(330)	±5%(J)	GRM0336S1E330JD01D	GRM1556S1H330JZ01D	
39pF(390)	±5%(J)	GRM0336S1E390JD01D	GRM1556S1H390JZ01D	
47pF(470)	±5%(J)	GRM0336S1E470JD01D	COM	
56pF(560)	±5%(J)	GRM0336S1E560JD01D	1007. OM.TW	
68pF(680)	±5%(J)	GRM0336S1E680JD01D	TY CONTRACTOR	
82pF(820)	±5%(J)	GRM0336S1E820JD01D	Vira COM	
100pF(101)	±5%(J)	GRM0336S1E101JD01D	M 100 1 COM. 1	

WWW.100Y.COM.T The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100Y.COM.TW

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.



[●]Product ID 2 Series **5**Temperature Characteristics 8 Capacitance Tolerance

³Dimension (LxW) 6 Rated Voltage 9Individual Specification Code

Temperature Compensating Type T2H(6T) Characteristics

W [mm]		0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc		25(1E)	50(1H)
Capacitance	Tolerance	Part N	umber
1.0pF(1R0)	±0.25pF(C)	GRM0336T1E1R0CD01D	GRM1556T1H1R0CD01D
2.0pF(2R0)	±0.25pF(C)	GRM0336T1E2R0CD01D	GRM1556T1H2R0CD01D
3.0pF(3R0)	±0.25pF(C)	GRM0336T1E3R0CD01D	GRM1556T1H3R0CD01D
4.0pF(4R0)	±0.25pF(C)	GRM0336T1E4R0CD01D	GRM1556T1H4R0CD01D
5.0pF(5R0)	±0.25pF(C)	GRM0336T1E5R0CD01D	GRM1556T1H5R0CD01D
6.0pF(6R0)	±0.5pF(D)	GRM0336T1E6R0DD01D	GRM1556T1H6R0DD01D
7.0pF(7R0)	±0.5pF(D)	GRM0336T1E7R0DD01D	GRM1556T1H7R0DD01D
8.0pF(8R0)	±0.5pF(D)	GRM0336T1E8R0DD01D	GRM1556T1H8R0DD01D
9.0pF(9R0)	±0.5pF(D)	GRM0336T1E9R0DD01D	GRM1556T1H9R0DD01D
10pF(100)	±5%(J)	GRM0336T1E100JD01D	GRM1556T1H100JD01D
12pF(120)	±5%(J)	GRM0336T1E120JD01D	GRM1556T1H120JD01D
15pF(150)	±5%(J)	GRM0336T1E150JD01D	GRM1556T1H150JD01D
18pF(180)	±5%(J)	GRM0336T1E180JD01D	GRM1556T1H180JD01D
22pF(220)	±5%(J)	GRM0336T1E220JD01D	GRM1556T1H220JD01D
27pF(270)	±5%(J)	GRM0336T1E270JD01D	GRM1556T1H270JD01D
33pF(330)	±5%(J)	GRM0336T1E330JD01D	GRM1556T1H330JD01D
39pF(390)	±5%(J)	GRM0336T1E390JD01D	GRM1556T1H390JD01D
47pF(470)	±5%(J)	GRM0336T1E470JD01D	GRM1556T1H470JD01D
56pF(560)	±5%(J)	GRM0336T1E560JD01D	GRM1556T1H560JD01D
68pF(680)	±5%(J)	GRM0336T1E680JD01D	GRM1556T1H680JD01D
82pF(820)	±5%(J)	GRM0336T1E820JD01D	GRM1556T1H820JD01D
100pF(101)	±5%(J)	GRM0336T1E101JD01D	GRM1556T1H101JD01D

WWW.100Y.COM.T The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code WWW.100Y.COM.TW WWW.100Y.COM.TW

WWW.100Y.COM.TW High Dielectric Constant Type X7R(R7) Characteristics

LxW [mm]	-1	0.4x0.2(02)<01005>
Rated Volt. [Vo	lc]	10(1A)
Capacitance	Tolerance	Part Number
68pF(680) ±10%(K)	GRM022R71A680KA01L
100pF(101) ±10%(K)	GRM022R71A101KA01L
150pF(151) ±10%(K)	GRM022R71A151KA01L
220pF(221) ±10%(K)	GRM022R71A221KA01L
330pF(331) ±10%(K)	GRM022R71A331KA01L
470pF(471) ±10%(K)	GRM022R71A471KA01L

_xW [mm]		1001	0.6x0.3(03)<0201>	ZN.100
Rated Volt. [Vdc]		25(1E)	16(1C)	10(1A)
Capacitance Tole	erance	WWW.IC	Part Number	WW. OOK.CO.
100pF(101) ±1	10%(K)	GRM033R71E101KA01D	COM	TINN TOO CONT.
150pF(151) ±1	10%(K)	GRM033R71E151KA01D	TOWITH	W. TOOT. COMULTA
220pF(221) ±1	10%(K)	GRM033R71E221KA01D	CONTIN	WWW. 100Y.Co. ILTW
330pF(331) ±1	10%(K)	GRM033R71E331KA01D	COMI.	MAM. TO OA' COM.
470pF(471) ±1	10%(K)	GRM033R71E471KA01D	COMIT	M. Too COM.
680pF(681) ±1	10%(K)	GRM033R71E681KA01D	OY.COMITY	WW. 1007.
1000pF(102) ±1	10%(K)	GRM033R71E102KA01D	ON COM	MAN TOOX CO.
1500pF(152) ±1	10%(K)	GRM033R71E152KA01D	TON.	COM.
2200pF(222) ±1	10%(K)	W W	GRM033R71C222KA88D	W 100 - COM
3300pF(332) ±1	10%(K)	TW WWW	GRM033R71C332KA88D	WW. 1007.00
4700pF(472) ±1	10%(K)	WIX	V. To COMP.	GRM033R71A472KA01D
6800pF(682) ±1	10%(K)	T.J. A. A	W.100 . COM.1	GRM033R71A682KA01D
10000pF(103) ±1	10%(K)		1100Y. CONT.	GRM033R71A103KA01D

1 Product ID 2 Series **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) 6 Rated Voltage 9Individual Specification Code

4 Dimension (T) Capacitance Packaging*

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

*GRM022: D is applicable.



LxW [mm]		1001.0 M.TW	1.0x0.5(1	5)<0402>	
Rated Volt. [Vdc		100(2A)	50(1H)	25(1E)	16(1C)
Capacitance	Tolerance	M.Ing J COM.	Part N	lumber	
220pF(221)	±10%(K)	GRM155R72A221KA01D	GRM155R71H221KA01D	ON.	
330pF(331)	±10%(K)	GRM155R72A331KA01D	GRM155R71H331KA01D	007.C	
470pF(471)	±10%(K)	GRM155R72A471KA01D	GRM155R71H471KA01D	ON CONTIN	
680pF(681)	±10%(K)	GRM155R72A681KA01D	GRM155R71H681KA01D	Too I COM.	
1000pF(102)	±10%(K)	GRM155R72A102KA01D	GRM155R71H102KA01D	17001. CON'IL	
1500pF(152)	±10%(K)	GRM155R72A152KA01D	GRM155R71H152KA01D	1007.00	
2200pF(222)	±10%(K)	GRM155R72A222KA01D	GRM155R71H222KA01D	M. T. COM.	N
3300pF(332)	±10%(K)	GRM155R72A332KA01D	GRM155R71H332KA01D	7.100 COM.1	_1
4700pF(472)	±10%(K)	GRM155R72A472KA01D	GRM155R71H472KA01D	GRM155R71E472KA01D	
6800pF(682)	±10%(K)	WWW.	GRM155R71H682KA88D	GRM155R71E682KA01D	TV
10000pF(103)	±10%(K)	100	GRM155R71H103KA88D	GRM155R71E103KA01D	-50
15000pF(153)	±10%(K)	11007	GRM155R71H153KA12D	GRM155R71E153KA61D	GRM155R71C153KA01D
22000pF(223)	±10%(K)	MMM. OOT	GRM155R71H223KA12D	GRM155R71E223KA61D	GRM155R71C223KA01D
33000pF(333)	±10%(K)	11 July 100	COM	GRM155R71E333KA88D	GRM155R71C333KA01D
47000pF(473)	±10%(K)	W 100	T. COM.T.	GRM155R71E473KA88D	GRM155R71C473KA01D
68000pF(683)	±10%(K)	MM	OYICO	111111111111111111111111111111111111111	GRM155R71C683KA88D
0.10μF(104)	±10%(K)	MIN WINNE	CONTRACTOR	MAN. OOK.	GRM155R71C104KA88D
100	T.Mon		TON COMP.	W.Ioo	COM
LxW [mm]	7.00-11	1.0x0.5(15)<0402>	100Y.COM.TW		
Rated Volt. [Vdc	M.COM	10(1A)	. ONY. COM		
Capacitance	Tolerance	Part Number	N.Ing. COM.		
68000pF(683)	±10%(K)	GRM155R71A683KA01D	M.1001.		

100	COMIT	W.W.
LxW [mm]	Y.Co	1.0x0.5(15)<0402>
Rated Volt. [Vdc	K.COn	10(1A)
Capacitance	Tolerance	Part Number
68000pF(683)	±10%(K)	GRM155R71A683KA01D
0.10μF(104)	±10%(K)	GRM155R71A104KA01D

100Y.COM.TW <>: EIA [inch] Code WWW.100Y.COM.TW The part number code is shown in () and Unit is shown in [].

High Dielectric Constant Type X7R(R7)/X7S(C7) Characteristics

LxW [mm]	-4	1007. OM.TW	1.6x0.8(1	8)<0603>	
Rated Volt. [Vdc		100(2A)	50(1H)	25(1E)	16(1C)
Capacitance	Tolerance	N.Ing COM.	Part N	lumber	
220pF(221)	±10%(K)	GRM188R72A221KA01D	GRM188R71H221KA01D	COM	
330pF(331)	±10%(K)	GRM188R72A331KA01D	GRM188R71H331KA01D	OOY. OM.TW	
470pF(471)	±10%(K)	GRM188R72A471KA01D	GRM188R71H471KA01D	ON CUM TW	
680pF(681)	±10%(K)	GRM188R72A681KA01D	GRM188R71H681KA01D	Jon COM.	
1000pF(102)	±10%(K)	GRM188R72A102KA01D	GRM188R71H102KA01D	17001. CON'IL	
1500pF(152)	±10%(K)	GRM188R72A152KA01D	GRM188R71H152KA01D	1100Y.CO 11TV	
2200pF(222)	±10%(K)	GRM188R72A222KA01D	GRM188R71H222KA01D	M. T. COM.	N
3300pF(332)	±10%(K)	GRM188R72A332KA01D	GRM188R71H332KA01D	M.100M.1	-<1
4700pF(472)	±10%(K)	GRM188R72A472KA01D	GRM188R71H472KA01D	1100Y.	
6800pF(682)	±10%(K)	GRM188R72A682KA01D	GRM188R71H682KA01D	MM. OOT.CO.	TW
10000pF(103)	±10%(K)	GRM188R72A103KA01D	GRM188R71H103KA01D	GRM188R71E103KA01D	
15000pF(153)	±10%(K)	11007	GRM188R71H153KA01D	GRM188R71E153KA01D	U.L.
22000pF(223)	±10%(K)	MMM	GRM188R71H223KA01D	GRM188R71E223KA01D	WILL
33000pF(333)	±10%(K)	TINN TOO	GRM188R71H333KA61D	GRM188R71E333KA01D	
47000pF(473)	±10%(K)	W 100	GRM188R71H473KA61D	GRM188R71E473KA01D	OM
68000pF(683)	±10%(K)	NW TIC	GRM188R71H683KA93D	GRM188R71E683KA01D	MIN
0.10μF(104)	±10%(K)	GRM188R72A104KA35D	GRM188R71H104KA93D	GRM188R71E104KA01D	TW
0.15μF(154)	±10%(K)		ON.	GRM188R71E154KA01D	GRM188R71C154KA01D
0.22μF(224)	±10%(K)		1007. OM.TW	GRM188R71E224KA88D	GRM188R71C224KA01D
0.33μF(334)	±10%(K)	WWW WIN	TW.Co. TW	1100	GRM188R71C334KA01D
0.47μF(474)	±10%(K)	THE TANK	Vito COM.	GRM188R71E474KA12D*	GRM188R71C474KA88D
1.0μF(105)	±10%(K)	VIII.	M.1003. COM: 1	GRM188R71E105KA12D*	GRM188R71C105KA12D*
MM	TOON TO	WW WITH	1100Y.	N NA	001. OM.TW
LxW [mm]	N.C.		1.6x0.8(18)<0603>	WWW.	100Y.CUTTY
Rated Volt. [Vdc	1.100	10(1A)	6.3(0J)	4(0G)	To COM.

LxW [mm]		TINE THE	1.6x0.8(18)<0603>		
Rated Volt. [Vdc	1.100	10(1A)	6.3(0J)	4(0G)	L'ION COD
Capacitance	Tolerance	W.T.W	Part Number	J.A.	N.100 1.
0.33μF(334)	±10%(K)	GRM188R71A334KA61D	NA TOOL CO.	TW WW	T1100Y.CC
0.47μF(474)	±10%(K)	GRM188R71A474KA61D	MAN COL	WW WW	M. P. C.
0.68μF(684)	±10%(K)	GRM188R71A684KA61D	M.100 CO	W. I.	NW.100 = 1
1.0μF(105)	±10%(K)	GRM188R71A105KA61D*	11001.00	M.TM	1007.
2.2μF(225)	±10%(K)	GRM188R71A225KE15D*	GRM188C70J225KE20D*	GRM188C70G225KE20D*	AM M. OUX

3Dimension (LxW) 6 Rated Voltage 9Individual Specification Code

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.



^{*:} Please refer to GRM Series Specifications and Test Method(2).

High Dielectric Constant Type X7R(R7)/X7U(E7) Characteristics

LxW [mm]		1007. OM.TW	2.0x1.25(21)<0805>	
Rated Volt. [Vdc		100(2A)	50(1H)	25(1E)	16(1C)
Capacitance	Tolerance	Wing COMP.	Part N	lumber	
6800pF(682)	±10%(K)	GRM219R72A682KA01D	1.1	COMIT	
10000pF(103)	±10%(K)	GRM21BR72A103KA01L	M. M.	OOY.	
15000pF(153)	±10%(K)	GRM21BR72A153KA01L	WWW.	ON CONTRACTOR	
22000pF(223)	±10%(K)	GRM21BR72A223KA01L		Too COM.	
33000pF(333)	±10%(K)	GRM21BR72A333KA01L	GRM219R71H333KA01D	17001. CONT. I.A.	
47000pF(473)	±10%(K)	GRM21BR72A473KA01L	GRM21BR71H473KA01L	1007.00	
68000pF(683)	±10%(K)	CO.	GRM21BR71H683KA01L	GRM219R71E683KA01D	N
0.10μF(104)	±10%(K)	W 1001.	GRM21BR71H104KA01L	GRM21BR71E104KA01L	_1
0.15μF(154)	±10%(K)	MALLOOTICE	GRM21BR71H154KA01L	GRM21BR71E154KA01L	
0.22μF(224)	±10%(K)	GRM21AR72A224KAC5L	GRM21BR71H224KA01L	GRM21BR71E224KA01L	TW
0.33μF(334)	±10%(K)	GRM21AR72A334KAC5L	GRM219R71H334KA88D	GRM21BR71E334KA01L	
0.47μF(474)	±10%(K)	GRM21BR72A474KA73L	GRM21BR71H474KA88L	GRM219R71E474KA88D	1.77
0.68μF(684)	±10%(K)	WWW OUT	COSTA	GRM219R71E684KA88D	GRM219R71C684KA01D
1.0μF(105)	±10%(K)	TANN 100	GRM21BR71H105KA12L	GRM21BR71E105KA99L	GRM21BR71C105KA01L
	MIL	W 100	COM	GRM219R71E105KA88D	OM.
2.2μF(225)	±10%(K)	N WWW.	OYICO	GRM21BR71E225KA73L*	GRM21BR71C225KA12L
4.7μF(475)	±10%(K)	W WWW.	COM	WWW. OOK!	GRM21BR71C475KA73L*

LxW [mm]		In M.	2.0x1.25(21)<0805>	
Rated Volt. [Vdc	M.COn	10(1A)	6.3(0J)	4(0G)
Capacitance	Tolerance		Part Number	I WWW.I
2.2μF(225)	±10%(K)	GRM21BR71A225KA01L	MION COMIT	TAW.1
4.7μF(475)	±10%(K)	GRM21BR71A475KA73L*	1100Y.	
10μF(106)	±10%(K)	GRM21BR71A106KE51L*	GRM21BR70J106KE76L*	M WWW.
22μF(226)	±20%(M)	OM	TN.100	GRM21BE70G226ME51L*

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code WWW.100Y.COM.TW

^{*:} Please refer to GRM Series Specifications and Test Method(2). WWW.100Y.CON

High Dielectric Constant Type X7R(R7)/X7U(E7) Characteristics

LxW [mm]		1007. OM.TW	3.2x1.6(3	31)<1206>	
Rated Volt. [Vdc		100(2A)	50(1H)	25(1E)	16(1C)
Capacitance	Tolerance	N.Ing COM.	Part N	lumber	
15000pF(153)	±10%(K)	GRM319R72A153KA01L	1.11	COM	
22000pF(223)	±10%(K)	GRM31MR72A223KA01L	M MM	OOY. OM.TW	
33000pF(333)	±10%(K)	GRM31MR72A333KA01L	WWW.	ON COM	
47000pF(473)	±10%(K)	GRM31MR72A473KA01L	TANK	Jan COM.	
68000pF(683)	±10%(K)	GRM31MR72A683KA01L	J.M.	11001. CON.TA	
0.10μF(104)	±10%(K)	GRM319R72A104KA01D	TW WW	1007.00	
0.15μF(154)	±10%(K)	GRM31MR72A154KA01L	GRM31MR71H154KA01L	M. T. COM	N
0.22μF(224)	±10%(K)	GRM31MR72A224KA01L	GRM31MR71H224KA01L	M.100, COM.1	. <1
0.33μF(334)	±10%(K)	MM. 100 A.C.	GRM319R71H334KA01D	1100Y.	
0.47μF(474)	±10%(K)	GRM31MR72A474KA35L	GRM31MR71H474KA01L	MAN. CON.	TV
0.68μF(684)	±10%(K)	GRM31MR72A684KA35L	GRM31MR71H684KA88L	TANN TOO	N. T. W.
1.0μF(105)	±10%(K)	GRM31CR72A105KA01L	GRM31MR71H105KA88L	W. 1001.	T.T.
2.2μF(225)	±10%(K)	WWW	GRM31CR71H225KA88L	GRM31MR71E225KA93L	GRM31MR71C225KA35L
4.7μF(475)	±10%(K)	TWW.100	GRM31CR71H475KA12L	GRM31CR71E475KA88L	GRM31CR71C475KA01L
10μF(106)	±10%(K)	W 100	J. COM:	GRM31CR71E106KA12L*	GRM31CR71C106KAC7L*
N. JOOX.		N WWW	OY.CO	MA. 100 X	OM.TW
LxW [mm]	COM	N NWW.	3.2x1.6(31)<1206>	WWW.	COLLAN
Datad Valt IVda	1 - 1	10(1A)	4 2(0.1)	4(0C)	

LxW [mm]		W WWW.	3.2x1.6(31)<1206>	MANA OUX
Rated Volt. [Vdc		10(1A)	6.3(0J)	4(0G)
Capacitance	Tolerance	IN WA	Part Number	W 100 1
10μF(106)	±10%(K)	GRM31CR71A106KA01L	TON CO. TW	11/1/
22μF(226)	±20%(M)	GRM31CR71A226ME15L*	GRM31CR70J226ME19L*	
47μF(476)	±20%(M)	1.77	W.100 F. COM. 1	GRM31CE70G476ME15L*

LxW [mm]	. CC	TIV W	3.2x2.5(3	2)<1210>		
Rated Volt. [Vdc	1.100	100(2A)	50(1H)	35(YA)	25(1E)	
Capacitance	Tolerance	Part Number			NTOO T. COMIT.	
0.68μF(684)	±10%(K)	GRM32CR72A684KA01L	GRM32NR71H684KA01L	TW WW	1100Y.	
1.0μF(105)	±10%(K)	GRM32CR72A105KA35L	MINN. TO CO	WW WY	M. COT. CO	
2.2μF(225)	±10%(K)	GRM32ER72A225KA35L	M.100	W. I	M.In. COM.	
4.7μF(475)	±10%(K)	Y.C. TIN	GRM32ER71H475KA88L	W.I.M.	1001. COM.	
10μF(106)	±10%(K)	COMP	WWW. COV.C	GRM32ER7YA106KA12L	GRM32DR71E106KA12L	
22μF(226)	±20%(M)	COMIT	100	OM	GRM32ER71E226ME15L*	
	WW	001.0 M.T.	1002.	OWITH	W.100 - CO	
LxW [mm]	MAL	ON CONTRACTIVE	3.2x2.5 (32) <1210>	TW.	MM 1 100 X .C.	
Rated Volt. [Vdc	1	16(1C)	10(1A)	6.3(0J)	MMM. TOWY.CO	
Capacitance	Tolerance	11001. W.I.	Part Number	COM	W.100 - C	

LxW [mm]	MMAIN	ON CONTRACTOR	3.2x2.5(32)<1210>	TY
Rated Volt. [Vdc]		16(1C)	10(1A)	6.3(0J)
Capacitance	Tolerance	11001. CONT.	Part Number	COM
22μF(226)	±20%(M)	GRM32ER71C226ME18L*	WW 10	N. OM.TW
47μF(476)	±20%(M)	M.T. COM.	GRM32ER71A476ME15L*	GRM32ER70J476ME20L*
•		() and Unit is shown in []. <>: E ifications and Test Method(2).	EIA [inch] Code	

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

2Series ●Product ID **6**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) **6**Rated Voltage 9Individual Specification Code

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.



^{*:} Please refer to GRM Series Specifications and Test Method(2). WWW.100Y.COM.TW

High Dielectric Constant Type X7R(R7)/X7T(D7) Characteristics Low Profile

LxW [mm]		1007. M.TW	1.0x0.5(15)<0402>	. OM.I.
Rated Volt. [Vdc		50(1H)	25(1E)	16(1C)
Capacitance Tolerance		Part Number		
220pF(221)	±10%(K)	GRM15XR71H221KA86D	1.10	COMIT
330pF(331)	±10%(K)	GRM15XR71H331KA86D		001. W.I.M
470pF(471)	±10%(K)	GRM15XR71H471KA86D	CA WAY	ON CONTRACTOR
680pF(681)	±10%(K)	GRM15XR71H681KA86D		Too COM.
1000pF(102)	±10%(K)	GRM15XR71H102KA86D	III MA	17001. COWILL
1500pF(152)	√ ±10%(K)	GRM15XR71H152KA86D	CTW WW	1100Y.C
2200pF(222)	±10%(K)	CO.	GRM15XR71E222KA86D	M. r. COhr.
3300pF(332)	±10%(K)	11.1001.	Will	GRM15XR71C332KA86D
4700pF(472)	±10%(K)	MM	WIN W	GRM15XR71C472KA86D
6800pF(682)	±10%(K)	WWW. LOV.C	On W	GRM15XR71C682KA86D
10000pF(103)	±10%(K)	100	COMPT	GRM15XR71C103KA86D
100Y.	MILIA	WW. 1007.	TOM.TW	M. 100 r.
LxW [mm]	W	1.6x0.8(18)<0603>	COM	
Rated Volt. [Vdc]		10(1A)	COM.	
Capacitance	Tolerance	Part Number	COWIT	
77.		-17/1/1/1	7	

LxW [mm]	W	1.6x0.8(18)<0603>
Rated Volt. [Vdc	DM	10(1A)
Capacitance	Tolerance	Part Number
1.0μF(105)	±10%(K)	GRM185D71A105KE36D*
-31 10		-111

		1.6XU.8(18)<0603>			
Rated Volt. [Vdc]	DMI	10(1A)	COM.		
Capacitance	Tolerance	Part Number	COMIT		
1.0μF(105)	±10%(K)	GRM185D71A105KE36D*	OY.COM.TV		
WW.IO	COMP	M MMM.	ON CONTRA	WW TOOK	TW
LxW [mm]	COM.	TAN W.	2.0x1.25(2	21)<0805>	COLL
Rated Volt. [Vdc]	M.	100(2A)	50(1H)	25(1E)	16(1C)
Capacitance	Tolerance	WWW WITH	Part N	lumber	Y.C.
6800pF(682)	±10%(K)	GRM219R72A682KA01D	V. To. COM.	WWW.	V.CO
33000pF(333)	±10%(K)	V.1.1.	GRM219R71H333KA01D	TANN.IU	COM
68000pF(683)	±10%(K)	WW WITH	1100Y.	GRM219R71E683KA01D	001. OM.T.M
0.22μF(224)	±10%(K)	GRM21AR72A224KAC5L	M. COL	M MM	ONY.CO. TY
0.33μF(334)	±10%(K)	GRM21AR72A334KAC5L	GRM219R71H334KA88D	WWIE IN	TO COMP.
0.47μF(474)	±10%(K)	MIN	1001. COM	GRM219R71E474KA88D	1700 F. COM: 1
0.68μF(684)	±10%(K)	COL	MAN	GRM219R71E684KA88D	GRM219R71C684KA01D
1.0μF(105)	±10%(K)	COM	COL	GRM219R71E105KA88D	M. T. COM

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

^{*:} Please refer to GRM Series Specifications and Test Method(2).

LxW [mm]		COMT	3.2x1.6(3	31)<1206>	
Rated Volt. [Vdc		100(2A)	50(1H)	25(1E)	16(1C)
Capacitance	Tolerance	LOOY.CO. TW	Part N	lumber	MM. 1100X.C
15000pF(153)	±10%(K)	GRM319R72A153KA01L	MW.To	COM.	MAIN. OUT.C.
22000pF(223)	±10%(K)	GRM31MR72A223KA01L	W.100	COM	TANN TO
33000pF(333)	±10%(K)	GRM31MR72A333KA01L	110	DY. OM.TW	M. 100x.
47000pF(473)	±10%(K)	GRM31MR72A473KA01L	V WWW.	OY.CO. TV	MM
68000pF(683)	±10%(K)	GRM31MR72A683KA01L	I.WW.	-1 COM.	
0.10μF(104)	±10%(K)	GRM319R72A104KA01D		1001. UW.I.A.	W.100
0.15μF(154)	±10%(K)	GRM31MR72A154KA01L	GRM31MR71H154KA01L	100Y.CO	1100
0.22μF(224)	±10%(K)	GRM31MR72A224KA01L	GRM31MR71H224KA01L	COM.	MW.
0.33μF(334)	±10%(K)	11001	GRM319R71H334KA01D	N.100, COM:1	1. W.M.
0.47μF(474)	±10%(K)	GRM31MR72A474KA35L	GRM31MR71H474KA01L	1100Y.	W. T.
0.68μF(684)	±10%(K)	GRM31MR72A684KA35L	GRM31MR71H684KA88L	M. COM	M MM
1.0μF(105)	±10%(K)	W.100	GRM31MR71H105KA88L	MAN. In S. COM.	
2.2μF(225)	±10%(K)	111111111111111111111111111111111111111	W.TW	GRM31MR71E225KA93L	GRM31MR71C225KA35I
		WWW. OOV.	W. T.	MM 100X CO	TW
LxW [mm]		3.2x2.5(3	2)<1210>	MAN. TO SA'CON	
Rated Volt. [Vdc]	100(2A)	50(1H)	. A	
Capacitance	Tolerance	Part N	umber	MM	
0 (0 5(004)	1100/40	001100000000010101	00110011001110011110011	-	

LxW [mm]		3.2x2.5(32)<1210>		
Rated Volt. [Vdc]		100(2A) 50(1H)		
Capacitance	Tolerance	Part Number		
0.68μF(684)	±10%(K)	GRM32CR72A684KA01L	GRM32NR71H684KA01L	
1.0μF(105)	±10%(K)	GRM32CR72A105KA35L	COM	



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COM.TW High Dielectric Constant Type X6S(C8) Characteristics

		COMP.	-) W
LxW [mm]		0.6x0.3(0	3)<0201>
Rated Volt. [Vdc		6.3(0J)	2.5(0E)
Capacitance	Tolerance	Part N	umber
15000pF(153)	±10%(K)	GRM033C80J153KE01D*	
22000pF(223)	±10%(K)	GRM033C80J223KE01D*	
33000pF(333)	±10%(K)	GRM033C80J333KE01D*	WWW
47000pF(473)	±10%(K)	GRM033C80J473KE19D*	
0.10μF(104)	±10%(K)	GRM033C80J104KE84D*	III
0.22μF(224)	±10%(K)	MAN. COL	GRM033C80E224ME15D

47000pF(473)	±10%(K)	GRM033C80J473KE19D*	TWW.	Jun COM.
0.10μF(104)	±10%(K)	GRM033C80J104KE84D*	III	N.100Y.
0.22μF(224)	±10%(K)	MMM. CON	GRM033C80E224ME15D*	100Y.CO
COM.	- <u>-</u>	CO.	VI.	M. To O.Y. COM.
LxW [mm]	A	11111001	1.0x0.5(15)<0402>	M.In COM.
Rated Volt. [Vdc]	hW	25(1E)	6.3(0J)	4(0G)
Capacitance	Tolerance	WWW.T	Part Number	M. M. CO.
68000pF(683)	±10%(K)	GRM155C81E683KA12D	COMPLET	TANN TOO
0.10μF(104)	±10%(K)	GRM155C81E104KA12D	- ow.TW	M. 1001.
0.15μF(154)	±10%(K)	WWW	GRM155C80J154KE01D*	GRM155C80G154KE01D*
0.22μF(224)	±10%(K)	TWW.Inc	GRM155C80J224KE01D*	GRM155C80G224KE01D*
0.33μF(334)	±10%(K)	77 100	GRM155C80J334KE01D*	GRM155C80G334KE01D*
0.47μF(474)	±10%(K)	WW	GRM155C80J474KE19D*	GRM155C80G474KE01D*
0.68μF(684)	±10%(K)	N NIWW.	COM	GRM155C80G684KE19D*

100	COM	WW.	COM	TWW.Io	COM
LxW [mm]	Y.Co	I'M WY	1.6x0.8(1	8)<0603>	COMIT
Rated Volt. [Vdc	IV.CON	10(1A)	6.3(0J)	4(0G)	2.5(0E)
Capacitance	Tolerance	TWY	Part N	lumber	ON COM TIN
1.0μF(105)	±10%(K)	V.J.	M. Ton COM. I.	GRM188C80G105MA01D	COM
2.2μF(225)	±10%(K)	GRM188C81A225KE34D*	GRM188C80J225KE19D*	1111	DOX.
4.7μF(475)	±10%(K)	MI.	M. COL	GRM188C80G475KE19D*	ONY.CO
10μF(106)	±20%(M)	OWIT	MAN. Ton COM.	TWW I	GRM188C80E106ME47D*

LxW [mm]	Voo.	COL	2.0x1.25(21)<0805>		
Rated Volt. [Vdc] 25(1E)			16(1C)	10(1A)	6.3(0J)
Capacitance	Tolerance	· · · · · · · · · · · · · · · · · · ·	Part Number		
1.0μF(105)	±10%(K)	Y.CO. TW	GRM216C81C105KA12D*	M.TW	W 1007.
2.2μF(225)	±10%(K)	ON COMP.	GRM219C81C225KA12D*	W W	W. TOOX.CO.
4.7μF(475)	±10%(K)	GRM21BC81E475KA12L*	GRM21BC81C475KA88L*	GRM219C81A475KE34D*	GRM219C80J475KE19D*
10μF(106)	±10%(K)	1007.	11,1001.	GRM21BC81A106KE18L*	GRM21BC80J106KE19L*
	MMM.	ON COT TW	WWW.	LU TW	GRM219C80J106KE39D*
	WWW	0.0 4.05(04), 0.005	WWW.100	Y.COM.	WWW. 100Y.Co
LxW [mm]		2.0x1.25(21)<0805>	- TWW.IO		
Rated Volt. [Vdc		4(0G)	W 1 = 10		
Capacitance	Tolerance	Part Number	N WWW.		
10μF(106)	±10%(K)	GRM219C80G106KE19D*	. WW.1		

LxW [mm]	11	2.0x1.25(21)<0805>
Rated Volt. [Vdc		4(0G)
Capacitance	Tolerance	Part Number
10μF(106)	±10%(K)	GRM219C80G106KE19D*
22μF(226)	±20%(M)	GRM21BC80G226ME39L*

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

2Series ●Product ID **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) 6 Rated Voltage 9Individual Specification Code

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

^{*:} Please refer to GRM Series Specifications and Test Method(2). WWW.100Y.COM.TW

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High Dielectric Constant Type X6S(C8)/X6T(D8) Characteristics

LxW [mm]		1007. OM.TW	3.2x1.6(3	31)<1206>	
Rated Volt. [Vdc	:]	25(1E)	16(1C)	10(1A)	6.3(0J)
Capacitance	Tolerance	Wine COMP.	Part N	lumber	
2.2μF(225)	±10%(K)	M.1001.	GRM316C81C225KA12D*	OW.	
4.7μF(475)	±10%(K)	1007.00	GRM319C81C475KA12D*	100Y.	
10μF(106)	±10%(K)	GRM31CC81E106KE15L*	WWW.	CONCOR	
22μF(226)	±20%(M)	TIN TOO TOOM.	TINN	GRM31CC81A226ME19L*	GRM31CC80J226ME19L*
47μF(476)	±20%(M)	11007:0	In m.	11001. OWITH	GRM31CC80J476ME18L*
COM	N	MAM. OUN.CO.	WW WITE	1007.00	
LxW [mm]	- 1	3.2x1.6(31)<1206>	M. T		
Rated Volt. [Vdc	:]	4(0G)	M.T.		
Capacitance	Tolerance	Part Number	WITE		
.= -(UM.		

111.10	COL	N	MAN W. CO.
MW.10	LxW [mm]	* · - « 1	3.2x1.6(31)<1206>
- 1 1	Rated Volt. [Vdc	1	4(0G)
MM.	Capacitance	Tolerance	Part Number
WW	47μF(476)	±20%(M)	GRM31CC80G476ME19L*
	100μF(107)	±20%(M)	GRM31CD80G107ME39L*

Rated Volt. [Vdc	j i	4(0G)		
Capacitance	Tolerance	Part Number	WITH	
47μF(476)	±20%(M)	GRM31CC80G476ME19L*	ON	
100μF(107)	±20%(M)	GRM31CD80G107ME39L*	COM.	
1007.	MIL	WW 100Y.	OM.TW	
LxW [mm]	W	WWW	3.2x2.5 (32) <1210>	MM
Rated Volt. [Vdc	DM	25(1E)	10(1A)	6.3(0J)
Capacitance	Tolerance	W 100	Part Number	100 m
10μF(106)	±10%(K)	GRM32DC81E106KA12L	OY.CO TITY	11007.
22μF(226)	±20%(M)	GRM32EC81E226ME15L*	ON COM	WWW. CON
47μF(476)	±20%(M)		GRM32EC81A476ME19L*	GRM32EC80J476ME64L*

< >: EIA [inch] Code The part number code is shown in () and Unit is shown in [].

WWW.100Y.COM.TW High Dielectric Constant Type X6S(C8) Characteristics Low Profile WWW.100Y.COM.TW

10(1A) 6.3(0J)
13(171)
Part Number
C81A105KE36D* GRM185C80J105KE26D*

itated voit. [vac	1 1 1 1 1 1	10(1A)	0.5(00)		
Capacitance	Tolerance	Part N	umber	WW WITH	
1.0μF(105)	±10%(K)	GRM185C81A105KE36D*	GRM185C80J105KE26D*	WW WY	
	100	TOM:	W.100	M.1	
LxW [mm]	1100	Y.Co.	2.0x1.25(21)<0805>	1001.
Rated Volt. [Vdc		16(1C)	10(1A)	6.3(0J)	4(0G)
Capacitance	Tolerance	COM	Part N	lumber	MAN TO COM
1.0μF(105)	±10%(K)	GRM216C81C105KA12D*	M. 1001.	COM:III	11 - 11 100 1 COL
2.2μF(225)	±10%(K)	GRM219C81C225KA12D*	MM 100X	TY	11001
4.7μF(475)	±10%(K)	TOO TOO	GRM219C81A475KE34D*	GRM219C80J475KE19D*	MMM. OON.CO
10μF(106)	±10%(K)	1100 . COM.1	W.100	GRM219C80J106KE39D*	GRM219C80G106KE19D*
	MM	100Y.C 11TW	WW 10	O. W.I.	1001
LxW [mm]	VIV	3.2x1.6(31)<1206>	N WWW.		
Rated Volt. [Vdc]	16(1C)	WW.1		
Capacitance	Tolerance	Part Number			
		- 13 N . 2			

LxW [mm]	VIV	3.2x1.6(31)<1206>
Rated Volt. [Vdc]	16(1C)
Capacitance	Tolerance	Part Number
2.2μF(225)	±10%(K)	GRM316C81C225KA12D*
4.7μF(475)	±10%(K)	GRM319C81C475KA12D*

LxW [mm]		3.2x2.5(32)<1210>
Rated Volt. [Vdc]	25(1E)
Capacitance	Tolerance	Part Number
10μF(106)	±10%(K)	GRM32DC81E106KA12L

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

V.100Y.COM.TW

^{*:} Please refer to GRM Series Specifications and Test Method(2).

WWW.100Y.CO WWW.100Y.COM.TW *: Please refer to GRM Series Specifications and Test Method(2).

LxW [mm]		0.4x0.2(0 2	2)<01005>
Rated Volt. [Vdc] WW	10(1A)	6.3(0J)
Capacitance	Tolerance	Part N	lumber
68pF(680)	±10%(K)	GRM022R61A680KA01L	
100pF(101)	±10%(K)	GRM022R61A101KA01L	M MM.
150pF(151)	±10%(K)	GRM022R61A151KA01L	
220pF(221)	±10%(K)	GRM022R61A221KA01L	
330pF(331)	±10%(K)	GRM022R61A331KA01L	1111
470pF(471)	±10%(K)	GRM022R61A471KA01L	WW WY
680pF(681)	±10%(K)	CO	GRM022R60J681KE19L*
1000pF(102)	±10%(K)	W. 1001.	GRM022R60J102KE19L*
1500pF(152)	±10%(K)	MALLION	GRM022R60J152KE19L*
2200pF(222)	±10%(K)	WWW.	GRM022R60J222KE19L*
3300pF(332)	±10%(K)	1111.100	GRM022R60J332KE19L*
4700pF(472)	±10%(K)	1/1/1/1007	GRM022R60J472KE19L*
6800pF(682)	±10%(K)	MMM	GRM022R60J682KE19L*
10000pF(103)	±10%(K)	TANN. IOO	GRM022R60J103KE19L*

4700pF(472)	±10%(K)	1100 -	GRM022R60J472KE19L*	COL	
6800pF(682)	±10%(K)	MANA	GRM022R60J682KE19L*	MM 100 Y.Co.	
10000pF(103)	±10%(K)	TWW.Inc	GRM022R60J103KE19L*	MANN.TO OA.CO	
TAI 100 Y.	MTW	W 10	COMIT	100	OM.
LxW [mm]	TY	WW	0.6x0.3(0)3)<0201>	-ow.TW
Rated Volt. [Vdc]	ICONT.	25(1E)	16(1C)	10(1A)	6.3(0J)
Capacitance	Tolerance	W.	Part N	lumber	COM
100pF(101)	±10%(K)		1001. WITH	W. 100 r	COM:
150pF(151)	±10%(K)	TW WW	TW. CO.	1100	Y. CONTIN
220pF(221)	±10%(K)	Wire	M.In. COM.	WWW.	V.COM TW
330pF(331)	±10%(K)	1.1.	M.100 COM.I.	1 10	TCOM.
470pF(471)	±10%(K)	WIT WIT	11001.	N N T	001. OM.IV
680pF(681)	±10%(K)	W. W.	MM. ON COM	M MM	MY.CO
1000pF(102)	±10%(K)	O_{M-1}	MM.Ing. TCOM.	WWW	COM
1500pF(152)	±10%(K)	MIN	1 1001. COM	GRM033R61A152KA01D	1700 . COM: 1
2200pF(222)	±10%(K)	TW	MM 100X CO.	GRM033R61A222KA01D	-100Y.
3300pF(332)	±10%(K)	COM	TIMA TO COL	GRM033R61A332KA01D	M. T. COM
4700pF(472)	±10%(K)	CONTIN	W 100 - CO	GRM033R61A472KA01D	M.In. COM.
6800pF(682)	±10%(K)	Y.Co.	11001	GRM033R61A682KA01D	1001. OM.
10000pF(103)	±10%(K)	A COMP.	WWW. OV.C	GRM033R61A103KA01D	MAL TOOK CO.
15000pF(153)	±10%(K)	COM	TANN Jun	OM	GRM033R60J153KE01D*
22000pF(223)	±10%(K)	001. M.I.M	M. 1007.	COM.TY	GRM033R60J223KE01D*
33000pF(333)	±10%(K)	ON CONTRACTOR	WWW	TIN	GRM033R60J333KE01D*
47000pF(473)	±10%(K)	COMP	MAN	CON TO	GRM033R60J473KE19D*
0.10μF(104)	±10%(K)	1001. OW.I.	W 100	GRM033R61A104KE84D*	TAN IOU

●Product ID 2Series **5**Temperature Characteristics 8 Capacitance Tolerance

muRata

3Dimension (LxW) 6 Rated Voltage

4 Dimension (T) Capacitance

^{*:} Please refer to GRM Series Specifications and Test Method(2). WWW.100Y.C WWW.100Y.COM.TW

LxW [mm]		1001. OM.TV	1.0x0.5(1	15)<0402>	
Rated Volt. [Vdc		100(2A)	50(1H)	25(1E)	16(1C)
Capacitance	Tolerance	M. Ing. COM.	Part N	lumber	
220pF(221)	±10%(K)	21.1001. COM.I.		COM	
330pF(331)	±10%(K)	100Y.Co	W WW.	OOY.	
470pF(471)	±10%(K)	MM. TO COM	CA WAY	ON CONTRACTOR	
680pF(681)	±10%(K)	MINITURE COM.	TI TINY	Too COM.	
1000pF(102)	±10%(K)	1 100 Y. O.M	GRM155R61H102KA01D	11001. ONITA	
1500pF(152)	±10%(K)	MAM. OM. CO.	TW WW	TOOY	
2200pF(222)	±10%(K)	TANN TOO	GRM155R61H222KA01D	W. T. COM	N
3300pF(332)	±10%(K)	W 1001.	William	M. Ion COM.	-d1
4700pF(472)	±10%(K)	MALLION	GRM155R61H472KA01D	1100Y.	
6800pF(682)	±10%(K)	WWW.	Om.	MAN	TV
10000pF(103)	±10%(K)	100	OM.	TANN TOO TOOM	
15000pF(153)	±10%(K)	1/1/1/1007	· M.T.W	W. 1001.	U.L.A.
22000pF(223)	±10%(K)	MMM	CONTIN	MALTIONICO	GRM155R61C223KA01D
33000pF(333)	±10%(K)	TAN I Too	COM	MAN CC	GRM155R61C333KA01D
47000pF(473)	±10%(K)	W 100	J. COM.	W.100	GRM155R61C473KA01D
68000pF(683)	±10%(K)	MM	OYICO	GRM155R61E683KA87D	GRM155R61C683KA88D
0.10μF(104)	±10%(K)	WW.	COM	GRM155R61E104KA87D	GRM155R61C104KA88D

LxW [mm]		In .	1.0x0.5(15)<0402>	
Rated Volt. [Vdc	K.Con	10(1A)	6.3(0J)	4(0G)
Capacitance	Tolerance		Part Number	WWW. COM
33000pF(333)	±10%(K)	GRM155R61A333KA01D	M.Ton. COM:I.	COM. I
47000pF(473)	±10%(K)	GRM155R61A473KA01D	1100Y.	MI 1007. OM.TI
68000pF(683)	±10%(K)	GRM155R61A683KA01D	M. COm	W WWW.
0.10μF(104)	±10%(K)	GRM155R61A104KA01D	MAN Jan COM.	COM.
0.15μF(154)	±10%(K)	GRM155R61A154KE19D*	GRM155R60J154KE01D*	144 M. 100 F. COM.
0.22μF(224)	±10%(K)	GRM155R61A224KE19D*	GRM155R60J224KE01D*	CTW WWT 100Y.CO.M.
0.33μF(334)	±10%(K)	GRM155R61A334KE15D*	GRM155R60J334KE01D*	W. T. O. COL
0.47μF(474)	±10%(K)	GRM155R61A474KE15D*	GRM155R60J474KE19D*	W.T. COL
0.68μF(684)	±10%(K)	GRM155R61A684KE15D*	GRM155R60J684KE19D*	N.TW 1007.
1.0μF(105)	±10%(K)	GRM155R61A105KE15D*	WWW. CY.C	MAN WAY
4.7μF(475)	±20%(M)	COMIT	M.In.	GRM155R60G475ME87D*

WWW.100Y.COM.TW

[:] Please refer to X7R(R7) etc Characteristics.

^{*:} Please refer to GRM Series Specifications and Test Method(2). WWW.100Y.COM.T

LxW [mm]		1007. MITW	1.6x0.8(1	8)<0603>	
Rated Volt. [Vdc		100(2A)	50(1H)	25(1E)	16(1C)
Capacitance	Tolerance	M.Ing COM.	Part N	lumber	
220pF(221)	±10%(K)	21 100 1. COM.	W.1	COM	
330pF(331)	±10%(K)	1007:00	IN MM	007. M.TW	
470pF(471)	±10%(K)	MM. TO COM	WWW.	ON CONTRACTOR	
680pF(681)	±10%(K)	-1W.100 COL	A. T.	Jun 1 COM.	
1000pF(102)	±10%(K)	11007.00	GRM188R61H102KA01D	11001. ONITH	
1500pF(152)	±10%(K)	MMM. OOK.CO	WW WIT	1007.00	
2200pF(222)	±10%(K)	TOWN TOO	GRM188R61H222KA01D	M. T. COM	N
3300pF(332)	±10%(K)	W 1001.	ON'THE	M.Ion. COM.	-d1
4700pF(472)	±10%(K)	MM. 100X.	GRM188R61H472KA01D	1100Y.	
6800pF(682)	±10%(K)	WW.	CONTRACT	MM. OUT CO.	TV
10000pF(103)	±10%(K)	W.100	GRM188R61H103KA01D	LINN TOO TOOM	
15000pF(153)	±10%(K)	1100	T. M.TW	W. 1003.	U.L.A.
22000pF(223)	±10%(K)	MM.	GRM188R61H223KA01D	MALLIONY	WILL
33000pF(333)	±10%(K)	TWW.In	N COMP.	MAN. TO CO	
47000pF(473)	±10%(K)	111.1	OA. COMIT	1100	D.M.
68000pF(683)	±10%(K)	MM	10 Y.Co. TY	111007.0	OM.TW
0.10μF(104)	±10%(K)	N NWW	. COM TW	GRM188R61E104KA01D	GRM188R61C104KA01D
0.15μF(154)	±10%(K)	TAN V	V. IUW	TWW.Inc	COMP
0.22μF(224)	±10%(K)	LA MA	1007. OM.TW	GRM188R61E224KA88D	GRM188R61C224KA88D
0.33μF(334)	±10%(K)	TW WW	TY CONTRACTOR	100	Y.Com I'M
0.47μF(474)	±10%(K)		A.V. Tan COM.	GRM188R61E474KA12D*	GRM188R61C474KA93D*
1.0μF(105)	±10%(K)	VIII M	William COWIL	GRM188R61E105KA12D*	GRM188R61C105KA93D*
2.2μF(225)	±10%(K)	W WILL	1100Y.COM.T	W W T	GRM188R61C225KE15D*
WWIE	· VCC	JAN.	MAN. COM	WWW.	TIN TO THE
LxW [mm]	V.100 -	OM.	1.6x0.8(18)<0603>	WWW	TO COM
Rated Volt. [Vdc	L 100 Y.C	10(1A)	6.3(0J)	4(0G)	1.100 J. COW. J.
Capacitance	Tolerance	COL	Part Number	TO TO THE	TY CONTRACTOR

LxW [mm]		OM.	1.6x0.8(18)<0603>	
Rated Volt. [Vdc]	-1100 Y.C	10(1A)	6.3(0J)	4(0G)
Capacitance	Tolerance	COMMENT	Part Number	TW WW
0.15μF(154)	±10%(K)	GRM188R61A154KA01D	TIMM TO COL	VIV VIV
0.22μF(224)	±10%(K)	GRM188R61A224KA01D	W.100 . CO	M.I.
0.33μF(334)	±10%(K)	Y.Co. TW	MM. 100X.0	W.TW
0.47μF(474)	±10%(K)	GRM188R61A474KA61D	WWW. OOY.C	ULT Y
0.68μF(684)	±10%(K)	COMIT	TANN TOO	ON
2.2μF(225)	±10%(K)	GRM188R61A225KE34D*	M. 1001.	COM.TY
4.7μF(475)	±10%(K)	ONY.CUTY	GRM188R60J475KE19D*	WILL
10μF(106)	±20%(M)	TOOM	GRM188R60J106ME47D*	GRM188R60G106ME47D

●Product ID 2Series **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) 6 Rated Voltage 9Individual Specification Code

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.



^{*:} Please refer to GRM Series Specifications and Test Method(2). WWW.100Y.COM.TW WWW.100X

LxW [mm]		100Y.	2.0x1.25(21)<0805>	
Rated Volt. [Vdc] Capacitance Tolerance		100(2A)	50(1H)	25(1E)	16(1C)
		Part Number			
6800pF(682)	±10%(K)	21 1001. CON. I.	1. W.1	COM	
10000pF(103)	±10%(K)	100Y.CO	M MM	1007. M.T.W	
15000pF(153)	±10%(K)	MM. TO COM.	CAN WANN.	ON CONTRACTOR	
22000pF(223)	±10%(K)	TW.100 COM.		Jan COM.	
33000pF(333)	±10%(K)	1100Y.	III	11001. CON.TA	
47000pF(473)	±10%(K)	MMM. OUN'COT	WW WIT	1007.00	
68000pF(683)	±10%(K)	LANN TO CO	AL MIN	M. TO. COMP.	N
0.10μF(104)	±10%(K)	111,1001	William	M.100, COW.1	-<1
0.15μF(154)	±10%(K)	MANAGA	WITH	1100Y.	
0.22μF(224)	±10%(K)	MAN	Om. TW	MAN	TV
0.33μF(334)	±10%(K)	W.100	COM	TANN TOO	GRM21BR61C334KA01L
0.47μF(474)	±10%(K)	1/1/1007	· M.T.W	W. 1003.	GRM21BR61C474KA01L
0.68μF(684)	±10%(K)	MMM	CONTIN	MALTON	WILL
1.0μF(105)	±10%(K)	M. Inc	COM.	GRM216R61E105KA12D	GRM21BR61C105KA01L
2.2μF(225)	±10%(K)	W 100	COMIT	GRM21BR61E225KA12L	GRM21BR61C225KA88L*
		1111	OY.CO TOTAL	GRM219R61E225KA12D*	GRM219R61C225KA88D*
4.7μF(475)	±10%(K)	N WWW.	ON COM	GRM21BR61E475KA12L*	GRM21BR61C475KA88L*
	COM.	W.V.	on i com.		GRM219R61C475KE15D*
10μF(106)	±10%(K)	M. M.	1001.0 W.I.M.	77 100	GRM21BR61C106KE15L*

W [mm]		TWY	2.0x1.25(21)<0805>		
ted Volt. [Vdc		10(1A)	6.3(0J)	4(0G)	CO^{\dagger}
pacitance	Tolerance	TIN WW	Part Number	N N N	
2.2μF(225)	±10%(K)	GRM21BR61A225KA01L	M. COm	M MM	
4.7μF(475)	±10%(K)	GRM219R61A475KE34D*	MAN TON		
10μF(106)	±10%(K)	GRM21BR61A106KE19L*	GRM219R60J106KE19D*	LA.	
	W. Y.	GRM219R61A106KE44D*	MALL TOOK CO.	TW WW	
22μF(226)	±20%(M)	COM.	GRM21BR60J226ME39L*	GRM219R60G226ME66D*	

WWW.100Y.COM.TW The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code

[:] Please refer to X7R(R7) etc Characteristics.

^{*:} Please refer to GRM Series Specifications and Test Method(2). WWW.100X.

LxW [mm]		100Y. WITH	3.2x1.6(3	31)<1206>	
Rated Volt. [Vdc		100(2A)	50(1H)	25(1E)	16(1C)
Capacitance	Tolerance	W.In. COM.			
15000pF(153)	±10%(K)	211001. COW.I.A	1.10	COM	
22000pF(223)	±10%(K)	1007.Co	M. M.	007. M.TW	
33000pF(333)	±10%(K)	MAN TO COMP.	CAN ANNIN	CON CONTRACTOR	
47000pF(473)	±10%(K)	TW.100 TOM.		Too I COM.	
68000pF(683)	±10%(K)	100X-0-21	III W.	11001. ONITH	
0.10μF(104)	±10%(K)	M.M.M. CO.	WW WIT	1007.00	
0.15μF(154)	±10%(K)	TANN Jun ST CO		M. Lo. COM.	N
0.22μF(224)	±10%(K)	WW 1001	WILL	7.100 COM:1	_1
0.33μF(334)	±10%(K)	MALTONICA	W WILL	1100Y.	
0.47μF(474)	±10%(K)	WWW.IDOV.C	OM.	MM. COS	TW
0.68μF(684)	±10%(K)	W.100 x	COM	TAN TON	
1.0μF(105)	±10%(K)	MA 100X	MITW	1001	1.77
2.2μF(225)	±10%(K)	WWW. col	GRM31CR61H225KA88L	GRM316R61E225KA12D*	WILL
4.7μF(475)	±10%(K)	100 WWW.	TCOM.TAI	GRM31CR61E475KA88L GRM319R61E475KA12D*	GRM31CR61C475KA01L GRM319R61C475KA88D*
10μF(106)	±10%(K)	N NN	OY.CO.	GRM31CR61E106KA12L*	GRM31CR61C106KA88L
	COMP.	W WWW.	ov.COM	WWW.	GRM319R61C106KE15D*
22μF(226)	±20%(M)		on COM.	TANN. IVO	GRM31CR61C226ME15L*
144	1.00	IN MA	1001: OM: TW	777 1003	COM.TW
LxW [mm]	V.COp.	WWW WWW	3.2x1.6(31)<1206>	1/1/1/1/100	Y.Co. TW
Rated Volt. [Vdc	I CON	10(1A)	6.3(0J)	4(0G)	COM.
Capacitance	Tolerance	W.I.A.	Part Number	WW.10	COM.
10μF(106)	±10%(K)	GRM319R61A106KE19L*	100Y.C.	N WY	ON.TW
22[/226]	1209/ (NA)	CDM21CD61A226ME10L*	CDM31CD60 I336ME10L*	-31	CUIT TAN

LxW [mm]	V.Con.	TW WWW	3.2x1.6(31)<1206>	1100			
Rated Volt. [Vdc	I CON	6.3(0J)	4(0G)				
Capacitance	Tolerance Part Number		Part Number			plerance Part Number	
10μF(106)	±10%(K)	GRM319R61A106KE19L*	1100Y.	N N V			
22μF(226)	±20%(M)	GRM31CR61A226ME19L*	GRM31CR60J226ME19L*	M MMM.			
47μF(476)	±20%(M)	OM.	GRM31CR60J476ME19L*	WW			
100μF(107)	±20%(M)	TITY V	GRM31CR60J107ME39L*	GRM31CR60G107ME39L*			

LxW [mm]	W.Inc	M. COL			
Rated Volt. [Vdc	1 100	100(2A)	50(1H)	25(1E)	
Capacitance	Tolerance	Y.Co. TIN	Part	Number	1001. COM
0.68μF(684)	±10%(K)	COMP	MAM. OOK.C	W W	MAL TOOK CO.
1.0μF(105)	±10%(K)	COM	TANN.In	COMP	MAN TO COM
2.2μF(225)	±10%(K)	OOX. M.Th	W 100x	COM.T	M.100
4.7μF(475)	±10%(K)	ONY.COM TW	WW 100	I.C. TIN	MM. 21100X-0
10μF(106)	±10%(K)	TOOM	MMM	GRM32ER6YA106KA12L	GRM32DR61E106KA12L
22μF(226)	±20%(M)	1100 J. CONT. I.	V 101	COM.	GRM32ER61E226ME15L*
	MM	TOOY	11/11	DOY.	1001.5
LxW [mm]	Win	M. T. COM	3.2x2.5(32)<1210>	ON CONTRACTOR	MAN TOOK
Rated Volt. [Vdc]	16(1C)	10(1A)	6.3(0J)	MWW.Io
Capacitance	Tolerance	T.100Y.	Part Number	1001. WILL	W 1003

LxW [mm]	TANK.	IN. T. COM	3.2x2.5(32)<1210>	Y.Co. TV
Rated Volt. [Vdc]		16(1C) 10(1A)		6.3(0J)
Capacitance	Tolerance	1100Y.	Part Number	Dr. COWIT
22μF(226)	±20%(M)	MAL. TOOX.CO.	LM MM	noY.Co
47μF(476)	±20%(M)	GRM32ER61C476ME15L*	GRM32ER61A476ME20L*	CONTRACTOR
	: Please refer to 2	() and Unit is shown in []. <>: E K7R(R7) etc Characteristics. ifications and Test Method(2).	EIA [inch] Code	N 100X COW TA

^{*:} Please refer to GRM Series Specifications and Test Method(2). WWW.100Y.COM.TW WWW.100Y

(Part Number)	GR	М	31	С	R6	1H	225	K	A88	L	1
		_					0				-

Product ID 2Series **6**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) **6**Rated Voltage 9Individual Specification Code

4 Dimension (T) 7 Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.





High Dielectric Constant Type X5R(R6) Characteristics Low Profile

		CONT		47 ()
LxW [mm]		100Y.	1.0x0.5(15)<0402>	J. JOM'I
Rated Volt. [Vdc]		16(1C)	25(1E)	16(1C)
Capacitance	Tolerance	Wiles COM.	Part Number	CONT.
220pF(221)	±10%(K)	W.1001.		Mar. COW.
330pF(331)	±10%(K)	1007.00	M MM.	1007.
470pF(471)	±10%(K)	MM.T. COM	WWW	ON COM TY
680pF(681)	±10%(K)	MAIN'ION COM.		N. Jon T. COM.
1000pF(102)	±10%(K)	1001	Th	717001. COM'.I
1500pF(152)	±10%(K)	MAN W. CO.	WW WIT	11007.00
2200pF(222)	±10%(K)	CO	VI.	M. M. COM.
3300pF(332)	±10%(K)	M. 1001.	William	MM.100M
4700pF(472)	±10%(K)	MM. 1007.C	TIN VI	100 Y.
6800pF(682)	±10%(K)	WWW. COV.C	Olympia	M. M. Co.
10000pF(103)	±10%(K)	1111.100	OM	TANN TOO
1100 Y.Co	WILL	WW 100X.	-oM.TW	W. 1001.
LxW [mm]	W	1.6x0.8(1	8)<0603>	_ M.M 100 A.C.
Rated Volt. [Vdc	DNI	16(1C)	10(1A)	- MMM.To
Capacitance	Tolerance	Part N	umber	W.100 P

LxW [mm]	W	1.6x0.8(1	8)<0603>
Rated Volt. [Vdc	DM	16(1C)	10(1A)
Capacitance	Tolerance	Part N	lumber
1.0μF(105)	±10%(K)	GRM185R61C105KE44D*	GRM185R61A105KE36D*

LXVV [IIIIII]		1.00.00.0(1	6)<0003>		
Rated Volt. [Vdc	DM	16(1C)	10(1A)	MMM.100X.COM.	
Capacitance	Tolerance	Part Number		100 100	
1.0μF(105)	±10%(K)	GRM185R61C105KE44D*	GRM185R61A105KE36D*	WW. 1007.C	
MM.Io.	COMP	W WW.	ON COM	WWW.	
LxW [mm]	COM		2.0x1.25(21)<0805>	COMP
Rated Volt. [Vdc		100(2A)	50(1H)	25(1E)	16(1C)
Capacitance	Tolerance	THE WINN	Part N	lumber	Y.Co. MIN
6800pF(682)	±10%(K)	TWY	Min COM.	WW.I	V.COM
33000pF(333)	±10%(K)	VIII	W.1003. COM: 14		COM
68000pF(683)	±10%(K)	TW WY	11007.00	N WY	101.
0.22μF(224)	±10%(K)	M. M.	M. Com	M MMM	ON.CO. TV
0.33μF(334)	±10%(K)	OWIT	MAN TOOM		TON COMP.
0.47μF(474)	±10%(K)	TITH	1007. COM	In h	1.100 r. CON'. I.
0.68μF(684)	±10%(K)	COM	MM A. TOON CO.	TW WW	1100Y.CON.TY
1.0μF(105)	±10%(K)	COM	COL	GRM216R61E105KA12D	W. P. CON.
2.2μF(225)	±10%(K)	. OM.TW	W.1003	GRM219R61E225KA12D*	GRM219R61C225KA88D*
4.7μF(475)	±10%(K)	Y.Co. TY	11007.00	MITH W	GRM219R61C475KE15D*
_	MAN	ON COMP.	WWW. OX.C	W Write	MALLONICO
LxW [mm]	- NV.1	COM	2.0x1.25(21)<0805>	OM	TMM-Ing COM
Rated Volt. [Vdc	:1	10(1A)	6.3(04)	4(0G)	100 7

LxW [mm]	1.1	COM	2.0x1.25(21)<0805>	
Rated Volt. [Vdc		10(1A)	6.3(0J)	4(0G)
Capacitance	Tolerance	ON CONTRACTOR	Part Number	
4.7μF(475)	±10%(K)	GRM219R61A475KE34D*	MMM	A COMP.
10μF(106)	±10%(K)	GRM219R61A106KE44D*	GRM219R60J106KE19D*	COM
22μF(226)	±20%(M)	W. Collection	MM.	GRM219R60G226ME66D

WWW.100Y.COM.TW *: Please refer to GRM Series Specifications and Test Method(2).

High Dielectric Constant Type X5R(R6) Characteristics Low Profile

LxW [mm]		100Y.	3.2x1.6(31)<1206>					
Rated Volt. [Vdc		100(2A)	50(1H)	25(1E)	16(1C)			
Capacitance	Tolerance	M.Ing COM.	Part I	Number				
15000pF(153)	±10%(K)	21.1001. COM.IV.	- T.V.1	COM				
22000pF(223)	±10%(K)	TIME	W.	1001. M.T.				
33000pF(333)	±10%(K)	MAN-TO COMP	M MM	ON COL				
47000pF(473)	±10%(K)	MINION COM.	TINY	COM.				
68000pF(683)	±10%(K)	11007.001.	I.M.	11001. COM.IV				
0.10μF(104)	±10%(K)	MMM. ON. CO.	TW WW	TION. TY				
0.15μF(154)	±10%(K)	LANN In COM	TXX XXX	M. T. COM.	N			
0.22μF(224)	±10%(K)	W. 1001.	Vii	MAIN COM.	- 1			
0.33μF(334)	±10%(K)	MM	NTW W	11007.0NI				
0.47μF(474)	±10%(K)	WWW.ICOV.CO	W.	MAN. TONY. CO.	TW			
0.68μF(684)	±10%(K)	W.100 -	OW.	AMM TOO COM				
1.0μF(105)	±10%(K)	11007.	-OM.TW	W. 1001.	U.L.			
2.2μF(225)	±10%(K)	MAN OUT	TW	GRM316R61E225KA12D*	WIN.			
4.7μF(475)	±10%(K)	TIMN.In	COM	GRM319R61E475KA12D*	GRM319R61C475KA88D*			
10μF(106)	±10%(K)	W 1003	COM:	W.W.	GRM319R61C106KE15D*			
Y TOOY!	T	100						
LxW [mm]	COMP	3.2x1.6(31)<1206>						
Rated Volt. [Vdc		10(1A)						
Capacitance	Tolerance	Part Number						

N. J. Oak		MW.
LxW [mm]	COM	3.2x1.6(31)<1206>
Rated Volt. [Vdc		10(1A)
Capacitance	Tolerance	Part Number
10μF(106)	±10%(K)	GRM319R61A106KE19D*

Rated Volt. [Vdc	COM	10(1A)		
Capacitance	Tolerance	Part Number		
10μF(106)	±10%(K)	GRM319R61A106KE19D*		
J. M. Ja	CON	THE TANK	To COM.	MMM.
LxW [mm]	00 i .	1.1.	3.2x2.5(32)<1210>	
Rated Volt. [Vdc	I WAY.CO	100(2A)	50(1H)	25(1E)
Capacitance	Tolerance	JAN WY	Part Number	CA MAN
0.68μF(684)	±10%(K)	OW.	MAN Jan T COMP.	W. W.
1.0μF(105)	±10%(K)	M.TW V	100 Y.	T.A.
10μF(106)	±10%(K)	COL	IN W. CO.	GRM32DR61E106KA12I

3Dimension (LxW) 6 Rated Voltage **9**Individual Specification Code

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

^{*:} Please refer to GRM Series Specifications and Test Method(2). WWW.100Y.COM

GRM Series Specifications and Test Methods (1) (Note1) Typical Inspection

(Note1) This Specifications and Test Methods indicates typical inspection. Please refer to individual specifications (our product specifications or the approval sheet). In case Non "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1). In case "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

No.	. Item	Temperature						
-		Compensating Type	High Dielectric Type	Test Method				
	Operating Temperature Range	-55 to +125°C (2P/R/S/T, 3P/R/S/T/U, 4P/R/S/T/U: -25 to +85°C)	B1, B3, F1: -25 to +85°C R1, R7: -55 to +125°C R6: -55 to +85°C C8: -55 to +105°C E4: +10 to +85°C F5: -30 to +85°C	Reference temperature: 25°C (2Δ, 3Δ, 4Δ, B1, B3, F1, R1: 20°C)				
2	Rated Voltage	See the previous pages.	COM.TW W	The rated voltage is defined as the maximum voltage which may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, V ^{p.p} or V whichever is larger, should be maintained within the rated voltage range.				
3	Appearance	No defects or abnormalities	N.Co. TVI	Visual inspection				
4	Dimensions	Within the specified dimension	s CONT	Using calipers (GRM02 size is based on Microscope)				
5	Dielectric Strength	No defects or abnormalities	100Y.COM.TW	No failure should be observed when 300%* of the rated volta (temperature compensating type) or 250% of the rated volta (high dielectric constant type) is applied between the terminations for 1 to 5 seconds, provided the charge/discharcurrent is less than 50mA. *200% for 500V				
6	Insulation Resistance	C≤0.047μF: More than 10,000 C>0.047μF: More than $500Ω$ ·		The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at 20/25°C and 75°C max. and within 2 minutes of charging, provided the charge discharge current is less than 50mA.				
7	Capacitance	Within the specified tolerance	MM. In COM.	N. M.M. CON'COM				
	MMM.100X MMM.100X	COM.TW	[R6, R7, C8] W.V.: 100V : 0.025 max. (C<0.068μF) : 0.05 max. (C≥0.068μF) W.V.: 50/35/25V: : 0.025 max.*	The capacitance/Q/D.F. should be measured at 20/25°C at frequency and voltage shown in the table.				
8	Q/ Dissipation Factor (D.F.)	30pF and over: Q≥1000 30pF and below: Q≥400+20C	*GRM32D R7/R6/C8 1E106: 0.035 max. W.V.: 16/10V: 0.035 max. W.V.: 6.3/4V : 0.05 max. (C≤3.3µF) : 0.1 max. (C≥3.3µF)	Char. ΔC to 7U, 1X (more than 1000pF) R6,R7,C8, F5,B1,B3,F1				
	W	C: Nominal Capacitance (pF)	[E4] W.V.: 25Vmin: 0.025 max.	Frequency 1±0.1MHz 1±0.1kHz 120±24kHz 1±0.1kHz				
	WW	W.100Y.COM.TW	[F1, F5] W.V.: 25V min. : 0.05 max. (C<0.1μF) : 0.09 max. (C≥0.1μF) W.V.: 16/10V: 0.125 max. W.V.: 6.3V: 0.15 max.	Voltage 0.5 to 5Vrms 1±0.2Vrms 0.51 0.1Vrms 0.05Vrm				
		1001.Com.T	W	Continued on the following pag				

WWW.100Y.COM.TW Continued on the following page.



No

GRM Series Specifications and Test Methods (1) (Note1) Typical Inspection

(Note1) This Specifications and Test Methods indicates typical inspection. Please refer to individual specifications (our product specifications or the approval sheet). In case Non "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1).

50% of

Capacitance Temperature

Characteristics

the Rated Voltage

Capacitance

Drift

Adhesive Strength

of Termination

Within $\pm 0.2\%$ or $\pm 0.05 pF$

*Do not apply to 1X/25V

(Whichever is larger.)

		Specif	ications	1001. W.I.			
o. 1	tem	Temperature Compensating Type	High Dielectric Type	Test Method			
M.TV OM.TV COM.T COM. N.COM	No bias	Within the specified tolerance (Table A-1)	B1, B3: Within $\pm 10\%$ (-25 to +85°C) R1, R7: Within $\pm 15\%$ (-55 to +125°C) R6: Within $\pm 15\%$ (-55 to +85°C) E4: Within $\pm 22/$ -56% (+10 to +85°C) F1: Within $\pm 30/$ -80% (-25 to +85°C) F5: Within $\pm 22/$ -82% (-30 to +85°C) C8: Within $\pm 22\%$ (-55 to +105°C)	The capacitance change should be measured after 5 min. at each specified temp. stage. (1)Temperature Compensating Type The temperature coefficient is determined using the capacitance measured in step 3 as a reference. When cycling the temperature sequentially from step 1 through 5 (5C: +25 to +125°C/ΔC: +20 to +125°C other temp. coeffs.: +25 to +85°C/+20 to +85°C) the capacitance should be within the specified tolerance for the temperature coefficient and capacitance change as Table A-1. The capacitance drift is calculated by dividing the differences between the maximum and minimum measured values in the step 1, 3 and 5 by the cap. value in step 3.			

B1: Within +10/-30% R1: Within +15/-40%

F1: Within +30/-95%

*Initial measurement for high

Perform a heat treatment at

and then set for 24±2 hours

150+0/-10°C for one hour

dielectric constant type

at room temperature. Perform the initial measurement.

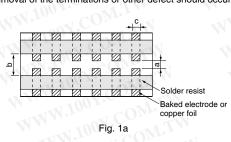
Step	remperature (C)
1.1.1	Reference Temperature ±2
2	-55±3 (for ΔC to 7U/R6/R7/C8) -30±3 (for F5), 10±3 (for E4) -25±3 (for other TC)
3	Reference Temperature ±2
4	125±3 (for ΔC/R7), 105±3 (for C8) 85±3 (for other TC)
5	Reference Temperature ±2

(2) High Dielectric Constant Type

The ranges of capacitance change compared with the Reference Temperature value over the temperature ranges shown in the table should be within the specified ranges.* In case of applying voltage, the capacitance change should be measured after 1 more min. with applying voltage in equilibration of each temp. stage.

Step	Temperature (°C)	Applying Voltage (V)		
11	Reference Temperature ±2			
2	-55±3 (for C8, R1, R7, R6) -25±3 (for B1, B3, F1) -30±3 (for F5)/10±3 (for E4)	V CONTRACTOR		
3	Reference Temperature ±2	No bias		
4	125±3 (for R1, R7)/ 85±3 (for B1, B3, R6 F1, F5, E4)/105±3 (for C8)	OOY.COM.T		
5	Reference Temperature ±2	100 r.		
6	-55±3 (for R1)/ -25±3 (for B1, F1)	50% of the rated		
7	Reference Temperature ±2	voltage		
8	125±3 (for R1)/ 85±3 (for B1, F1)	W.100 Y.COD		

No removal of the terminations or other defect should occur.



Solder the capacitor to the test jig (glass epoxy board) shown in Fig. 1a using an eutectic solder. Then apply 10N* force in parallel with the test jig for 10±1 sec.

The soldering should be done either with an iron or using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. *1N (GRM02), 2N (GRM03), 5N (GRM15, GRM18)

			(in mm)
Type	a	b	C
GRM02	0.2	0.56	0.23
GRM03	0.3	0.9	0.3
GRM15	0.4	1.5	0.5
GRM18	1.0	3.0	1.2
GRM21	1.2	4.0	1.65
GRM31	2.2	5.0	2.0
GRM32	2.2	5.0	2.9
GRM43	3.5	7.0	3.7
GRM55	4.5	8.0	5.6

Continued on the following page.



10

GRM Series Specifications and Test Methods (1) (Note1) Typical Inspection

(Note1) This Specifications and Test Methods indicates typical inspection. Please refer to individual specifications (our product specifications or the approval sheet).

In case Non "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1). Continued from the preceding page. In case "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

			•	ications	m, cow.	Total Ma	. 411		
lo.	Item	4	Temperature Compensating Type	High Dielectric Type	Test Method				
) [1	Appe	arance	No defects or abnormalities		. OUX.Com				
om^{γ}	Capa	citance	Within the specified tolerance	M. T.	N.100 CO				
Vibrat Resis	stance	N DEW A.T' M.T' OM	30pF and over: Q≥1000 30pF and below: Q≥400+20C C: Nominal Capacitance (pF)	[B1, B3, R6, R7, C8] W.V.: 100V : 0.025 max. (C<0.068μF) : 0.05 max. (C≥0.068μF) W.V.: 50/35/25V: : 0.025 max.* *GRM32D R7/R6/C8 1E106: 0.035 max. W.V.: 16/10V: 0.035 max. W.V.: 6.3/4V : 0.05 max. (C<3.3μF) : 0.1 max. (C≥3.3μF) [E4] W.V.: 25Vmin: 0.025 max. [F1, F5] W.V.: 25V min. : 0.05 max. (C<0.1μF) : 0.09 max. (C≥0.1μF) W.V.: 16/10V: 0.125 max. W.V.: 6.3V: 0.15 max.	Solder the capacitor on the test jig (glass epsame manner and under the same condition. The capacitor should be subjected to a simple having a total amplitude of 1.5mm, the frequeniformly between the approximate limits of frequency range, from 10 to 55Hz and return be traversed in approximately 1 minute. This applied for a period of 2 hours in each of 3 perpendicular directions (total of 6 hours).		te conditions as d to a simple han, the frequence te limits of 10 az and return to ninute. This may each of 3 mutu	ns as (10). ple harmonic motio uency being varied f 10 and 55Hz. The rn to 10Hz, should is motion should be	
	Appe	arance	No marking defects	1100X.CM.TM	Solder the capacito	or on the test ii	g (glass epoxy	board) shown	
	- 7	citance	Within ±5% or ±0.5pF	W. COL	in Fig. 2a using an	eutectic solde	r. Then apply a	force in the	
-11	Capa		(Whichever is larger)	Within ±10%	direction shown in				
N	- 00	3-	(**************************************		done by the reflow so that the solderir				
12 Defle	lection	7V.10 1001 1001	20 R230_	50 Pressurizing speed: 1.0mm/sec.		b t c 100 Fig. 1		M.TW OM.TW COM.TW	
		TXX	Inn, CONTY	Flores	ONI		t: 1.6mm (GRM02/	7	
		144	MY.CO TENT	Flexure : ≦1	Туре	a	b	С	
		- 11	Canacita	nce meter	GRM02	0.2	0.56	0.23	
		111	45	45	GRM03	0.3	0.9	0.3	
		-451	N.In. COM.	TINN.IO	GRM15	0.4	1.5	0.5	
		MAA	Fig	ı. 3a	GRM18	1.0	3.0	1.2	
			M.In. COMP. I.	MINISTER STATE	GRM21	1.2	4.0	1.65	
		W			GRM31	2.2	5.0	2.0	
					GRM32	2.2	5.0	2.9	
		W			GRM43	3.5	7.0	3.7	
					GRM55	4.5	8.0	5.6	
		1			1001. COM	TV	TXX	(in mm)	
			MAN ALL TOTAL COLL	TH WW	Immove the cont	oltov in a politic	on of others! (IIC I/ 0101\	
	derability o	of	75% of the terminations are to b continuously.	pe soldered evenly and	Immerse the capacinosin (JIS-K-5902) Preheat at 80 to 12 After preheating, ir 2±0.5 seconds at 2	(25% rosin in 20°C for 10 to 3 nmerse in an e	weight proporti 30 seconds. eutectic solder	on).	

Continued on the following page.

for 2±0.5 seconds at 245±5°C.





WWW.100Y.CO

WWW.100Y.COM.TW

GRM Series Specifications and Test Methods (1) (Note1) Typical Inspection

(Note1) This Specifications and Test Methods indicates typical inspection. Please refer to individual specifications (our product specifications or the approval sheet). In case Non "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1).

TW " I.TW M.TV	em	Temperature Compensating Type The measured and observed ch	High Dielectric Type	100X.C	Thes	Method	4		
		The measured and observed ch							
		specifications in the following ta	_ (1 ' \	V.100Y.C					
JMr	Appearance	No defects or abnormalities	MI WAY	100Y.					
T.MOJ	Capacitance Change	Within ±2.5% or ±0.25pF (Whichever is larger)	B1, B3, R1, R6, R7, C8 : Within ±7.5% F1, F5, E4: Within ±20%	NN.100Y					
Resistance to Soldering Heat	Q/D.F.	30pF and over: Q≥1000 30pF and below: Q≥400+20C	[B1, B3, R6, R7, C8] W.V.: 100V : 0.025 max. (C<0.068μF) : 0.05 max. (C≥0.068μF) W.V.: 50/35/25V: : 0.025 max.* *GRM32D R7/R6/C8 1E106: 0.035 max. W.V.: 16/10V: 0.035 max. W.V.: 6.3/4V : 0.05 max. (C<3.3μF)	solder solution at 270±5°C for 10±0.5 seconds. Set at temperature for 24±2 hours, then measure. •Initial measurement for high dielectric constant type Perform a heat treatment at 150+0/–10°C for one houthen set at room temperature for 24±2 hours.			room		
· cov	$CO_{h_{x}}$	O. Naminal Canasitanas (nF)	: 0.1 max. (C≧3.3μF)		4410		TW		
N.100	COM	C: Nominal Capacitance (pF)	[E4] W.V.: 25Vmin: 0.025 max.	Step 1	Temper 100 to 1		Tim 1 m		
W.1003		T.I.	[F1, F5] W.V.: 25V min.	2	170 to 2		1 m		
W.100	JY. CO	M.TV	: 0.05 max. (C<0.1μF) : 0.09 max. (C≧0.1μF)						
WW.10	JOY.C	OM.TW WY	W.V.: 16/10V: 0.125 max. W.V.: 6.3V: 0.15 max.		M.M.M.1007.COW.T.M				
WW.	I.R.	More than 10,000M Ω or 500 Ω ·	F (Whichever is smaller)	W					
WWW	Dielectric Strength	No defects	MAM. 100X COM.	IM	WWW	100	Y.COM.	TW	
WW		The measured and observed che specifications in the following ta		LTW.					
WW	Appearance	No defects or abnormalities		WILL					
W	Capacitance Change Within $\pm 2.5\%$ or ± 0.25 pF (Whichever is larger) B1, B3, R1, R6, R7, C8 : Within $\pm 7.5\%$ F1, F5, E4: Within $\pm 20\%$		OM.TW WWW.100Y.COM.TW						
	WWW	W.100Y.COM.TW	[B1, B3, R6, R7, C8] W.V.: 100V : 0.025 max. (C<0.068μF) : 0.05 max. (C≥0.068μF) W.V.: 50/35/25V: : 0.025 max.*	manner and u Perform the five shown in the five Set for 24±2 h	Fix the capacitor to the supporting jig in the same nanner and under the same conditions as (10). Perform the five cycles according to the four heat treatments shown in the following table. Set for 24±2 hours at room temperature, then measure.				
Temperature	WY	30pF and over: Q≧1000	*GRM32D R7/R6/C8 1E106: 0.035 max. W.V.: 16/10V: 0.035 max.	Step	Min.	2 Poom	3 Max.	Poom.	
Cycle	Q/D.F.	30pF and below: Q≧400+20C	W.V.: 6.3/4V : 0.05 max. (C<3.3μF)	Temp. (°C)	Temp. +0/-3	Room Temp.	Operating Temp. +3/-0	Room Temp.	
	<	C: Nominal Capacitance (pF)	: 0.1 max. (C≧3.3μF) ([E4]	Time (min.)	1777	2 to 3	30±3	2 to 3	
		C. Nominal Capacitance (pr)	(C=4) W.V.: 25Vmin: 0.05 max. [F1, F5] W.V.: 25V min. : 0.05 max. (C<0.1μF) : 0.09 max. (C≥0.1μF) W.V.: 16/10V: 0.125 max. W.V.: 6.3V: 0.15 max.	Perform a hea	rement for high at treatment at 1 om temperature uitial measureme	50+0/-1 for 24±2	0°C for one ho	ur and	
	I.R.	More than 10,000M Ω or 500 Ω ·	F (Whichever is smaller)	MM.To					
	Dielectric Strength	No defects	.COM.ITW	WW.100	OY.COM.	TW		WW.	





GRM Series Specifications and Test Methods (1) (Note1) Typical Inspection

(Note1) This Specifications and Test Methods indicates typical inspection. Please refer to individual specifications (our product specifications or the approval sheet). In case Non "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1).

	1	Specif	ications	001.
. Ite	em	Temperature Compensating Type	High Dielectric Type	Test Method
WTW		The measured and observed characteristics should satisfy the specifications in the following table.		V.100Y.COM.TW
TT	Appearance	No defects or abnormalities		WI 100Y. COM.TW
COM.T	Capacitance Change	Within ±5% or ±0.5pF (Whichever is larger)	B1, B3, R1, R6, R7, C8 : Within ±12.5% F1, F5, E4: Within ±30%	NW.100Y.COM.TW
Humidity (Steady State)	Q/D.F.	30pF and over: Q≥350 10pF and over 30pF and below: Q≥275+2.5C 10pF and below: Q≥200+10C C: Nominal Capacitance (pF)	[R6, R7, C8] W.V.: 100V : 0.05 max. (C<0.068μF) : 0.075 max. (C≥0.068μF) W.V.: 50/35/25/16/10V : 0.05 max. W.V.: 6.3/4V : 0.075 max. (C≤3.3μF) : 0.125 max. (C≥3.3μF) [E4] W.V.: 25Vmin: 0.05 max. [F1, F5] W.V.: 25V min. : 0.075 max. (C<0.1μF) : 0.125 max. (C≥0.1μF) W.V.: 16/10V: 0.15 max. W.V.: 6.3V: 0.2 max.	Set the capacitor at 40±2°C and in 90 to 95% humidity for 500±12 hours. Remove and set for 24±2 hours at room temperature, then measure.
WW.T	I.R.	More than $1,000M\Omega$ or $50\Omega \cdot F$	(Whichever is smaller)	N. M.M. OOX.CO. T.M.
WWW.		The measured and observed cl specifications in the following to	haracteristics should satisfy the able.	W WWW.Idoy.COM.TW
WW	Appearance	No defects or abnormalities		TW WWW. ONY.COM CTW
MAL	Capacitance Change	Within ±7.5% or ±0.75pF (Whichever is larger)	B1, B3, R1, R6, R7, C8 : Within ±12.5% F1, F5, E4: Within ±30% [W.V.: 10V max.] F1, F5: Within +30/-40%	M.TW WWW.100Y.COM.TW
Humidity Load	Q/D.F.	30pF and over: Q≥200 30pF and below: Q≥100+10C/3 C: Nominal Capacitance (pF)	[B1, B3, R6, R7, C8] W.V.: 100V $: 0.05 \text{ max. } (C < 0.068 \mu F) \\: 0.075 \text{ max. } (C ≥ 0.068 \mu F) \\W.V.: 50/35/25/16/10V \\: 0.05 \text{ max.} \\W.V.: 6.3/4V \\: 0.075 \text{ max. } (C < 3.3 \mu F) \\[E4] W.V.: 25V min: 0.05 \text{ max.} \\[F1, F5] W.V.: 25V min. \\: 0.075 \text{ max. } (C < 0.1 \mu F) \\: 0.125 \text{ max. } (C ≥ 0.1 \mu F) \\W.V.: 16/10V: 0.15 \text{ max.} \\W.V.: 6.3V: 0.2 \text{ max.} \\W.V.: 6.3V: 0.2 \text{ max.} \\W.V.: 6.3V: 0.2 \text{ max.} \\W.V.: 6.3V: 0.2 \text{ max.} \\W.V.: 6.3V: 0.2 \text{ max.} \\$	Apply the rated voltage at 40±2°C and 90 to 95% humidity for 500±12 hours. Remove and set for 24±2 hours at room temperature, then measure. The charge/discharge current is less than 50mA. Initial measurement for F1, F5/10V max. Apply the rated DC voltage for 1 hour at 40±2°C. Remove and set for 24±2 hours at room temperature. Perform initial measurement.

Continued on the following page. MMM.100X.COW.TM

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GRM Series Specifications and Test Methods (1) (Note1) Typical Inspection

(Note1) This Specifications and Test Methods indicates typical inspection. Please refer to individual specifications (our product specifications or the approval sheet). In case Non "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1).

			Specifications		$100 \mathrm{M}_{\odot}$
No.	Ite	em	Temperature High Dielectric Type Compensating Type		Test Method
) D			The measured and observed of specifications in the following to		V.100Y.COM.TW
U		Appearance	No defects or abnormalities	WIN WW	TION.CON.TW
		Capacitance Change	Within ±3% or ±0.3pF (Whichever is larger)	B1, B3, R1, R6, R7, C8 : Within ±12.5% F1, F5, E4: Within ±30% [Except 10V max. and. C≥1.0μF] F1, F5: Within +30/–40% [10V max. and C≥1.0μF]	Apply 200%* of the rated voltage at the maximum operating temperature ±3°C for 1000±12 hours. Set for 24±2 hours at room temperature, then measure.
88	High Temperature Load	Q/D.F.	30pF and over: Q≥350 10pF and over 30pF and below: Q≥275+2.5C 10pF and below: Q≥200+10C C: Nominal Capacitance (pF)	[B1, B3, R6, R7, C8] W.V.: 100V : 0.05 max. (C<0.068μF) : 0.075 max. (C≥0.068μF) W.V.: 50/35/25/16/10V : 0.05 max. W.V.: 6.3/4V : 0.075 max. (C<3.3μF) : 0.125 max. (C≥3.3μF) [E4] W.V.: 25Vmin: 0.05 max. [F1, F5] W.V.: 25V min. : 0.075 max. (C<0.1μF) : 0.125 max. (C≥0.1μF) W.V.: 16/10V: 0.15 max. W.V.: 6.3V: 0.2 max.	The charge/discharge current is less than 50mA. Initial measurement for high dielectric constant type. Apply 200% of the rated voltage* at the maximum operating temperature ±3°C for one hour. Remove and set for 24±2 hours at room temperature. Perform initial measurement. *GRM155C81E 683/104, GRM21BR71H105, GRM21BR72A474, GRM21BR71C225, GRM31CR71H475, GRM32E R6/R7 YA106, GRM32D R7/R6/C8 1E106: 150% of the rated voltage.
		I.R.	More than 1,000M Ω or 50 Ω · F	(Whichever is smaller)	TW WWW.I COMP

Table A-1	W.100X.COM.TW	WWW	N.100X.CO	OM.TW	WWW	W.100Y.CC	OM.TW
1/1/1/	1001.	111	-1100 J. (Capacitance Cha	nge from 25°C (%	6) (100	ZOM.
Char.	ır. Nominal Values (ppm/°C)*1	-55		-30		-10	
		Max.	Min.	Max.	Min.	Max.	Min.
5C	0± 30	0.58	-0.24	0.40	-0.17	0.25	-0.11
6C	0± 60	0.87	-0.48	0.59	-0.33	0.38	-0.21
6P	-150± 60	2.33	0.72	1.61	0.50	1.02	0.32
6R	-220± 60	3.02	1.28	2.08	0.88	1.32	0.56
6S	-330± 60	4.09	2.16	2.81	1.49	1.79	0.95
6T	-470± 60	5.46	3.28	3.75	2.26	2.39	1.44
7U	-750±120	8.78	5.04	6.04	3.47	3.84	2.21
1X	+350 to -1000			100 - and	J		700 - 40

^{*1:} Nominal values denote the temperature coefficient within a range of 25°C to 125°C (for ∆C)/85°C (for other TC).

	N 100 - ac	Capacitance Change from 20°C (%)									
Char.	Nominal Values (ppm/°C)*2	· TW	-55	1007.0	25	-10					
	W.100 -	Max.	Min.	Max.	Min.	Max.	Min.				
2C	0± 60	0.82	-0.45	0.49	-0.27	0.33	-0.18				
3C	0±120	1.37	-0.90	0.82	-0.54	0.55	-0.36				
4C	0±250	2.56	-1.88	1.54	-1.13	1.02	-0.75				
2P	-150± 60	CO/41.	-	1.32	0.41	0.88	0.27				
3P	-150±120	- 7	- V	1.65	0.14	1.10	0.09				
4P	-150±250	CONT.		2.36	-0.45	1.57	-0.30				
2R	-220± 60	Y.U = 1	(N) -	1.70	0.72	1.13	0.48				
3R	-220±120	CON.		2.03	0.45	1.35	0.30				
4R	-220±250	7.0-	(W -	2.74	-0.14	1.83	-0.09				
2S	-330± 60	-1 CON	_ 41-	2.30	1.22	1.54	0.81				
3S	-330±120	00 X -	TW-	2.63	0.95	1.76	0.63				
48	-330±250	2-CO	- T	3.35	0.36	2.23	0.24				
2T	-470± 60	1007-	1172	3.07	1.85	2.05	1.23				
3T	-470±120	- Z- CC	-381	3.40	1.58	2.27	1.05				
4T	-470±250	100=1.	77.77	4.12	0.99	2.74	0.66				
3U	-750±120	1. E = 1 C	ON XXI	4.94	2.84	3.29	1.89				
4U	-750±250	104) 1.	- 1 7 7	5.65	2.25	3.77	1.50				

^{*2:} Nominal values denote the temperature coefficient within a range of 20°C to 125°C (for ∆C)/85°C (for other TC). . 5 to 1



GRM Series Specifications and Test Methods (2) (Note1) Typical Inspection

(Note1) This Specifications and Test Methods indicates typical inspection. Please refer to individual specifications (our product specifications or the approval sheet). In case Non "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1).
In case "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

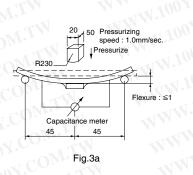
No.	Ite	em	Specifications	Test Method					
	Operating Temperat Range	•	B1, B3, F1: -25 to +85°C R1, R7, C7, D7, E7: -55 to +125°C C6, R6: -55 to +85°C F5: -30 to +85°C C8, D8: -55 to +105°C,	Reference temperature: 25°C (B1, B3, R1, F1: 20°C)					
2	Rated Vo	ltage	See the previous pages.	The rated voltage is defined as the maximum voltage which may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, VP-P or VO-P, whichever is larger, should be maintained within the rated voltage range.					
3	Appearan	nce	No defects or abnormalities	Visual inspection					
4	Dimensio	ns	Within the specified dimensions	Using calipers (GRM02 size is based on Microscope)					
5	Dielectric	Strength	No defects or abnormalities	No failure should be observed when 250% of the rated voltage is applied between the terminations for 1 to 5 seconds, provided the charge/discharge current is less than 50mA.					
6	Insulation Resistance		The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at reference temperature and 75%RH max. and within 1 minutes of charging, provided the charge/discharge current is less than 50mA.						
	Capacita	N CO	Within the specified tolerance *Table 1 GRM155 B3/R6 1A 124 to 105 GRM185 B3/R6 1C/1A 105 GRM185 C8/D7 1A 105 GRM188 B3/R6 1C/1A 225 GRM188 R7/C8 1A 225	The capacitance/D.F. should be measured at reference temperature at the measuring frequency and voltage shown in the table.					
	WWW	M.100 N.100A	GRM188 B3/R6 1A 335 GRM219 B3/R6 1C/1A 475, 106 GRM219 C8 1A 475 GRM21B B3/R6 1C/1A 106 GRM21B R7/C8 1A 106 GRM319 B3/R6 1C/1A 106	Nominal Capacitance Measuring Frequency Measuring Voltage C≤10μF (10V min.)* 1±0.1kHz 1.0±0.2Vrms C≤10μF (6.3V max.) 1±0.1kHz 0.5±0.1Vrms C>10μF 120±24Hz 0.5±0.1Vrms *For items in Table1 1±0.1kHz 0.5±0.1Vrms GRM188C80E106:					
8	Dissipatio (D.F.)	on Factor	B1, B3, R1, R6*, R7*, C7, C8, E7, D7: 0.1 max. C6: 0.125 max. D8: 0.15 max. F1, F5: 0.2 max. *GRM31CR71E106: 0.125 max. GRM31CR6 0J/0G 107: 0.15 max.	Perform a heat treatment at 150+0/-10°C for one hour and then set for 24±2 hours at room temperature.					
		No bias	B1, B3: Within ±10% (-25 to +85°C) F1: Within +30/-80% (-25 to +85°C) R6: Within ±15% (-55 to +85°C) R1, R7: Within ±15% (-55 to +125°C) F5: Within ±22/-82% (-30 to +85°C) C6: Within ±22% (-55 to +85°C) C7: Within ±22% (-55 to +125°C) C8: Within ±22% (-55 to +125°C) D7: Within ±22% (-55 to +125°C) E7: Within +22/-33% (-55 to +125°C) E7: Within +22/-33% (-55 to +125°C) D8: Within +22/-33% (-55 to +125°C)	The capacitance change should be measured after 5 min. at each specified temp. stage. The ranges of capacitance change compared with the reference temperature value over the temperature ranges shown in the table should be within the specified ranges.* In case of applying voltage, the capacitance change should be measured after 1 more min. with applying voltage in equilibration of each temp. stage. *GRM32DR60J226, GRM43 B1/B3/R6 0J/1A 336/476 only: 1.0±0.2Vrms Step Temperature (°C) Applying Voltage (V)					
	Capacitance		WWW.100Y.COM.TW WW	1 25±2 (for R6, R7, C6, C7, C8, D7, D8, E7, F5) 20±2 (for B1, B3, F1, R1) -55±3 (for R1, R6, R7, C6, C7, C8, D7, D8, E7) 2 -30±3 (for F5)					
9	Temperature Characteristics		WWW.100Y.COM.TW WW	-25±3 (for B1, B3, F1) 25±2 (for R6, R7, C6, C7, C8, D7, D8, E7, F5) No bias					
		50% of	B1: Within +10/–30%	20±2 (for B1, B3, F1, R1) 125±3 (for R1, R7, C7, D7, E7) 4 105±3 (for C8, D8) 85±3 (for B1, B3, F1, F5, R6, C6)					
		the Rated Voltage	F1: Within +30/–95%	5 20±2 (for B1, F1, R1) 6 -5±3 (for R1) -25±3 (for B1, F1) 7 20±2 (for B1, F1, R1) 8 125±3 (for R1) 8 5±3 (for B1, F1)					
			WWW.100Y.COM.TW WWW.100Y.COM.TW WWW.100Y.COM.TW	•Initial measurement for high dielectric constant type Perform a heat treatment at 150 +0/-10°C for one hour and then set for 24±2 hours at room temperature. Perform the initial measurement.					

WWW.100

GRM Series Specifications and Test Methods (2) (Note1) Typical Inspection

(Note1) This Specifications and Test Methods indicates typical inspection. Please refer to individual specifications (our product specifications or the approval sheet). In case Non "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1).

Continued from the preceding page. In case "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2). No Item Specifications Test Method Solder the capacitor on the test jig (glass epoxy board) shown in Fig. 1a using an eutectic solder. Then apply 10N* force in parallel with the test jig for 10±1sec. The soldering should be done either with an iron or using the No removal of the terminations or other defects should occur. reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. *1N: GRM02, 2N: GRM03, 5N: GRM15/GRM18 Type а \overline{M} 7/ Adhesive Strength GRM02 10 0.2 0.56 0.23 mm of Termination GRM03 0.3 0.9 0.3 Solder resist GRM15 0.4 1.5 0.5 Baked electrode or GRM18 3.0 1.0 1.2 copper foil GRM21 12 40 1 65 GRM31 2.2 5.0 2.0 GRM32 2.2 5.0 2.9 GRM43 3.5 7.0 3.7 GRM55 4.5 8.0 5.6 No defects or abnormalities Solder the capacitor on the test jig (glass epoxy board) in the Appearance same manner and under the same conditions as (10) Capacitance Within the specified tolerance The capacitor should be subjected to a simple harmonic motion B1, B3, R1, R6*, R7*, C7, C8, E7, D7: 0.1 max. having a total amplitude of 1.5mm, the frequency being varied Vibration uniformly between the approximate limits of 10 and 55Hz. The 11 C6: 0.125 max. D8: 0.15 max. frequency range, from 10 to 55Hz and return to 10Hz, should D.F. F1, F5: 0.2 max. be traversed in approximately 1 minute. This motion should be *GRM31CR71E106: 0.125 max. applied for a period of 2 hours in each of 3 mutually GRM31CR6 0J/0G 107: 0.15 max. perpendicular directions (total of 6 hours). Solder the capacitor on the test jig (glass epoxy board) shown **Appearance** No marking defects in Fig. 2a using an eutectic solder. Then apply a force in the Capacitance direction shown in Fig. 3a for 5±1 sec. The soldering should be Within ±10% Change done by the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat



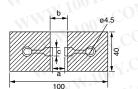


Fig. 2a

(GRM02/03/15: t: 0.8mm) b Type а GRM02 0.56 0.2 0.23 GRM03 0.3 0.9 0.3 GRM15 0.4 1.5 0.5 GRM18 1.0 3.0 1.2 GRM21 1.2 4.0 1.65 GRM31 2.2 5.0 2.0 GRM32 2.2 5.0 2.9 GRM43 3.5 7.0 3.7 GRM55 4.5 8.0 5.6

(in mm)

13	Solderability of Termination	75% of the terminations is to be soldered evenly and continuously.

WW.100Y.

Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Preheat at 80 to 120°C for 10 to 30 seconds.

After preheating, immerse in an eutectic solder solution for 2±0.5 seconds at 230±5°C or Sn-3.0Ag-0.5Cu solder solution for 2±0.5 seconds at 245±5°C.

Continued on the following page.



Deflection

GRM Series Specifications and Test Methods (2) (Note1) Typical Inspection

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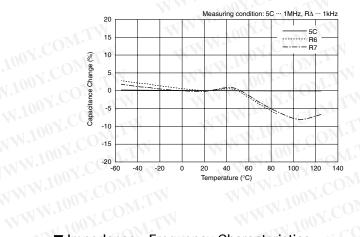
In case "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

	lt∈	em	Specifications	.100 = CO	Test Method						
	M.TW M.TV	Appearance Capacitance Change	No defects or abnormalities B1, B3, R1, R6*, R7, C6, C7, C8*, E7, D7, D8: Within ±7.5% F1, F5: Within ±20% *GRM188R6 0J/0G 106, GRM188C80E106, GRM219R60G226: within ±12.5% GRM155R60G475: Within ±15%	temperature io	apacitor in an e at 270±5°C fo r 24±2 hours, t	eutectic s r 10±0.5	older* or Sn-3. seconds. Set a	U			
14	Resistance to Soldering Heat	D.F.	B1, B3, R1, R6*, R7*, C7, C8, E7, D7: 0.1 max. C6: 0.125 max. D8: 0.15 max. F1, F5: 0.2 max. *GRM31CR71E106: 0.125 max. GRM31CR6 0J/0G 107: 0.15 max. More than 50Ω · F	*Do not apply to GRM02. •Initial measurement for high dielectric constant type Perform a heat treatment at 150+0/-10°C for one hour and then set at room temperature for 24±2 hours. Perform the initial measurement. *Preheating for GRM32/43/55 Step Temperature Time							
10	OX.CO	Dielectric Strength	No defects	1 2	100 to 1 170 to 2		1 m				
1.7	ast C	Appearance	No defects or abnormalities	Fix the capacite	4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		in the same ma	anner and			
W.	100X	Capacitance Change	B1, B3, R1, R6, R7, C6, C7, C8, D7, D8: Within ±7.5% E7: Within ±30% F1, F5: Within ±20%	under the same Perform the five shown in the fo Set for 24±2 ho	e cycles accor llowing table.	ding to th					
. «T	N.100		B1, B3, R1, R6*, R7*, C7, C8, E7, D7: 0.1 max.	Step	11.1	2	3	4			
15	Temperature Sudden	D.F.	C6: 0.125 max. D8: 0.15 max. F1, F5: 0.2 max.	Temp. (°C)	Min. Operating Temp. +0/-3		Max. Operating Temp. +3/-0				
- 1	Change	~√ C	*GRM31CR71E106: 0.125 max. GRM31CR6 0J/0G 107: 0.15 max.	Time (min.)	30±3	2 to 3	30±3	2 to 3			
1	WW.	I.R.	More than $50\Omega \cdot F$	Perform a heat then set at room	treatment at 1	50+0/-1	0°C for one ho				
	WWW	Dielectric Strength	No defects	Perform the initial measurement. GRM188R60J106 only Measurement after test Perform a heat treatment and then let sit for 24±2 hours at room temperature, then measure.							
	WW	Appearance	No defects or abnormalities	Apply the rated	Apply the rated voltage at 40±2°C and 90 to 95% humidity for						
	High	Capacitance Change	B1, B3, R1, R6, R7, C6, C7, C8, E7, D7, D8: Within ±12.5% F1, F5: Within ±30%	•Initial measure	500±12 hours. The charge/discharge current is less than 50mA. •Initial measurement						
16	Temperature High Humidity	D.F.	B1, B3, R1, R6, R7, C6, C7, C8, E7, D7, D8: 0.2 max. F1, F5: 0.4 max.	Perform a heat treatment at 150+0/–10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement.							
	(Steady)	I.R.	More than 12.5 Ω · F	Measurement after test Perform a heat treatment at 150+0/–10°C for one hour and then let sit for 24±2 hours at room temperature, then measure							
		Appearance	No defects or abnormalities	Apply 150% of	the rated volta	ige for 10	000±12 hours a	at the			
		Capacitance Change	B1, B3, R1, R6*, R7, C6, C7, C8*, E7, D7, D8: Within ±12.5% F1, F5: Within ±30% *GRM188C80E106, GRM219R60G226: within ±15%	maximum oper room temperat The charge/dis	ure, then meas	sure.		±2 hours a			
17	Durability	D.F.	B1, B3, R1, R6, R7, C6, C7, C8, E7, D7, D8: 0.2 max. F1, F5: 0.4 max.	Perform a heat	•Initial measurement Perform a heat treatment at 150+0/–10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the						
		I.R.	More than $25\Omega \cdot F$	•Measurement Perform a heat then let sit for 2	ment. after test treatment at 1	50+0/–1	0°C for one ho	ur and			

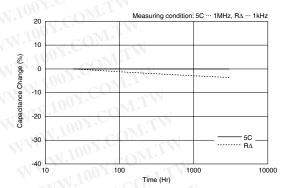
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GRM Series Data

■ Capacitance - Temperature Characteristics

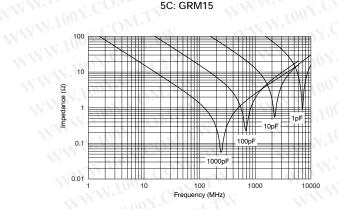


■ Capacitance Change - Aging

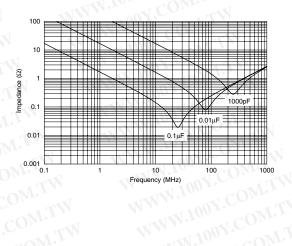


■ Impedance - Frequency Characteristics

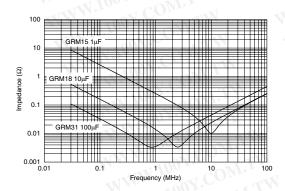
5C: GRM15



R∆: GRM15



 $\mathsf{R}\Delta$



ne uata nerein are given in typical values, not guaranteed ratings.

Please refer to our Web site or contact our sales representatives for individual Part Number's data.

Our Web Site: http://www.murata.com/products/capacitor/tech_data/index.html

Continued on the following page.



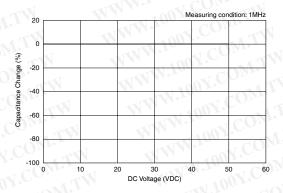
WWW.100X

GRM Series Data

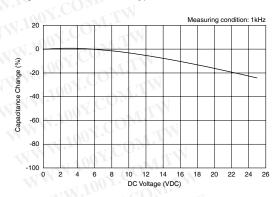
Continued from the preceding page.

■ Capacitance - DC Voltage Characteristics

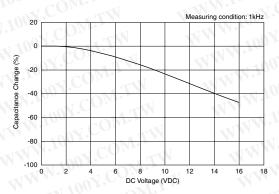
Temperature Compensating Type: GRM1555C1H102JA01



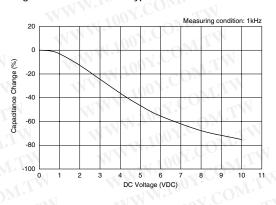
High Dielectric Constant Type: GRM155R71E103KA01



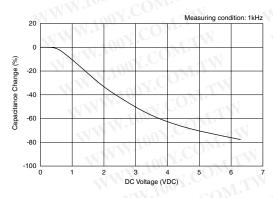
High Dielectric Constant Type: GRM155R71C104KA88



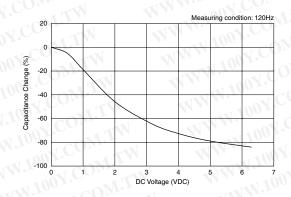
High Dielectric Constant Type: GRM155R61A105KE15



High Dielectric Constant Type: GRM188R60J106ME47



High Dielectric Constant Type: GRM31CR60J107ME39



The data herein are given in typical values, not guaranteed ratings. Please refer to our Web site or contact our sales representatives for individual Part Number's data. Our Web Site: http://www.murata.com/products/capacitor/tech_data/index.html

Continued on the following page.





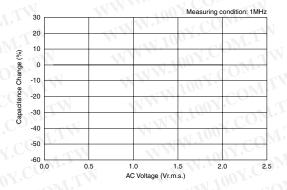
WWW.100Y

GRM Series Data

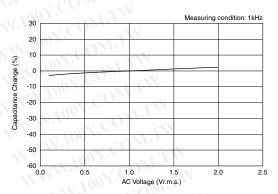
Continued from the preceding page.

■ Capacitance - AC Voltage Characteristics

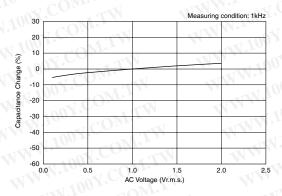
Temperature Compensating Type: GRM1555C1H102JA01



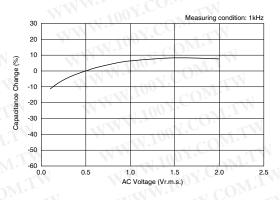
High Dielectric Constant Type: GRM155R71E103KA01



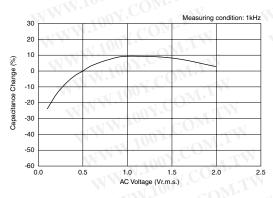
High Dielectric Constant Type: GRM155R71C104KA88



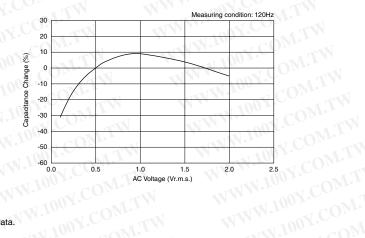
High Dielectric Constant Type: GRM155R61A105KE15



High Dielectric Constant Type: GRM188R60J106ME47



High Dielectric Constant Type: GRM31CR60J107ME39



The data herein are given in typical values, not guaranteed ratings. Please refer to our Web site or contact our sales representatives for individual Part Number's data. Our Web Site: http://www.murata.com/products/capacitor/tech_data/index.html

WWW.100Y.CO

Chip Monolithic Ceramic Capacitors



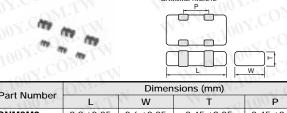
Capacitor Array GNM Series

■ Features

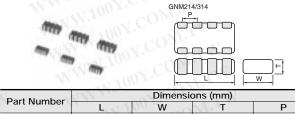
- 1. High density mounting due to mounting space saving
- 2. Mounting cost saving

Applications

General electronic equipment



Dant Number	Dimensions (mm)									
Part Number	LIT	w	T	100 P						
GNM0M2	0.9 ±0.05	0.6 ±0.05	0.45 ±0.05	0.45 ±0.05						
1001	· Ma	144	0.5 +0.05/-0.10	1 100 -						
GNM1M2	1.37 ±0.15	1.0 ±0.15	0.6 ±0.1	0.64 ±0.05						
	Mos		0.8 +0/-0.15							
GNM212	2.0 ±0.15	1.25 ±0.15	0.6 ±0.1	10101						
GIVIVIZ 12	2.0 ±0.15	1.25 ±0.15	0.85 ±0.1	1.0 ±0.1						
I		-110	< N N							



Part Number	Dimensions (mm)									
Part Number	L	W	T T	Р						
N.	AXIV N	and Co	0.5 +0.05/-0.1							
GNM214	2.0 ±0.15	1.25 ±0.15	0.6 ±0.1	0.5 ±0.05						
XX	- X W W	. N.C	0.85 ±0.1							
	11	100 1	0.8 ±0.1							
GNM314	3.2 +0.15	1.6 ±0.15	0.85 ±0.1	0.8 ±0.1						
GINIVIS 14	3.2 ±0.15	1.0 ±0.15	1.0 ±0.1							
	N. T.	W.	1.15 ±0.1	XX						

WWW.100Y.CO

Capacitance Table

Temperature Compensating Type C0G(5C) Characteristics WWW.100Y.COM.TW

0.6 ex.0.6:	T Dimens	ion [mm]		
LxW [mm]	(1M)	2.0x1.25 (21) <0805>	(3	x1.6 8 1) 206>
Number of Elements	2(2)		4(4)	N 1
Rated Voltage Capacitance [Vdc]	4 (L. J.W.)	50 (1H)	100 (2A)	50 (1H)
10pF(100)	0.6	0.6	0.8	0.8
15pF(150)	0.6	0.6	0.8	0.8
22pF(220)	0.6	0.6	0.8	0.8
33pF(330)	0.6	0.6	0.8	0.8
47pF(470)	0.6	0.6	0.8	0.8
68pF(680)	0.6	0.6	0.8	0.8
100pF(101)	0.6	0.6	0.8	0.8
150pF(151)	0.6	0.6	0.8	0.8
220pF(221)	0.6	0.6	100	0.8
330pF(331)			- 400	0.8

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100Y.COM

Continued on the following page.





Capacitance Table

High Dielectric Constant Type X7R(R7)/X7S(C7) Characteristics 0.6 ex.0.6: T Dimension [mm]

[mm]	M	JW1	(1M) <0504>	c01	T.T.	1	(21) <0805>	VV	.100		8 1) 206>	- XX
Number of Elements	W	NN '	2(2)		TI	N	1	N 4.	4(4)	77.	Ma	1.1.
Rated Voltage [Vdc]	50 (1H)	25 (1E)	16 (1C)	1.0	0 A)	50 (1H)	25 (1E)	16 (1C)	50 (1H)	25 (1E)	16 (1C)	6.3 (0J)
Capacitance	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)	X7S (C7)	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)
470pF(471)		- 11	1111.1	- ×1	CON	0.6	I	* 1		. 1	V.C	Nr.
1000pF(102)	0.6		-TXN	100,7	<u>~</u>	0.6			431	1.10	-1.0	O_{M} .
2200pF(222)		0.6				TIL	0.6		MA			
4700pF(472)	N	0.6	UVV)Nr.	0.6		WW			
10000pF(103)	_1	0.6	-33	N.Jo	-1	OM.	0.6		1	WW.	Lan	CO_{J}
22000pF(223)			0.6	0.6	001.		TW	0.85				
47000pF(473)	TW		0.6	0.6	ON	Cox		0.85	0.85	M.	1.0	Y.C.
0.10μF(104)	- XXI		0.6	WW.	0.6	CO	Mr.	0.85	0.85	0.85	1.0	N.C
1.0μF(105)	7.7.		A	- T T T	1.100		M_{II}	-1	[[[- TAN	W.II	1.15
The part number code is s	shown in	() and U	nit is show	vn in [].	< >: El/	A [inch] Co	ode	CAL		11/4		001.

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

High Dielectric Constant Type X5R(R6) Characteristics

1.0μF(105)				-11	1700	(M_{I}	-1	!	1	$M \cdot r$	1.15	\sqrt{O}_{M_2}			
The part number code is s	hown in	() and U	nit is show	wn in [].	< >: El.	A [inch] C	ode									
High Dielectric Co	onstar	nt Typ	e X5R	(R6) C	harac	teristi	cs									
0.6 ex.0.6: 1	Dimens	ion [mm]		1111	- XX	100%	-01	1.1.	N		- TX	N.100	. CI	OM_{γ}		
LxW [mm]		(0	x0.6 M) 802>				1.37x1.0 (1M) <0504>			1	2.0x1.2 (21) <0805>		(2	(1.25 (1) (05>	(3	x1.6 8 1) 206>
Number of Elements		M: I	₹ .		-31	4 (7)	(2)	OM:	1 4	•	71	NW.	UU -	C 4	(4)	KT
Rated Voltage [Vdc]	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	16 (1C)	10 (1A)	6.3 (0J)	10 (1A)	6.3 (0J)	16 (1C)	10 (1A)
TC Capacitance	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)	X5R (R6)
1000pF(102)	Voo	CO_{2s}	·TV		0.6	11/1/	400	V.C	- 17	W		11/11	-11	00 X.		TI
2200pF(222)						0.6	Vira.			TIN			1111.		$C_{O_{\lambda}}$	
4700pF(472)						0.6	W.10			7			WW		7 (0	
10000pF(103)	0.45	0.45	0.45			0.6	-411	007.	. 01					1,100		·M.
22000pF(223)	0.45	0.45	0.45	TW	 		0.6	0.6	$C_{O_{z}}$						J.C.	
47000pF(473)	0.45	0.45	0.45	. 1	1		0.6	0.6	J C.O	Mr.			WIN		V.C	
0.10μF(104)	0.45	0.45	0.45	ΛTV			-14	0.6	7.	M.				. W.1	00 -	col
0.22μF(224)	MAI.	4001	I.Co.	T	N		0.8	-, 10	OY.C	- 11			W		1001	
0.47μF(474)							WIN	M.r.		0.85			W		. 001	
1.0μF(105)	V 1-1-1-1	N.101	1.1	0.45	1.4		0.8	0.8	0.8	0.85	0.85	ĸ1	0.85	0.85	0.85	0.85
2.2μF(225)					TW		11	0.8	0.8		0.85	0.85		0.85	x 10	71.

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

High Dielectric Constant Type X7R(R7) Characteristics Low Profile W.100Y.COM.TV

0.5 ex.0.5:	Γ Dimensi	ion [mm]
LxW [mm]	(1M)	2.0x1.25 (21) <0805>
Number of Elements	2(2)	4(4)
Rated Voltage [Vdc]	16 (1C)	16 (1C)
Capacitance	X7R (R7)	X7R (R7)
0.10μF(104)	0.5	0.5
The part number code is s	shown in	() and Ur

WWW.1007.COV.TV WWW.100Y.COM.T

WWW.100Y.COM.7 WWW.100Y.COM

-17/1/11	~ 1	OF	-37	
ligh Dielectri	c Constan	t Type	X5R(R6) Charac
0.5	ex.0.5: T	7 (T U	5.	
	LxW [mm]	(1	'x1.0 M) 604>	2.0x1.25 (21) <0805>
Numbe	r of Elements	2((2)	4(4)
Rate	d Voltage [Vdc]	16 (1C)	10 (1A)	16 (1C)
Capacitance	тс	X5R (R6)	X5R (R6)	X5R (R6)
1.0	DμF(105)	0.5	0.5	0.5

ne part number code The part number code is shown in () and Unit is shown in [].



⚠Note

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• This PDF catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		1.37x1.0(1M)<0504>	2.0x1.25(21)<0805>	3.2x1.6(31)<1206>				
Rated Volt. [Vdc		50(1H)	50(1H)	100(2A)	50(1H)			
Capacitance	Tolerance	Wing COM.	Part N	umber				
10pF(100)	±10%(K)	GNM1M25C1H100KD01D	GNM2145C1H100KD01D	GNM3145C2A100KD01D	GNM3145C1H100KD01D			
15pF(150)	±10%(K)	GNM1M25C1H150KD01D	GNM2145C1H150KD01D	GNM3145C2A150KD01D	GNM3145C1H150KD01D			
22pF(220)	±10%(K)	GNM1M25C1H220KD01D	GNM2145C1H220KD01D	GNM3145C2A220KD01D	GNM3145C1H220KD01D			
33pF(330)	±10%(K)	GNM1M25C1H330KD01D	GNM2145C1H330KD01D	GNM3145C2A330KD01D	GNM3145C1H330KD01D			
47pF(470)	±10%(K)	GNM1M25C1H470KD01D	GNM2145C1H470KD01D	GNM3145C2A470KD01D	GNM3145C1H470KD01D			
68pF(680)	±10%(K)	GNM1M25C1H680KD01D	GNM2145C1H680KD01D	GNM3145C2A680KD01D	GNM3145C1H680KD01D			
100pF(101)	±10%(K)	GNM1M25C1H101KD01D	GNM2145C1H101KD01D	GNM3145C2A101KD01D	GNM3145C1H101KD01D			
150pF(151)	±10%(K)	GNM1M25C1H151KD01D	GNM2145C1H151KD01D	GNM3145C2A151KD01D	GNM3145C1H151KD01D			
220pF(221)	±10%(K)	GNM1M25C1H221KD01D	GNM2145C1H221KD01D	1100Y.	GNM3145C1H221KD01D			
330pF(331)	±10%(K)	WWW.Ioov.C	ON.	MM. OOK.CO.	GNM3145C1H331KD01D			

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code

High Dielectric Constant Type X7R(R7)/X7S(C7) Characteristics

				11	U ¹		
LxW [mm]	T	N WW	1.37x1.0(1	IM)<0504>	-OM.TW		
Number of Elements		N 2(2) WWW. CO					
Rated Volt. [Vdc]		50(1H)	25(1E)	16(1C)	10(1A)		
Capacitance	Tolerance	IN N.	Part N	lumber	COM:		
1000pF(102)	±20%(M)	GNM1M2R71H102MA01D	TW.CO. TW	100	Y.C. TIN		
2200pF(222)	±20%(M)	The same	GNM1M2R71E222MA01D		N.COM		
4700pF(472)	±20%(M)	VIII.	GNM1M2R71E472MA01D	I IIIIIIII	COM		
10000pF(103)	±20%(M)	WW WITH	GNM1M2R71E103MA01D	N N N	001. W.T.W		
22000pF(223)	±20%(M)		M. COn	GNM1M2R71C223MA01D	GNM1M2R71A223MA01D		
47000pF(473)	±20%(M)	OMIT	MAIN TON	GNM1M2R71C473MA01D	GNM1M2R71A473MA01D		
0.10μF(104)	±20%(M)	WI.IN V	1001. OM	GNM1M2R71C104MA01D	GNM1M2C71A104MA01D		
WW	VV.	Con	MM 1 100 Y.Co.	TW WW.	TIOOY.		
LxW [mm]	M. Inc	COMP	2.0x1.25(21)<0805>	WIN WA	M. T. COMP.		
Number of Elem	nents	. OM.TH	4(4)	Will	MY TOW COM.		
Datad Valt IVde		EO(1LI)	2E/4E)	14/10)	1007		

LxW [mm]		2.0x1.25(21)<0805>				
Number of Elem	ents	. COM.TY	4(4)	M. I		
Rated Volt. [Vdc	1	50(1H)	25(1E)	16(1C)		
Capacitance	Tolerance	V.CON	Part Number	W. W		
470pF(471)	±20%(M)	GNM214R71H471MA01D	TANN TOO	ONL		
1000pF(102)	±20%(M)	GNM214R71H102MA01D	W. 1001.	COM.T		
2200pF(222)	±20%(M)	ON.CO. TW	GNM214R71E222MA01D	TY		
4700pF(472)	±20%(M)	Too A COMP.	GNM214R71E472MA01D	I COM.		
10000pF(103)	±20%(M)	1100 . OM.I.	GNM214R71E103MA01D	COM		
22000pF(223)	±20%(M)	TOOY	110	GNM214R71C223MA01D		
47000pF(473)	±20%(M)	W. T. COM.	N MM.	GNM214R71C473MA01D		
0.10μF(104)	±20%(M)	W.100 COM.	· WIX	GNM214R71C104MA01D		

LxW [mm]	V	MAN. CO.	3.2x1.6(3	11)<1206>	WW. 100.
Number of Elem	ents	4(4) CONTRACTOR			WWW.
Rated Volt. [Vdc	:]	50(1H)	25(1E)	16(1C)	6.3(0J)
Capacitance	Tolerance	MM	Part Number		
47000pF(473)	±20%(M)	GNM314R71H473MA11D	W W	GNM314R71C473MA01L	M MM
0.10μF(104)	±20%(M)	GNM314R71H104MA11D	GNM314R71E104MA11D	GNM314R71C104MA01L	WWW.
1.0μF(105)	±20%(M)	W 1007.	OW.TV	WILDOW COM	GNM314R70J105MA01L

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

(Part Number) | GN | M | 1M | 2 | 5C | 1H | 100 | K | D01 | D **9 9 9 5** 6 0 8 9 1

Product ID **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) **6**Rated Voltage

4 Number of Elements

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

Capacitance 9Individual Specification Code Packaging

^{*:} Please refer to GNM series Specifications and Test Method(2).

LxW [mm]		100Y.	0.9x0.6(0	M)<0302>	
Number of Elem	nents	. ON CONTRACT			
Rated Volt. [Vdc		16(1C)	10(1A)	6.3(0J)	4(0G)
Capacitance	Tolerance	M.1001.	Part N	umber	
10000pF(103)	±20%(M)	GNM0M2R61C103ME18D*	GNM0M2R61A103ME17D*	GNM0M2R60J103ME17D*	
22000pF(223)	±20%(M)	GNM0M2R61C223ME18D*	GNM0M2R61A223ME17D*	GNM0M2R60J223ME17D*	
47000pF(473)	±20%(M)	GNM0M2R61C473ME18D*	GNM0M2R61A473ME17D*	GNM0M2R60J473ME17D*	
0.10μF(104)	±20%(M)	GNM0M2R61C104ME18D*	GNM0M2R61A104ME17D*	GNM0M2R60J104ME17D*	
1.0μF(105)	±20%(M)	MAN W. CO.	TW WW	1001.00	GNM0M2R60G105ME17D*

LxW [mm]		1.37x1.0(1M)<0504>			
Number of Elem	ents	11007.	2(2)	1001.	
Rated Volt. [Vdc	Ì	50(1H)	25(1E)	16(1C)	
Capacitance	Tolerance	, M.100	Part Number	TANN TOO COM	
1000pF(102)	±20%(M)	GNM1M2R61H102MA01D	-ow.TW	W. 1001.	
2200pF(222)	±20%(M)	MAN. OUT	GNM1M2R61E222MA01D	MM 100 X.C.	
4700pF(472)	±20%(M)	M. Inc	GNM1M2R61E472MA01D	MAN. CO	
10000pF(103)	±20%(M)	W 100	GNM1M2R61E103MA01D	100 . 100	
22000pF(223)	±20%(M)	WWW	OY.CO	GNM1M2R61C223MA01D	
47000pF(473)	±20%(M)	WWW.	ON.COM	GNM1M2R61C473MA01D	
0.22μF(224)	±20%(M)		In COM.	GNM1M2R61C224ME18D*	
1.0μF(105)	±20%(M)	IN WY	1001. W.T.	GNM1M2R61C105ME18D*	
NWW	A.Com	THE WAY	TW. CO. TW	11/100	
LxW [mm]		1.37x1.0(1	I M)<0504>	WWW.I	
Number of Elem	ents	2	(2)	V 10	
Rated Volt. [Vdc	LONY.CO	10(1A)	6.3(0J)	M MM.	

LxW [mm]		1.37x1.0(1M)<0504>		
Number of Elem	ents	2(2)		
Rated Volt. [Vdc	Looy.Co	10(1A)	6.3(0J)	
Capacitance	Tolerance	Part N	umber	
22000pF(223)	±20%(M)	GNM1M2R61A223MA01D	MAY TOOM	
47000pF(473)	±20%(M)	GNM1M2R61A473MA01D	1 100 Y	
0.10μF(104)	±20%(M)	GNM1M2R61A104MA01D	NAM TOOX.CO.	
1.0μF(105)	±20%(M)	GNM1M2R61A105ME17D*	GNM1M2R60J105ME12D*	
2.2μF(225)	±20%(M)	GNM1M2R61A225ME18D*	GNM1M2R60J225ME18D*	

47000pF(473)	±20%(M)	GNM1M2R61A473MA01D	W 1001.	
0.10μF(104)	±20%(M)	GNM1M2R61A104MA01D	NA TOOX.CO.	WW WITH
1.0μF(105)	±20%(M)	GNM1M2R61A105ME17D*	GNM1M2R60J105ME12D*	TW W
2.2μF(225)	±20%(M)	GNM1M2R61A225ME18D*	GNM1M2R60J225ME18D*	Will
W	100	M.Co. TW	WW. 1001.0	WII.Mc
LxW [mm]		V.COM.	2.0x1.25(21)<0805>	TW
Number of Eleme	ents	COM	2(2)	OM
Rated Volt. [Vdc]	M M	16(1C)	10(1A)	6.3(0J)
Capacitance	Tolerance	LOON.CO. CTW	Part Number	WT I
0.47μF(474)	±20%(M)	GNM212R61C474MA16D	THE STATE OF	TCOM.
1.0μF(105)	±20%(M)	GNM212R61C105MA16D	GNM212R61A105MA13D	COM
2.2μF(225)	±20%(M)	100Y.C	GNM212R61A225ME16D*	GNM212R60J225ME16D

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code

3Dimension (LxW) 4 Number of Elements 6 Rated Voltage Capacitance 9Individual Specification Code Packaging

Packaging Code in Part Number is a code shows STD Tray.



^{*:} Please refer to GNM series Specifications and Test Method(2). WWW.100Y.COM.TW WWW.100Y.

¹ Product ID 2 Series **5**Temperature Characteristics **8**Capacitance Tolerance

OM.TW

WWW.100Y.COM.TW

High Dielectric Constant Type X5R(R6) Characteristics

		COM	111111.10	
LxW [mm]		2.0x1.25(21)<0805>		
Number of Elem	ents	4.CV	(4)	
Rated Volt. [Vdc]	10(1A)	6.3(0J)	
Capacitance Tolerance		Part Number		
1.0μF(105)	±20%(M)	GNM214R61A105ME17D*	GNM214R60J105ME17D	
2.2μF(225) ±20%(M)		MAN COM	GNM214R60J225ME18D	
COM		TW. Too. COM.		
LxW [mm]		3.2x1.6(3	1)<1206>	
Number of Elem	ents	C 4	(4)	

LxW [mm] Number of Elements		3.2x1.6(31)<1206>	
ated Volt. [Vdc		16(1C)	4) 10(1A)
Capacitance	Tolerance		umber
1.0μF(105)	±20%(M)	GNM314R61C105MA15D	GNM314R61A105MA13D

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

WWW.100Y.COM.TW High Dielectric Constant Type X7R(R7) Characteristics Low Profile

LxW [mm]	T	1.37x1.0(1M)<0504>	2.0x1.25(21)<0805>
Number of Elem	ents	2(2)	4(4)
Rated Volt. [Vdc		16(1C)	16(1C)
Capacitance	Tolerance	Part N	umber
0.10μF(104)	±20%(M)	GNM1M2R71C104MAA1D	GNM214R71C104MAA1D

WWW.100Y.COM.TW High Dielectric Constant Type X5R(R6) Characteristics Low Profile WWW.100Y.COM.TW

	1.37x1.0(1M)<0504> 2(2)		
OXIC			
any.Co	16(1C)	10(1A)	
ince	Part Number		
%(M) G	NM1M2R61C105MEA2D*	GNM1M2R61A105MEA4D	
		16(1C)	

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code WWW.100Y.COM.TW

^{*:} Please refer to GNM series Specifications and Test Method(2).

^{*:} Please refer to GNM series Specifications and Test Method(2). WWW.100Y.COM.

GNM Series Specifications and Test Methods (1)

In case Non "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (1).
In case "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (2).

			C	in case "" is added in PNs table, pi	lease refer to GNM Series Specifications and Test Methods		
No.	lte	em 🔩	WT	Specifications	Test Method		
	-1		Temperature Compensating Type	High Dielectric Type	TOO TOOM		
1	Operating Temperat Range		5C: -55 to +125°C	R7, C7: –55 to +125°C R6: –55 to +85°C	N.100X.COM.TW		
2	Rated Vo	ltage	See the previous page	ges. I COM TW	The rated voltage is defined as the maximum voltage which may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, V ^{p,p} or V whichever is larger, should be maintained within the rated voltage range.		
3	Annogram	1.11	No defects or observe	malitica (CO	voltage range.		
3	Appearan		No defects or abnorr	1002.	Visual inspection		
5	Dimensio Dielectric	N.T.W	Within the specified dimensions No defects or abnormalities		Using calipers No failure should be observed when 300% of the rated volt (5C) or 250% of the rated voltage (R7) is applied between terminations for 1 to 5 seconds, provided the charge/dischargurrent is less than 50mA.		
6	Insulation Resistance		More than 10,000Ms (Whichever is smalle		The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at 25°C and 75%RI-max. and within 2 minutes of charging.		
7	TO TO		Capacitance Within the specified tolerance 30pF min.: Q≥1000		The capacitance/Q/D.F. should be measured at 25°C at the frequency and voltage shown in the table.		
8	Q/ Dissipatio	on Factor	30pF max.: Q≥400+20C	Char. 25V min. 16V 10V 6.3V R7, R6, 0.025 0.035 0.035 0.05	Char. 5C R7		
	(D.F.)		C: Nominal Capacitance (pF)	C7 max. max. max. max.	Frequency 1±0.1MHz 1±0.1kHz Voltage 0.5 to 5Vrms 1.0±0.2Vrms		
9	Capacitance Temperature Characteristics	Capacitance Change Temperature Coefficient Capacitance Drift	Within the specified tolerance (Table A) Within the specified tolerance (Table A) Within ±0.2% or ±0.05pF (Whichever is larger.)	Char. Temp. Reference Cap. Temp. Change R7 -55°C to +125°C 25°C 25°C Within ±15% ±125°C ±22%	The capacitance change should be measured after 5 min. a each specified temperature stage. (1) Temperature Compensating Type The temperature coefficient is determined using the capacitance measured in step 3 as a reference. When cycling the temperature sequentially from step1 through 5, the capacitance measured in step 3 as a reference for the temperature coefficient and capacitance change as Table A. The capacitance drift is calculated by dividing the difference between the maximum and minimum measured values in the steps 1, 3 and 5 by the cap. value in step 3. Step Temperature (°C) 1 25±2 2 -55±3 (for 5C/R7/C7), -30±3 (for F5) 3 25±2 4 125±3 (for 5C/R7/C7), 85±3 (for F5) 5 25±2 (2) High Dielectric Constant Type The ranges of capacitance change compared with the abov 25°C value over the temperature ranges shown in the table should be within the specified ranges. • Initial measurement for high dielectric constant type. Perform a heat treatment at 150+0/-10°C for one hour and then set for 24±2 hours at room temperature. Perform the initial measurement. Solder the capacitor to the test jig (glass epoxy board) show		
10	Adhesive of Termin		GNM		Fig.1 using a eutectic solder. Then apply 5N force in parallel with the test jig for 10±1 sec. The soldering should be done either with an iron or using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. Type a b c d GNM1M2 0.5 1.6 0.32 0.32 GNM212 0.6 1.8 0.5 0.5 GNM214 0.6 2.0 0.25 0.25 GNM314 0.8 2.5 0.4 0.4 (in mn		
				TW.100 COM. T	Fig. 1		



GNM Series Specifications and Test Methods

In case Non "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (1).
In case "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (2). Continued from the preceding page.

	Item		W.100Y.C	Specifications		ON.I.					
No.			Temperature Compensating Type	High Dielectric	Туре	WW.	Test Method				
-70	WI.	Appearance	No defects or abnor	nalities		-11/	Solder the capacitor to the test jig (glass epoxy board) in the				
	W	Capacitance	Within the specified tolerance				same manner and under the same conditions as (10). The capacitor should be subjected to a simple harmonic motion				
	Vibration		30pF min.: Q≧1000	Y.COM.		WW	having a total amplitude of 1.5mm, the frequency being varied				
11 C	Resistance	Q/D.F.	30pF max.: Q≥400+20C C: Nominal Capacitance (pF)	Char. 25V min. 16V R7, R6, 0.025 0.035 C7 max. max.	10V 0.035 max.	6.3V 0.05 max.	uniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 minute. This motion should be applied for a period of 2 hours in each of 3 mutually perpendicular directions (total of 6 hours).				
N	Con	Appearance	No marking defects	100Y.		V	Solder the capacitor on the test jig (glass epoxy board) shown				
	Y.CON	Capacitance Change	Within ±5% or ±0.5p (Whichever is larger)	Within ±10%	W	4	in Fig. 2 using a eutectic solder. Then apply a force in the direction shown in Fig. 3 for 5±1 sec The soldering should be done by the reflow method and shoul				
12	2 Deflection		GNM212 2 GNM214 2	*GNM□2 *GNM□2 *5.0 *5	t=0.8r .05 0.32 05 0.5±	be conducted with care so that the soldering is uniform and from the first of defects such as heat shock. 20 50 Pressurizing speed: 1.0mm/sec. Pressurize R230 Flexure: ≤1 Capacitance meter 45 45					
	MM	N.100Y	GNM314 2	2.5±0.05 0.8±0.05 0.4±0.	W	0.05 n mm)	Fig. 3 Immerse the capacitor in a solution of ethanol (JIS-K-8101) and				
13	Solderability of Termination		75% of the termination continuously.	ons are to be soldered ever	nly and	rosin (JIS-K-5902) (25% rosin in weight proportion). Preheat at 80 to 120°C for 10 to 30 seconds. After preheating, immerse in eutectic solder solution for 2±0.5 seconds at 230±5°C or Sn-3.0Ag-0.5Cu solder solution for 2±0.5 seconds at 245±5°C.					
	Resistant Soldering		The measured and of specifications in the	observed characteristics sho following table.	ould satis	OW.TW WWW.100X.COM.					
		Appearance	No marking defects	TW W	Mar.	WW TOOY.CO					
		Capacitance Change	Within ±2.5% or ±0.25pF (Whichever is larger)	R7, R6, C7: Within ±7.5%	MMA	Preheat the capacitor at 120 to 150°C for 1 minute. Immerse the capacitor in a eutectic solder or Sn-3.0Ag-0.5Cu solder solution at 270±5°C for 10±0.5 seconds. Let sit at room temperature for 24±2 hours, then measure.					
14		Q/D.F.	30pF min.: Q≥1000 30pF max.: Q≥400+20C	MIN	MAI	- XI 1	101. OW.IM. W. W. 1001.				
				Char. 25V min. 16V R7, R6, 0.025 0.035 C7 max. max.	10V 0.035 max.	6.3V 0.05 max.	Initial measurement for high dielectric constant type Perform a heat treatment at 150+0/-10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement.				
		1.5	Capacitance (pF)	5000 - 5 717 1		NVV	100Y.CO. TITW WW. 100Y				
		I.R.	wore than 10,000MS	2 or 500Ω · F (Whichever is	smaller	N.T. COMP.					

Continued on the following page.



WWW.100Y.CO

Dielectric

Strength

No failure

WWW.100Y.COM.7

WWW.100

GNM Series Specifications and Test Methods (1)

In case Non "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (1).

In case "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (2). Continued from the preceding page.

	Item		WIN.IO	Specii	fications		-11	MINI	Test Method				
	ite	2111	Temperature Compensating Type						lest Method				
	Temperat Cycle	ture	The measured and observed characteristics should satisfy the specifications in the following table.					Fix the capacitor to the supporting jig in the same manner an					
	M. L	Appearance	No marking defects						under the same conditions as (10). Perform the five cycles according to the four heat treatments listed in the following				•
	OM.TY	Capacitance Change	Within $\pm 2.5\%$ or ± 0.25 pF (Whichever is larger)					table. Let sit for 24±2 hours (temperature compensating type or 48±4 hours (high dielectric constant type) at room temperature, then measure.					
Ĭ		Q/D.F.	30pF min.: Q≥1000 30pF max.: Q≥400+20C C:Nominal Capacitance (pF)	TOOL:					Step Temp. (°C)	1 Min. Operating	Room	3 Max. Operating	Room
7	Cor			Char. 25V min. 16V 10V 6.3V									
				R7, R6,	0.025	0.035	0.035	0.05	NY	Temp.+0/-3		Temp. +3/-0	Temp.
				C7	max.	max.	max.	max.	Time (min.) 30	30±3	2 to 3	30±3	2 to 3
0	Y.Co	VIIV		Initial measurement for high dielectric con									
	NV.C	I.R.	More than 10,000MΩ	Ω or 500Ω · F (Whichever is smaller)					Perform a heat treatment at 150+0/-10°C for one hour and then let sit for 24±2 hours at room temperature.				
	OOY.C	Dielectric Strength	No failure	failure WWW.TW.COM.TW						Perform the initial measurement.			
N	Humidity State	Steady	bserved characteristics should satisfy the following table.				MM	W.100Y	1 CO	I.TW			
1	11003	Appearance	No marking defects										
	N.100	Capacitance	Within ±5% or ±0.5pF	WWW.100Y.COM.TW					W				
	NW.10	Change (Whichever is larger) R7, R6, C7: Within ±12.5%						Sit the capacito	or at 40+2°C a	and 90 to	95% humidity	for 500+	
	30pF and over:					- (JM.	hours.	or at 10±2 or		CO		
1	100X.		Q≧350 10pF and over,	WW. 1007.Com.				Remove and le measure.	et sit for 24±2	hours at	room temperat	ure, ther	
	NWW	V. CON	30pF and below:	Char. 25V min. 16V 10V/6.3V					measure.				
		Q/D.F.	Q≥275+5C/2	R7, R6,	0.05	0.05	- 7	0.05	-VN				
	M.	TI 100	10pF and below: Q≧200+10C	C7 max. max. max.				1.7					
	WW	11.	C: Nominal					MILI					
	-311	M.In	Capacitance (pF)	N.		IVV	1.1	V CO	TW				
1		I.R.	More than 1,000M Ω or $50\Omega \cdot F$ (Whichever is smaller)						OM:		WW	.100 C	O_{Mr}
	Humidity	bserved characteristics should satisfy the ollowing table.				OM.TW							
		Appearance	No marking defects					100 -	COM.				
		MM.	Within ±7.5%	1.TW WW.1003				TOM.T					
	Capacitance or ±0.75pF Change (Whichever is larger)			R7, R6, C7: Within ±12.5%				Apply the rated 500±12 hours.	d voltage at 40)±2°C and	d 90 to 95% hu	ımidity fo	
		44.3	30pF and over:	OW.TW.				Remove and le measure.	et sit for 24±2	hours at	room temperat	ure, ther	
	30		Q≧200 30pF and below:	Char.	25V min	ı. 16V	1 10	V/6.3V	The charge/dis	scharge currer	nt is less t	than 50mA.	
		Q/D.F.	Q≥100+10C/3	R7, R6,	0.05	0.05		0.05	MY.Co.				
				C7 max.		max		max.	CO				
			C: Nominal Capacitance (pF)						100 r.				
		I.R.	More than $500M\Omega$ or $25\Omega \cdot F$ (Whichever is smaller)						N.100Y.				
1			MM	THIRDIE OF EAST 1 (THIRDIE OF IS STRUIG)					1001.	TI	Continu	ued on the follow	ving nage
											Continu	aca on the follow	ring page

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2

GNM Series Specifications and Test Methods

Continued from the preceding page

In case Non "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (1). In case "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (2).

			W.1001.	Specifications	ONUT TO THE REAL PROPERTY.
No.	Ite	em	Temperature Compensating Type	High Dielectric Type	Test Method
	High Ten Load	nperature	The measured and o specifications in the	bserved characteristics should satisfy the following table.	100 r. COM. TW
	W_{II}	Appearance	No marking defects	COM.	N.In. COM.
	OM.T\ CMOS	Capacitance Change	Within ±3% or ±0.3pF (Whichever is larger)	R7, R6, C7: Within ±12.5%	Apply 200% of the rated voltage for 1000±12 hours at the maximum operating temperature ±3°C. Let sit for 24±2 hours at room temperature, then measure. The charge/discharge current is less than 50mA.
18	CO_M	TW	30pF and over: Q≧350 10pF and over,	100X.COM.TW	Initial measurement for high dielectric constant type. Apply 200% of the rated DC voltage for one hour at the
	00X.CO	Q/D.F.	30pF and below: Q≥275+5C/2 10pF and below: Q≥200+10C C: Nominal Capacitance (pF)	Char. 25V min. 16V 10V/6.3V R7, R6, 0.04 0.05 0.05 C7 max. max. max.	maximum operating temperature ±3°C. Remove and let sit fo 24±2 hours at room temperature. Perform initial measurement.
	700 7.	I.R.	More than 1,000MΩ	or $50\Omega \cdot F$ (Whichever is smaller)	MW.Io. O. COM.

Table A

11003	Nominal Values	V 100	. OW:10	Capacitance Ch	ange from 25°C (%		
Char.		-5	5°C	- N	30°C	-1	0°C
100	(ppm/°C) Note 1	Max.	Min.	Max.	Min.	Max.	Min.
5C	0±30	0.58	-0.24	0.40	-0.17	0.25	-0.1
e 1: Nominal	values denote the temperature of	oefficient within a ra	ange of 25 to 125°0	o.*			

GNM Series Specifications and Test Methods (2)

In case Non "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (1). In case "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (2).

No.	Item	Specifications	Test Method
1	Operating Temperature Range	R6: -55°C to +85°C	1.1007.COM.TW
2	Rated Voltage	See the previous pages.	The rated voltage is defined as the maximum voltage which may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, V ^{p,p} or V ^{o,p} , whichever is larger, should be maintained within the rated voltage range.
3	Appearance	No defects or abnormalities	Visual inspection
4	Dimensions	Within the specified dimension	Using calipers
5	Dielectric Strength	No defects or abnormalities	No failure should be observed when 250% of the rated voltage is applied between the terminations for 1 to 5 seconds, provided the charge/discharge current is less than 50mA.
6	Insulation Resistance	$50\Omega \cdot$ F min.	The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at 25°C and 75%RH max. and within 1 minute of charging.
7	Capacitance	Within the specified tolerance	The capacitance/D.F. should be measured at 25°C at the frequency and voltage shown in the table.
8	Dissipation Factor (D.F.)	0.1 max.*3 Table 3 GNM0M2 R6 103/223/473/104 GNM1M2 R6 0J 105/225 GNM1M2 R6 1A 225 GNM212 R6 0J 225 GNM212 R6 1A 225 GNM214 R6 0J 225 *3 However 0.125 max. about Table 3 items.	Nominal Capacitance Measuring Frequency Measuring Voltage
9	Capacitance Temperature Characteristics	Char. Temp. Range Reference Temp. Cap. Change R6 -55 to +85°C 25°C Within ±15%	The capacitance change should be measured after 5 min.at each specified temperature stage. Step Temperature (°C) 1 25±2 2 -55±3 3 25±2 4 85±3 5 25±2 The ranges of capacitance change compared with the 25°C value over the temperature ranges shown in the table should be within the specified ranges. Initial measurement for high dielectric constant type. Perform a heat treatment at 150+0/-10°C for one hour and then set for 24±2 hours at room temperature. Perform the initial measurement.
10	Adhesive Strength of Termination	No removal of the terminations or other defects should occur. GNM 4 GNM 2 By the service of the terminations or other defects should occur. GNM 2 Solder resist Copper foil Fig. 1	Solder the capacitor to the test jig (glass epoxy board) shown in Fig. 1 using a eutectic solder. Then apply 5N (GNM0M2: 2N) force in parallel with the test jig fo 10±1 sec. The soldering should be done either with an iron or using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. Type a b c d GNM0M2 0.2 0.96 0.25 0.2 GNM1M2 0.5 1.6 0.32 0.32 GNM1M2 0.5 1.6 0.32 0.32 GNM212 0.6 1.8 0.5 0.5 GNM214 0.6 2.0 0.25 0.25 GNM314 0.8 2.5 0.4 0.4
	Annogration	W. CO.	(in mm)
	Appearance Capacitance	No defects or abnormalities Within the specified tolerance	Solder the capacitor to the test jig (glass epoxy board) in the same manner and under the same conditions as (10). The capacitor should be subjected to a simple harmonic motion

The capacitor should be subjected to a simple harmonic motion having a total amplitude of 1.5mm, the frequency being varied

uniformly between the approximate limits of 10 and 55Hz.

The frequency range, from 10 to 55Hz and return to 10Hz,

should be traversed in approximately 1 minute. This motion should be applied for a period of 2 hours in each of 3 mutually

perpendicular directions (total of 6 hours).

11

Vibration

D.F.

*3 However 0.125 max. about Table 3 items.



GNM Series Specifications and Test Methods

In case Non "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (1). In case "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (2). Continued from the preceding page No Item Test Method Specifications Solder the capacitor to the test jig (glass epoxy board) shown in Appearance No marking defects Fig. 2 using a eutectic solder. Then apply a force in the Capacitance Within ±10% direction shown in Fig. 3. The soldering should be done by the Change reflow method and should be conducted with care so that the •GNM□□4 •GNM□□2 soldering is uniform and free of defects such as heat shock. 50 Pressurizing speed: 1.0mm/sec. Deflection Flexure · ≤1 Type b d a GNM0M2 2.0+0.05 | 0.2+0.05 | 0.2+0.05 | 0.25+0.05 GNM1M2 2.0±0.05 | 0.5±0.05 | 0.32±0.05 | 0.32±0.05 45 GNM212 2.0±0.05 0.6±0.05 0.5±0.05 0.5±0.05 GNM214 2.0±0.05 0.7±0.05 0.3±0.05 0.2±0.05 Fig. 3 **GNM314** 2.5±0.05 | 0.8±0.05 | 0.4±0.05 | 0.4±0.05 Fig. 2 Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Preheat at Solderability of 75% of the terminations are to be soldered evenly 80 to 120°C for 10 to 30 seconds. After preheating, immerse in 13 Termination and continuously. eutectic solder solution for 2±0.5 seconds at 230±5°C or Sn-3.0Ag-0.5Cu solder solution for 2±0.5 seconds at 245±5°C. **Appearance** No marking defects Preheat the capacitor at 120 to 150°C for 1 minute. Immerse Capacitance R6⁻⁴: Within ±7.5% the capacitor in a eutectic solder or Sn-3.0Ag-0.5Cu solder Change *4 GNM0M2R60E105: Within +15/-7.5% solution at 270±5°C for 10±0.5 seconds. Resistance Let sit at room temperature for 24±2 hours, then measure. DF 14 to Soldering *3 However 0.125 max, about Table 3 items Initial measurement Heat Perform a heat treatment at 150 +0/-10°C for one hour and I.R $50\Omega \cdot F \min$ then let sit for 24±2 hours at room temperature. Perform Dielectric the initial measurement. No failure Strength Fix the capacitor to the supporting jig in the same manner and **Appearance** No marking defects under the same conditions as (10). Capacitance R6*5: Within ±12.5% Perform the five cycles according to the four heat treatments *5 GNM0M2R60E105: Within +15% Change listed in the following table. 0.1 max *3 Let sit for 24±2 hours at room temperature, then measure. D.F. *3 However 0.125 max. about Table 3 items Step Temperature 15 Min. Operating Min. Operating Room $50\Omega \cdot F$ min. Room I.R. Temp. (°C) Cycle Temp. Temp. Temp. Temp. 2 to 3 30+3 2 to 3 Time (min.) 30±3 Initial measurement Dielectric No failure Perform a heat treatment at 150 +0/-10 °C for one hour and Strength then let sit for 24±2 hours at room temperature. Perform the initial measurement. Apply the rated voltage at 40±2°C and 90 to 95% humidity for Appearance No marking defects 500±12 hours. The charge/discharge current is less than 50mA. Capacitance R6: Within ±12.5% Initial measurement Hiah Change Perform a heat treatment at 150 +0/-10°C for one hour Temperature D.F. and then let sit for 24+2 hours at room temperature. 0.2 max. 16 High Perform the initial measurement. Humidity Measurement after test (Steady) Perform a heat treatment at 150 +0/-10°C for one hour I.R. and then let sit for 24±2 hours at room temperature, then measure. Apply 150% (GNM1M2R61A225/1C105: 125% of the rated **Appearance** No marking defects voltage) of the rated voltage for 1000±12 hours at the Capacitance R6: Within ±12.5% maximum operating temperature ±3°C. Let sit for 24±2 hours Change at room temperature, then measure. D.F. 0.2 max. The charge/discharge current is less than 50mA. Initial measurement 17 Durability Perform a heat treatment at 150 +0/-10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement. I.R. $25\Omega \cdot F$ min. Measurement after test Perform a heat treatment at 150 ±0/-10°C for one hour and

then let sit for 24±2 hours at room temperature, then measure.

This PDF catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering

Chip Monolithic Ceramic Capacitors



Low ESL LLL/LLA/LLM Series

Reversed Geometry Low ESL Type

■ Features

3

- Low ESL, good for noise reduction for high frequency
- 2. Small, high cap

■ Applications

- 1. High speed micro processor
- 2. High frequency digital equipment

Eight Terminals Low ESL Type

■ Features

- 1. Low ESL (100pH), suitable to decoupling capacitor for 1GHz clock speed IC.
- 2. Small, large cap

■ Applications

- 1. High speed micro processor
- 2. High frequency digital equipment

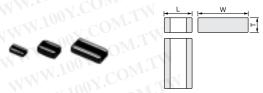
Ten Terminals Low ESL Type

■ Features

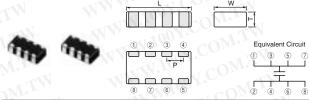
- 1. Low ESL (45pH), suitable to decoupling capacitor for 2GHz clock speed IC.
- 2. Small, large cap

■ Applications

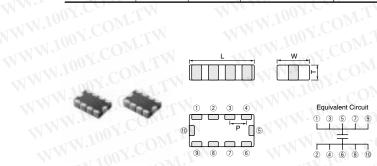
- 1. High speed micro processor
- 2. High frequency digital equipment



		1.0	
Part Number		Dimensions (mm)	
Fait Number	-100F	W	Т
LLL153	0.5 ±0.05	1.0 ±0.05	0.3 ±0.05
LLL185	0.8 ±0.1	1.6 ±0.1	0.6 max.
LLL215	W. Joo		0.5 +0/-0.15
LLL216	1.25 ±0.1	2.0 ±0.1	0.6 ±0.1
LLL219	-1100 J.	~7(1,7)	0.85 ±0.1
LLL315	JW - 7 (Uly at 1	0.5 +0/-0.15
LLL317	1.6 ±0.15	3.2 ±0.15	0.7 ±0.1
LLL31M	100		1.15 ±0.1



Part Number		Dime	ensions (mm)	1.44
Part Number	L	W	TONE.	P
LLA185	1.6 ±0.1	0.8 ±0.1	0.5 +0.05/-0.1	0.4 ±0.1
LLA215	2.0 ±0.1	1.25 ±0.1	0.5 +0.05/-0.1	0.5 ±0.05
LLA219	2.0 ±0.1	1.25 ±0.1	0.85 ±0.1	0.5 ±0.05
LLA315	3.2 ±0.15	1.6 ±0.15	0.5 +0.05/-0.1	0.8 ±0.1
LLA319	3.2 ±0.15	1.6 ±0.15	0.85 ±0.1	0.8 ±0.1
LLA31M	3.2 ±0.15	1.6 ±0.15	1.15 ±0.1	0.8 ±0.1



Dout Niverbox	I.Cu	Dime	nsions (mm)	1100 X.
Part Number	A.COM	W	T	P
LLM215	2.0 ±0.1	1.25 ±0.1	0.5 +0.05/-0.1	0.5 ±0.05
LLM315	3.2 ±0.15	1.6 ±0.15	0.5 +0.05/-0.1	0.8 ±0.1



Capacitance Table

Reversed Geometry Low ESL Type X7R(R7)/X7S(C7)/X6S(C8)/X5R(R6) Characteristics

5 ex.5: T	Dimensi	on [mm]																
LxW [mm]	(1	x1.0 l 5) 204>	1002		0.8x1.6 (18) <0306>		ı	W		1.25x2. (21) <0508>		OM.	IM	ī	(3	x3.2 (1) (12>		
Rated Voltage [Vdc]		4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	_	.3 J)
Capacitance	X6S (C8)	X7S (C7)	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)	X7S (C7)	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)	X7S (C7)	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)	X5R (R6)
2200pF(222)		W	5	400	I.Co	- 11	TIN		W	Maria.	- 100	Y.C.		TW				
4700pF(472)			5	Too									Ozo					
10000pF(103)			-414	5	1 350	MO	77.	6			W.M	JU	7	1	- 3 1			
22000pF(223)				5	01.			6					7	V.T				
47000pF(473)	N		WW	Mor	5	C_{O}		N	6				7.7					
0.10μF(104)	3			WW.	Ino	5	Mi		6	-41	WW	Too	M	77				
0.22μF(224)	3		W.			5	Mo	LA		9	6	V.10		M	7	. 1		
0.47μF(474)	W	3	V			NY.C	5	TV			9	-11	101.	M	7	N		
1.0μF(105)	- × 1	1		AT W	M.To		5		N		9	M:3.	NO.	CO	M	7		
2.2μF(225)	LTV		1				5	$V_{T,T}$			-14	9	100.		Mr.,	М	7	
4.7μF(475)	TI											1	100			J.A.	М	
10μF(106)	Mrs			4X			V.C		TW				40	oy.C	,O = 1	TV		М

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

Reversed Geometry Low ESL Type X7R(R7)/X7S(C7) Characteristics Low Profile

LxW [mm]	I.CC	(1	x1.6 8) 806>		W	WW	(2	5x2.0 2 1) 508>		TW		(3	x3.2 81) 612>	vi Viro
Rated Voltage [Vdc]	25 (1E)	16 (1C)	10 (1A)	4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)
Capacitance	X7R (R7)	X7R (R7)	X7R (R7)	X7S (C7)	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)	X7S (C7)	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)
10000pF(103)	5	of CC)Mr.	-XXI	5	< X	WW	.10	v.C	Ohr	5			NW
22000pF(223)	1.100	5	MO			5	1	N.10			5	κĪ		
47000pF(473)	1Ω	5		VI	ļ 		5		00χ			5	<u> </u>	M.
0.10μF(104)			5		N		5	111.00	.003			5		W
0.22μF(224)			- cO	5	-31		- 411	5	Too	<1 C	Mr.,	- XX	5	-<1
0.47μF(474)	i i Lucii	100		Me			M	111	5	7.	Mo	TAL		5
1.0μF(105)		- 0	37 C	7,7	N/A		41			5	3			

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Capacitance Table

-							1	M	-40
Continued from the pre	٠.	•							
Eight Terminals L	ow E	SL Ty	pe X	7S(C7	7)/X7F	R(R7)	Char	acter	istics
	Dimensio								
LxW [mm]	1.6x0.8 (18) <0603>	W.1		2.0x1.2 (21) <0805>		W		3.2x1.6 (31) <1206>	
Rated Voltage [Vdc]		25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	16 (1C)	10 (1A)	4 (0G)
Capacitance	X7S (C7)	X7R (R7)	X7R (R7)	X7R (R7)	X7R (R7)	X7S (C7)	X7R (R7)	X7R (R7)	X7R (R7)
10000pF(103)		9	14.	4005	I.Co	- N	W	•	W
22000pF(223)		9	WW						
47000pF(473)		9					1.7		
0.10μF(104)	5		9	-11	10 X .		9	N	
0.22μF(224)	5		9	111.2			9	W	
0.47μF(474)	5		77	9	100 -		9		
1.0μF(105)	5			-41	90	1.0	M	9]
2.2μF(225)	5				40	9	0-	M	9
4.7μF(475)	- XX					9	COM	1.	N

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12.4	ļ				1 300		IVIVI
	Ì			M.r.	9	CO_{h}	-
hown in	() and	Unit is s	hown in	[]. <	>: EIA [i	nch] Cod	de
ow E	SL Ty	pe X	7R(R	7)/X7	S(C7)	Char	acter
Dimensio	on [mm]						
- ~ 1	1 2		5	14.	×1 10	3.2x1.6	3
			>		M		Co_{r}
25	102			4	-47		6.3
	-57	(1A)	(0J)	(0G)		(1A)	(0J)
Y7B	Y7P	Y7D	Y7D	Y79	(A) A)	Y7B	X7R
(R7)	(R7)	(R7)	(R7)	(C7)			(R7)
5	MO	30.11			N. V.	11.1	90 .
5							
	5	1			W		
	5	77.	نيار آهر			WW	7,000
	1.	5	L_{IJ}		5		
			5			5	1
11:7-		CO_{L}	- 11	5	1	WIN	5
				5			5
				5	1		
	25 (1E) X7R (R7)	25 16 (1E) X7R (R7) 5 5 5 5	Ow ESL Type X Dimension [mm] 2.0x1.2 (21) <0805: 25	Dow ESL Type X7R(R: 2.0x1.25 (21) <0805> 25	Ow ESL Type X7R(R7)/X75 Dimension [mm] 2.0x1.25 (21) <0805> 25	hown in () and Unit is shown in [].	hown in () and Unit is shown in []. <>: EIA [inch] Cocow ESL Type X7R(R7)/X7S(C7) Chardimension [mm] 2.0x1.25 (21) (31) (31) (0805> (25 16 10 6.3 4 16 10 (1E) (1C) (1A) (0J) (0G) (1C) (1A) (1A) (1B) (1B) (1B) (1B) (1B) (1B) (1B) (1B

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

Ten Terminals Low ESL Type X7R(R7)/X7S(C7) Characteristics Low Profile WWW.100Y.COM.TW WWW.100Y

5 ex.5: T	Dimension	on [mm]					
LxW [mm]	W	(2	1.25 (1) (05>	Y.CU	MA	3.2x1.6 (31) <1206>	
Rated Voltage [Vdc]	25 (1E)	16 (1C)	6.3 (0J)	4 (0G)	16 (1C)	10 (1A)	6.3 (0J)
Capacitance	X7R (R7)	X7R (R7)	X7R (R7)	X7S (C7)	X7R (R7)	X7R (R7)	X7R (R7)
10000pF(103)	5	W	NN T	100	1.0	100	IW
22000pF(223)	5	1	MN		V.C		
47000pF(473)		5		N.70	W -	CON	100
0.10μF(104)		5	M. A.	-xxi 1	5	a01	
0.22μF(224)			5		5		717
0.47μF(474)			5	N	70	5	Diar.
1.0μF(105)				5	1.100	(Mo
2.2μF(225)				5	×1 10	01.	5

<>: EIA [inch] Code The part number code is shown in () and Unit is shown in [].

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Reversed Geometry Low ESL Type X7R(R7)/X7S(C7)/X6S(C8) Characteristics

LxW [mm]		0.5x1.0(1	5)<0204>
Rated Volt. [Vdc]	WWW	6.3(0J)	4(0G)
Capacitance	Tolerance	Part N	umber
0.10μF(104)	±20%(M)	LLL153C80J104ME01E*	
0.22μF(224)	±20%(M)	LLL153C80J224ME14E*	N MM.
0.47μF(474)	±20%(M)	MIN. TO COM.	LLL153C70G474ME17E

LxW [mm]		MAN W. CO.	0.8x1.6(1	8)<0306>	
Rated Volt. [Vdc	:]	50(1H)	25(1E)	16(1C)	10(1A)
Capacitance	Tolerance	W. 1001.	Part N	lumber	-<1
2200pF(222)	±20%(M)	LLL185R71H222MA01L	TITY W	1100Y.	
4700pF(472)	±20%(M)	LLL185R71H472MA01L	On	MAN. CO.	TW
10000pF(103)	±20%(M)	1111.100	LLL185R71E103MA01L	TANN TOO COM	-XX
22000pF(223)	±20%(M)	1/1/1/1007	LLL185R71E223MA01L	M	U.L.
47000pF(473)	±20%(M)	WWW	CONTY	LLL185R71C473MA01L	VIII
0.10μF(104)	±20%(M)	TWW.Inc	COM.	MAN. PON.CC	LLL185R71A104MA01L
0.22μF(224)	±20%(M)	71100	OM:	-TXN.100	LLL185R71A224MA01L

LxW [mm]		0.8x1.6(18)<0306>
Rated Volt. [Vdc	i com.	4(0G)
Capacitance	Tolerance	Part Number
0.47μF(474)	±20%(M)	LLL185C70G474MA01L
1.0μF(105)	±20%(M)	LLL185C70G105ME02L*
2.2μF(225)	±20%(M)	LLL185C70G225ME01L*

Capacitance	Tolerance	Part Number			
0.47μF(474)	±20%(M)	LLL185C70G474MA01L	TOOY.COM TW		
1.0μF(105)	±20%(M)	LLL185C70G105ME02L*	N.In. COM.		
2.2μF(225)	±20%(M)	LLL185C70G225ME01L*	M.1001. COM.1		
MM	TONY.CO.	TW WW	1007.001.1	N NN	001. W.TW
LxW [mm]	. T. CC		1.25x2.0(21)<0508>	ANY.CO TY
Rated Volt. [Vdc	1.100	50(1H)	25(1E)	16(1C)	10(1A)
Capacitance	Tolerance	M.TW V	Part N	lumber	1.100 . COW. 1.
10000pF(103)	±20%(M)	LLL216R71H103MA01L	MAN AT TOOK CO.	TW WW.	1100Y.
22000pF(223)	±20%(M)	LLL216R71H223MA01L	TIMM TO COL	WIN W	W. T. COM
47000pF(473)	±20%(M)	COM.TV	LLL216R71E473MA01L	M. I.	M.Ing. COM.
0.10μF(104)	±20%(M)	Y.CO. TW	LLL216R71E104MA01L	MIN	1007.
0.22μF(224)	±20%(M)	COM	MAN. ON.C.	LLL219R71C224MA01L	LLL216R71A224MA01L
0.47μF(474)	±20%(M)	COM	13111.100	OM	LLL219R71A474MA01L
1.0μF(105)	±20%(M)	OOY. OM.TW	W. 1007.	COM:IV	LLL219R71A105MA01L
	MM	ON.CO. TW	MM 100X	WT1	11007.0
LxW [mm]	WW	1.25x2.0(21)<0508>	MW.10		
Rated Volt. [Vdc]	4(0G)	W 100		
Capacitance	Tolerance	Part Number	WW 1		
2.2 [(005)	1200(/84)	1110400700005844041			

LxW [mm]	WW	1.25x2.0(21)<0508>
Rated Volt. [Vdc]	1 1/1	4(0G)
Capacitance Tolerance		Part Number
2.2uF(225)	±20%(M)	LLL219C70G225MA01L

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code

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●Product ID 2Series **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) 6 Rated Voltage **9**Individual Specification Code

4 Dimension (T) Capacitance Packaging

^{*:} Please refer to LLL/LLA/LLM Series Specifications and Test Method(2).

Reversed Geometry Low ESL Type X7R(R7)/X5R(R6) Characteristics

LxW [mm]		100Y.	1.6x3.2(3	31)<0612>	
Rated Volt. [Vdc		50(1H)	25(1E)	16(1C)	10(1A)
Capacitance	Tolerance	M.Ing COM.	Part N	lumber	
10000pF(103)	±20%(M)	LLL317R71H103MA01L	1.10	COM	
22000pF(223)	±20%(M)	LLL317R71H223MA01L	M. M.	1007. TW	
47000pF(473)	±20%(M)	LLL317R71H473MA01L	W WWW	ON CONTIN	
0.10μF(104)	±20%(M)	LLL31MR71H104MA01L	LLL317R71E104MA01L	Jan COM.	
0.22μF(224)	±20%(M)	11007.0	LLL31MR71E224MA01L	LLL317R71C224MA01L	
0.47μF(474)	±20%(M)	MANA CONT.	LLL31MR71E474MA01L	LLL317R71C474MA01L	
1.0μF(105)	±20%(M)	TANN TOO	VI.	LLL31MR71C105MA01L	LLL317R71A105MA01L
2.2μF(225)	±20%(M)	11001.	W.I.	M.100 COM.	LLL31MR71A225MA01L
ON.CO	TW	MM	WILL	11007.	
LxW [mm]	- TN	1.6x3.2(31)<0612>	OM		
Rated Volt. [Vdc		6.3(0J)	COM.1		
Capacitance	Tolerance	Part Number	M.TW		

LxW [mm]		1.6x3.2(31)<0612>
Rated Volt. [Vdc	1.1	6.3(0J)
Capacitance	Tolerance	Part Number
2.2μF(225)	±20%(M)	LLL317R70J225MA01L
4.7μF(475)	±20%(M)	LLL31MR70J475MA01L
10μF(106)	±20%(M)	LLL31MR60J106ME01L*

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code

Reversed Geometry Low ESL Type X7R(R7)/X7S(C7) Characteristics Low Profile

LxW [mm]	001.	1.1.	0.8x1.6(1	18)<0306>	COM.
Rated Volt. [Vdc	I ON Y.CO.	25(1E)	16(1C)	10(1A)	4(0G)
Capacitance	Tolerance		Part N	lumber	100Y.CO
10000pF(103)	±20%(M)	LLL185R71E103MA11L	MAN TON		TO COM.
22000pF(223)	±20%(M)	WIII V	LLL185R71C223MA11L	In h	VION COMPLY
47000pF(473)	±20%(M)	COLLAN	LLL185R71C473MA11L	TW WW	1100Y.
0.10μF(104)	±20%(M)	COM	TAMMITON COL	LLL185R71A104MA11L	W. T. COM
0.22μF(224)	±20%(M)	. OW.TW	W.1003	W.I.	LLL185C70G224MA11L

LxW [mm]		V.COIN.	1.25x2.0(21)<0508>	W TOOY LO
Rated Volt. [Vdc	1.11	50(1H)	25(1E)	16(1C)	10(1A)
Capacitance	Tolerance	OOX.COM.TW	Part N	lumber	W.100 COM
10000pF(103)	±20%(M)	LLL215R71H103MA11L	WWW	TIN	MM = 1007.00
22000pF(223)	±20%(M)	COM	LLL215R71E223MA11L	I COM	MAN COT
47000pF(473)	±20%(M)	11001. OWITH	VI 100	LLL215R71C473MA11L	CO
0.10μF(104)	±20%(M)	1007.0	WW	LLL215R71C104MA11L	1001.
0.22μF(224)	±20%(M)	M. T. COM	N WWW.	W.Co. TVI	LLL215R71A224MA11L
		M. Ing COM.	TWW.	COMP	WW.I
LxW [mm]	W.	1.25x2.0(21)<0508>	1001. OM.TW	
Rated Volt. [Vdc	:]	6.3(0J)	4(0G)	100Y.CO.	
Capacitance	Tolerance	Part N	lumber	L. TO COM	

6.3(0J)	4/00)
0.5(00)	4(0G)
Part Nu	mber
LLL215R70J474MA11L	Tr. W
LLL215C70G105MA	

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

(Part Number) | LL | L | 31 | 7 | R7 | 1H | 103 | M | A01 | L 6 0 0 **9 0**

2Series ●Product ID **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) **6**Rated Voltage 9Individual Specification Code

4 Dimension (T) Capacitance Packaging



^{*:} Please refer to LLL/LLA/LLM Series Specifications and Test Method(2).

^{*:} Please refer to LLL/LLA/LLM Series Specifications and Test Method(2).

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• This PDF catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

Reversed Geometry Low ESL Type X7R(R7) Characteristics Low Profile

xW [mm]		1007. OM.TW	1.6x3.2(3	i 1)<0612>	
ated Volt. [Vdc]	MAIN	50(1H)	25(1E)	16(1C)	10(1A)
apacitance	Tolerance	N.Ing. COM.	Part N	lumber	
10000pF(103)	±20%(M)	LLL315R71H103MA11L	1.11	COM	
22000pF(223)	±20%(M)	LLL315R71H223MA11L		001.	
47000pF(473)	±20%(M)	MM. TO COM.	LLL315R71E473MA11L	ON CONTIN	
0.10μF(104)	±20%(M)	TW.100 COM.	LLL315R71E104MA11L	Too COM.	
0.22μF(224)	±20%(M)	11007.0	In	LLL315R71C224MA11L	
0.47μF(474)	±20%(M)	MAN CON	TW WW	TW.	LLL315R71A474MA11L

^{*:} Please refer to LLL/LLA/LLM Series Specifications and Test Method(2). The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

COM.TW WWW.100Y.COM.TW Eight Terminals Low ESL Type X7R(R7)/X7S(C7) Characteristics

LxW [mm] Rated Volt. [Vdc]		1.6x0.8(18)<0603>	
		4(0G)	
Capacitance	Tolerance	Part Number	
0.10μF(104)	±20%(M)	LLA185C70G104MA01L	
0.22μF(224)	±20%(M)	LLA185C70G224MA01L	
0.47μF(474)	±20%(M)	LLA185C70G474MA01L	
1.0μF(105)	±20%(M)	LLA185C70G105ME01L*	
2.2μF(225)	±20%(M)	±20%(M) LLA185C70G225ME16L*	

W T					
0.47μF(474)	±20%(M)	LLA185C70G474MA01L	In CON'T		
1.0μF(105)	±20%(M)	LLA185C70G105ME01L*	1007. COM.TW		
2.2μF(225)	±20%(M)	LLA185C70G225ME16L*	TOON.CO. TY		
I. M.In	-1 CON	Wire	N. To. COM.	MMM.r	OV.COM. TW
LxW [mm]	001.		2.0x1.25(2	21)<0805>	COM
Rated Volt. [Vdc	I ONY.	25(1E)	16(1C)	10(1A)	6.3(0J)
Capacitance	Tolerance	TW WY	Part N	umber	100Y.CO
10000pF(103)	±20%(M)	LLA219R71E103MA01L	M.In. COM.	WWW.	TO COMP.
22000pF(223)	±20%(M)	LLA219R71E223MA01L	1007. COM	In A	1.100 COM. 1.
47000pF(473)	±20%(M)	LLA219R71E473MA01L	MAN TOOK.CO.	TW WW	11001.
0.10μF(104)	±20%(M)	COM	LLA219R71C104MA01L	WW W	M. COL
0.22μF(224)	±20%(M)	. TOM.TY	LLA219R71C224MA01L	M. I	M.In. COM.
0.47μF(474)	±20%(M)	Y.Co. ITW	11001.00	LLA219R71A474MA01L	1001. OM
1.0μF(105)	±20%(M)	COM	MAN. ON C	Dir. AN	LLA219R70J105MA01L
	-XW.10	COMP	M.Ioo	ONL	MAN COL
LxW [mm]	WW	2.0x1.25(21)<0805>	W ' 100 Y.		
Rated Volt. [Vdc		4(0G)	MANATOOX		
Capacitance	Tolerance	Part Number	TWW.Ioc		
2.2μF(225)	±20%(M)	LLA219C70G225MA01L	W 100		

LxW [mm]	WAL.	2.0x1.25(21)<0805>		
Rated Volt. [Vdc]		4(0G)		
Capacitance	Tolerance	Part Number		
2.2μF(225)	±20%(M)	LLA219C70G225MA01L		
4.7μF(475)	±20%(M)	LLA219C70G475ME01L*		

	4(00)		
Tolerance	Part Number	MW.IO	
±20%(M)	LLA219C70G225MA01L	W.100	
±20%(M)	LLA219C70G475ME01L*	WW 10	
TAIN!	M. T. COM	N WWW.	ON.COM
**	M.Ing COM.	3.2x1.6(31)<1206>	COM
]	16(1C)	10(1A)	4(0G)
Tolerance	MAN. TOOX.CO.	Part Number	100Y.CO.TY
±20%(M)	LLA319R71C104MA01L	WWW WWW	· COM
±20%(M)	LLA319R71C224MA01L		N.Ing. COM.
±20%(M)	LLA319R71C474MA01L	LIN WY	T 100Y.
±20%(M)	LLA31MR71C105MA01L	LLA319R71A105MA01L	M. Com
±20%(M)	11.100 C	LLA31MR71A225MA01L	LLA319R70G225MA01I
			MMM.100X.CO
	Tolerance ±20%(M) ±20%(M) Tolerance ±20%(M) ±20%(M) ±20%(M) ±20%(M) ±20%(M) ±20%(M) ode is shown in	Tolerance Part Number ±20%(M) LLA219C70G225MA01L ±20%(M) LLA219C70G475ME01L*] 16(1C) Tolerance ±20%(M) LLA319R71C104MA01L ±20%(M) LLA319R71C224MA01L ±20%(M) LLA319R71C474MA01L ±20%(M) LLA31MR71C105MA01L ±20%(M) code is shown in () and Unit is shown in []. <>: E	Tolerance

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

WWW.100Y.COM.TW *: Please refer to LLL/LLA/LLM Series Specifications and Test Method(2).

Eight Terminals Low ESL Type X7R(R7)/X7S(C7) Characteristics Low Profile

LxW [mm]		2.0x1.25 (21) <0805>					
Rated Volt. [Vdc		25(1E)	16(1C)	10(1A)	6.3(0J)		
Capacitance	Tolerance	M.In. COM.	Part N	lumber			
10000pF(103)	±20%(M)	LLA215R71E103MA14L	1.11	COM			
22000pF(223)	±20%(M)	LLA215R71E223MA14L		007.0 M.TW			
47000pF(473)	±20%(M)	MM. LON COM	LLA215R71C473MA14L	ON.CO			
0.10μF(104)	±20%(M)	TW. Inn. COM.	LLA215R71C104MA14L	Jon COM.			
0.22μF(224)	±20%(M)	11007.0	J.M.	LLA215R71A224MA14L			
0.47μF(474)	±20%(M)	M.M. O.Y.Co.	WW WY	1007.00	LLA215R70J474MA14L		
COM	_ 1	TANN TOO CO	VI.	M. To O.Y. COM.	N		
LxW [mm]		2.0x1.25(21)<0805>	M.I.				
Rated Volt. [Vdc	HW	4(0G)	WITH				
Capacitance	Tolerance	Part Number	ONL				
1.0μF(105)	±20%(M)	LLA215C70G105MA14L	COM.				

LxW [mm]	. An	2.0x1.25(21)<0805>
Rated Volt. [Vdc	hW	4(0G)
Capacitance	Tolerance	Part Number
1.0μF(105)	±20%(M)	LLA215C70G105MA14L
2.2μF(225)	±20%(M)	LLA215C70G225ME11L*
4.7μF(475)	±20%(M)	LLA215C70G475ME19L*

LxW [mm]	· OM.T.	W 100	3.2x1.6(31)<1206>	100 -
Rated Volt. [Vdc	l TV	16(1C)	10(1A)	6.3(0J)
Capacitance Tolerance		W WWW.	WWW	
0.22μF(224)	±20%(M)	LLA315R71C224MA14L	ON.	TWW.Inc
0.47μF(474)	±20%(M)		LLA315R71A474MA14L	W 100
1.0μF(105)	±20%(M)	THE WITH	TY CONTRACTOR	LLA315R70J105MA14L
2.2μF(225)	±20%(M)		Vila COM.	LLA315R70J225MA14L

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code

Ten Terminals Low ESL Type X7R(R7)/X7S(C7) Characteristics Low Profile

LxW [mm]		COM	2.0x1.25(21)<0805>	
Rated Volt. [Vdc	100	25(1E)	16(1C)	6.3(0J)	4(0G)
Capacitance	Tolerance	Y.CO. TW	Part N	Number	1001. COM.
10000pF(103)	±20%(M)	LLM215R71E103MA11L	WWW.	UNITED VI	MAN TOOK CO.
22000pF(223)	±20%(M)	LLM215R71E223MA11L	TANN Too	ONL	MAN TO COM
47000pF(473)	±20%(M)	OOY.	LLM215R71C473MA11L	COM:IV	W.100 . COI
0.10μF(104)	±20%(M)	ON.CO. TV	LLM215R71C104MA11L	TI	MM. 11007.00
0.22μF(224)	±20%(M)	Too COM.	MAN	LLM215R70J224MA11L	MAN ON CC
0.47μF(474)	±20%(M)	1100 F. COW. I.A.	V 100	LLM215R70J474MA11L	TANN TOO
1.0μF(105)	±20%(M)	1001.	WW10	O. MIN	LLM215C70G105MA11L
2.2μF(225)	±20%(M)	M. T. COM	V WWW.	OY.COP TW	LLM215C70G225ME11L*
		MAIN COM.	· WW.	COMP	TWW.IO
LxW [mm]	W.	1100Y.	3.2x1.6(31)<1206>	1001. CONT.LA.	- W. 1003
Rated Volt. [Vdc	:]	16(1C)	10(1A)	6.3(0J)	- WW 100

LxW [mm]	1/1	1100Y.	3.2x1.6(31)<1206>	1001. COW.11
Rated Volt. [Vdc]	16(1C)	10(1A)	6.3(0J)
Capacitance	Tolerance	COM	Part Number	V. T. COM.
0.10μF(104)	±20%(M)	LLM315R71C104MA11L		N.Ing. COM.
0.22μF(224)	±20%(M)	LLM315R71C224MA11L	WIN WW	11001. OM.TW
0.47μF(474)	±20%(M)	WWW. CO	LLM315R71A474MA11L	M. TONY. COM
2.2uF(225)	±20%(M)	-13N 100	M. I	LLM315R70J225MA11L

< >: EIA [inch] Code The part number code is shown in () and Unit is shown in [].

(Part Number) | LL | A | 5 R7 1E 103 M A14 L 6 0 8 0 1

Product ID **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) **6**Rated Voltage

4 Dimension (T) Capacitance

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

9Individual Specification Code

Packaging



^{*:} Please refer to LLL/LLA/LLM Series Specifications and Test Method(2).

^{*:} Please refer to LLL/LLA/LLM Series Specifications and Test Method(2).

LLL/LLA/LLM Series Specifications and Test Methods (1)

In case Non "*" is added in PNs table, please refer to LLL/LLA/LLM Series Specifications and Test Methods (1). In case "*" is added in PNs table, please refer to LLL/LLA/LLM Series Specifications and Test Methods (2).

No.	Ite	em	WW.10	Spe	cifications	WWW.	TO COM	Test Method
1	Operating Temperat Range		R7, C7: -5	5 to +125°C	M.TW	WWW	N.100X.COV	M.TW
Or	WTI		MM	1100Y.CO	MIW	MM		ge is defined as the maximum voltage which
2	Rated Vo	ltage	See the pre	vious pages.			When AC voltag	continuously to the capacitor. ge is superimposed on DC voltage, V ^{p.p} or V ^{o.f} ger, should be maintained within the rated
	T	N	11/11	1007.	TIMOS	1	voltage range.	TOM.T.
3	Appearar	ice		or abnormalities	COS		Visual inspectio	n
4	Dimensio	ns	Within the s	pecified dimension	on CO	N.	Using calipers	Y.CO.
5	Dielectric	Strength	No defects	or abnormalities			is applied betwe	d be observed when 250% of the rated voltage the terminations for 1 to 5 seconds, arge/discharge current is less than 50mA.
6	Insulation Resistant			: More than 10,00 : More than 500Ω Capacitance		M.TW	-1	esistance should be measured with a DC volt he rated voltage at 25°C and 75%RH max. ar s of charging.
7	Capacita	nce	Within the s	pecified tolerance	e on Y.C.	WT	The capacitance	e/D.F. should be measured at 25°C at the
8	Dissipatio (D.F.)	n Factor	Factor W.V.: 25V min.; 0.025 max. W.V.: 16V/10V max.; 0.035 max. W.V.: 6.3V max.; 0.05 max.					roltage shown in the table. 0.1kHz /rms r0G474, the capacitance should be measured ge of 0.5±0.1Vrms.
	VW.100	N.CC	M.TW		WW.100	N.COM.TV		e change should be measured after 5 min. at emperature stage.
	WW.10	VW.1001					Step	Temperature (°C)
	- 18 N 1		W.TV				1	25±2
	1111		T	N	WW.	OOX.C	3	-55±3 25±2
	Capacitance		Char.	Temp. Range (°C)	Reference Temp.	Cap.Change	4	125±3
9	Temperat Character		R7 C7	-55 to +125 -55 to +125	25°C 25°C	Within ±15% Within ±22%	5	25±2
	WWW.		100X.C.	OM.TW	W.	MM.100X.	set for 24±2 hou measurement.	treatment at 150+0/-10°C for one hour and the urs at room temperature. Perform the initial
10	Adhesive of Termin	•	No removal	of the termination	ns or other defe	ect should occur.	eutectic solder. jig for 10±1 sec iron or using the	citor to the test jig (glass epoxy board) using Then apply 10N* force in parallel with the test. The soldering should be done either with an ereflow method and should be conducted wit soldering is uniform and free of defects such *LLL18 and LLA/LLM Series:
		Appearance	No defects	or abnormalities	- XX	LIWW.		citor to the test jig (glass epoxy board) in
		Capacitance	Within the s	pecified tolerance	9	W Zal W		er and under the same conditions as (10). The best of the subjected to a simple harmonic motion
11	Vibration Resistance	D.F.	W.V.: 16V/1	having a total amplitud uniformly between the frequency range, from be traversed in approx applied for a period of		to be subjected to a simple narmonic motion implitude of 1.5mm, the frequency being varies on the approximate limits of 10 and 55Hz. The from 10 to 55Hz and return to 10Hz, should approximately 1 minute. This motion should riod of 2 hours in each of 3 mutually irections (total of 6 hours).		
12	Solderability of Termination		75% of the terminations are to be soldered evenly and continuously.		rosin (JIS-K-590 80 to 120°C for eutectic solder s	pacitor in a solution of ethanol (JIS-K-8101) a 02) (25% rosin in weight proportion). Preheat 10 to 30 seconds. After preheating, immerse solution for 2±0.5 seconds at 230±5°C, or a solder solution for 2±0.5 seconds at 245±5		
		Appearance	No marking	defects	MOD	17.	Probact the see	rapitor at 120 to 150°C for 1 minute Improve
		Capacitance Change	Within ±7.5	WW.	OY.CON	LTW	the capacitor in solution at 270±	acitor at 120 to 150°C for 1 minute. Immerse a eutectic solder or Sn-3.0Ag-0.5Cu solder -5°C for 10±0.5 seconds. Let sit at room
13	Resistance to Soldering Heat	D.F.	W.V.: 16V/1	nin.; 0.025 max. 0V max.; 0.035 n max.; 0.05 max.	nax.	DM.TW	Initial measure	
13		I.R.	More than 1	0,000MΩ or 500s	Ω · F (Whicheve	er is smaller)		t treatment at $150 \stackrel{\circ}{=} ^{\circ}_{0}$ °C for one hour and the hours at room temperature. Perform the initi
13			More than 10,000M Ω or 500 Ω · F (Whichever is smaller) No failure		measurement.			

WWW.100Y.COM.TW

W.100Y.

LLL/LLA/LLM Series Specifications and Test Methods (1)

In case Non "*" is added in PNs table, please refer to LLL/LLA/LLM Series Specifications and Test Methods (1).

Vo.	Ite	em	Specifications	Test Method					
) I	LTW	Appearance Capacitance Change	No marking defects Within ±7.5%	Fix the capacitor to the supporting jig in the same manner under the same conditions as (10). Perform the five cycles according to the four heat treatmer listed in the following table. Let sit for 24±2 hours at room					
14	Cyclo	D.F.	W.V.: 25V min.; 0.025 max. W.V.: 16V/10V max.; 0.035 max. W.V.: 6.3V max.; 0.05 max.	4 (7)(1) 1-	then measure. 1 2 3 4 Min. Operating Room Max. Operating Room				
		I.R.	More than 10,000M Ω or 500 Ω · F (Whichever is smaller)	1 -31 100 F	Temp. ±3 30±3	Temp. 2 to 3	Temp. ±3 30±3	Temp. 2 to 3	
Y. []. [Dielectric Strength	No failure	Time (min.) 30±3 2 to 3 30±3 2 to 3 • Initial measurement. Perform a heat treatment at 150±9°° C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement.					
	=1 CO	Appearance	No marking defects	TIWW.		Mr.			
<u> </u>	Humidity 5 (Steady State)	Capacitance Change	Within ±12.5%		Sit the capacitor at 40±2°C and 90 to 95% humidit				
15		D.F.	W.V.: 10V min.; 0.05 max. W.V.: 6.3V max.; 0.075 max.		hours. Remove and let sit for 24±2 hours at room ten then measure.			mperature	
		I.R.	More than 1,000M Ω or $50\Omega \cdot F$ (Whichever is smaller)	WW					
N	Vino.	Appearance	No marking defects	WV	MANNIGOTICO		W		
	W.100	Capacitance Change	Within ±12.5%	1 1 1 1			d 90 to 95% hu	•	
16	Humidity Load	D.F.	W.V.: 10V min.; 0.05 max. W.V.: 6.3V max.; 0.075 max.	temperature, t	500±12 hours. Remove and let sit for 24±2 h temperature, then measure. The charge/discretes than 50mA.				
	WW.	I.R.	More than $500M\Omega$ or $25\Omega \cdot F$ (Whichever is smaller)	N .					
1	144	Appearance	No marking defects	1	Apply 200% of the rated voltage for 1000±12 hours at the				
	High 7 Temperature Load	Capacitance Change	Within ±12.5%		erature, then m		C. Let sit for 24 The charge/disc		
17		D.F.	W.V.: 10V min.; 0.05 max. W.V.: 6.3V max.; 0.075 max.	•Initial measu	rement.				
		I.R.	More than 1,000M Ω or $50\Omega \cdot F$ (Whichever is smaller)	Apply 200% of the rated DC voltage for one hour at the maximum operating temperature ±3°C. Remove and le 24±2 hours at room temperature. Perform initial measurement.					

LLL/LLA/LLM Series Specifications and Test Methods (2)

In case Non "*" is added in PNs table, please refer to LLL/LLA/LLM Series Specifications and Test Methods (1). In case "*" is added in PNs table, please refer to LLL/LLA/LLM Series Specifications and Test Methods (2).

Operating Temperature Range Rated Voltage Appearance Dimensions Dielectric Strength Insulation Resistance Capacitance	WWW.100Y.COM.TW	The rated voltage is defined as the maximum voltage which may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, V ^{p,p} or V ^{o,p} , whichever is larger, should be maintained within the rated voltage range. Visual inspection Using calipers No failure should be observed when 250% of the rated voltag is applied between the terminations for 1 to 5 seconds,	
Appearance Dimensions Dielectric Strength Insulation Resistance	No defects or abnormalities Within the specified dimension No defects or abnormalities	may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, V ^{p,p} or V ^{o,p} , whichever is larger, should be maintained within the rated voltage range. Visual inspection Using calipers No failure should be observed when 250% of the rated voltage	
Dimensions Dielectric Strength Insulation Resistance	Within the specified dimension No defects or abnormalities	Using calipers No failure should be observed when 250% of the rated voltag	
Dielectric Strength Insulation Resistance	No defects or abnormalities	No failure should be observed when 250% of the rated voltage	
Insulation Resistance	WWW.100Y.COM.TW		
Resistance	MAL TOOK	provided the charge/discharge current is less than 50mA.	
Canacitance	50Ω · F min.	The insulation resistance should be measured with a DC volta not exceeding the rated voltage at 25°C and 75%RH max. ar within 1 minute of charging.	
Capacitance	Within the specified tolerance	The capacitance/D.F. should be measured at 25°C at the frequency and voltage shown in the table.	
Dissipation Factor (D.F.)	R6, R7, C7, C8: 0.120 max.	Capacitance Frequency Voltage C≤10μF (10V min.) 1±0.1kHz 1.0±0.2Vrms C≤10μF (6.3V max.) 1±0.1kHz 0.5±0.1Vrms C>10μF 120±24Hz 0.5±0.1Vrms	
Capacitance Temperature Characteristics	Char. Temp. Range (°C) Reference Temp. Cap. Change R6 -55 to +85 Within ±15% R7 -55 to +125 Within ±15% C7 -55 to +125 Within ±22% C8 -55 to +105 Within ±22%	The capacitance change should be measured after 5 min. at each specified temperature stage. The ranges of capacitance change compared with the 25°C value over the temperature ranges shown in the table should be within the specified ranges. • Initial measurement. Perform a heat treatment at 150+0/-10°C for one hour and th set for 24±2 hours at room temperature. Perform the initial measurement.	
Adhesive Strength of Termination	No removal of the terminations or other defect should occur.	Solder the capacitor to the test jig (glass epoxy board) using eutectic solder. Then apply 10N* force in parallel with the pig for 10±1 sec. The soldering should be done either with iron or using the reflow method and should be conducted care so that the soldering is uniform and free of defects such that shock. *5N (LLL15, LLL18, LLA,LLM Sec.	
Appearance	e No defects or abnormalities	Solder the capacitor to the test jig (glass epoxy board) in	
Capacitance	e Within the specified tolerance	the same manner and under the same conditions as (10). The capacitor should be subjected to a simple harmonic motion	
Vibration D.F.	R6, R7, C7, C8: 0.120 max.	having a total amplitude of 1.5mm, the frequency being varieuniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 minute. This motion should be applied for a period of 2 hours in each of 3 mutually perpendicular directions (total of 6 hours).	
Solderability of Termination	75% of the terminations are to be soldered evenly and continuously.	Immerse the capacitor in a solution of ethanol (JIS-K-8101) a rosin (JIS-K-5902) (25% rosin in weight proportion). Preheat 80 to 120°C for 10 to 30 seconds. After preheating, immerse eutectic solder solution for 2±0.5 seconds at 230±5°C, or Sn-3.0Ag-0.5Cu solder solution for 2±0.5 seconds at 245±5°	
Appearance	e No marking defects	Preheat the capacitor at 120 to 150°C for 1 minute. Immerse	
Capacitance Change	e R6, R7, C7, C8: Within ±7.5%	the capacitor in a eutectic solder or Sn-3.0Ag-0.5Cu solder solution at 270±5°C for 10±0.5 seconds.	
Resistance to Soldering D.F.	R6, R7, C7, C8: 0.120 max.	Let sit at room temperature for 24±2 hours, then measure.	
Heat I.R.	$50\Omega \cdot F$ min.	Initial measurement. Perform a heat treatment at 150+0 °C for one hour and the	
Dielectric Strength	I No fallure	Perform a heat treatment at 150+0,0°C for one hour and the let sit for 24±2 hours at room temperature. Perform the initi measurement.	
T C S T	Adhesive Strength of Termination Appearanc Capacitanc Vibration D.F. Solderability of Termination Appearanc Capacitanc Change D.F. I.R. Dielectri	Capacitance Temperature Characteristics R6	





LLL/LLA/LLM Series Specifications and Test Methods (2)

In case Non "*" is added in PNs table, please refer to LLL/LLA/LLM Series Specifications and Test Methods (1). In case "*" is added in PNs table, please refer to LLL/LLA/LLM Series Specifications and Test Methods (2). Continued from the preceding page.

Vo.	Ite	m	Specifications	Test Method				
	W	Appearance Capacitance	No marking defects	Fix the capacitor to the supporting jig in the same manner and under the same conditions as (10).Perform the five cycles according to the four heat treatments listed in the following				
Ų	Temperature	Change	R6, R7, C7, C8: Within ±12.5%	table. Let sit for 24±2 hours at room temperature,				
0		D.F.	R6, R7, C7, C8: 0.120 max.	then measure.				
14	. K	I.R.	$50Ω \cdot F$ min.	Step 1 2 3 4 Temp (°C) Min. Operating Room Min. Operating Room				
	Sudden Change			Temp. (°C) Min. Operating Room Temp. ±3 Temp. Boom Temp. ±3 Temp.				
Y X	COM:	Dielectric Strength	No failure	Time (min.) 30±3 2 to 3 30±3 2 to 3 • Initial measurement Perform a heat treatment at 150±9° C for one hour and theil let sit for 24±2 hours at room temperature. Perform the initial measurement.				
1	1 CO	Appearance	No marking defects	Apply the rated voltage at 40±2°C and 90 to 95% humidity for				
0	OV.CO	Capacitance Change	R6, R7, C7, C8: Within ±12.5%	500±12 hours. The charge/discharge current is less than 50mA. Apply the rated DC voltage.				
.1	High Temperature	D.F.	R6, R7, C7, C8: 0.2 max.	Apply the fated bo voltage.				
15	High Humidity (Steady State)	COM LR. Y.COM	12.5Ω · F min.	 Initial measurement Perform a heat treatment at 150±9°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement. Measurement after test Perform a heat treatment at 150±9°C for one hour and then let sit for 24±2 hours at room temperature, then measure. 				
	W.10	Appearance	No marking defects	Apply 150% of the rated voltage for 1000±12 hours at the				
N		Capacitance Change	R6, R7, C7, C8: Within ±12.5% * LLL153C70G474: Within ±20%	maximum operating temperature ±3°C. The charge/discharge current is less than 50mA.				
	TWW.	D.F.	R6, R7, C7, C8: 0.2 max.	•Initial measurement				
16	6 Durability	I.R.	25Ω · F min.	Perform a heat treatment at 150±\(^{9}\) ₁₀ °C for one hour and ther let sit for 24±2 hours at room temperature. Perform the initia measurement. •Measurement after test Perform a heat treatment at 150±\(^{9}\) ₀ °C for one hour and ther let sit for 24±2 hours at room temperature, then measure.				



Chip Monolithic Ceramic Capacitors

muRata

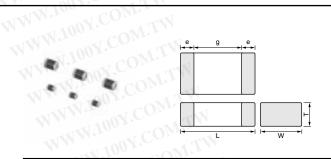
High-Q Type GJM Series

■ Features

- 1. Mobile Telecommunication and RF module, mainly
- 2. Quality improvement of telephone call, Low power Consumption, yield ratio improvement

Applications

VCO, PA, Mobile Telecommunication WWW.100Y.COM.TW



Part Number	Dimensions (mm)						
Part Number	Myna	W	() T	е	g min.		
GJM03	0.6 ±0.03	0.3 ±0.03	0.3 ±0.03	0.1 to 0.2	0.2		
GJM15	1.0 ±0.05	0.5 ±0.05	0.5 ±0.05	0.15 to 0.3	0.4		

Capacitance Table

Temperature Compensating Type C0G(5C)/C0H(6C) Characteristics

Temperatur 3	_	npens Dimensio		Type (\mathbb{C}^{0}
	LxW [mm]	0.6	(0.3 3)	1.0x0.5 (15) <0402>	
	Voltage	25	6.3	50	
Capacitance	[Vdc]	(1A)	(0J)	(1H)	
	F(R10)			5	
	F(R20)	3	V .	5	
-	F(R30)	3	11/1/	5	
	F(R40)	3	W	5	
	F(R50)	3		5	
100	F(R60)	3		5	
	F(R70)	3	4	5	
	F(R80)	3		5	
N. D.	F(R90)	3		5	
	F(1R0)	3		5	
	F(1R1)	3		5	
1111-	F(1R2)	3	KĪ	5	
- 31 100	F(1R3)	3		5	
	F(1R4)	3	N	5	
	F(1R5)	3	TV	5	
	F(1R6)	3	7.	5	
	F(1R7)	3		5	
	F(1R8)	3		5 -	
	F(1R9)	3	M:	5	
	F(2R0)	3	M.	5	
	F(2R1)	3	7 N	5	
	F(2R2)	3	OM	5	
	F(2R3))))3°	CON	5	
	F(2R4)	3		5	
	F(2R5)	3	Z.CU	5	
	F(2R6)	3	*7 C	5	
	F(2R7)	3	N.	5	
	F(2R8)	3	OY.	5	
	F(2R9)	3.		5	
	F(3R0)	3	100 -	5	
	F(3R1)	3	100	5	
	F(3R2)	3		5	
-	F(3R3)	3	N'JO.	5	
-	F(3R4)	3	W.1	5	
	F(3R5)	3		5	
	F(3R6)	3	MW.	5	
	F(3R7)	3	TAN V	5	
-	F(3R8)	3		5	
	F(3R9)	3		5	
	F(4R0)	3	- 11	5	
	F(4R1)	3	111 ,	5	
	F(4R2)	3	W	5	
	F(4R3)	3	4 1	5	
	F(4R4)	3		5	
	F(4R5)	3		5	
	F(4R6)	3		5	
	F(4R7)	3		5	
4.8p	F(4R8)	3		5	

LxW [mm]	0.6x (0	3)	1.0x0.5 (15)	LxW [mm]	
	<02		<0402>		H
Rated Voltage [Vdc]	25 (1A)	6.3 (0J)	50 (1H)	Rated Voltage [Vdc]	١,
5.0pF(5R0)	3	(00)	5	9.9pF(9R9)	
5.1pF(5R1)	3	M.	5 0	10pF(100)	
5.2pF(5R2)	3	WW	5	11pF(110)	
5.3pF(5R3)	3		5	12pF(120)	
5.4pF(5R4)	3		5	13pF(130)	
5.5pF(5R5)	3	W	5	15pF(150)	H
5.6pF(5R6)	3		5	16pF(160)	
5.7pF(5R7)	3		5	18pF(180)	4
	3				N
5.8pF(5R8) 5.9pF(5R9)	3		5	20pF(200) 22pF(220)	
111V - 111V					1
6.0pF(6R0)	3		5	24pF(240)	1
6.1pF(6R1)	3		5	27pF(270)	
6.2pF(6R2)	3	≪ 1	5	30pF(300)	1.0
6.3pF(6R3)	3	M	5	33pF(330)	H
6.4pF(6R4)	3	W	5		
6.5pF(6R5)	3		5		
6.6pF(6R6)	3	7.11	5 -		
6.7pF(6R7)	3	VII	5		
6.8pF(6R8)	3	170	5		
6.9pF(6R9)	3	λL	5		
7.0pF(7R0)	3	17.	5		
7.1pF(7R1)	3	ONE	5		
7.2pF(7R2)	V 3	CON	5		
7.3pF(7R3)	3/-	-01	5		
7.4pF(7R4)	3	CO	5		
7.5pF(7R5)	3	J.CC	5		
7.6pF(7R6)	3	7.	5		
7.7pF(7R7)	3	OXIC	5		
7.8pF(7R8)	3	ov.	5		
7.9pF(7R9)	3	00 -	5		
8.0pF(8R0)	3	100)	5		
8.1pF(8R1)	3	100	5		
8.2pF(8R2)	3	Tra.	5		
8.3pF(8R3)	3	W.10	5		
8.4pF(8R4)	3	- 1	5		
8.5pF(8R5)	3	M.	5		
8.6pF(8R6)	3	Wix	5		
8.7pF(8R7)	3		5		
8.8pF(8R8)	3		5		
8.9pF(8R9)	3		5		
9.0pF(9R0)	3	M.	5		
9.1pF(9R1)	3	W	5		
9.2pF(9R2)	3	- 4	5		
9.3pF(9R3)	3	V	5		
9.4pF(9R4)	3	1	5		
9.5pF(9R5)	3		5		
9.6pF(9R6)	3		5		
9.7pF(9R7)	3		5		
9 8nF(9R8)	31	1	5		

LxW [mm]	0.6x (0 <02	3)	1.0x0 (15) <0402
Rated Voltage Capacitance [Vdc]	25 (1A)	6.3 (0J)	50 (1H)
9.9pF(9R9)	3		5
10pF(100)	3		5
11pF(110)	3		5
12pF(120)	3		5
13pF(130)	3		5
15pF(150)	3		5
16pF(160)	3		5
18pF(180)	3		5
20pF(200)	3		5
22pF(220)	W	3	
24pF(240)		3	
27pF(270)		3	
30pF(300)	1.1.	3	
33pF(330)		3	

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100

5

9.8pF(**9R8**) **3**

4.9pF(**4R9**)

LxW [mm]		0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc		25(1E)	50(1H)
pacitance	Tolerance	Part N	umber
0.1pF(R10)	±0.05pF(W)	$\alpha 100^{\circ}$ αM°	GJM1555C1HR10WB01D
TW	±0.1pF(B)	1007.0	GJM1555C1HR10BB01D
0.2pF(R20)	±0.05pF(W)	GJM0335C1ER20WB01D	GJM1555C1HR20WB01D
αM^{AA}	±0.1pF(B)	GJM0335C1ER20BB01D	GJM1555C1HR20BB01D
0.3pF(R30)	±0.05pF(W)	GJM0335C1ER30WB01D	GJM1555C1HR30WB01D
OM	±0.1pF(B)	GJM0335C1ER30BB01D	GJM1555C1HR30BB01D
0.4pF(R40)	±0.05pF(W)	GJM0335C1ER40WB01D	GJM1555C1HR40WB01D
.00-11	±0.1pF(B)	GJM0335C1ER40BB01D	GJM1555C1HR40BB01D
0.5pF(R50)	±0.05pF(W)	GJM0335C1ER50WB01D	GJM1555C1HR50WB01D
	±0.1pF(B)	GJM0335C1ER50BB01D	GJM1555C1HR50BB01D
0.6pF(R60)	±0.05pF(W)	GJM0335C1ER60WB01D	GJM1555C1HR60WB01D
VA'COD	±0.1pF(B)	GJM0335C1ER60BB01D	GJM1555C1HR60BB01D
0.7pF(R70)	±0.05pF(W)	GJM0335C1ER70WB01D	GJM1555C1HR70WB01D
1007.0	±0.1pF(B)	GJM0335C1ER70BB01D	GJM1555C1HR70BB01D
0.8pF(R80)	±0.05pF(W)	GJM0335C1ER80WB01D	GJM1555C1HR80WB01D
1.100	±0.1pF(B)	GJM0335C1ER80BB01D	GJM1555C1HR80BB01D
0.9pF(R90)	±0.05pF(W)	GJM0335C1ER90WB01D	GJM1555C1HR90WB01D
W.T.	±0.1pF(B)	GJM0335C1ER90BB01D	GJM1555C1HR90BB01D
1.0pF(1R0)	±0.05pF(W)	GJM0335C1E1R0WB01D	GJM1555C1H1R0WB01D
100	±0.1pF(B)	GJM0335C1E1R0BB01D	GJM1555C1H1R0BB01D
MM.	±0.25pF(C)	GJM0335C1E1R0CB01D	GJM1555C1H1R0CB01D
1.1pF(1R1)	±0.05pF(W)	GJM0335C1E1R1WB01D	GJM1555C1H1R1WB01D
N. P. (III)	±0.1pF(B)	GJM0335C1E1R1BB01D	GJM1555C1H1R1BB01D
41/WW.1	±0.25pF(C)	GJM0335C1E1R1CB01D	GJM1555C1H1R1CB01D
1.2pF(1R2)	±0.25pf (V)	GJM0335C1E1R2WB01D	GJM1555C1H1R2WB01D
1.2μF(1n2)		GJM0335C1E1R2BB01D	
WWW	±0.1pF(B)	GJM0335C1E1R2CB01D	GJM1555C1H1R2BB01D GJM1555C1H1R2CB01D
1.2pF/ 1D2)	±0.25pF(C)	GJM0335C1E1R3WB01D	
1.3pF(1R3)	±0.05pF(W)		GJM1555C1H1R3WB01D
TAI V	±0.1pF(B)	GJM0335C1E1R3BB01D	GJM1555C1H1R3BB01D
4.4.5(4.0.4)	±0.25pF(C)	GJM0335C1E1R3CB01D	GJM1555C1H1R3CB01D
1.4pF(1R4)	±0.05pF(W)	GJM0335C1E1R4WB01D	GJM1555C1H1R4WB01D
1	±0.1pF(B)	GJM0335C1E1R4BB01D	GJM1555C1H1R4BB01D
	±0.25pF(C)	GJM0335C1E1R4CB01D	GJM1555C1H1R4CB01D
1.5pF(1R5)	±0.05pF(W)	GJM0335C1E1R5WB01D	GJM1555C1H1R5WB01D
	±0.1pF(B)	GJM0335C1E1R5BB01D	GJM1555C1H1R5BB01D
	±0.25pF(C)	GJM0335C1E1R5CB01D	GJM1555C1H1R5CB01D
1.6pF(1R6)	±0.05pF(W)	GJM0335C1E1R6WB01D	GJM1555C1H1R6WB01D
	±0.1pF(B)	GJM0335C1E1R6BB01D	GJM1555C1H1R6BB01D
	±0.25pF(C)	GJM0335C1E1R6CB01D	GJM1555C1H1R6CB01D
1.7pF(1R7)	±0.05pF(W)	GJM0335C1E1R7WB01D	GJM1555C1H1R7WB01D
	±0.1pF(B)	GJM0335C1E1R7BB01D	GJM1555C1H1R7BB01D
	±0.25pF(C)	GJM0335C1E1R7CB01D	GJM1555C1H1R7CB01D
1.8pF(1R8)	±0.05pF(W)	GJM0335C1E1R8WB01D	GJM1555C1H1R8WB01D
1 \ /	±0.1pF(B)	GJM0335C1E1R8BB01D	GJM1555C1H1R8BB01D
	±0.25pF(C)	GJM0335C1E1R8CB01D	GJM1555C1H1R8CB01D
1.9pF(1R9)	±0.05pF(W)	GJM0335C1E1R9WB01D	GJM1555C1H1R9WB01D
1.7p1 (111 3)		GJM0335C1E1R9BB01D	GJM1555C1H1R9BB01D
	±0.1pF(B)		
2 UnE(2D0)	±0.25pF(C)	GJM0335C1E1R9CB01D	GJM1555C1H1R9CB01D
2.0pF(2R0)	±0.05pF(W)	GJM0335C1E2R0WB01D	GJM1555C1H2R0WB01D
	±0.1pF(B)	GJM0335C1E2R0BB01D	GJM1555C1H2R0BB01D
	±0.25pF(C)	GJM0335C1E2R0CB01D	GJM1555C1H2R0CB01D

(Part Number) | GJ | M | 03 | 3 | 5C | 1E | R20 | W | B01 | D 2 3 4 5 6 7 8 **9 0**

1 Product ID 2Series **5**Temperature Characteristics

8 Capacitance Tolerance

3Dimension (LxW)

6 Rated Voltage **9**Individual Specification Code

4 Dimension (T) Capacitance Packaging

LxW [mm]	-4	0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc	MMA	25(1E)	50(1H)
Capacitance	Tolerance	Part N	umber
2.1pF(2R1)	±0.05pF(W)	GJM0335C1E2R1WB01D	GJM1555C1H2R1WB01D
	±0.1pF(B)	GJM0335C1E2R1BB01D	GJM1555C1H2R1BB01D
DIVI. T	±0.25pF(C)	GJM0335C1E2R1CB01D	GJM1555C1H2R1CB01D
2.2pF(2R2)	±0.05pF(W)	GJM0335C1E2R2WB01D	GJM1555C1H2R2WB01D
WIT	±0.1pF(B)	GJM0335C1E2R2BB01D	GJM1555C1H2R2BB01D
CO_{Mr}	±0.25pF(C)	GJM0335C1E2R2CB01D	GJM1555C1H2R2CB01D
2.3pF(2R3)	±0.05pF(W)	GJM0335C1E2R3WB01D	GJM1555C1H2R3WB01D
·Comi	±0.1pF(B)	GJM0335C1E2R3BB01D	GJM1555C1H2R3BB01D
A'COM	±0.25pF(C)	GJM0335C1E2R3CB01D	GJM1555C1H2R3CB01D
2.4pF(2R4)	±0.05pF(W)	GJM0335C1E2R4WB01D	GJM1555C1H2R4WB01D
07.0	±0.1pF(B)	GJM0335C1E2R4BB01D	GJM1555C1H2R4BB01D
OUT.COP	±0.25pF(C)	GJM0335C1E2R4CB01D	GJM1555C1H2R4CB01D
2.5pF(2R5)	±0.05pF(W)	GJM0335C1E2R5WB01D	GJM1555C1H2R5WB01D
100 100	±0.1pF(B)	GJM0335C1E2R5BB01D	GJM1555C1H2R5BB01D
-100 Y.C	±0.25pF(C)	GJM0335C1E2R5CB01D	GJM1555C1H2R5CB01D
2.6pF(2R6)	±0.05pF(W)	GJM0335C1E2R6WB01D	GJM1555C1H2R6WB01D
2.0pr (2110)	±0.05pF(v)	GJM0335C1E2R6WB01D	GJM1555C1H2R6BB01D
	±0.1pf (b) ±0.25pF(C)	GJM0335C1E2R6CB01D	GJM1555C1H2R6CB01D
2.7pF(2D7)	7 () ()		
2.7pF(2R7)	±0.05pF(W)	GJM0335C1E2R7WB01D	GJM1555C1H2R7WB01D
10	±0.1pF(B)	GJM0335C1E2R7BB01D	GJM1555C1H2R7BB01D
	±0.25pF(C)	GJM0335C1E2R7CB01D	GJM1555C1H2R7CB01D
2.8pF(2R8)	±0.05pF(W)	GJM0335C1E2R8WB01D	GJM1555C1H2R8WB01D
MW.	±0.1pF(B)	GJM0335C1E2R8BB01D	GJM1555C1H2R8BB01D
MINN.	±0.25pF(C)	GJM0335C1E2R8CB01D	GJM1555C1H2R8CB01D
2.9pF(2R9)	±0.05pF(W)	GJM0335C1E2R9WB01D	GJM1555C1H2R9WB01D
M.	±0.1pF(B)	GJM0335C1E2R9BB01D	GJM1555C1H2R9BB01D
WW	±0.25pF(C)	GJM0335C1E2R9CB01D	GJM1555C1H2R9CB01D
3.0pF(3R0)	±0.05pF(W)	GJM0335C1E3R0WB01D	GJM1555C1H3R0WB01D
	±0.1pF(B)	GJM0335C1E3R0BB01D	GJM1555C1H3R0BB01D
W	±0.25pF(C)	GJM0335C1E3R0CB01D	GJM1555C1H3R0CB01D
3.1pF(3R1)	±0.05pF(W)	GJM0335C1E3R1WB01D	GJM1555C1H3R1WB01D
	±0.1pF(B)	GJM0335C1E3R1BB01D	GJM1555C1H3R1BB01D
	±0.25pF(C)	GJM0335C1E3R1CB01D	GJM1555C1H3R1CB01D
3.2pF(3R2)	±0.05pF(W)	GJM0335C1E3R2WB01D	GJM1555C1H3R2WB01D
	±0.1pF(B)	GJM0335C1E3R2BB01D	GJM1555C1H3R2BB01D
	±0.25pF(C)	GJM0335C1E3R2CB01D	GJM1555C1H3R2CB01D
3.3pF(3R3)	±0.05pF(W)	GJM0335C1E3R3WB01D	GJM1555C1H3R3WB01D
1 \ /	±0.1pF(B)	GJM0335C1E3R3BB01D	GJM1555C1H3R3BB01D
	±0.25pF(C)	GJM0335C1E3R3CB01D	GJM1555C1H3R3CB01D
3.4pF(3R4)	±0.05pF(W)	GJM0335C1E3R4WB01D	GJM1555C1H3R4WB01D
5.4pr (6114)	±0.1pF(B)	GJM0335C1E3R4BB01D	GJM1555C1H3R4BB01D
		GJM0335C1E3R4CB01D	GJM1555C1H3R4CB01D
2 FmF/2DE)	±0.25pF(C)		
3.5pF(3R5)	±0.05pF(W)	GJM0335C1E3R5WB01D	GJM1555C1H3R5WB01D
	±0.1pF(B)	GJM0335C1E3R5BB01D	GJM1555C1H3R5BB01D
	±0.25pF(C)	GJM0335C1E3R5CB01D	GJM1555C1H3R5CB01D
3.6pF(3R6)	±0.05pF(W)	GJM0335C1E3R6WB01D	GJM1555C1H3R6WB01D
	±0.1pF(B)	GJM0335C1E3R6BB01D	GJM1555C1H3R6BB01D
	±0.25pF(C)	GJM0335C1E3R6CB01D	GJM1555C1H3R6CB01D

(Part Number) | GJ | M | 03 | 3 | 5C | 1E | 2R1 | W | B01 | D 2 3 4 5 6 0 8 0 0 0

1 Product ID 2Series **5**Temperature Characteristics 8 Capacitance Tolerance

6 Rated Voltage 9Individual Specification Code

3Dimension (LxW)

4 Dimension (T) Capacitance Packaging

N [mm]	-151	0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc]		25(1E)	50(1H)
Capacitance	Tolerance		umber
3.7pF(3R7)	±0.05pF(W)	GJM0335C1E3R7WB01D	GJM1555C1H3R7WB01D
WILVE	±0.1pF(B)	GJM0335C1E3R7BB01D	GJM1555C1H3R7BB01D
OM	±0.25pF(C)	GJM0335C1E3R7CB01D	GJM1555C1H3R7CB01D
3.8pF(3R8)	±0.05pF(W)	GJM0335C1E3R8WB01D	GJM1555C1H3R8WB01D
OMITY	±0.1pF(B)	GJM0335C1E3R8BB01D	GJM1555C1H3R8BB01D
CO TY	±0.25pF(C)	GJM0335C1E3R8CB01D	GJM1555C1H3R8CB01D
3.9pF(3R9)	±0.05pF(W)	GJM0335C1E3R9WB01D	GJM1555C1H3R9WB01D
COM	±0.1pF(B)	GJM0335C1E3R9BB01D	GJM1555C1H3R9BB01D
OY.C	±0.25pF(C)	GJM0335C1E3R9CB01D	GJM1555C1H3R9CB01D
4.0pF(4R0)	±0.05pF(W)	GJM0335C1E4R0WB01D	GJM1555C1H4R0WB01D
JU TON	±0.1pF(B)	GJM0335C1E4R0BB01D	GJM1555C1H4R0BB01D
1001.	±0.25pF(C)	GJM0335C1E4R0CB01D	GJM1555C1H4R0CB01D
4.1pF(4R1)	±0.05pF(W)	GJM0335C1E4R1WB01D	GJM1555C1H4R1WB01D
V. LO	±0.1pF(B)	GJM0335C1E4R1BB01D	GJM1555C1H4R1BB01D
W.100 1.	±0.25pF(C)	GJM0335C1E4R1CB01D	GJM1555C1H4R1CB01D
4.2pF(4R2)	±0.05pF(W)	GJM0335C1E4R2WB01D	GJM1555C1H4R2WB01D
NW.	±0.1pF(B)	GJM0335C1E4R2BB01D	GJM1555C1H4R2BB01D
WW.100	±0.25pF(C)	GJM0335C1E4R2CB01D	GJM1555C1H4R2CB01D
4.3pF(4R3)	±0.05pF(W)	GJM0335C1E4R3WB01D	GJM1555C1H4R3WB01D
WWW	±0.1pF(B)	GJM0335C1E4R3BB01D	GJM1555C1H4R3BB01D
WW.Io	±0.25pF(C)	GJM0335C1E4R3CB01D	GJM1555C1H4R3CB01D
4.4pF(4R4)	±0.05pF(W)	GJM0335C1E4R4WB01D	GJM1555C1H4R4WB01D
MM	±0.1pF(B)	GJM0335C1E4R4BB01D	GJM1555C1H4R4BB01D
WW.	±0.25pF(C)	GJM0335C1E4R4CB01D	GJM1555C1H4R4CB01D
4.5pF(4R5)	±0.05pF(W)	GJM0335C1E4R5WB01D	GJM1555C1H4R5WB01D
W.	±0.1pF(B)	GJM0335C1E4R5BB01D	GJM1555C1H4R5BB01D
WW	±0.25pF(C)	GJM0335C1E4R5CB01D	GJM1555C1H4R5CB01D
4.6pF(4R6)	±0.05pF(W)	GJM0335C1E4R6WB01D	GJM1555C1H4R6WB01D
14.	±0.1pF(B)	GJM0335C1E4R6BB01D	GJM1555C1H4R6BB01D
W	±0.25pF(C)	GJM0335C1E4R6CB01D	GJM1555C1H4R6CB01D
4.7pF(4R7)	±0.05pF(W)	GJM0335C1E4R7WB01D	GJM1555C1H4R7WB01D
	±0.1pF(B)	GJM0335C1E4R7BB01D	GJM1555C1H4R7BB01D
	±0.25pF(C)	GJM0335C1E4R7CB01D	GJM1555C1H4R7CB01D
4.8pF(4R8)	±0.05pF(W)	GJM0335C1E4R8WB01D	GJM1555C1H4R8WB01D
	±0.1pF(B)	GJM0335C1E4R8BB01D	GJM1555C1H4R8BB01D
	±0.25pF(C)	GJM0335C1E4R8CB01D	GJM1555C1H4R8CB01D
4.9pF(4R9)	±0.05pF(W)	GJM0335C1E4R9WB01D	GJM1555C1H4R9WB01D
	±0.1pF(B)	GJM0335C1E4R9BB01D	GJM1555C1H4R9BB01D
	±0.25pF(C)	GJM0335C1E4R9CB01D	GJM1555C1H4R9CB01D
5.0pF(5R0)	±0.05pF(W)	GJM0335C1E5R0WB01D	GJM1555C1H5R0WB01D
	±0.1pF(B)	GJM0335C1E5R0BB01D	GJM1555C1H5R0BB01D
	±0.25pF(C)	GJM0335C1E5R0CB01D	GJM1555C1H5R0CB01D
5.1pF(5R1)	±0.05pF(W)	GJM0335C1E5R1WB01D	GJM1555C1H5R1WB01D
,	±0.1pF(B)	GJM0335C1E5R1BB01D	GJM1555C1H5R1BB01D
	±0.25pF(C)	GJM0335C1E5R1CB01D	GJM1555C1H5R1CB01D
	±0.5pF(D)	GJM0335C1E5R1DB01D	GJM1555C1H5R1DB01D
5.2pF(5R2)	±0.05pF(W)	GJM0335C1E5R2WB01D	GJM1555C1H5R2WB01D
5.2ρι (σι ιΔ)	±0.1pF(B)	GJM0335C1E5R2BB01D	GJM1555C1H5R2BB01D
	±0.1pr(B) ±0.25pF(C)	GJM0335C1E5R2CB01D	GJM1555C1H5R2CB01D
	±0.5pF(D)	GJM0335C1E5R2DB01D	GJM1555C1H5R2DB01

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100Y.C

LxW [mm]		0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc]	MAN	25(1E)	50(1H)
apacitance	Tolerance	Part N	umber
5.3pF(5R3)	±0.05pF(W)	GJM0335C1E5R3WB01D	GJM1555C1H5R3WB01D
WILL	±0.1pF(B)	GJM0335C1E5R3BB01D	GJM1555C1H5R3BB01D
W. T.	±0.25pF(C)	GJM0335C1E5R3CB01D	GJM1555C1H5R3CB01D
OW.	±0.5pF(D)	GJM0335C1E5R3DB01D	GJM1555C1H5R3DB01D
5.4pF(5R4)	±0.05pF(W)	GJM0335C1E5R4WB01D	GJM1555C1H5R4WB01D
CONTRACTOR	√ ±0.1pF(B)	GJM0335C1E5R4BB01D	GJM1555C1H5R4BB01D
	±0.25pF(C)	GJM0335C1E5R4CB01D	GJM1555C1H5R4CB01D
· Mor	±0.5pF(D)	GJM0335C1E5R4DB01D	GJM1555C1H5R4DB01D
5.5pF(5R5)	±0.05pF(W)	GJM0335C1E5R5WB01D	GJM1555C1H5R5WB01D
	±0.1pF(B)	GJM0335C1E5R5BB01D	GJM1555C1H5R5BB01D
	±0.25pF(C)	GJM0335C1E5R5CB01D	GJM1555C1H5R5CB01D
OUX.CO.	±0.5pF(D)	GJM0335C1E5R5DB01D	GJM1555C1H5R5DB01D
5.6pF(5R6)	±0.05pF(W)	GJM0335C1E5R6WB01D	GJM1555C1H5R6WB01D
100 1.	±0.1pF(B)	GJM0335C1E5R6BB01D	GJM1555C1H5R6BB01D
-1100 Y.C	±0.25pF(C)	GJM0335C1E5R6CB01D	GJM1555C1H5R6CB01D
N. T	±0.5pF(D)	GJM0335C1E5R6DB01D	GJM1555C1H5R6DB01D
5.7pF(5R7)	±0.05pF(W)	GJM0335C1E5R7WB01D	GJM1555C1H5R7WB01D
1007	±0.1pF(B)	GJM0335C1E5R7BB01D	GJM1555C1H5R7BB01D
WW.	±0.25pF(C)	GJM0335C1E5R7CB01D	GJM1555C1H5R7CB01D
	±0.5pF(D)	GJM0335C1E5R7DB01D	GJM1555C1H5R7DB01D
5.8pF(5R8)	±0.05pF(W)	GJM0335C1E5R8WB01D	GJM1555C1H5R8WB01D
5.0pr (3no)		GJM0335C1E5R8BB01D	GJM1555C1H5R8BB01D
T.WW.1	±0.1pF(B)		
M	±0.25pF(C)	GJM0335C1E5R8CB01D	GJM1555C1H5R8CB01D
5.0. 5(500)	±0.5pF(D)	GJM0335C1E5R8DB01D	GJM1555C1H5R8DB01D
5.9pF(5R9)	±0.05pF(W)	GJM0335C1E5R9WB01D	GJM1555C1H5R9WB01D
VV '	±0.1pF(B)	GJM0335C1E5R9BB01D	GJM1555C1H5R9BB01D
WW	±0.25pF(C)	GJM0335C1E5R9CB01D	GJM1555C1H5R9CB01D
NA V	±0.5pF(D)	GJM0335C1E5R9DB01D	GJM1555C1H5R9DB01D
6.0pF(6R0)	±0.05pF(W)	GJM0335C1E6R0WB01D	GJM1555C1H6R0WB01D
	±0.1pF(B)	GJM0335C1E6R0BB01D	GJM1555C1H6R0BB01D
	±0.25pF(C)	GJM0335C1E6R0CB01D	GJM1555C1H6R0CB01D
	±0.5pF(D)	GJM0335C1E6R0DB01D	GJM1555C1H6R0DB01D
6.1pF(6R1)	±0.05pF(W)	GJM0335C1E6R1WB01D	GJM1555C1H6R1WB01D
	±0.1pF(B)	GJM0335C1E6R1BB01D	GJM1555C1H6R1BB01D
	±0.25pF(C)	GJM0335C1E6R1CB01D	GJM1555C1H6R1CB01D
	±0.5pF(D)	GJM0335C1E6R1DB01D	GJM1555C1H6R1DB01D
6.2pF(6R2)	±0.05pF(W)	GJM0335C1E6R2WB01D	GJM1555C1H6R2WB01D
	±0.1pF(B)	GJM0335C1E6R2BB01D	GJM1555C1H6R2BB01D
	±0.25pF(C)	GJM0335C1E6R2CB01D	GJM1555C1H6R2CB01D
	±0.5pF(D)	GJM0335C1E6R2DB01D	GJM1555C1H6R2DB01D
6.3pF(6R3)	±0.05pF(W)	GJM0335C1E6R3WB01D	GJM1555C1H6R3WB01D
6.5pr (6n3)		GJM0335C1E6R3BB01D	
	±0.1pF(B)	GJM0335C1E6R3CB01D	GJM1555C1H6R3BB01D
	±0.25pF(C)		
(4 F(OD 4)	±0.5pF(D)	GJM0335C1E6R3DB01D	GJM1555C1H6R3DB01D
6.4pF(6R4)	±0.05pF(W)	GJM0335C1E6R4WB01D	GJM1555C1H6R4WB01D
	±0.1pF(B)	GJM0335C1E6R4BB01D	GJM1555C1H6R4BB01D
	±0.25pF(C)	GJM0335C1E6R4CB01D	GJM1555C1H6R4CB01D
	±0.5pF(D)	GJM0335C1E6R4DB01D	GJM1555C1H6R4DB01D

(Part Number) | GJ | M | 03 | 3 | 5C | 1E | 5R3 | W | B01 | D 2 8 4 5 6 0 8 0 0 0

2Series 1 Product ID **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) 6 Rated Voltage 9Individual Specification Code

4 Dimension (T) Capacitance Packaging

LxW [mm]		0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc]	MMM	25(1E)	50(1H)
apacitance	Tolerance	Part N	lumber
6.5pF(6R5)	±0.05pF(W)	GJM0335C1E6R5WB01D	GJM1555C1H6R5WB01D
WTI	±0.1pF(B)	GJM0335C1E6R5BB01D	GJM1555C1H6R5BB01D
DIAT	±0.25pF(C)	GJM0335C1E6R5CB01D	GJM1555C1H6R5CB01D
OW.I	±0.5pF(D)	GJM0335C1E6R5DB01D	GJM1555C1H6R5DB01D
6.6pF(6R6)	±0.05pF(W)	GJM0335C1E6R6WB01D	GJM1555C1H6R6WB01D
CONT	±0.1pF(B)	GJM0335C1E6R6BB01D	GJM1555C1H6R6BB01D
COM.	±0.25pF(C)	GJM0335C1E6R6CB01D	GJM1555C1H6R6CB01D
·······································	±0.5pF(D)	GJM0335C1E6R6DB01D	GJM1555C1H6R6DB01D
6.7pF(6R7)	±0.05pF(W)	GJM0335C1E6R7WB01D	GJM1555C1H6R7WB01D
ON COM	±0.1pF(B)	GJM0335C1E6R7BB01D	GJM1555C1H6R7BB01D
COV	±0.25pF(C)	GJM0335C1E6R7CB01D	GJM1555C1H6R7CB01D
001.00	±0.5pF(D)	GJM0335C1E6R7DB01D	GJM1555C1H6R7DB01D
6.8pF(6R8)	±0.05pF(W)	GJM0335C1E6R8WB01D	GJM1555C1H6R8WB01D
.100 -7 C	±0.1pF(B)	GJM0335C1E6R8BB01D	GJM1555C1H6R8BB01D
M 100 Y.	±0.25pF(C)	GJM0335C1E6R8CB01D	GJM1555C1H6R8CB01D
YOUX.	±0.5pF(D)	GJM0335C1E6R8DB01D	GJM1555C1H6R8DB01D
6.9pF(6R9)	±0.05pF(W)	GJM0336C1E6R9WB01D	GJM1555C1H6R9WB01D
1001	±0.1pF(B)	GJM0336C1E6R9BB01D	GJM1555C1H6R9BB01D
100	±0.25pF(C)	GJM0336C1E6R9CB01D	GJM1555C1H6R9CB01D
JWW.	±0.5pF(D)	GJM0336C1E6R9DB01D	GJM1555C1H6R9DB01D
7.0pF(7R0)	±0.05pF(W)	GJM0336C1E7R0WB01D	GJM1555C1H7R0WB01D
MAN.	±0.1pF(B)	GJM0336C1E7R0BB01D	GJM1555C1H7R0BB01D
MMM.	±0.25pF(C)	GJM0336C1E7R0CB01D	GJM1555C1H7R0CB01D
WW.	±0.5pF(D)	GJM0336C1E7R0DB01D	GJM1555C1H7R0DB01D
7.1pF(7R1)	±0.05pF(W)	GJM0336C1E7R1WB01D	GJM1555C1H7R1WB01D
WWW	±0.1pF(B)	GJM0336C1E7R1BB01D	GJM1555C1H7R1BB01D
-XIW	±0.25pF(C)	GJM0336C1E7R1CB01D	GJM1555C1H7R1CB01D
	±0.5pF(D)	GJM0336C1E7R1DB01D	GJM1555C1H7R1DB01D
7.2pF(7R2)	±0.05pF(W)	GJM0336C1E7R2WB01D	GJM1555C1H7R2WB01D
XX	±0.1pF(B)	GJM0336C1E7R2BB01D	GJM1555C1H7R2BB01D
	±0.25pF(C)	GJM0336C1E7R2CB01D	GJM1555C1H7R2CB01D
	±0.5pF(D)	GJM0336C1E7R2DB01D	GJM1555C1H7R2DB01D
7.3pF(7R3)	±0.05pF(W)	GJM0336C1E7R3WB01D	GJM1555C1H7R3WB01D
7.5pr (7110)	±0.05pf (11)	GJM0336C1E7R3BB01D	GJM1555C1H7R3BB01D
	±0.25pF(C)	GJM0336C1E7R3CB01D	GJM1555C1H7R3CB01D
		GJM0336C1E7R3DB01D	GJM1555C1H7R3DB01D
7.4pF/ 7D4 \	±0.5pF(D)		
7.4pF(7R4)	±0.05pF(W)	GJM0336C1E7R4WB01D	GJM1555C1H7R4WB01D
	±0.1pF(B)	GJM0336C1E7R4BB01D	GJM1555C1H7R4BB01D
	±0.25pF(C)	GJM0336C1E7R4CB01D	GJM1555C1H7R4CB01D
7.5.5/ 3.5 .	±0.5pF(D)	GJM0336C1E7R4DB01D	GJM1555C1H7R4DB01D
7.5pF(7R5)	±0.05pF(W)	GJM0336C1E7R5WB01D	GJM1555C1H7R5WB01D
	±0.1pF(B)	GJM0336C1E7R5BB01D	GJM1555C1H7R5BB01D
	±0.25pF(C)	GJM0336C1E7R5CB01D	GJM1555C1H7R5CB01D
	±0.5pF(D)	GJM0336C1E7R5DB01D	GJM1555C1H7R5DB01D
7.6pF(7R6)	±0.05pF(W)	GJM0336C1E7R6WB01D	GJM1555C1H7R6WB01D
	±0.1pF(B)	GJM0336C1E7R6BB01D	GJM1555C1H7R6BB01D
	±0.25pF(C)	GJM0336C1E7R6CB01D	GJM1555C1H7R6CB01D
	±0.5pF(D)	GJM0336C1E7R6DB01D	GJM1555C1H7R6DB01D
7.7pF(7R7)	±0.05pF(W)	GJM0336C1E7R7WB01D	GJM1555C1H7R7WB01D
	±0.1pF(B)	GJM0336C1E7R7BB01D	GJM1555C1H7R7BB01D
	±0.25pF(C)	GJM0336C1E7R7CB01D	GJM1555C1H7R7CB01D
	±0.5pF(D)	GJM0336C1E7R7DB01D	GJM1555C1H7R7DB01D

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100



LxW [mm]		0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc		25(1E)	50(1H)
apacitance	Tolerance	Part N	umber
7.8pF(7R8)	±0.05pF(W)	GJM0336C1E7R8WB01D	GJM1555C1H7R8WB01D
WILL	±0.1pF(B)	GJM0336C1E7R8BB01D	GJM1555C1H7R8BB01D
)Mr.	±0.25pF(C)	GJM0336C1E7R8CB01D	GJM1555C1H7R8CB01D
OM:	±0.5pF(D)	GJM0336C1E7R8DB01D	GJM1555C1H7R8DB01D
7.9pF(7R9)	±0.05pF(W)	GJM0336C1E7R9WB01D	GJM1555C1H7R9WB01D
COM	±0.1pF(B)	GJM0336C1E7R9BB01D	GJM1555C1H7R9BB01D
	±0.25pF(C)	GJM0336C1E7R9CB01D	GJM1555C1H7R9CB01D
· OM.	±0.5pF(D)	GJM0336C1E7R9DB01D	GJM1555C1H7R9DB01D
8.0pF(8R0)	±0.05pF(W)	GJM0336C1E8R0WB01D	GJM1555C1H8R0WB01D
	±0.1pF(B)	GJM0336C1E8R0BB01D	GJM1555C1H8R0BB01D
	±0.25pF(C)	GJM0336C1E8R0CB01D	GJM1555C1H8R0CB01D
OUX.Co.	±0.5pF(D)	GJM0336C1E8R0DB01D	GJM1555C1H8R0DB01D
8.1pF(8R1)	±0.05pF(W)	GJM0336C1E8R1WB01D	GJM1555C1H8R1WB01D
100 1.	±0.1pF(B)	GJM0336C1E8R1BB01D	GJM1555C1H8R1BB01D
-1100 X.C.	±0.25pF(C)	GJM0336C1E8R1CB01D	GJM1555C1H8R1CB01D
N. Y	±0.5pF(D)	GJM0336C1E8R1DB01D	GJM1555C1H8R1DB01D
8.2pF(8R2)	±0.05pF(W)	GJM0336C1E8R2WB01D	GJM1555C1H8R2WB01D
1007	±0.1pF(B)	GJM0336C1E8R2BB01D	GJM1555C1H8R2BB01D
MM. TOO	±0.25pF(C)	GJM0336C1E8R2CB01D	GJM1555C1H8R2CB01D
	±0.5pF(D)	GJM0336C1E8R2DB01D	GJM1555C1H8R2DB01D
8.3pF(8R3)	±0.05pF(W)	GJM0336C1E8R3WB01D	GJM1555C1H8R3WB01D
6.5pr (6n3)		GJM0336C1E8R3BB01D	GJM1555C1H8R3BB01D
T.WW.1	±0.1pF(B)		
W Y	±0.25pF(C)	GJM0336C1E8R3CB01D	GJM1555C1H8R3CB01D
0.4.5(00.4)	±0.5pF(D)	GJM0336C1E8R3DB01D	GJM1555C1H8R3DB01D
8.4pF(8R4)	±0.05pF(W)	GJM0336C1E8R4WB01D	GJM1555C1H8R4WB01D
VV '	±0.1pF(B)	GJM0336C1E8R4BB01D	GJM1555C1H8R4BB01D
MAN	±0.25pF(C)	GJM0336C1E8R4CB01D	GJM1555C1H8R4CB01D
- N	±0.5pF(D)	GJM0336C1E8R4DB01D	GJM1555C1H8R4DB01D
8.5pF(8R5)	±0.05pF(W)	GJM0336C1E8R5WB01D	GJM1555C1H8R5WB01D
	±0.1pF(B)	GJM0336C1E8R5BB01D	GJM1555C1H8R5BB01D
	±0.25pF(C)	GJM0336C1E8R5CB01D	GJM1555C1H8R5CB01D
	±0.5pF(D)	GJM0336C1E8R5DB01D	GJM1555C1H8R5DB01D
8.6pF(8R6)	±0.05pF(W)	GJM0336C1E8R6WB01D	GJM1555C1H8R6WB01D
	±0.1pF(B)	GJM0336C1E8R6BB01D	GJM1555C1H8R6BB01D
	±0.25pF(C)	GJM0336C1E8R6CB01D	GJM1555C1H8R6CB01D
	±0.5pF(D)	GJM0336C1E8R6DB01D	GJM1555C1H8R6DB01D
8.7pF(8R7)	±0.05pF(W)	GJM0336C1E8R7WB01D	GJM1555C1H8R7WB01D
	±0.1pF(B)	GJM0336C1E8R7BB01D	GJM1555C1H8R7BB01D
	±0.25pF(C)	GJM0336C1E8R7CB01D	GJM1555C1H8R7CB01D
	±0.5pF(D)	GJM0336C1E8R7DB01D	GJM1555C1H8R7DB01D
8.8pF(8R8)	±0.05pF(W)	GJM0336C1E8R8WB01D	GJM1555C1H8R8WB01D
o.op. (0110)	±0.1pF(B)	GJM0336C1E8R8BB01D	GJM1555C1H8R8BB01D
	±0.25pF(C)	GJM0336C1E8R8CB01D	GJM1555C1H8R8CB01D
			GJM1555C1H8R8DB01D
0.0mF/ 0D0)	±0.5pF(D)	GJM0336C1E8R8DB01D	N
8.9pF(8R9)	±0.05pF(W)	GJM0336C1E8R9WB01D	GJM1555C1H8R9WB01D
	±0.1pF(B)	GJM0336C1E8R9BB01D	GJM1555C1H8R9BB01D
	±0.25pF(C)	GJM0336C1E8R9CB01D	GJM1555C1H8R9CB01D
	±0.5pF(D)	GJM0336C1E8R9DB01D	GJM1555C1H8R9DB01D

(Part Number) | GJ | M | 03 | 3 | 6C | 1E | 7R8 | W | B01 | D **2 8 4 5 6** 0 8 **9 0** 0

2Series Product ID **5**Temperature Characteristics 8 Capacitance Tolerance

6 Rated Voltage 9Individual Specification Code

3Dimension (LxW)

4 Dimension (T) Capacitance Packaging

Temperature Compensating Type C0G(5C)/C0H(6C) Characteristics

_xW [mm]		0.6x0.3(03)<0201>	1.0x0.5(15)<0402>
ated Volt. [Vdc		25(1E)	50(1H)
apacitance	Tolerance		umber
9.0pF(9R0)	±0.05pF(W)	GJM0336C1E9R0WB01D	GJM1555C1H9R0WB01D
WT.IV	±0.1pF(B)	GJM0336C1E9R0BB01D	GJM1555C1H9R0BB01D
T.W.	±0.25pF(C)	GJM0336C1E9R0CB01D	GJM1555C1H9R0CB01D
OW.	±0.5pF(D)	GJM0336C1E9R0DB01D	GJM1555C1H9R0DB01D
9.1pF(9R1)	±0.05pF(W)	GJM0336C1E9R1WB01D	GJM1555C1H9R1WB01D
Oh-	±0.1pF(B)	GJM0336C1E9R1BB01D	GJM1555C1H9R1BB01D
COM.	±0.25pF(C)	GJM0336C1E9R1CB01D	GJM1555C1H9R1CB01D
· oM.	±0.5pF(D)	GJM0336C1E9R1DB01D	GJM1555C1H9R1DB01D
9.2pF(9R2)	±0.05pF(W)	GJM0336C1E9R2WB01D	GJM1555C1H9R2WB01D
	±0.1pF(B)	GJM0336C1E9R2BB01D	GJM1555C1H9R2BB01D
	±0.25pF(C)	GJM0336C1E9R2CB01D	GJM1555C1H9R2CB01D
WY.Co.	±0.5pF(D)	GJM0336C1E9R2DB01D	GJM1555C1H9R2DB01D
9.3pF(9R3)	±0.05pF(W)	GJM0336C1E9R3WB01D	GJM1555C1H9R3WB01D
100 1.	±0.1pF(B)	GJM0336C1E9R3BB01D	GJM1555C1H9R3BB01D
100 X.C	±0.25pF(C)	GJM0336C1E9R3CB01D	GJM1555C1H9R3CB01D
· V	±0.5pF(D)	GJM0336C1E9R3DB01D	GJM1555C1H9R3DB01D
9.4pF(9R4)	±0.05pF(W)	GJM0336C1E9R4WB01D	GJM1555C1H9R4WB01D
31 100 Y	±0.1pF(B)	GJM0336C1E9R4BB01D	GJM1555C1H9R4BB01D
W	±0.25pF(C)	GJM0336C1E9R4CB01D	GJM1555C1H9R4CB01D
	±0.5pF(D)	GJM0336C1E9R4DB01D	GJM1555C1H9R4DB01D
9.5pF(9R5)	±0.05pF(W)	GJM0336C1E9R5WB01D	GJM1555C1H9R5WB01D
7.5pi (3h3)	±0.03pf (V)	GJM0336C1E9R5BB01D	GJM1555C1H9R5BB01D
TINW.L		GJM0336C1E9R5CB01D	GJM1555C1H9R5CB01D
	±0.25pF(C)	Pd +	
0 (= F(0DC)	±0.5pF(D)	GJM0336C1E9R5DB01D	GJM1555C1H9R5DB01D
9.6pF(9R6)	±0.05pF(W)	GJM0336C1E9R6WB01D	GJM1555C1H9R6WB01D
- T	±0.1pF(B)	GJM0336C1E9R6BB01D	GJM1555C1H9R6BB01D
MAN	±0.25pF(C)	GJM0336C1E9R6CB01D	GJM1555C1H9R6CB01D
N	±0.5pF(D)	GJM0336C1E9R6DB01D	GJM1555C1H9R6DB01D
9.7pF(9R7)	±0.05pF(W)	GJM0336C1E9R7WB01D	GJM1555C1H9R7WB01D
	±0.1pF(B)	GJM0336C1E9R7BB01D	GJM1555C1H9R7BB01D
	±0.25pF(C)	GJM0336C1E9R7CB01D	GJM1555C1H9R7CB01D
	±0.5pF(D)	GJM0336C1E9R7DB01D	GJM1555C1H9R7DB01D
9.8pF(9R8)	±0.05pF(W)	GJM0336C1E9R8WB01D	GJM1555C1H9R8WB01D
	±0.1pF(B)	GJM0336C1E9R8BB01D	GJM1555C1H9R8BB01D
	±0.25pF(C)	GJM0336C1E9R8CB01D	GJM1555C1H9R8CB01D
	±0.5pF(D)	GJM0336C1E9R8DB01D	GJM1555C1H9R8DB01D
9.9pF(9R9)	±0.05pF(W)	GJM0336C1E9R9WB01D	GJM1555C1H9R9WB01D
	±0.1pF(B)	GJM0336C1E9R9BB01D	GJM1555C1H9R9BB01D
	±0.25pF(C)	GJM0336C1E9R9CB01D	GJM1555C1H9R9CB01D
	±0.5pF(D)	GJM0336C1E9R9DB01D	G IM1555C1HQPQDR01D
ne part number co			IA [inch] Code

LxW [mm]		0.6x0.3(0	3)<0201>	1.0x0.5(15)<0402>
Rated Volt. [Vdc]		25(1E)	6.3(0J)	50(1H)
apacitance	Tolerance	M.In. COM.	Part Number	V.COM
10pF(100)	±2%(G)	GJM0336C1E100GB01D	1. VIV.1	GJM1555C1H100GB01D
WT	±5%(J)	GJM0336C1E100JB01D	W WW	GJM1555C1H100JB01D
11pF(110)	±2%(G)	GJM0336C1E110GB01D	CIV WINN.	GJM1555C1H110GB01D
OMITWO	±5%(J)	GJM0336C1E110JB01D	VIVI	GJM1555C1H110JB01D
12pF(120)	±2%(G)	GJM0336C1E120GB01D	III W.	GJM1555C1H120GB01D
COM	±5%(J)	GJM0336C1E120JB01D	WW WIT	GJM1555C1H120JB01D
13pF(130)	±2%(G)	GJM0336C1E130GB01D	VI.	GJM1555C1H130GB01D
I.Mo	±5%(J)	GJM0336C1E130JB01D	W.T.	GJM1555C1H130JB01D
15pF(150)	±2%(G)	GJM0336C1E150GB01D	W WILL	GJM1555C1H150GB01D
	±5%(J)	GJM0336C1E150JB01D	OB STATE	GJM1555C1H150JB01D
16pF(160)	±2%(G)	GJM0336C1E160GB01D	COM:	GJM1555C1H160GB01D
W.Co.	±5%(J)	GJM0336C1E160JB01D		GJM1555C1H160JB01D
18pF(180)	±2%(G)	GJM0336C1E180GB01D	COM	GJM1555C1H180GB01D
100	±5%(J)	GJM0336C1E180JB01D	COM.	GJM1555C1H180JB01D
20pF(200)	±2%(G)	GJM0336C1E200GB01D	T. COM.TW	GJM1555C1H200GB01D
N. J. OOY.	±5%(J)	GJM0336C1E200JB01D	07.0	GJM1555C1H200JB01D
22pF(220)	±2%(G)	N NINN.	GJM0335C0J220GB01D	WWW.
	±5%(J)	W.V.	GJM0335C0J220JB01D	
24pF(240)	±2%(G)	IN WA	GJM0335C0J240GB01D	W 100
WW.L	±5%(J)		GJM0335C0J240JB01D	WW
27pF(270)	±2%(G)		GJM0335C0J270GB01D	MAN
N VI	±5%(J)		GJM0335C0J270JB01D	. W.V.
30pF(300)	±2%(G)	TIN TIN	GJM0335C0J300GB01D	N N
WW.	±5%(J)	IN WI	GJM0335C0J300JB01D	M MMM
33pF(330)	±2%(G)	OWIT	GJM0335C0J330GB01D	VIVI
	±5%(J)	-117W W	GJM0335C0J330JB01D	114

WWW.100Y.COM.T <>: EIA [inch] Code The part number code is shown in () and Unit is shown in []. WWW.100X.COM WWW.100Y.COM.TW

3Dimension (LxW) 6 Rated Voltage

9Individual Specification Code

4 Dimension (T) Capacitance Packaging



¹ Product ID 2Series **5**Temperature Characteristics 8 Capacitance Tolerance

GJM Series Specifications and Test Methods

- 1			Specifications	1001. COW.1		
0.	Item	V	Temperature Compensating Type	V.100Y.COM.T	Test Method	
M	Operating Temperature Ran	nge	−55 to +125°C	Reference Temperature: 25℃ (2C, 3C, 4C: 20℃)		
	Rated Voltage		See the previous pages.	may be applied continuous When AC voltage is s	efined as the maximum voltage which to the capacitor. Support the capacitor. Support the capacitor of the capacitor of the capacitor of the capacitor. Support the capacitor of the capacitor	
	Appearance		No defects or abnormalities	Visual inspection	W.T.	
	Dimensions	V	Within the specified dimensions	Using calipers	SMITH	
	Dielectric Stren	gth	No defects or abnormalities	is applied between the	observed when 300% of the rated voltage terminations for 1 to 5 seconds, lischarge current is less than 50mA.	
	Insulation Resista (I.R.)	ance	10,000MΩ min. or 500Ω \cdot F min. (Whichever is smaller)		nce should be measured with a DC the rated voltage at 25°C and 75%RH utes of charging.	
	Capacitance	1.	Within the specified tolerance	The capacitance/Q sh frequency and voltage	ould be measured at 25℃ at the shown in the table.	
1	Q N.100Y.CC	OJ JVJ	30pF and over: Q≧1000 30pF and below: Q≧400+20C C: Nominal Capacitance (pF)	Frequency Voltage	1±0.1MHz 0.5 to 5Vrms	
	Tempera Coefficie		Within the specified tolerance (Table A)	each specified temper		
	MM.1002	I.U N.		capacitance measured When cycling the tem	isaury Type ficient is determined using the d in step 3 as a reference. perature sequentially from step 1 throughter the sequentially from the step 1 throughter temp. coeffs.: +20 to 125°C) the	
	Capacitance Temperature Characteristics Capacit.	ance	Within ±0.2% or ±0.05pF	capacitance should be temperature coefficier The capacitance drift between the maximum	e within the specified tolerance for the nt and capacitance change as Table A. is calculated by dividing the differences n and minimum measured values in ste	
	Temperature	ance	Within ±0.2% or ±0.05pF (Whichever is larger.)	capacitance should be temperature coefficier The capacitance drift between the maximum 1, 3 and 5 by the capa	e within the specified tolerance for the nt and capacitance change as Table A. is calculated by dividing the differences n and minimum measured values in ste acitance value in step 3.	
	Temperature Characteristics Capacita	ance		capacitance should be temperature coefficier The capacitance drift between the maximum	e within the specified tolerance for the nt and capacitance change as Table A. is calculated by dividing the differences n and minimum measured values in ste	
	Temperature Characteristics Capacita	ance		capacitance should be temperature coefficier. The capacitance drift between the maximum 1, 3 and 5 by the capacitance.	e within the specified tolerance for the nt and capacitance change as Table A. is calculated by dividing the differences in and minimum measured values in steacitance value in step 3. Temperature (°C)	
	Temperature Characteristics Capacita	ance		capacitance should be temperature coefficier. The capacitance drift between the maximum 1, 3 and 5 by the capacitance.	e within the specified tolerance for the nt and capacitance change as Table A. is calculated by dividing the differences in and minimum measured values in steacitance value in step 3. Temperature (°C) Reference Temp. ±2	
	Temperature Characteristics Capacita	ance		capacitance should be temperature coefficier. The capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the drift between the maximum 1, 3 and 5 by the capacitance drift between the dr	e within the specified tolerance for the nt and capacitance change as Table A. is calculated by dividing the difference in and minimum measured values in structuration and minimum measured values in structuration (°C) Reference Temp. ±2 -55±3 Reference Temp. ±2 125±3	
l	Temperature Characteristics Capacita	ance		capacitance should be temperature coefficier. The capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the maximum 2 and 5 by the capacitance drift between the drift between the maximum 2 and 5 by the capacitance drift between the drift between	e within the specified tolerance for the nt and capacitance change as Table A. is calculated by dividing the differences in and minimum measured values in steacitance value in step 3. Temperature (°C) Reference Temp. ±2 -55±3 Reference Temp. ±2	
	Temperature Characteristics Capacita	ance		capacitance should be temperature coefficier. The capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between th	e within the specified tolerance for the nt and capacitance change as Table A. is calculated by dividing the differences in and minimum measured values in steacitance value in step 3. Temperature (°C) Reference Temp. ±2 -55±3 Reference Temp. ±2 125±3	
l	Temperature Characteristics Capacita	NAME AND AND AND AND AND AND AND AND AND AND		capacitance should be temperature coefficier. The capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the capacitance drift drift between the capacitance drift drif	e within the specified tolerance for the nt and capacitance change as Table A. is calculated by dividing the differences in and minimum measured values in steacitance value in step 3. Temperature (°C) Reference Temp. ±2 -55±3 Reference Temp. ±2 125±3 Reference Temp. ±2 125±3 Reference Temp. ±2 the test jig (glass epoxy board) shown in solder. Then apply a 5N* force in parallect sec. The soldering should be done either ereflow method and should be conducted delering is uniform and free of defects suitable in the state of the second conducted delering is uniform and free of defects suitable in the second conducted delering is uniform and free of defects suitable in the second conducted delering is uniform and free of defects suitable in the second conducted in the second conducted delering is uniform and free of defects suitable in the second conducted in	
l	Temperature Characteristics Drift Adhesive Strene	NAME AND AND AND AND AND AND AND AND AND AND	(Whichever is larger.)	capacitance should be temperature coefficier. The capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between the maximum 1, 3 and 5 by the capacitance drift between th	e within the specified tolerance for the nt and capacitance change as Table A. is calculated by dividing the differences in and minimum measured values in steacitance value in step 3. Temperature (°C) Reference Temp. ±2 -55±3 Reference Temp. ±2 125±3 Reference Temp. ±2 125±3 Reference Temp. ±2 125±3 Reference Temp. ±2 125±3 Reference Temp. ±2 145±3 Reference Temp. ±2 155±3 Referen	



COM.TV

GJM Series Specifications and Test Methods

Gold Selies Specific	alions and res	or Michigas
Continued from the preceding page.		

D.	Ite	m	Specifications	Test Method
	-1		Temperature Compensating Type	COM.
T.I		Appearance	No defects or abnormalities	Solder the capacitor to the test jig (glass epoxy board) in the
	TW	Capacitance	Within the specified tolerance	same manner and under the same conditions as (10). The capacitor should be subjected to a simple harmonic mot
Vibra Resis	ation stance	Q TW	30pF and over: Q≧1000 30pF and below: Q≧400+20C C: Nominal Capacitance (pF)	having a total amplitude of 1.5mm, the frequency being varie uniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 minute. This motion should be applied for a period of 2 hours in each of 3 mutuall perpendicular directions (total of 6 hours).
I.C.	- N/	Appearance	No marking defects	Solder the capacitor to the test jig (glass epoxy boards) show
Y.C	ON	Capacitance Change	Within $\pm 5\%$ or ± 0.5 pF (Whichever is larger)	in Fig. 2 using a eutectic solder. Then apply a force in the direction shown in Fig. 3.
2 Def	flection	OM.TY	e4.5	The soldering should be done by the reflow method and should be conducted with care so that the soldering is uniform and for of defects such as heat shock. 20 50 Pressurizing speed: 1.0mm/sec. Pressurize
W.I			Type a b c GJM03 0.3 0.9 0.3 GJM15 0.4 1.5 0.5 (in mm)	Flexure : ≦1 Capacitance meter 45 45 (in mm)
	v · ·	OOY.C	Fig. 2	Fig. 3
	derabi minatio		75% of the terminations are to be soldered evenly and continuously.	Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Preheat at 80 to 120°C for 10 to 30 seconds. After preheating, immerse in eutectic solder solution for 2±0.5 seconds at 230±5 or Sn-3.0Ag-0.5Cu solder solution for 2±0.5 seconds at 245±5°
	WW	71.100 10 12 10	The measured and observed characteristics should satisfy the specifications in the following table.	M.TW WWW.100Y.COM.TV
	W	Appearance	No marking defects	M.TW WW.100Y.COM.T
Docie	stance	Capacitance Change	Within ±2.5% or ±0.25pF (Whichever is larger)	Preheat the capacitor at 120 to 150℃ for 1 minute.
	oldering	Q	30pF and over: Q≥1000 30pF and below: Q≥400+20C C: Nominal Capacitance (pF)	Immerse the capacitor in a eutectic solder or Sn-3.0Ag-0.5Cu solder solution at 270±5°C for 10±0.5 seconds. Let sit at room temperature for 24±2 hours.
		I.R.	More than 10,000M Ω or 500 Ω · F (Whichever is smaller)	K.COM. TW WWW. LOOY.CO
		Dielectric Strength	No failure	DY.COM.TW WWW.100Y.CO
	'	N	The measured and observed characteristics should satisfy the specifications in the following table.	OOX.COM.TW WWW.100X.C
		Appearance	No marking defects	Fix the capacitor to the supporting jig in the same manner and under the same conditions as (10). Perform the five cycles
Tama		Capacitance Change	Within ±2.5% or ±0.25pF (Whichever is larger)	according to the four heat treatments listed in the following tab Let sit for 24±2 hours at room temperature, then measure.
Cycle	erature	Q	30pF and over: Q≥1000 30pF and below: Q≥400+20C C: Nominal Capacitance (pF)	Step 1 2 3 4 Temp (°C) Min. Operating Room Max. Operating Room
		I.R.	More than 10,000M Ω or 500 Ω · F (Whichever is smaller)	Time (min.) 30±3 2 to 3 30±3 2 to 3
		Dielectric Strength	No failure	WW.100Y.COM.TW WWW.
			The measured and observed characteristics should satisfy the specifications in the following table.	NWW.100X.COW.TW WWW.
		Appearance	No marking defects	MAL TOOK CONTING MAL
	nidity,	Capacitance Change	Within ±5% or ±0.5pF (Whichever is larger)	Let the capacitor sit at 40±2°C and 90 to 95% humidity for 500±12 hours.
Stea State	,	Q	30pF and below: Q≥350 10pF and over, 30pF and below: Q≥275+ ½- C 10pF and below: Q≥200+10C C: Nominal Capacitance (pF)	Remove and let sit for 24±2 hours (temperature compensation type) at room temperature, then measure.

GJM Series Specifications and Test Methods

1	14.0		Specifications	Test Method
lo.	ПЕ	em	Temperature Compensating Type	rest Method
)D	LTW		The measured and observed characteristics should satisfy the specifications in the following table.	TOOK COMETW
0		Appearance	No marking defects	N.100 COM.
17	Humidity Load	Capacitance Change	Within ±7.5% or ±0.75pF (Whichever is larger)	Apply the rated voltage at 40±2°C and 90 to 95% humidity for 500±12 hours. Remove and let sit for 24±2 hours at room temperature, then
	COM	Q	30pF and over: Q≥200 30pF and below: Q≥100+ ^{1.0} / ₃ C C: Nominal Capacitance (pF)	measure. The charge/discharge current is less than 50mA.
		I.R.	More than $500M\Omega$ or $25\Omega \cdot F$ (Whichever is smaller)	W.100 1. COM.1
0	y.C0*	M.TW	The measured and observed characteristics should satisfy the specifications in the following table.	MWW.100X.COW.TW
0		Appearance	No marking defects	M. TON T. CONT.
18	High Temperature	Capacitance Change	Within ±3% or ±0.3pF (Whichever is larger)	Apply 200% of the rated voltage for 1000±12 hours at the maximum operating temperature ±3°C. Let sit for 24±2 hours (temperature compensating type) at room temperature, then
Z.	Load	Q M	30pF and over: Q≧350 10pF and over, 30pF and below: Q≧275+ ½ C 10pF and below: Q≧200+10C C: Nominal Capacitance (pF)	measure. The charge/discharge current is less than 50mA.
N'		I.R.	More than 1,000M Ω or $50\Omega \cdot F$ (Whichever is smaller)	WWW.roov.COM.
19	ESR 1	OA.CC	0.1pF≦C≦1pF: 350mΩ · pF below 1pF <c≦5pf: 300mω="" below<br="">5pF<c≦10pf: 250mω="" below<="" td=""><td>The ESR should be measured at room temperature, and frequency 1±0.2GHz with the equivalent of BOONTON Model 34A.</td></c≦10pf:></c≦5pf:>	The ESR should be measured at room temperature, and frequency 1±0.2GHz with the equivalent of BOONTON Model 34A.
			10pF <c≦33pf: 400mω="" below<="" td=""><td>The ESR should be measured at room temperature, and frequency 500±50MHz with the equivalent of HP8753B.</td></c≦33pf:>	The ESR should be measured at room temperature, and frequency 500±50MHz with the equivalent of HP8753B.

able A							
WW	ON CONTRACTOR	WW	Cap	pacitance Change	e from 25℃ Value	(%)	MIM
Char. Code	Temp. Coeff. (ppm/°C) *1		55℃	ONE -3	0°C	1111.	10℃
M.	(ppin/c) *1	Max.	Min.	Max.	Min.	Max.	Min.
5C	0±30	0.58	-0.24	0.40	-0.17	0.25	-0.11
6C	0±60	0.87	-0.48	0.60	-0.33	0.38	-0.21

^{*1:} Nominal values denote the temperature coefficient within a range of 25 to 125°C.

	Naminal Value		Cap	acitance Change	e from 20℃ Value	(%)	any.Co
Char.	Nominal Values (ppm/°C) *2	—5	5℃	00-2	5℃	H1	0°C
	(рріті/ С) - 2	Max.	Min.	Max.	Min.	Max.	Min.
2C	0±60	0.82	-0.45	0.49	-0.27	0.33	-0.18
3C	0±120	1.37	-0.90	0.82	-0.54	0.55	-0.36
4C	0±250	2.56	-1.88	1.54	-1.13	1.02	-0.75

^{*2:} Nominal values denote the temperature coefficient within a range of 20 to 125°C. WWW.100Y.COM.TW WWW.100Y.CC WWW.100Y.COM.TW

Chip Monolithic Ceramic Capacitors

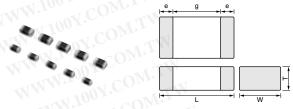
High Frequency GQM Series

■ Features

- 1. HiQ and low ESR at VHF, UHF, Microwave
- 2. Feature improvement, low power consumption for mobile telecommunication. (Base station, terminal,

Applications

High frequency circuit (Mobile telecommunication, etc.)



Part Number	100 x .	Dime	ensions (mm	1)	
Part Number	L = 1 (W	T	е	g min.
GQM187	1.6 ±0.15	0.8 ±0.15	0.7 ±0.1	0.2 to 0.5	0.5
GQM188	1.6 ±0.1	0.8 ±0.1	0.8 ±0.1	0.2 to 0.5	0.5
GQM219 (50,100V)	2.0 ±0.1	1.25 ±0.1	0.85 ±0.1	0.2 to 0.7	0.7
GQM219 (250V)	2.0 ±0.15	1.25 ±0.15	0.85 ±0.15	0.2 to 0.7	0.7

Capacitance Table

Temperature Compensating Type C0G(5C) Characteristics

7 ex.7: T [Dimensio	n [mm]		WW	M.ro.	N.C
TC	M_{i}	- 1	C0G	i(5C)	M_{1}	4 1.1
LxW [mm]	OM	1.6x0.8 (18) <0603>		W.	2.0x1.25 (21) <0805>	
Rated Voltage Capacitance [Vdc]	250 (2E)	100 (2A)	50 (1H)	250 (2E)	100 (2A)	50 (1H)
0.10pF(R10)	7	Tim				
0.20pF(R20)	7	DIAT.		! !		
0.30pF(R30)	7	OM.		! !		
0.40pF(R40)	7		(TV)	! !	M	-111
0.50pF(R50)	7	8	TV	9	9 📢	
0.75pF(R75)	7	. 8	11.	9	9	
1.0pF(1R0)	7	8	$M_{i,I}$	9	9	N. Carlo
1.1pF(1R1)	7	8	- 7/	9	9	MAI
1.2pF(1R2)	7	8	OMr.	9	9	W
1.3pF(1R3)	7.1	8	CON	9	9	
1.5pF(1R5)	7	8		9	9	1
1.6pF(1R6)	7	8	CO_{i}	9	N 9	4
1.8pF(1R8)	7	8	SI CC	9	9	
2.0pF(2R0)	7	8		9	9	
2.2pF(2R2)	7	8	OY.C	9	9	
2.4pF(2R4)	7	8		9	9	
2.7pF(2R7)	7	8	00 1	9)	9	« 1
3.0pF(3R0)	7	8	1007	9	9	14
3.3pF(3R3)	7	8		9	9	W
3.6pF(3R6)	7	8	V. Jan	9	9	-XX
3.9pF(3R9)	7	8	W.10	9	9 /	7.1.
4.0pF(4R0)	7	8	21.1	9	9	MIL
4.3pF(4R3)	7	8	MW.	9	9	- 17
4.7pF(4R7)	7	8	WIXE	9	9	Mir
5.0pF(5R0)	7	8	1	900	9	M^{3}
5.1pF(5R1)	7	8	NW	9	9	O Trie
5.6pF(5R6)	7	8		9	9	O_{M}
6.0pF(6R0)	7	8		9	9	c01
6.2pF(6R2)	7	8	W	9	9	.00
6.8pF(6R8)	7	8	11	9	9	$_{\rm V.CO}$
7.0pF(7R0)	7		8	9	9	21 C(
			-	W 4 1		117

	-47	4000	000	(50)		
TC	MA	4000		(5C)	20.4.0	_
LxW [mm]	NWV	1.6x0.8 (18)		O Pri	2.0x1.25 (21)	
Wey,	(1	<0603>		4 1 1 JA 2	<0805>	
Rated Voltage Capacitance [Vdc]		100 (2A)	50 (1H)	250 (2E)	100 (2A)	50 (1H)
7.5pF(7R5)	7	-33	8	9	9	1
8.0pF(8R0)	7	41.44	8	9	9	W
8.2pF(8R2)	7	TINV.	8	90	9	~W
9.0pF(9R0)	7	(N - 41)	8	9	9	7.4.
9.1pF(9R1)	7	MM	8	9	9	TW
10pF(100)	7		8	9	9	TV.
11pF(110)	7		8	9	9	M.
12pF(120)	7	111	8	9	9	M.T
13pF(130)	7	1	8	9	9	- 11
15pF(150)	7		8	9	9	OMr.
16pF(160)	7		8	9	9	COM
18pF(180)	7		8	9	9	
20pF(200)	7		8	9	. 001	9
22pF(220)	7	kī	8	9	Tan	9
24pF(240)	7		8	9	N.10	9
27pF(270)	7	V	8	9	-11	9
30pF(300)	7	-XX	8	9	111.7	9
33pF(330)	7	7 1	8	9	NIW.	9
36pF(360)	7	TW	8	9	N	9
39pF(390)	(7) ^N	TV	8	9 <		9
43pF(430)	70	M.r.	8	9		9
47pF(470)	7	T.V.	8	9	M	91
51pF(510)	V.C.		8	9	W	9
56pF(560)			8	9	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9
62pF(620)	00 r.		8	9		9
68pF(680)	1001		8	9		9
75pF(750)			8	9		9
82pF(820)	700,		8	9		9
91pF(910)	<u> </u>		8	9		9
100pF(101)			8	9		9

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code

Y.COM.TW

Temperature Compensating Type C0G(5C) Characteristics

ated Volt. [Vdc]		250(2E)	100(2A)
Capacitance	Tolerance		umber
0.10pF(R10)	±0.1pF(B)	GQM1875C2ER10BB12D	N N N N N
0.20pF(R20)	±0.1pF(B)	GQM1875C2ER20BB12D	M M .
0.30pF(R30)	±0.1pF(B)	GQM1875C2ER30BB12D	
-0M.1	±0.25pF(C)	GQM1875C2ER30CB12D	
0.40pF(R40)	±0.1pF(B)	GQM1875C2ER40BB12D	7.77
COL	±0.25pF(C)	GQM1875C2ER40CB12D	TW W
0.50pF(R50)	±0.1pF(B)	GQM1875C2ER50BB12D	GQM1885C2AR50BB01D
LOM!	±0.25pF(C)	GQM1875C2ER50CB12D	GQM1885C2AR50CB01D
0.75pF(R75)	±0.1pF(B)	GQM1875C2ER75BB12D	GQM1885C2AR75BB01D
CON	±0.25pF(C)	GQM1875C2ER75CB12D	GQM1885C2AR75CB01D
1.0pF(1R0)	±0.1pF(B)	GQM1875C2E1R0BB12D	GQM1885C2A1R0BB01D
1007.	±0.25pF(C)	GQM1875C2E1R0CB12D	GQM1885C2A1R0CB01D
1.1pF(1R1)	±0.1pF(B)	GQM1875C2E1R1BB12D	GQM1885C2A1R1BB01D
1.100	±0.25pF(C)	GQM1875C2E1R1CB12D	GQM1885C2A1R1CB01D
1.2pF(1R2)	±0.1pF(B)	GQM1875C2E1R2BB12D	GQM1885C2A1R2BB01D
TOON.	±0.25pF(C)	GQM1875C2E1R2CB12D	GQM1885C2A1R2CB01D
1.3pF(1R3)	±0.1pF(B)	GQM1875C2E1R3BB12D	GQM1885C2A1R3BB01D
W.100 1	±0.25pF(C)	GQM1875C2E1R3CB12D	GQM1885C2A1R3CB01D
1.5pF(1R5)	±0.1pF(B)	GQM1875C2E1R5BB12D	GQM1885C2A1R5BB01D
NWW.1	±0.25pF(C)	GQM1875C2E1R5CB12D	GQM1885C2A1R5CB01D
1.6pF(1R6)	±0.1pF(B)	GQM1875C2E1R6BB12D	GQM1885C2A1R6BB01D
MM.	±0.25pF(C)	GQM1875C2E1R6CB12D	GQM1885C2A1R6CB01D
1.8pF(1R8)	±0.1pF(B)	GQM1875C2E1R8BB12D	GQM1885C2A1R8BB01D
WWW.	±0.25pF(C)	GQM1875C2E1R8CB12D	GQM1885C2A1R8CB01D
2.0pF(2R0)	±0.1pF(B)	GQM1875C2E2R0BB12D	GQM1885C2A2R0BB01D
WWW	±0.25pF(C)	GQM1875C2E2R0CB12D	GQM1885C2A2R0CB01D
2.2pF(2R2)	±0.1pF(B)	GQM1875C2E2R2BB12D	GQM1885C2A2R2BB01D
,-,,	±0.25pF(C)	GQM1875C2E2R2CB12D	GQM1885C2A2R2CB01D
2.4pF(2R4)	±0.1pF(B)	GQM1875C2E2R4BB12D	GQM1885C2A2R4BB01D
2. 151 (2114)	±0.25pF(C)	GQM1875C2E2R4CB12D	GQM1885C2A2R4CB01D
2.7pF(2R7)	±0.1pF(B)	GQM1875C2E2R7BB12D	GQM1885C2A2R7BB01D
2.7 pr (2117)		GQM1875C2E2R7CB12D	GQM1885C2A2R7CB01D
3.0pF(3R0)	±0.25pF(C)	GQM1875C2E3R0BB12D	GQM1885C2A3R0BB01D
3.0pF(3HU)	±0.1pF(B)	2	
0.0 5(000)	±0.25pF(C)	GQM1875C2E3R0CB12D	GQM1885C2A3R0CB01D
3.3pF(3R3)	±0.1pF(B)	GQM1875C2E3R3BB12D	GQM1885C2A3R3BB01D
/	±0.25pF(C)	GQM1875C2E3R3CB12D	GQM1885C2A3R3CB01D
3.6pF(3R6)	±0.1pF(B)	GQM1875C2E3R6BB12D	GQM1885C2A3R6BB01D
	±0.25pF(C)	GQM1875C2E3R6CB12D	GQM1885C2A3R6CB01D
3.9pF(3R9)	±0.1pF(B)	GQM1875C2E3R9BB12D	GQM1885C2A3R9BB01D
	±0.25pF(C)	GQM1875C2E3R9CB12D	GQM1885C2A3R9CB01D
4.0pF(4R0)	±0.1pF(B)	GQM1875C2E4R0BB12D	GQM1885C2A4R0BB01D
	±0.25pF(C)	GQM1875C2E4R0CB12D	GQM1885C2A4R0CB01D
4.3pF(4R3)	±0.1pF(B)	GQM1875C2E4R3BB12D	GQM1885C2A4R3BB01D
	±0.25pF(C)	GQM1875C2E4R3CB12D	GQM1885C2A4R3CB01D
4.7pF(4R7)	±0.1pF(B)	GQM1875C2E4R7BB12D	GQM1885C2A4R7BB01D
	±0.25pF(C)	GQM1875C2E4R7CB12D	GQM1885C2A4R7CB01D
5.0pF(5R0)	±0.1pF(B)	GQM1875C2E5R0BB12D	GQM1885C2A5R0BB01D
	±0.25pF(C)	GQM1875C2E5R0CB12D	GQM1885C2A5R0CB01D

(Part Number) | GQ | M | 18 | 7 | 5C | 2E | R10 | B | B12 | D 0 2 3 4 5 6 0 8 0 0

2Series 1 Product ID **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) 6 Rated Voltage

9Individual Specification Code

4 Dimension (T) Capacitance Packaging

LxW [mm]		1001. OM.TW	1.6x0.8(18)<0603>	COM:I
Rated Volt. [Vdc]	MAIN	250(2E)	100(2A)	50(1H)
Capacitance	Tolerance	N.In. COM.	Part Number	ON COM
5.1pF(5R1)	±0.25pF(C)	GQM1875C2E5R1CB12D	GQM1885C2A5R1CB01D	COMP
	±0.5pF(D)	GQM1875C2E5R1DB12D	GQM1885C2A5R1DB01D	OOY. OM.TW
5.6pF(5R6)	±0.25pF(C)	GQM1875C2E5R6CB12D	GQM1885C2A5R6CB01D	LOON.COM.TW
OMIL	±0.5pF(D)	GQM1875C2E5R6DB12D	GQM1885C2A5R6DB01D	Too COM.
6.0pF(6R0)	±0.25pF(C)	GQM1875C2E6R0CB12D	GQM1885C2A6R0CB01D	1700 COW.I.A.
COM	±0.5pF(D)	GQM1875C2E6R0DB12D	GQM1885C2A6R0DB01D	11007.00
6.2pF(6R2)	±0.25pF(C)	GQM1875C2E6R2CB12D	GQM1885C2A6R2CB01D	M. T. COMP.
I.Mo	±0.5pF(D)	GQM1875C2E6R2DB12D	GQM1885C2A6R2DB01D	M.In. COM.
6.8pF(6R8)	±0.25pF(C)	GQM1875C2E6R8CB12D	GQM1885C2A6R8CB01D	1007.0M
COM	±0.5pF(D)	GQM1875C2E6R8DB12D	GQM1885C2A6R8DB01D	MAN. OON.CO.
7.0pF(7R0)	±0.25pF(C)	GQM1875C2E7R0CB12D	COM	GQM1885C1H7R0CB01D
100 X .C.	±0.5pF(D)	GQM1875C2E7R0DB12D	-ow.TW	GQM1885C1H7R0DB01D
7.5pF(7R5)	±0.25pF(C)	GQM1875C2E7R5CB12D	CONTIN	GQM1885C1H7R5CB01D
1.100	±0.5pF(D)	GQM1875C2E7R5DB12D	COM.	GQM1885C1H7R5DB01D
8.0pF(8R0)	±0.25pF(C)	GQM1875C2E8R0CB12D	COWILL	GQM1885C1H8R0CB01D
W. Jony.	±0.5pF(D)	GQM1875C2E8R0DB12D	OY.C. TITY	GQM1885C1H8R0DB01D
8.2pF(8R2)	±0.25pF(C)	GQM1875C2E8R2CB12D	COM TAN	GQM1885C1H8R2CB01D
100 X	±0.5pF(D)	GQM1875C2E8R2DB12D	ON.	GQM1885C1H8R2DB01D
9.0pF(9R0)	±0.25pF(C)	GQM1875C2E9R0CB12D	1001. CM.TW	GQM1885C1H9R0CB01D
INW.	±0.5pF(D)	GQM1875C2E9R0DB12D	ON CONTRACTOR	GQM1885C1H9R0DB01D
9.1pF(9R1)	±0.25pF(C)	GQM1875C2E9R1CB12D	V.Too COM.	GQM1885C1H9R1CB01D
WW	±0.5pF(D)	GQM1875C2E9R1DB12D	01.100 COM. T.V.	GQM1885C1H9R1DB01D
10pF(100)	±2%(G)	GQM1875C2E100GB12D	1007.00	GQM1885C1H100GB01D
WW.	±5%(J)	GQM1875C2E100JB12D	W. CO	GQM1885C1H100JB01D
11pF(110)	±2%(G)	GQM1875C2E110GB12D	71.100 r. COM.	GQM1885C1H110GB01D
WW	±5%(J)	GQM1875C2E110JB12D	1007	GQM1885C1H110JB01D
12pF(120)	±2%(G)	GQM1875C2E120GB12D	MAN CON	GQM1885C1H120GB01D
1 1 1 1	±5%(J)	GQM1875C2E120JB12D	CO1	GQM1885C1H120JB01D
13pF(130)	±2%(G)	GQM1875C2E130GB12D	W 1001-	GQM1885C1H130GB01D
N.	±5%(J)	GQM1875C2E130JB12D	WWW.	GQM1885C1H130JB01D
15pF(150)	±2%(G)	GQM1875C2E150GB12D	MAN C	GQM1885C1H150GB01D
1 (1-2-)	±5%(J)	GQM1875C2E150JB12D		GQM1885C1H150JB01D
16pF(160)	±2%(G)	GQM1875C2E160GB12D	4/4/1001	GQM1885C1H160GB01D
-1 (3)	±5%(J)	GQM1875C2E160JB12D	WWW	GQM1885C1H160JB01D
18pF(180)	±2%(G)	GQM1875C2E180GB12D	17777.100	GQM1885C1H180GB01D
. = (. • • •)	±5%(J)	GQM1875C2E180JB12D		GQM1885C1H180JB01D
20pF(200)	±2%(G)	GQM1875C2E200GB12D	WW.	GQM1885C1H200GB01D
== 5: (==3)	±5%(J)	GQM1875C2E200JB12D		GQM1885C1H200JB01D
22pF(220)	±2%(G)	GQM1875C2E220GB12D	N V	GQM1885C1H220GB01D
22/3: (223)	±5%(J)	GQM1875C2E220JB12D	4	GQM1885C1H220JB01D
24pF(240)	±2%(G)	GQM1875C2E240GB12D	THE THE	GQM1885C1H240GB01D
_ ipi (= +0)	±2 %(J)	GQM1875C2E240JB12D	N. C.	GQM1885C1H240JB01D
27pF(270)	±2%(G)	GQM1875C2E270GB12D	TA AM	GQM1885C1H270GB01D
21 μι (210)	±2 %(G) ±5%(J)	GQM1875C2E270JB12D		GQM1885C1H270JB01D
30pF(300)	±2%(G)	GQM1875C2E300GB12D		GQM1885C1H300GB01D
30pi (300)	±2%(J) ±5%(J)	GQM1875C2E300GB12D		GQM1885C1H300JB01D

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

(Part Number) | GQ | M | 18 | 7 | 5C | 2E | 5R1 | C | B12 | D 0 2 3 4 5 6 0 8 9 0

Product ID **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) **6**Rated Voltage

7 Capacitance Packaging

4 Dimension (T)

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

9Individual Specification Code

LxW [mm] Rated Volt. [Vdc]		1.6x0.8(1	8)<0603>
		250(2E)	50(1H)
Capacitance	Tolerance	Part N	umber
33pF(330)	±2%(G)	GQM1875C2E330GB12D	GQM1885C1H330GB01D
WT	±5%(J)	GQM1875C2E330JB12D	GQM1885C1H330JB01D
36pF(360)	±2%(G)	GQM1875C2E360GB12D	GQM1885C1H360GB01D
OMITY	±5%(J)	GQM1875C2E360JB12D	GQM1885C1H360JB01D
39pF(390)	±2%(G)	GQM1875C2E390GB12D	GQM1885C1H390GB01D
COM	±5%(J)	GQM1875C2E390JB12D	GQM1885C1H390JB01D
43pF(430)	±2%(G)	GQM1875C2E430GB12D	GQM1885C1H430GB01D
Y.C.	±5%(J)	GQM1875C2E430JB12D	GQM1885C1H430JB01D
47pF(470)	±2%(G)	GQM1875C2E470GB12D	GQM1885C1H470GB01D
T CON	±5%(J)	GQM1875C2E470JB12D	GQM1885C1H470JB01D
51pF(510)	±2%(G)	100	GQM1885C1H510GB01D
100 X.CO	±5%(J)	WW1007.	GQM1885C1H510JB01D
56pF(560)	±2%(G)	WWW.	GQM1885C1H560GB01D
N.100	±5%(J)	TWW.III	GQM1885C1H560JB01D
62pF(620)	±2%(G)	W 100	GQM1885C1H620GB01D
V. JOOY.	±5%(J)	NW 10	GQM1885C1H620JB01D
68pF(680)	±2%(G)	N WWW.	GQM1885C1H680GB01D
1001	±5%(J)		GQM1885C1H680JB01D
75pF(750)	±2%(G)	IN WAR	GQM1885C1H750GB01D
MWW.10	±5%(J)	WWW WWW	GQM1885C1H750JB01D
82pF(820)	±2%(G)		GQM1885C1H820GB01D
WW.	±5%(J)	William A.	GQM1885C1H820JB01D
91pF(910)	±2%(G)	WW WITE	GQM1885C1H910GB01D
WW.	±5%(J)		GQM1885C1H910JB01D
100pF(101)	±2%(G)	UN:3	GQM1885C1H101GB01D
	±5%(J)	V VY	GQM1885C1H101JB01D

< >: EIA [inch] Code The part number code is shown in () and Unit is shown in []. WWW.100X.COM WWW.100Y.COM.TW

xW [mm]		2.0x1.25(2	241 114
Rated Volt. [Vdc]		250(2E)	100(2A)
apacitance	Tolerance		umber
0.50pF(R50)	±0.1pF(B)	GQM2195C2ER50BB12D	GQM2195C2AR50BB01D
MTN	±0.25pF(C)	GQM2195C2ER50CB12D	GQM2195C2AR50CB01D
0.75pF(R75)	±0.1pF(B)	GQM2195C2ER75BB12D	GQM2195C2AR75BB01D
$0_{M^{1,1}}$	±0.25pF(C)	GQM2195C2ER75CB12D	GQM2195C2AR75CB01D
1.0pF(1R0)	±0.1pF(B)	GQM2195C2E1R0BB12D	GQM2195C2A1R0BB01D
Con	±0.25pF(C)	GQM2195C2E1R0CB12D	GQM2195C2A1R0CB01D
1.1pF(1R1)	±0.1pF(B)	GQM2195C2E1R1BB12D	GQM2195C2A1R1BB01D
-owi	±0.25pF(C)	GQM2195C2E1R1CB12D	GQM2195C2A1R1CB01D
1.2pF(1R2)	±0.1pF(B)	GQM2195C2E1R2BB12D	GQM2195C2A1R2BB01D
COM	±0.25pF(C)	GQM2195C2E1R2CB12D	GQM2195C2A1R2CB01D
1.3pF(1R3)	±0.1pF(B)	GQM2195C2E1R3BB12D	GQM2195C2A1R3BB01D
OUX.CO.	±0.25pF(C)	GQM2195C2E1R3CB12D	GQM2195C2A1R3CB01D
1.5pF(1R5)	±0.1pF(B)	GQM2195C2E1R5BB12D	GQM2195C2A1R5BB01D
100 1.	±0.25pF(C)	GQM2195C2E1R5CB12D	GQM2195C2A1R5CB01D
1.6pF(1R6)	±0.1pF(B)	GQM2195C2E1R6BB12D	GQM2195C2A1R6BB01D
1.op/ (1110)	±0.25pF(C)	GQM2195C2E1R6CB12D	GQM2195C2A1R6CB01D
1.0pF/ 1D0 \		GQM2195C2E1R8BB12D	GQM2195C2A1R8BB01D
1.8pF(1R8)	±0.1pF(B)		
0.0 5(0.00)	±0.25pF(C)	GQM2195C2E1R8CB12D	GQM2195C2A1R8CB01D
2.0pF(2R0)	±0.1pF(B)	GQM2195C2E2R0BB12D	GQM2195C2A2R0BB01D
10	±0.25pF(C)	GQM2195C2E2R0CB12D	GQM2195C2A2R0CB01D
2.2pF(2R2)	±0.1pF(B)	GQM2195C2E2R2BB12D	GQM2195C2A2R2BB01D
1	±0.25pF(C)	GQM2195C2E2R2CB12D	GQM2195C2A2R2CB01D
2.4pF(2R4)	±0.1pF(B)	GQM2195C2E2R4BB12D	GQM2195C2A2R4BB01D
WW.	±0.25pF(C)	GQM2195C2E2R4CB12D	GQM2195C2A2R4CB01D
2.7pF(2R7)	±0.1pF(B)	GQM2195C2E2R7BB12D	GQM2195C2A2R7BB01D
MAI.	±0.25pF(C)	GQM2195C2E2R7CB12D	GQM2195C2A2R7CB01D
3.0pF(3R0)	±0.1pF(B)	GQM2195C2E3R0BB12D	GQM2195C2A3R0BB01D
	±0.25pF(C)	GQM2195C2E3R0CB12D	GQM2195C2A3R0CB01D
3.3pF(3R3)	±0.1pF(B)	GQM2195C2E3R3BB12D	GQM2195C2A3R3BB01D
W	±0.25pF(C)	GQM2195C2E3R3CB12D	GQM2195C2A3R3CB01D
3.6pF(3R6)	±0.1pF(B)	GQM2195C2E3R6BB12D	GQM2195C2A3R6BB01D
	±0.25pF(C)	GQM2195C2E3R6CB12D	GQM2195C2A3R6CB01D
3.9pF(3R9)	±0.1pF(B)	GQM2195C2E3R9BB12D	GQM2195C2A3R9BB01D
3.7pr (0113)	±0.25pF(C)	GQM2195C2E3R9CB12D	GQM2195C2A3R9CB01D
4.0nF/ 4D0 \		GQM2195C2E4R0BB12D	GQM2195C2A4R0BB01D
4.0pF(4R0)	±0.1pF(B)		
4.0. 5/400	±0.25pF(C)	GQM2195C2E4R0CB12D	GQM2195C2A4R0CB01D
4.3pF(4R3)	±0.1pF(B)	GQM2195C2E4R3BB12D	GQM2195C2A4R3BB01D
	±0.25pF(C)	GQM2195C2E4R3CB12D	GQM2195C2A4R3CB01D
4.7pF(4R7)	±0.1pF(B)	GQM2195C2E4R7BB12D	GQM2195C2A4R7BB01D
	±0.25pF(C)	GQM2195C2E4R7CB12D	GQM2195C2A4R7CB01D
5.0pF(5R0)	±0.1pF(B)	GQM2195C2E5R0BB12D	GQM2195C2A5R0BB01D
	±0.25pF(C)	GQM2195C2E5R0CB12D	GQM2195C2A5R0CB01D
5.1pF(5R1)	±0.25pF(C)	GQM2195C2E5R1CB12D	GQM2195C2A5R1CB01D
	±0.5pF(D)	GQM2195C2E5R1DB12D	GQM2195C2A5R1DB01D
5.6pF(5R6)	±0.25pF(C)	GQM2195C2E5R6CB12D	GQM2195C2A5R6CB01D
	±0.5pF(D)	GQM2195C2E5R6DB12D	GQM2195C2A5R6DB01D
6.0pF(6R0)	±0.25pF(C)	GQM2195C2E6R0CB12D	GQM2195C2A6R0CB01D
1. (/		GQM2195C2E6R0DB12D	GQM2195C2A6R0DB01D

(Part Number) | GQ | M | 21 | 9 | 5C | 2E | R50 | B | B12 | D 2 8 4 5 6 **7** 8 0 0 0

2Series 1 Product ID **5**Temperature Characteristics 8 Capacitance Tolerance

6 Rated Voltage 9Individual Specification Code

3Dimension (LxW)

4 Dimension (T) Capacitance Packaging

_xW [mm] Rated Volt. [Vdc]		250(2E)	100(2A)	50(1H)	
apacitance	Tolerance	N.In. COMP.	Part Number	ON CONTRACTOR	
6.2pF(6R2)	±0.25pF(C)	GQM2195C2E6R2CB12D	GQM2195C2A6R2CB01D	O. COW.	
TW	±0.5pF(D)	GQM2195C2E6R2DB12D	GQM2195C2A6R2DB01D	001:0 VIIA	
6.8pF(6R8)	±0.25pF(C)	GQM2195C2E6R8CB12D	GQM2195C2A6R8CB01D	CON COM	
$o_{M,T,N}$	±0.5pF(D)	GQM2195C2E6R8DB12D	GQM2195C2A6R8DB01D	Too COM.	
7.0pF(7R0)	±0.25pF(C)	GQM2195C2E7R0CB12D	GQM2195C2A7R0CB01D	11001. OW.IN	
OMI	±0.5pF(D)	GQM2195C2E7R0DB12D	GQM2195C2A7R0DB01D	100Y.CO	
7.5pF(7R5)	±0.25pF(C)	GQM2195C2E7R5CB12D	GQM2195C2A7R5CB01D	M. In COM.	
· · · · · ·	±0.5pF(D)	GQM2195C2E7R5DB12D	GQM2195C2A7R5DB01D	7M.100, COM.	
8.0pF(8R0)	±0.25pF(C)	GQM2195C2E8R0CB12D	GQM2195C2A8R0CB01D	1100 Y.	
	±0.5pF(D)	GQM2195C2E8R0DB12D	GQM2195C2A8R0DB01D	MAA: OOX.Co.	
8.2pF(8R2)	±0.25pF(C)	GQM2195C2E8R2CB12D	GQM2195C2A8R2CB01D	TANN TOO	
UOX.CO.	±0.5pF(D)	GQM2195C2E8R2DB12D	GQM2195C2A8R2DB01D	M. 100 F. CO.	
9.0pF(9R0)	±0.25pF(C)	GQM2195C2E9R0CB12D	GQM2195C2A9R0CB01D	MM	
100	±0.5pF(D)	GQM2195C2E9R0DB12D	GQM2195C2A9R0DB01D	MWW. AV.C	
9.1pF(9R1)	±0.25pF(C)	GQM2195C2E9R1CB12D	GQM2195C2A9R1CB01D	A. 100	
. You	±0.5pF(D)	GQM2195C2E9R1DB12D	GQM2195C2A9R1DB01D	WW 1007	
10pF(100)	±2%(G)	GQM2195C2E100GB12D	GQM2195C2A100GB01D	MAM.	
W.100 X	±5%(J)	GQM2195C2E100JB12D	GQM2195C2A100JB01D	71X/W.100	
11pF(110)	±2%(G)	GQM2195C2E110GB12D	GQM2195C2A110GB01D	W " 100	
MM.To	±5%(J)	GQM2195C2E110JB12D	GQM2195C2A110JB01D	WW - 100	
12pF(120)	±2%(G)	GQM2195C2E120GB12D	GQM2195C2A120GB01D	WW.	
1	±5%(J)	GQM2195C2E120JB12D	GQM2195C2A120JB01D	· VVV	
13pF(130)	±2%(G)	GQM2195C2E130GB12D	GQM2195C2A130GB01D	N NN	
WW.	±5%(J)	GQM2195C2E130JB12D	GQM2195C2A130JB01D	M MM	
15pF(150)	±2%(G)	GQM2195C2E150GB12D	GQM2195C2A150GB01D	William I	
MW	±5%(J)	GQM2195C2E150JB12D	GQM2195C2A150JB01D	11/4	
16pF(160)	±2%(G)	GQM2195C2E160GB12D	GQM2195C2A160GB01D	TV WW	
1	±5%(J)	GQM2195C2E160JB12D	GQM2195C2A160JB01D	VIC VC	
18pF(180)	±2%(G)	GQM2195C2E180GB12D	GQM2195C2A180GB01D	N.i.	
W	±5%(J)	GQM2195C2E180JB12D	GQM2195C2A180JB01D	W.I.W	
20pF(200)	±2%(G)	GQM2195C2E200GB12D	WWW.	GQM2195C1H200GB01D	
	±5%(J)	GQM2195C2E200JB12D	W.W.	GQM2195C1H200JB01D	
22pF(220)	±2%(G)	GQM2195C2E220GB12D	1/1 1007.	GQM2195C1H220GB01D	
	±5%(J)	GQM2195C2E220JB12D	MMATTAN	GQM2195C1H220JB01D	
24pF(240)	±2%(G)	GQM2195C2E240GB12D	TIMN.In	GQM2195C1H240GB01D	
, , -/	±5%(J)	GQM2195C2E240JB12D	W 100	GQM2195C1H240JB01D	
27pF(270)	±2%(G)	GQM2195C2E270GB12D	WW -110	GQM2195C1H270GB01D	
	±5%(J)	GQM2195C2E270JB12D	V WWW	GQM2195C1H270JB01D	
30pF(300)	±2%(G)	GQM2195C2E300GB12D	TI TOWN.	GQM2195C1H300GB01D	
	±5%(J)	GQM2195C2E300JB12D	NY TOTAL STATE OF THE STATE OF	GQM2195C1H300JB01D	
33pF(330)	±2%(G)	GQM2195C2E330GB12D	IN MAN	GQM2195C1H330GB01D	
	±5%(J)	GQM2195C2E330JB12D	WIX WW	GQM2195C1H330JB01D	
36pF(360)	±2%(G)	GQM2195C2E360GB12D	C.L.	GQM2195C1H360GB01D	
	±5%(J)	GQM2195C2E360JB12D	(1)W	GQM2195C1H360JB01D	
39pF(390)	±2%(G)	GQM2195C2E390GB12D	W WY	GQM2195C1H390GB01D	
	±5%(J)	GQM2195C2E390JB12D	DM.	GQM2195C1H390JB01D	
				T. All III	

WWW.100Y.COM.TW WWW.100Y.

		CONS		
xW [mm] lated Volt. [Vdc]		2.0x1.25(21)<0805>		
		250(2E)	50(1H)	
apacitance	Tolerance	Part Number		
43pF(430)	±2%(G)	GQM2195C2E430GB12D	GQM2195C1H430GB01D	
	±5%(J)	GQM2195C2E430JB12D	GQM2195C1H430JB01D	
47pF(470)	±2%(G)	GQM2195C2E470GB12D	GQM2195C1H470GB01D	
	±5%(J)	GQM2195C2E470JB12D	GQM2195C1H470JB01D	
51pF(510)	±2%(G)	GQM2195C2E510GB12D	GQM2195C1H510GB01D	
	±5%(J)	GQM2195C2E510JB12D	GQM2195C1H510JB01D	
56pF(560)	±2%(G)	GQM2195C2E560GB12D	GQM2195C1H560GB01D	
	±5%(J)	GQM2195C2E560JB12D	GQM2195C1H560JB01D	
62pF(620)	±2%(G)	GQM2195C2E620GB12D	GQM2195C1H620GB01D	
	±5%(J)	GQM2195C2E620JB12D	GQM2195C1H620JB01D	
68pF(680)	±2%(G)	GQM2195C2E680GB12D	GQM2195C1H680GB01D	
	±5%(J)	GQM2195C2E680JB12D	GQM2195C1H680JB01D	
75pF(750)	±2%(G)	GQM2195C2E750GB12D	GQM2195C1H750GB01D	
	±5%(J)	GQM2195C2E750JB12D	GQM2195C1H750JB01D	
82pF(820)	±2%(G)	GQM2195C2E820GB12D	GQM2195C1H820GB01D	
	±5%(J)	GQM2195C2E820JB12D	GQM2195C1H820JB01D	
91pF(910)	±2%(G)	GQM2195C2E910GB12D	GQM2195C1H910GB01D	
	±5%(J)	GQM2195C2E910JB12D	GQM2195C1H910JB01D	
100pF(101)	±2%(G)	GQM2195C2E101GB12D	GQM2195C1H101GB01D	
	±5%(J)	GQM2195C2E101JB12D	GQM2195C1H101JB01D	

WWW.100Y.COM.T The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100Y.COM.

4 Dimension (T) Capacitance Packaging

Product ID 2 Series **5**Temperature Characteristics 8 Capacitance Tolerance

³Dimension (LxW) 6 Rated Voltage 9Individual Specification Code

GQM Series Specifications and Test Methods

No.	lt∈	em	Specifications	COM	Test Method		
1	Operating Temperatu		-55 to 125℃	Reference Temperature: 25℃			
2	Rated Voltage		See the previous page.	The rated voltage is defined as the maximum voltage which may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, V ^{p.p} or V ^{o.p} , whichever is larger, should be maintained within the rated			
3	Appearar		No defects or abnormalities	voltage range. Visual inspection			
3	Dimensio	-«T	Within the specified dimensions	Using calipers	NA CAN		
5	Dielectric Strength		No defects or abnormalities	No failure should be observed when 300%* of the rated voltage is applied between the terminations for 1 to 5 seconds, provided the charge/discharge current is less than 50mA. *250V only 250°			
6	Insulation Resistance		More than 10,000M Ω	The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at 25℃ and 75%RH max. and within 2 minutes of charging.			
7	Capacita	nce	Within the specified tolerance		The capacitance/Q should be measured at 25°C at the frequency and voltage shown in the table.		
N	You.	CO_{H_2}	30pF min.: Q≧1400 30pF max.: Q≥800+20C		any.		
8	Q	COM	THE THINK ON COM	Frequency Voltage	1±0.1MHz 0.5 to 5Vrms		
×1	N.100	COL	C: Nominal Capacitance (pF)	Voltage	0.5 to 541116		
1	W.100	Capacitance Change	Within the specified tolerance (Table A)	The temperature coefficient is determined using the capacitance measured in step 3 as a reference. When cycling the temperature sequentially from step 1 through 5 the capacitance should be within the specified tolerance for the temperature coefficient and capacitance change as in Table A. The capacitance drift is calculated by dividing the differences between the maximum and minimum measured values in the steps 1, 3 and 5 by the capacitance value in step 3.			
	Capacitance	Temperature Coefficient	Within the specified tolerance (Table A)				
9	Temperature Characteristics	N.100 x	CONTANT WAYNESTON	Step	Temperature (℃)		
	WW	Capacitance	Within ±0.2% or ±0.05pF	1 1	Reference Temp. ±2		
	WW	Drift	(Whichever is larger)	2	-55±3		
	- T	MN.Jo	CON.	3 4	Reference Temp. ±2		
	W	TXV.1	101.0 M. JAN 100	5	125±3 Reference Temp. ±2		
	V	11	No removal of the terminations or other defect should occur.		- W - 33 100 - 30 N		
10	Adhesive Strength of Termination		Solder resist Baked electrode or copper foil	Fig. 1 using a eutectic with the test jig for 10± The soldering should by reflow method and should the soldering should be reflow method and should be reflow method and should be reflow method and should be reflow method and should be reflow method and should be reflow method and should be reflow method and should be reflow method and should be reflowed by the reflow method and should be reflowed by the reflex by the	the test jig (glass epoxy board) shown solder. Then apply 10N* force in parallet 1 sec. be done either with an iron or using the bould be conducted with care so that the had free of defects such as heat shock. *5N (GQM) a b c 1.0 3.0 1.2 1.2 4.0 1.65 (in mr		
		Appearance	No defects or abnormalities		to the test jig (glass epoxy board) in the		
		Capacitance	Within the specified tolerance	4 () () ()	same manner and under the same conditions as (10). The capacitor should be subjected to a simple harmonic motion		
			30pF min.: Q≥1400	having a total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 minute. This motion should be applied for a period of 2 hours in each of 3 mutually perpendicular directions (total of 6 hours).			
11	Vibration Resistance	Q	30pF max.: Q≥800+20C C: Nominal Capacitance (pF)	be traversed in approx This motion should be	e applied for a period of 2 hours in eac		
11		Q	M. 100 r. OW. I.	be traversed in approx This motion should be	e applied for a period of 2 hours in eac		

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GQM Series Specifications and Test Methods

Continued from the preceding page Specifications Test Method No Item Appearance No marking defects Solder the capacitor on the test jig (glass epoxy board) shown in Fig. 2 using a eutectic solder. Capacitance Within ±5% or ±0.5pF Then apply a force in the direction shown in Fig. 3. (Whichever is larger) Change The soldering should be done by the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. 50 Pressurizing speed: 1.0mm/sec. Pressurize Deflection 12 t: 1.6mm Type b С 1.2 GQM18 1.0 3.0 Capacitance meter GQM21 1.65 1.2 4.0 (in mm) Fig. 2 Fia. 3 Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Preheat at Solderability of 75% of the terminations are to be soldered evenly 80 to 120℃ for 10 to 30 seconds. After preheating, immerse in 13 Termination and continuously. eutectic solder solution for 2±0.5 seconds at 230±5℃ or Sn-3.0Ag-0.5Cu solder solution for 2±0.5 seconds at 245±5°C. The measured and observed characteristics should satisfy the specifications in the following table Appearance No marking defects Capacitance Within $\pm 2.5\%$ or ± 0.25 pF Change (Whichever is larger) Preheat the capacitor at 120 to 150℃ for 1 minute. Immerse the Resistance capacitor in a eutectic solder or Sn-3.0Ag-0.5Cu solder solution 30pF min : Q≥1400 to Soldering 14 at 270±5℃ for 10±0.5 seconds. Let sit at room temperature for 30pF max.: Q≥800+20C Heat Q 24±2 hours. C: Nominal Capacitance (pF) I.R More than $10,000M\Omega$ Dielectric No failure Strength The measured and observed characteristics should satisfy the specifications in the following table. Fix the capacitor to the supporting jig in the same manner and No marking defects Appearance under the same conditions as (10). Capacitance Within $\pm 2.5\%$ or ± 0.25 pF Perform the five cycles according to the four heat treatments (Whichever is larger) Change listed in the following table. Temperature Let sit for 24±2 hours at room temperature, then measure. 30pF min.: Q≥1400 15 Cycle 30pF max.: Q≥800+20C Step Q Min. Operating Max. Operating Room Temp. (°C) C: Nominal Capacitance (pF) Temp. +0/-3 Temp. Temp. +3/-0 Temp. 30 + 3More than $10,000M\Omega$ Time (min.) 2 to 3 ΙR Dielectric No failure Strength The measured and observed characteristics should satisfy the specifications in the following table. No marking defects Appearance Within ±5% or ±0.5pF Capacitance Let the capacitor sit at 40±2°C and 90 to 95% humidity for Humidity (Whichever is larger) Change 500±12 hours. 16 Steady 30pF min.: Q≥350 Remove and let sit for 24±2 hours (temperature compensating State 10pF and over, 30pF and below: Q≥275+5C/2 type) at room temperature, then measure. Q 10pF max.: Q≥200+10C C: Nominal Capacitance (pF) I.R More than $1,000M\Omega$

Continued on the following page.



GQM Series Specifications and Test Methods

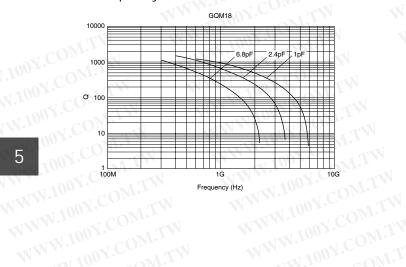
No.	o. Item		Specifications	Test Method		
		The measured and observed characteristics should satisfy th specifications in the following table.		100X.COM.TW		
	I'I'	Appearance	No marking defects	TO COM.		
17 Humid Load	Humidity	Capacitance Change	Within ±7.5% or ±0.75pF (Whichever is larger)	Apply the rated voltage at 40±2°C and 90 to 95% humidity fo 500±12 hours. Remove and let sit for 24±2 hours at room		
	Load	Q	30pF min.: Q≥200 30pF max.: Q≥100+10C/3 C: Nominal Capacitance (pF)	temperature then measure. The charge/discharge current is less than 50mA.		
	COM	I.R.	More than 500M Ω	WW.100 COM.		
90 <u>,</u>	Y.CON	TW	The measured and observed characteristics should satisfy the specifications in the following table.	WWW.IIIOY.COM.TW		
	V.CO	Appearance	No marking defects	WWW. 100Y.CO. TW		
	High	Capacitance Change	Within ±3% or ±0.3pF (Whichever is larger)	Apply 200% of the rated voltage for 1000±12 hours at the maximum operating temperature ±3°C.		
`	Temperature Load	o ^M	30pF min.: Q≧350 10pF and over, 30pF and below: Q≥275+5C/2 10pF max.: Q≥200+10C	Let sit for 24±2 hours (temperature compensating type) at room temperature, then measure. The charge/discharge current is less than 50mA.		
	-1100°		C: Nominal Capacitance (pF)	- W.100 - COM.1		
	M z	I.R.	More than 1,000MΩ			

- TX 10	Or. COM.TY	TW.1	ON	Capacitance Cha	nge from 25℃ (%)	-1 COM	-31
Char.	Nominal Values (ppm/°C) *1	-5	55℃	−30°C		−10°C	
	(ppin/ c) * 1	Max.	Min.	Max.	Min.	Max.	Min.
5C	0±30	0.58	-0.24	0.40	-0.17	0.25	-0.11

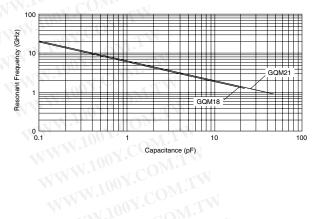
^{*1:} Nominal values denote the temperature coefficient within a range of 25 to 125°C.

GQM Series Data

■ Q - Frequency Characteristics



■ Resonant Frequency - Capacitance



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Chip Monolithic Ceramic Capacitors



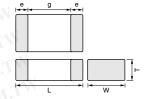
High Frequency Type ERB Series

- Features (ERB Series)
- 1. Negligible inductance is achieved by its monolithic structure so the series can be used at frequencies above 1GHz.
- 2. Nickel barriered terminations of ERB series improve solderability and decrease solder leaching.
- 3. ERB18/21 series are designed for both flow and reflow soldering and ERB32 series are designed for reflow soldering.

Applications

WWW.100Y.COM. High frequency and high-power circuits





Part Number	Dimensions (mm)						
Part Number	N. ILL	C W	T max.	e min.	g min.		
ERB188	1.6±0.1	0.8±0.1	0.9	0.2	0.5		
ERB21B	2.0±0.3	1.25±0.3	1.35	0.25	0.7		
ERB32Q	3.2±0.3	2.5±0.3	1.7	0.3	1.0		

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Capacitance Table

6

sating Type COG(5C) Characteristics

8 ex.8: T		C0G(5C)						
LxW	1.6x0.8	2.	.0x1.25	00(3		.2x2.	5	
[mm]	(18) <0603>		(21) :0805>	Y.C	\(\frac{1}{2}\)	(32) 1210	> 1	4
Rated Voltage Capacitance [Vdc]		250 (2E)	100 50 (2A) (1H)	500 (2H)	300 (YD)	250 (2E)	100 (2A)	50 (1H)
0.50pF(R50)	8	В	- TXXI J	00.				
0.75pF(R75)	8	В		۱۵۱	V.	, O	_1.1	M
1.0pF(1R0)	8	В	ot WW	To				
1.1pF(1R1)	8	В	N .	1.1				
1.2pF(1R2)	8	В	MM.	1				
1.3pF(1R3)	8	В	WW	$M \cdot$				
1.5pF(1R5)	8	В		VV				
1.6pF(1R6)	8	В	W.					
1.8pF(1R8)	8	В	N			اً ا	Y.L	
2.0pF(2R0)	8	В		W	W.	To	V.	CO
2.2pF(2R2)	8	В						
2.4pF(2R4)	8	В		W				
2.7pF(2R7)	8	В				M		X.
3.0pF(3R0)	8	В	* I		· · · · · ·	W	Ing	~ 1
3.3pF(3R3)	8	В	N	Q	M.			
3.6pF(3R6)	8	В	W	Q	W			
3.9pF(3R9)	8	В	L	Q		M	M.)	
4.0pF(4R0)	8	В	7.7.	Q				
4.3pF(4R3)	8	В	WIN	Q				
4.7pF(4R7)	8	В	TW	Q				
5.0pF(5R0)	8	В	Mir	Q			-141	W.
5.1pF(5R1)	8	В	TIME	Q				
5.6pF(5R6)	8	В	OM-	Q				
6.0pF(6R0)	8	В	CO_{Mr} .	Q				W
6.2pF(6R2)	8	В	MOD	Q				
6.8pF(6R8)	8	В	.00	Q	N			
7.0pF(7R0)	8	В	A CON	Q	N			W
7.5pF(7R5)	8	В	- c0	Q				
8.0pF(8R0)	8	В	01:0.	Q	\mathcal{I}_{A}			
8.2pF(8R2)	8	В	ON C	Q	T	N		
9.0pF(9R0)	8	В	~47 (Q	70.7	axXI		
9.1pF(9R1)	8	В	700 x.	Q	M.	1.44	. 4 .	
10pF(100)	8	В	1100X	Q	~~1	TV	V	
11pF(110)	8	В	N.10	Q	Diz.			
12pF(120)	8	В	W.100	Q	101			
13pF(130)	8	В	-XI 10	Q				
15pF(150)	8	В	N. N.	Q	Cr			
16pF(160)	8	В	MM'T	Q	J.C			
18pF(180)	8	В	TIN.	Q	1.			
20pF(200)	8	В	MM	Q	JY.			
22pF(220)	8	В	WWW	Q	n V			
24pF(240)	8	В	-14.1	Q	na ,			
27pF(270)	8	В	MAN	Q	100			
30pF(300)	8	В	WV	Q				
33pF(330)	8	В	_ KT	Q	1.In			
36pF(360)	8	В	1/1	Q	w.1			
39pF(390)	8	В	V	Q	411			
			†		- 1			

CTC	1 P	TW			0G(5 0					
LxW [mm]	1.6x0.8 (18) <0603>		0x1.2 (21) 0805				3.2x2. (32) 1210			
Rated Voltage [Vdc]		250 (2E)	100 (2A)	50 (1H)	500 (2H)	300 (YD)		100 (2A)	50 (1H)	
47pF(470)	8	В	LA.		Q					
51pF(510)	8	В	T	N	Q					
56pF(560)	8	В	7.	W	Q					
62pF(620)	8	В	$M_{i,j}$		Q					
68pF(680)	8	В	N	TV	Q					
75pF(750)	8	В) N		Q					
82pF(820)	8	В	O	1	Q					
91pF(910)	8	В	<u>م</u> 0	M.	Q	7				
100pF(101)	8	В		- 3 (Q	V				
110pF(111)	1.2	001	В	Obi	Q	W				
120pF(121)	W.	100	В	O	Q	-41				
130pF(131)		10	В		M	Q				
150pF(151)	NA	. 46	M	В	7 1	Q	N			
160pF(161)	W	N.7,		В	O_{M}	1.0	Q			
180pF(181)	*	W.		3-	-01		Q]		
200pF(201)	M			01.			Q			
220pF(221)	W	M			C		Q	N		
240pF(241)				UV 1	c7 (1. 1	Q		
270pF(271)				100	7.0			Q		
300pF(301)	4	W		- 10	OY.			Q	i.	
330pF(331)				1.14				Q	N	
360pF(361)		777		$\sqrt{1}$	00			Q		
390pF(391)		V		~ < 1	100			Q	LIN	
430pF(431)				111				Q	TV	
470pF(471)				V	1.77			Q		
510pF(511)					x 1.1				Q	
560pF(561)	V			VV	111				Q	
620pF(621)	W			TAI V	VV				Q	
680pF(681)	41			71					Q	
750pF(751)	IM			V	AA				Q	
820pF(821)		N		-	NV				Q	
910pF(911)	7.7	e E			1	NN	1.70	v -≼	Q	
1000pF(102)		AV.			M	7777	oxi 1	.100	Q	

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100

Q

43pF(**430**) **8 B**

_xW [mm]		1.6x0.8(18)<0603>	2.0x1.25(21)<0805>
Rated Volt. [Vdc		250(2E)	250(2E)
apacitance	Tolerance	Part N	umber
0.50pF(R50)	±0.1pF(B)	ERB1885C2ER50BDX1D	ERB21B5C2ER50BDX1L
	±0.25pF(C)	ERB1885C2ER50CDX1D	ERB21B5C2ER50CDX1L
0.75pF(R75)	±0.1pF(B)	ERB1885C2ER75BDX1D	ERB21B5C2ER75BDX1L
	±0.25pF(C)	ERB1885C2ER75CDX1D	ERB21B5C2ER75CDX1L
1.0pF(1R0)	±0.1pF(B)	ERB1885C2E1R0BDX1D	ERB21B5C2E1R0BDX1L
	±0.25pF(C)	ERB1885C2E1R0CDX1D	ERB21B5C2E1R0CDX1L
1.1pF(1R1)	±0.1pF(B)	ERB1885C2E1R1BDX1D	ERB21B5C2E1R1BDX1L
	±0.25pF(C)	ERB1885C2E1R1CDX1D	ERB21B5C2E1R1CDX1L
1.2pF(1R2)	±0.1pF(B)	ERB1885C2E1R2BDX1D	ERB21B5C2E1R2BDX1L
	±0.25pF(C)	ERB1885C2E1R2CDX1D	ERB21B5C2E1R2CDX1L
1.3pF(1R3)	±0.1pF(B)	ERB1885C2E1R3BDX1D	ERB21B5C2E1R3BDX1L
	±0.25pF(C)	ERB1885C2E1R3CDX1D	ERB21B5C2E1R3CDX1L
1.5pF(1R5)	±0.1pF(B)	ERB1885C2E1R5BDX1D	ERB21B5C2E1R5BDX1L
	±0.25pF(C)	ERB1885C2E1R5CDX1D	ERB21B5C2E1R5CDX1L
1.6pF(1R6)	±0.1pF(B)	ERB1885C2E1R6BDX1D	ERB21B5C2E1R6BDX1L
N.100 7	±0.25pF(C)	ERB1885C2E1R6CDX1D	ERB21B5C2E1R6CDX1L
1.8pF(1R8)	±0.1pF(B)	ERB1885C2E1R8BDX1D	ERB21B5C2E1R8BDX1L
M.To.	±0.25pF(C)	ERB1885C2E1R8CDX1D	ERB21B5C2E1R8CDX1L
2.0pF(2R0)	±0.1pF(B)	ERB1885C2E2R0BDX1D	ERB21B5C2E2R0BDX1L
100	±0.25pF(C)	ERB1885C2E2R0CDX1D	ERB21B5C2E2R0CDX1L
2.2pF(2R2)	±0.1pF(B)	ERB1885C2E2R2BDX1D	ERB21B5C2E2R2BDX1L
10.10	±0.25pF(C)	ERB1885C2E2R2CDX1D	ERB21B5C2E2R2CDX1L
2.4pF(2R4)	±0.1pF(B)	ERB1885C2E2R4BDX1D	ERB21B5C2E2R4BDX1L
WWW.	±0.25pF(C)	ERB1885C2E2R4CDX1D	ERB21B5C2E2R4CDX1L
2.7pF(2R7)	±0.1pF(B)	ERB1885C2E2R7BDX1D	ERB21B5C2E2R7BDX1L
M. W.	±0.25pF(C)	ERB1885C2E2R7CDX1D	ERB21B5C2E2R7CDX1L
3.0pF(3R0)	±0.1pF(B)	ERB1885C2E3R0BDX1D	ERB21B5C2E3R0BDX1L
TXN	±0.25pF(C)	ERB1885C2E3R0CDX1D	ERB21B5C2E3R0CDX1L
3.3pF(3R3)	±0.1pF(B)	ERB1885C2E3R3BDX1D	ERB21B5C2E3R3BDX1L
olopi (cito)	±0.25pF(C)	ERB1885C2E3R3CDX1D	ERB21B5C2E3R3CDX1L
3.6pF(3R6)	±0.1pF(B)	ERB1885C2E3R6BDX1D	ERB21B5C2E3R6BDX1L
0.0pr (0.10)	±0.25pF(C)	ERB1885C2E3R6CDX1D	ERB21B5C2E3R6CDX1L
3.9pF(3R9)	±0.25pr (b)	ERB1885C2E3R9BDX1D	ERB21B5C2E3R9BDX1L
3.7pr (3113)	±0.1pr(b) ±0.25pF(C)	ERB1885C2E3R9CDX1D	ERB21B5C2E3R9CDX1L
4.0pF(4R0)	±0.25pr (b)	ERB1885C2E4R0BDX1D	ERB21B5C2E4R0BDX1L
4.0pr (4no)			
4.3pF(4R3)	±0.25pF(C) ±0.1pF(B)	ERB1885C2E4R0CDX1D ERB1885C2E4R3BDX1D	ERB21B5C2E4R0CDX1L ERB21B5C2E4R3BDX1L
4.5pr(4n3)	±0.1pF(B)		
1 7nE(1 D7)	±0.25pF(C)	ERB1885C2E4R3CDX1D	ERB21B5C2E4R3CDX1L
4.7pF(4R7)	±0.1pF(B)	ERB1885C2E4R7BDX1D	ERB21B5C2E4R7BDX1L
F 0m F/FBC\	±0.25pF(C)	ERB1885C2E4R7CDX1D	ERB21B5C2E4R7CDX1L
5.0pF(5R0)	±0.1pF(B)	ERB1885C2E5R0BDX1D	ERB21B5C2E5R0BDX1L
F 1c-F/FB4\	±0.25pF(C)	ERB1885C2E5R0CDX1D	ERB21B5C2E5R0CDX1L
5.1pF(5R1)	±0.1pF(B)	ERB1885C2E5R1BDX1D	ERB21B5C2E5R1BDX1L
	±0.25pF(C)	ERB1885C2E5R1CDX1D	ERB21B5C2E5R1CDX1L
	±0.5pF(D)	ERB1885C2E5R1DDX1D	ERB21B5C2E5R1DDX1L
5.6pF(5R6)	±0.1pF(B)	ERB1885C2E5R6BDX1D	ERB21B5C2E5R6BDX1L
	±0.25pF(C)	ERB1885C2E5R6CDX1D	ERB21B5C2E5R6CDX1L
	±0.5pF(D)	ERB1885C2E5R6DDX1D	ERB21B5C2E5R6DDX1L
6.0pF(6R0)	±0.1pF(B)	ERB1885C2E6R0BDX1D	ERB21B5C2E6R0BDX1L
	±0.25pF(C)	ERB1885C2E6R0CDX1D	ERB21B5C2E6R0CDX1L
	±0.5pF(D)	ERB1885C2E6R0DDX1D	ERB21B5C2E6R0DDX1L

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code

(Part Number) | ER | B | 18 | 8 | 5C | 2E | R50 | B | DX1 | D 2 3 4 5 6 0 0 9 0

2Series 1 Product ID **5**Temperature Characteristics **8**Capacitance Tolerance

6 Rated Voltage 9Individual Specification Code

3Dimension (LxW)

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.



LxW [mm]		1.6x0.8(18)<0603>	2.0x1.25(21)<0805>		
Rated Volt. [Vdc		250(2E)	250(2E)		
Capacitance	Tolerance	Part N	umber		
6.2pF(6R2)	±0.1pF(B)	ERB1885C2E6R2BDX1D	ERB21B5C2E6R2BDX1L		
	±0.25pF(C)	ERB1885C2E6R2CDX1D	ERB21B5C2E6R2CDX1L		
	±0.5pF(D)	ERB1885C2E6R2DDX1D	ERB21B5C2E6R2DDX1L		
6.8pF(6R8)	±0.1pF(B)	ERB1885C2E6R8BDX1D	ERB21B5C2E6R8BDX1L		
	±0.25pF(C)	ERB1885C2E6R8CDX1D	ERB21B5C2E6R8CDX1L		
	±0.5pF(D)	ERB1885C2E6R8DDX1D	ERB21B5C2E6R8DDX1L		
7.0pF(7R0)	±0.1pF(B)	ERB1885C2E7R0BDX5D	ERB21B5C2E7R0BDX1L		
	±0.25pF(C)	ERB1885C2E7R0CDX5D	ERB21B5C2E7R0CDX1L		
	±0.5pF(D)	ERB1885C2E7R0DDX5D	ERB21B5C2E7R0DDX1L		
7.5pF(7R5)	±0.1pF(B)	ERB1885C2E7R5BDX5D	ERB21B5C2E7R5BDX1L		
10 Y.C.	±0.25pF(C)	ERB1885C2E7R5CDX5D	ERB21B5C2E7R5CDX1L		
	±0.5pF(D)	ERB1885C2E7R5DDX5D	ERB21B5C2E7R5DDX1L		
8.0pF(8R0)	±0.1pF(B)	ERB1885C2E8R0BDX5D	ERB21B5C2E8R0BDX1L		
1007	±0.25pF(C)	ERB1885C2E8R0CDX5D	ERB21B5C2E8R0CDX1L		
	±0.5pF(D)	ERB1885C2E8R0DDX5D	ERB21B5C2E8R0DDX1L		
8.2pF(8R2)	±0.1pF(B)	ERB1885C2E8R2BDX5D	ERB21B5C2E8R2BDX1L		
311005	±0.25pF(C)	ERB1885C2E8R2CDX5D	ERB21B5C2E8R2CDX1L		
	±0.5pF(D)	ERB1885C2E8R2DDX5D	ERB21B5C2E8R2DDX1L		
9.0pF(9R0)	±0.1pF(B)	ERB1885C2E9R0BDX5D	ERB21B5C2E9R0BDX1L		
7.0pr (3110)	±0.1pr(b) ±0.25pF(C)	ERB1885C2E9R0CDX5D	ERB21B5C2E9R0CDX1L		
	±0.25pf (D)	ERB1885C2E9R0DDX5D	ERB21B5C2E9R0DDX1L		
0.1pF(0D1)	7 (1)32	ERB1885C2E9R1BDX5D	ERB21B5C2E9R1BDX1L		
9.1pF(9R1)	±0.1pF(B)				
	±0.25pF(C)	ERB1885C2E9R1CDX5D	ERB21B5C2E9R1CDX1L		
10 F(100)	±0.5pF(D)	ERB1885C2E9R1DDX5D	ERB21B5C2E9R1DDX1L		
10pF(100)	±2%(G)	ERB1885C2E100GDX5D	ERB21B5C2E100GDX1L		
11 5(110)	±5%(J)	ERB1885C2E100JDX5D	ERB21B5C2E100JDX1L		
11pF(110)	±2%(G)	ERB1885C2E110GDX5D	ERB21B5C2E110GDX1L		
10 5(100)	±5%(J)	ERB1885C2E110JDX5D	ERB21B5C2E110JDX1L		
12pF(120)	±2%(G)	ERB1885C2E120GDX5D	ERB21B5C2E120GDX1L		
	±5%(J)	ERB1885C2E120JDX5D	ERB21B5C2E120JDX1L		
13pF(130)	±2%(G)	ERB1885C2E130GDX5D	ERB21B5C2E130GDX1L		
	±5%(J)	ERB1885C2E130JDX5D	ERB21B5C2E130JDX1L		
15pF(150)	±2%(G)	ERB1885C2E150GDX5D	ERB21B5C2E150GDX1L		
	±5%(J)	ERB1885C2E150JDX5D	ERB21B5C2E150JDX1L		
16pF(160)	±2%(G)	ERB1885C2E160GDX5D	ERB21B5C2E160GDX1L		
	±5%(J)	ERB1885C2E160JDX5D	ERB21B5C2E160JDX1L		
18pF(180)	±2%(G)	ERB1885C2E180GDX5D	ERB21B5C2E180GDX1L		
	±5%(J)	ERB1885C2E180JDX5D	ERB21B5C2E180JDX1L		
20pF(200)	±2%(G)	ERB1885C2E200GDX5D	ERB21B5C2E200GDX1L		
	±5%(J)	ERB1885C2E200JDX5D	ERB21B5C2E200JDX1L		
22pF(220)	±2%(G)	ERB1885C2E220GDX5D	ERB21B5C2E220GDX1L		
	±5%(J)	ERB1885C2E220JDX5D	ERB21B5C2E220JDX1L		
24pF(240)	±2%(G)	ERB1885C2E240GDX5D	ERB21B5C2E240GDX1L		
,	±5%(J)	ERB1885C2E240JDX5D	ERB21B5C2E240JDX1L		
27pF(270)	±2%(G)	ERB1885C2E270GDX5D	ERB21B5C2E270GDX1L		
_ , p , (= , 0,	±5%(J)	ERB1885C2E270JDX5D	ERB21B5C2E270JDX1L		
30pF(300)	±2%(G)	ERB1885C2E300GDX5D	ERB21B5C2E300GDX1L		
- op. (000)	±5%(J)	ERB1885C2E300JDX5D	ERB21B5C2E300JDX1L		
33pF(330)	±2%(G)	ERB1885C2E330GDX5D	ERB21B5C2E330GDX1L		
55pi (330)					
	±5%(J)	ERB1885C2E330JDX5D	ERB21B5C2E330JDX1L		

(Part Number) | ER | B | 18 | 8 | 5C | 2E | 6R2 | B | DX1 | D 0 2 3 4 5 6 **7 8 9 0**

1 Product ID 2Series **5**Temperature Characteristics

8Capacitance Tolerance

3Dimension (LxW)

6 Rated Voltage 9Individual Specification Code

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.

LxW [mm] Rated Volt. [Vdc]		1.6x0.8(18)<0603>	3E0(2E)	2.0x1.25(21)<0805>	FO/411\
	Tolar	250(2E)	250(2E)	100(2A)	50(1H)
	Tolerance	EDDAGGGGGGGGGG		Number	
36pF(360)	±2%(G)	ERB1885C2E360GDX5D	ERB21B5C2E360GDX1L	COM.	
OMITIN	±5%(J)	ERB1885C2E360JDX5D	ERB21B5C2E360JDX1L	Ins. COW.T.	
39pF(390)	±2%(G)	ERB1885C2E390GDX5D	ERB21B5C2E390GDX1L	- M.T. J. 1907 -	
COM.	±5%(J)	ERB1885C2E390JDX5D	ERB21B5C2E390JDX1L	ATT COM.	
43pF(430)	±2%(G)	ERB1885C2E430GDX5D	ERB21B5C2E430GDX1L	47m, 40W.	<u> </u>
Z.CU	±5%(J)	ERB1885C2E430JDX5D	ERB21B5C2E430JDX1L	100Y. W.TY	1
47pF(470)	±2%(G)	ERB1885C2E470GDX5D	ERB21B5C2E470GDX1L	M. VICOM	M
J. TOM.T	±5%(J)	ERB1885C2E470JDX5D	ERB21B5C2E470JDX1L	M.In. COM.	
51pF(510)	±2%(G)	ERB1885C2E510GDX5D	ERB21B5C2E510GDX1L	1 21 100 X W.	L.A.
CONT	±5%(J)	ERB1885C2E510JDX5D	ERB21B5C2E510JDX1L	MAL. TOUX CO.	TW
56pF(560)	±2%(G)	ERB1885C2E560GDX5D	ERB21B5C2E560GDX1L	TMM-TON	
1007.	±5%(J)	ERB1885C2E560JDX5D	ERB21B5C2E560JDX1L	M. 201700 3.	V.r.
62pF(620)	±2%(G)	ERB1885C2E620GDX5D	ERB21B5C2E620GDX1L	MM 1001.Co.	WILL
N.100	±5%(J)	ERB1885C2E620JDX5D	ERB21B5C2E620JDX1L	MAN. VA CC	TW
68pF(680)	±2%(G)	ERB1885C2E680GDX5D	ERB21B5C2E680GDX1L	100 ×	OM-
J.Y. Jany.C	±5%(J)	ERB1885C2E680JDX5D	ERB21B5C2E680JDX1L		Low.TV
75pF(750)	±2%(G)	ERB1885C2E750GDX5D	ERB21B5C2E750GDX1L	WWW.	TW
100X	±5%(J)	ERB1885C2E750JDX5D	ERB21B5C2E750JDX1L	THE STATE OF THE S	COMP.
82pF(820)	±2%(G)	ERB1885C2E820GDX5D	ERB21B5C2E820GDX1L	1003	COMITY
MAN. 10.	±5%(J)	ERB1885C2E820JDX5D	ERB21B5C2E820JDX1L	WW. vo	N.C. T. L.M.
91pF(910)	±2%(G)	ERB1885C2E910GDX5D	ERB21B5C2E910GDX1L	I WWW.III	N.COM
WWY	±5%(J)	ERB1885C2E910JDX5D	ERB21B5C2E910JDX1L		hCOW.F.
100pF(101)	±2%(G)	ERB1885C2E101GDX5D	ERB21B5C2E101GDX1L	N WA	001. TA
TWW.	±5%(J)	ERB1885C2E101JDX5D	ERB21B5C2E101JDX1L	M WAY	LOUX COMP
110pF(111)	±2%(G)	OWILL M	M.Jon COM.	ERB21B5C2A111GDX1L	Tan COM.
MMA	±5%(J)	VIII W	1007	ERB21B5C2A111JDX1L	1700 x V VI LY
120pF(121)	±2%(G)	COM	MAM. COM	ERB21B5C2A121GDX1L	1100Y.CU
171-17	±5%(J)	COM	12/W 100	ERB21B5C2A121JDX1L	Mari COm
130pF(131)	±2%(G)	WITH THE	M. 100X.	ERB21B5C2A131GDX1L	M.100, COM.
(101)	±5%(J)	N.CON.	MA A CONTROL	ERB21B5C2A131JDX1L	1007.00
150pF(151)	±2%(G)	N COM.	WINN TO	ON ALL TOTOLOGICAL	ERB21B5C1H151GDX1L
. 55pi (1 51)	±5%(J)	BY X WILL		10M:1-11	ERB21B5C1H151JDX1L
160pF(161)	±2%(G)	OOX.CV.	MW A. TUUX	TITLE T	ERB21B5C1H161GDX1L
100pi (1 01)	±5%(J)	AL COMP.	WWW.P	COM	ERB21B5C1H161JDX1L
	- 1	() and Unit is shown in [].	IA [inch] Code		

LxW [mm]		3.2x2.5(32)<1210>
Rated Volt. [Vdc		500(2H)
Capacitance	Tolerance	Part Number
3.3pF(3R3)	±0.1pF(B)	ERB32Q5C2H3R3BDX1L
WILL	±0.25pF(C)	ERB32Q5C2H3R3CDX1L
3.6pF(3R6)	±0.1pF(B)	ERB32Q5C2H3R6BDX1L
co_{M-1}	±0.25pF(C)	ERB32Q5C2H3R6CDX1L
3.9pF(3R9)	±0.1pF(B)	ERB32Q5C2H3R9BDX1L
I.Com	±0.25pF(C)	ERB32Q5C2H3R9CDX1L
4.0pF(4R0)	±0.1pF(B)	ERB32Q5C2H4R0BDX1L
M	±0.25pF(C)	ERB32Q5C2H4R0CDX1L
4.3pF(4R3)	±0.1pF(B)	ERB32Q5C2H4R3BDX1L
COM	±0.25pF(C)	ERB32Q5C2H4R3CDX1L
4.7pF(4R7)	±0.1pF(B)	ERB32Q5C2H4R7BDX1L
100 Y.C.	±0.25pF(C)	ERB32Q5C2H4R7CDX1L
5.0pF(5R0)	±0.1pF(B)	ERB32Q5C2H5R0BDX1L
	±0.25pF(C)	ERB32Q5C2H5R0CDX1L
5.1pF(5R1)	±0.1pF(B)	ERB32Q5C2H5R1BDX1L
	±0.25pF(C)	ERB32Q5C2H5R1CDX1L
	±0.5pF(D)	ERB32Q5C2H5R1DDX1L
5.6pF(5R6)	±0.1pF(B)	ERB32Q5C2H5R6BDX1L
	±0.25pF(C)	ERB32Q5C2H5R6CDX1L
	±0.5pF(D)	ERB32Q5C2H5R6DDX1L
6.0pF(6R0)	±0.1pF(B)	ERB32Q5C2H6R0BDX1L
WW	±0.25pF(C)	ERB32Q5C2H6R0CDX1L
	±0.5pF(D)	ERB32Q5C2H6R0DDX1L
6.2pF(6R2)	±0.1pF(B)	ERB32Q5C2H6R2BDX1L
11	±0.25pF(C)	ERB32Q5C2H6R2CDX1L
	±0.5pF(D)	ERB32Q5C2H6R2DDX1L
6.8pF(6R8)	±0.1pF(B)	ERB32Q5C2H6R8BDX1L
	±0.25pF(C)	ERB32Q5C2H6R8CDX1L
	±0.5pF(D)	ERB32Q5C2H6R8DDX1L
7.0pF(7R0)	±0.1pF(B)	ERB32Q5C2H7R0BDX1L
-1- (4/1	±0.25pF(C)	ERB32Q5C2H7R0CDX1L
	±0.5pF(D)	ERB32Q5C2H7R0DDX1L
7.5pF(7R5)	±0.1pF(B)	ERB32Q5C2H7R5BDX1L
p. (1113)	±0.25pF(C)	ERB32Q5C2H7R5CDX1L
	±0.5pF(D)	ERB32Q5C2H7R5DDX1L
8.0pF(8R0)	±0.3pr(B)	ERB32Q5C2H8R0BDX1L
5.5pr (6116)	±0.1pf (b)	ERB32Q5C2H8R0CDX1L
	±0.5pF(D)	ERB32Q5C2H8R0DDX1L
8.2pF(8R2)	±0.3pf (B)	ERB32Q5C2H8R2BDX1L
0.2pr (0H2)	±0.1pF(B)	ERB32Q5C2H8R2CDX1L
		ERB32Q5C2H8R2DDX1L
9.0pF(9R0)	±0.5pF(D) ±0.1pF(B)	ERB32Q5C2H9R0BDX1L
4.υμε(3ηυ)	±0.1pF(B)	
	±0.25pF(C)	ERB32Q5C2H9R0CDX1L
0.1pF/0D4\	±0.5pF(D)	ERB32Q5C2H9R0DDX1L
9.1pF(9R1)	±0.1pF(B)	ERB32Q5C2H9R1BDX1L
	±0.25pF(C)	ERB32Q5C2H9R1CDX1L
40 5/465	±0.5pF(D)	ERB32Q5C2H9R1DDX1L
10pF(100)	±2%(G)	ERB32Q5C2H100GDX1L
	±5%(J)	ERB32Q5C2H100JDX1L

N [mm]	-doM-	3.2x2.5(32)<1210>
ated Volt. [Vdc]	Y.C.	500(2H)
pacitance	Tolerance	Part Number
11pF(110)	±2%(G)	ERB32Q5C2H110GDX1L
1	±5%(J)	ERB32Q5C2H110JDX1L
12pF(120)	±2%(G)	ERB32Q5C2H120GDX1L
	±5%(J)	ERB32Q5C2H120JDX1L
13pF(130)	±2%(G)	ERB32Q5C2H130GDX1L
MM	±5%(J)	ERB32Q5C2H130JDX1L
15pF(150)	±2%(G)	ERB32Q5C2H150GDX1L
	±5%(J)	ERB32Q5C2H150JDX1L
16pF(160)	±2%(G)	ERB32Q5C2H160GDX1L
N.	±5%(J)	ERB32Q5C2H160JDX1L
18pF(180)	±2%(G)	ERB32Q5C2H180GDX1L
	±5%(J)	ERB32Q5C2H180JDX1L
20pF(200)	±2%(G)	ERB32Q5C2H200GDX1L
	±5%(J)	ERB32Q5C2H200JDX1L
22pF(220)	±2%(G)	ERB32Q5C2H220GDX1L
TW	±5%(J)	ERB32Q5C2H220JDX1L
24pF(240)	±2%(G)	ERB32Q5C2H240GDX1L
1.1	±5%(J)	ERB32Q5C2H240JDX1L
27pF(270)	±2%(G)	ERB32Q5C2H270GDX1L
WT	±5%(J)	ERB32Q5C2H270JDX1L
30pF(300)	±2%(G)	ERB32Q5C2H300GDX1L
	±5%(J)	ERB32Q5C2H300JDX1L
33pF(330)	±2%(G)	ERB32Q5C2H330GDX1L
COM	±5%(J)	ERB32Q5C2H330JDX1L
36pF(360)	±2%(G)	ERB32Q5C2H360GDX1L
1.00	±5%(J)	ERB32Q5C2H360JDX1L
39pF(390)	±2%(G)	ERB32Q5C2H390GDX1L
CON	±5%(J)	ERB32Q5C2H390JDX1L
43pF(430)	±2%(G)	ERB32Q5C2H430GDX1L
100 Y.Co	±5%(J)	ERB32Q5C2H430JDX1L
47pF(470)	±2%(G)	ERB32Q5C2H470GDX1L
(1) pr (110)	±5%(J)	ERB32Q5C2H470JDX1L
51pF(510)	±2%(G)	ERB32Q5C2H510GDX1L
3 (pr (3 13)	±5%(J)	ERB32Q5C2H510JDX1L
56pF(560)	±3%(G)	ERB32Q5C2H560GDX1L
30pi (300)	±5%(J)	ERB32Q5C2H560JDX1L
62pE/ 620)	V. V. III	ERB32Q5C2H620GDX1L
62pF(620)	±2%(G)	*************************
40pF/ 600 \	±5%(J)	ERB32Q5C2H620JDX1L
68pF(680)	±2%(G)	ERB32Q5C2H680GDX1L
75 F/ 750)	±5%(J)	ERB32Q5C2H680JDX1L
75pF(750)	±2%(G)	ERB32Q5C2H750GDX1L
22 5(222)	±5%(J)	ERB32Q5C2H750JDX1L
82pF(820)	±2%(G)	ERB32Q5C2H820GDX1L
	±5%(J)	ERB32Q5C2H820JDX1L
91pF(910)	±2%(G)	ERB32Q5C2H910GDX1L
- AT	±5%(J)	ERB32Q5C2H910JDX1L
100pF(101)	±2%(G)	ERB32Q5C2H101GDX1L
	±5%(J)	ERB32Q5C2H101JDX1L

<>: EIA [inch] Code The part number code is shown in () and Unit is shown in [].

(Part Number) | ER | B | 32 | Q | 5C | 2H | 3R3 | B | DX1 | L 0 0 0 0 0 0 0 0 0

Product ID 2Series **6**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) **6**Rated Voltage 9Individual Specification Code

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.



LxW [mm]		1001. ONITH	3.2x2.5(3	32)<1210>	
Rated Volt. [Vdc		500(2H)	300(YD)	250(2E)	100(2A)
Capacitance	Tolerance	N.In. COM.	Part N	lumber	
110pF(111)	±2%(G)	ERB32Q5C2H111GDX1L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	COM	
	±5%(J)	ERB32Q5C2H111JDX1L	W WW	00X:00 - 11 IM	
120pF(121)	±2%(G)	ERB32Q5C2H121GDX1L	WWW.	CONTRACT	
MIM	±5%(J)	ERB32Q5C2H121JDX1L		Jan, COM'r	
130pF(131)	±2%(G)	MAL TOOK IN	ERB32Q5CYD131GDX1L	1100Y.	
COM.	±5%(J)	TAMM'TO T COM	ERB32Q5CYD131JDX1L	V. CON	
150pF(151)	±2%(G)	1001	ERB32Q5CYD151GDX1L	M.Inn COM.	-1
V.COn-	±5%(J)	MM	ERB32Q5CYD151JDX1L	11007.	N
160pF(161)	±2%(G)	CC CC	Mr.	ERB32Q5C2E161GDX1L	
00 J.	±5%(J)	W 100 3	OW.	ERB32Q5C2E161JDX1L	1
180pF(181)	±2%(G)	MMAN	WITH V	ERB32Q5C2E181GDX1L	IM
Ing - COD	±5%(J)	TWW.	CONTRACTOR	ERB32Q5C2E181JDX1L	TW
200pF(201)	±2%(G)	111.1002	COM:	ERB32Q5C2E201GDX1L	1.1
OUT.CO	±5%(J)	111111111111111111111111111111111111111	i.Co. T. T.	ERB32Q5C2E201JDX1L	M.TW
220pF(221)	±2%(G)	TIWW.io	A COMP	ERB32Q5C2E221GDX1L	TW
100 Y.	±5%(J)	100	COM.	ERB32Q5C2E221JDX1L	OM
240pF(241)	±2%(G)		OY.CO	MM. 1007.0	ERB32Q5C2A241GDX
	±5%(J)		ON COM		ERB32Q5C2A241JDX
270pF(271)	±2%(G)		no. COW.	W.In	ERB32Q5C2A271GDX
111	±5%(J)		1007:	W 1003	ERB32Q5C2A271JDX
300pF(301)	±2%(G)	WWW TIN	. COM	WWW	ERB32Q5C2A301GDX
W 1.	±5%(J)		Vina, COM.		ERB32Q5C2A301JDX
330pF(331)	±2%(G)	TIN	-1100Y.	W 10	ERB32Q5C2A331GDX
T.WW.L	±5%(J)	W XVV	W. O.Y.CO	N WW	ERB32Q5C2A331JDX
360pF(361)	±2%(G)	William	M. Ing COM.	TINN.	ERB32Q5C2A361GDX
MM	±5%(J)	W WILL	1007.	W. Sala	ERB32Q5C2A361JDX
390pF(391)	±2%(G)	ON THE	MM. COM	TW WINT	ERB32Q5C2A391GDX
N. T.	±5%(J)	LOW.	COM	TWV	ERB32Q5C2A391JDX
430pF(431)	±2%(G)	TIME	MA. 1001.	The Man	ERB32Q5C2A431GDX
-11	±5%(J)	COM	MALL VON CO.	WW WT	ERB32Q5C2A431JDX
470pF(471)	±2%(G)	COMIT	1 CO	M. F	ERB32Q5C2A471GDX
W	±5%(J)	1.00	11002:0	W.I.M.	ERB32Q5C2A471JDX
<	MAN . 1	ON COM	WWW. MY.C	W WIT	MAL TOOK CO.
LxW [mm]	1.W.1	3.2x2.5(32)<1210>	- WWW.100X.C		
Rated Volt. [Vdc]	MAN	50(1H)	MMM.100X.		
Capacitance	Tolerance	Part Number	WWW.		
510pF(511)	±2%(G)	ERB32Q5C1H511GDX1L	. W.100		

LxW [mm]	1.W.1	3.2x2.5(32)<1210>	
Rated Volt. [Vdc		50(1H)	
Capacitance	Tolerance	Part Number	
510pF(511)	±2%(G)	ERB32Q5C1H511GDX1L	
	±5%(J)	ERB32Q5C1H511JDX1L	
560pF(561)	±2%(G)	ERB32Q5C1H561GDX1L	
	±5%(J)	ERB32Q5C1H561JDX1L	
620pF(621)	±2%(G)	ERB32Q5C1H621GDX1L	
	±5%(J)	ERB32Q5C1H621JDX1L	
680pF(681)	±2%(G)	ERB32Q5C1H681GDX1L	
	±5%(J)	ERB32Q5C1H681JDX1L	
750pF(751)	±2%(G)	ERB32Q5C1H751GDX1L	
	±5%(J)	ERB32Q5C1H751JDX1L	
820pF(821)	±2%(G)	ERB32Q5C1H821GDX1L	
	±5%(J)	ERB32Q5C1H821JDX1L	
910pF(911)	±2%(G)	ERB32Q5C1H911GDX1L	
	±5%(J)	ERB32Q5C1H911JDX1L	
1000pF(102)	±2%(G)	ERB32Q5C1H102GDX1L	
	±5%(J)	ERB32Q5C1H102JDX1L	

The part number code is shown in () and Unit is shown in []. <>: EIA [inch] Code WWW.100Y.COM.TW WWW.100Y

ERB Series Specifications and Test Methods

Ite	em	Specifications	001. COW:11	Test Met	thod	
Operating Temperati		-55 to +125℃	Reference Temperat	ure: 25°C		
Rated Vo	lltage	See the previous pages.	The rated voltage is a may be applied contil When AC voltage is a whichever is larger, s voltage range.	nuously to the superimposed	e capacitor. d on DC voltag	ge, V ^{P-P} or V ^{O-P} ,
Appearar	nce	No defects or abnormalities	Visual inspection			
Dimensio	ons	Within the specified dimension	Using calipers	TIME		
Dielectric Strength		No defects or abnormalities	No failure should be observed when 300%(*) of the rated volt age is applied between the terminations for 1 to 5 seconds, provided the charge/discharge current is less than 50mA. (*) 300V: 250%, 500V: 200%			5 seconds,
Insulation Resistance (I.R.)		1,000,000MΩ min. (C≦470pF) 100,000MΩ min. (C>470pF)	The insulation resistate voltage not exceeding humidity and within 2	g the rated vo	oltage at 25℃ a	
Capacita	nce	Within the specified tolerance C≤ 220pF : Q≥10,000	The capacitance/Q should be measured at 25°C at the frequency and voltage shown in the table.		at the	
Q 00X	I.COM	220pF <c≦ 470pf="" 5,000<br="" :="" q≧="">470pF<c≦1,000pf 3,000<br="" :="" q≧="">C: Nominal Capacitance (pF)</c≦1,000pf></c≦>	Frequency Voltage	on C	1±0.1MHz 1±0.2Vrms	
M.100	Capacitance Change Temperature Coefficient	Within the specified tolerance (Table A-6) Within the specified tolerance (Table A-6)	The temperature coe capacitance measure the temperature seque capacitance should be	ed in step 3 as uentially from be within the s	s a reference. step 1 through specified tolera	When cycling n 5, the ance for the
Capacitance Temperature	100X.	COM.TW WWW.100Y.COM.	temperature coefficie The capacitance drift between the maximu 1, 3 and 5 by the cap	is calculated m and minim acitance valu	by dividing th um measured le in step 3.	e differences values in step
Characteristics	Capacitance	Within ±0.2% or ±0.05pF	Step Temperature (℃) ±0.05pF 1 25±2			
MAN	Drift	(Whichever is larger)	2		-55±3	OM:
WW	W	V.CO. TW WWW.	3	MAN.	25±2	-11.TA
	WW.10	CONT.	4	WWW	125±3	COMP.
11/	- IXXI 1	00x. CM.TW W. 1001.	5		25±2	COM
	Strength	No removal of the terminations or other defects should occur.	Solder the capacitor in Fig. 1 using an eut Then apply 10N* forc The soldering should reflow method and sh soldering is uniform a	ectic solder. ce in parallel v be done eith nould be cond	with the test jig er with an iron lucted with ca	of for 10±1sec. To rusing the re so that the
of Termir	nation		Туре	а	b	C C
		Solder Resist	ERB18 ERB21	1.0	3.0 4.0	1.2 1.65
	V	Baked Electrode or	ERB32	2.2	5.0	2.9
		Fig.1 Copper Foil	100Y.COM.T	W	M.M.	(in mm) 5N (ERB188)
		WWW.100Y.COM.TW WW	N.100 Y. COM	Con	ntinued on the fo	-11003

Continued on the following page. WWW.100Y.COM.7 WWW.100



ERB Series Specifications and Test Methods

	Continued II	rom the prec	eding page.	I.IVW.I	TCOM.	- X X]				
No.	Ite	em	W.100Y.	Specifications	100 1. COM	Te	st Metho	d		
		Appearance	No defects or abnormaliti	es	Solder the cap	acitor to the to	est jig (gla	ass epoxy boar	d) in the	
		Capacitance	Within the specified tolera	ance	same manner and under the same conditions as (10). The capacitor should be subjected to a simple harmonic motion					
11,	Vibration Resistance	No W	Satisfies the initial value. C≦ 220pF : Q≥ 220pF < C≦ 470pF : Q≥ 470pF < C≦1,000pF : Q≥ C: Nominal Capacitance	5,000 3,000	having a total amplitude of 1.5mm, the frequency being va uniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 minute. This motic should be applied for a period of 2 hours in each of 3 mutu perpendicular directions (total of 6 hours).				ing varied 55Hz. 10Hz, motion	
Y.(Appearance	No marking defects	Y.C. TW	1100	Mo	11/1			
	COMP KCON	Capacitance Change	Within ±5% or ±0.5pF (Whichever is larger) 20 50 Pressur speed:	te b	in Fig. 2a using direction show the reflow met	g an eutectic s n in Fig. 3a. ⁻ hod and shou	solder. T The solde d be con	lass epoxy boar hen apply a fore ering should be ducted with car efects such as l	ce in the done by e so that	
12	Deflectio	n	R230	Ø4.5) Mr.			
	on Y.C.			3	Type		1	b	C	
					ERB1		.0	3.0	1.2	
				Flexure : ≦1	ERB2		.2		1.65	
	100		Capacitance meter	a	ERB3	2 2	.2	5.0	2.9 mm)	
13	Solderab Terminat		95% of the terminations ar continuously.	e to be soldered evenly and	rosin (25% ros Preheat at 80 After preheatin	in in weight pi to 120℃ for 10 ng, immerse in	roportion) to 30 se an eute	conds.		
1	MMA.	N.100X	The measured and obse specifications in the follow ltem Appearance	1007.	Preheat accord	•	eutectic	sted in the table solder or Sn-3.0	e below.	
	Resistanc			Specifications No marked defect	solder solution			GOGGHAG. LOT G	0Ag-0.5Cu	
14			Capacitance	No marked defect Within ±2.5% or ±0.25pF	solder solution temperature fo	or 24±2 hours.	111.77	CON CON	0Ag-0.5Cu	
14	to Solderi			No marked defect Within ±2.5% or ±0.25pF (Whichever is larger)	solder solution temperature for Chip Si	or 24±2 hours.	Preh	eat Condition	OAg-0.5Cu t at room	
14			Capacitance Change	No marked defect Within ±2.5% or ±0.25pF (Whichever is larger) C≤ 220pF: Q≥10,000	solder solution temperature fo	or 24±2 hours.	Preh	CON CON	OAg-0.5Cu t at room	
14			Capacitance	No marked defect Within ±2.5% or ±0.25pF (Whichever is larger) C≦ 220pF : Q≥10,000 220pF <c≤ 470pf="" 5,000<="" :="" q≥="" td=""><td>solder solution temperature for Chip Si</td><td>ze m max.</td><td>Preh 1minute</td><td>eat Condition</td><td>DAg-0.5Cu it at room</td></c≤>	solder solution temperature for Chip Si	ze m max.	Preh 1minute	eat Condition	DAg-0.5Cu it at room	
14			Capacitance Change	No marked defect Within ±2.5% or ±0.25pF (Whichever is larger) C≦ 220pF : Q≥10,000 220pF <c≤ 3,000<="" 470pf="" 470pf<c≤1,000pf="" 5,000="" :="" q≥="" td=""><td>solder solution temperature for Chip Si 2.0×1.25mr</td><td>ze m max.</td><td>Preh 1minute</td><td>eat Condition e at 120 to 150°</td><td>DAg-0.5Cu it at room</td></c≤>	solder solution temperature for Chip Si 2.0×1.25mr	ze m max.	Preh 1minute	eat Condition e at 120 to 150°	DAg-0.5Cu it at room	
14			Capacitance Change	No marked defect Within ±2.5% or ±0.25pF (Whichever is larger) C≦ 220pF : Q≥10,000 220pF <c≤ 3,000="" 470pf="" 470pf<c≤1,000pf="" 5,000="" :="" failure<="" no="" q≥="" td=""><td>solder solution temperature for Chip Si 2.0×1.25mr 3.2×2.5mm</td><td>ze m max.</td><td>Preh 1minute</td><td>eat Condition e at 120 to 150°</td><td>DAg-0.5Cu it at room</td></c≤>	solder solution temperature for Chip Si 2.0×1.25mr 3.2×2.5mm	ze m max.	Preh 1minute	eat Condition e at 120 to 150°	DAg-0.5Cu it at room	
14			Capacitance Change	No marked defect Within ±2.5% or ±0.25pF (Whichever is larger) C≦ 220pF : Q≥10,000 220pF <c≤ 3,000<="" 470pf="" 470pf<c≤1,000pf="" 5,000="" :="" q≥="" td=""><td>solder solution temperature for Chip Si 2.0×1.25mr 3.2×2.5mm</td><td>ze m max.</td><td>Preh 1minute</td><td>eat Condition e at 120 to 150°</td><td>DAg-0.5Cu it at room</td></c≤>	solder solution temperature for Chip Si 2.0×1.25mr 3.2×2.5mm	ze m max.	Preh 1minute	eat Condition e at 120 to 150°	DAg-0.5Cu it at room	
14			Capacitance Change Q Dielectric Strength The measured and obse specifications in the follow ltem Appearance	No marked defect Within ±2.5% or ±0.25pF (Whichever is larger) C≤ 220pF : Q≥10,000 220pF <c≤ (proved="" 3,000="" 470pf="" 470pf<c≤1,000pf="" 5,000="" :="" c:="" capacitance="" characteristics="" failure="" large="" no="" nominal="" of="" q≥="" satisfy="" should="" td="" the="" trans<="" transport=""><td>solder solution temperature for Chip Si 2.0×1.25mm 3.2×2.5mm Fix the capacitunder the samu according to the</td><td>or 24±2 hours. ze m max. Each 1 i</td><td>Preh 1minute at 10 porting jig is (10). Poatments I</td><td>eat Condition e at 120 to 150° 0 to 120°C and then n the same mar erform the five coisted in the follo</td><td>C 70 to 200°C</td></c≤>	solder solution temperature for Chip Si 2.0×1.25mm 3.2×2.5mm Fix the capacitunder the samu according to the	or 24±2 hours. ze m max. Each 1 i	Preh 1minute at 10 porting jig is (10). Poatments I	eat Condition e at 120 to 150° 0 to 120°C and then n the same mar erform the five coisted in the follo	C 70 to 200°C	
14	to Solderi	ing Heat	Capacitance Change Q Dielectric Strength The measured and obse specifications in the follow Item Appearance Capacitance	No marked defect Within ±2.5% or ±0.25pF (Whichever is larger) C≤ 220pF : Q≥10,000 220pF <c≤ (proved="" 3,000="" 470pf="" 470pf<c≤1,000pf="" 5,000="" :="" c:="" capacitance="" characteristics="" failure="" large="" no="" nominal="" q≥="" satisfy="" should="" td="" th<="" thas="" that="" the=""><td>solder solution temperature for Chip Si 2.0×1.25mm 3.2×2.5mm Fix the capacitunder the samu according to the Let sit for 24±2</td><td>or 24±2 hours. ze m max. Each 1 i</td><td>Preh 1minute 1minute at 10 porting jig is (10). Poatments In tempera</td><td>eat Condition e at 120 to 150° 0 to 120°C and then n the same mar erform the five of isted in the follo ature, then mea</td><td>OAg-0.5Cut at room C 170 to 200℃ Inner and ycles wing table sure.</td></c≤>	solder solution temperature for Chip Si 2.0×1.25mm 3.2×2.5mm Fix the capacitunder the samu according to the Let sit for 24±2	or 24±2 hours. ze m max. Each 1 i	Preh 1minute 1minute at 10 porting jig is (10). Poatments In tempera	eat Condition e at 120 to 150° 0 to 120°C and then n the same mar erform the five of isted in the follo ature, then mea	OAg-0.5Cut at room C 170 to 200℃ Inner and ycles wing table sure.	
	to Solderi	ing Heat	Capacitance Change Q Dielectric Strength The measured and obse specifications in the follow ltem Appearance	No marked defect Within ±2.5% or ±0.25pF (Whichever is larger) C≤ 220pF : Q≥10,000 220pF <c≤ (pforced="" 3,000="" 470pf="" 470pf<c≤1,000pf="" 5,000="" :="" c:="" capacitance="" characteristics="" failure="" large="" no="" nominal="" q≥="" satisfy="" should="" td="" the="" thr<="" through=""><td>solder solution temperature for Chip Si 2.0×1.25mm 3.2×2.5mm Fix the capacitunder the samu according to the</td><td>or to the suppre e conditions as re four heat tree?</td><td>Preh 1minute at 10 porting jig is (10). Poatments I</td><td>eat Condition e at 120 to 150° 0 to 120°C and then In the same marerform the five of isted in the folloature, then mea</td><td>C 70 to 200°C</td></c≤>	solder solution temperature for Chip Si 2.0×1.25mm 3.2×2.5mm Fix the capacitunder the samu according to the	or to the suppre e conditions as re four heat tree?	Preh 1minute at 10 porting jig is (10). Poatments I	eat Condition e at 120 to 150° 0 to 120°C and then In the same marerform the five of isted in the folloature, then mea	C 70 to 200°C	
14	to Solderi	ing Heat	Capacitance Change Q Dielectric Strength The measured and obse specifications in the follow Item Appearance Capacitance	No marked defect Within ±2.5% or ±0.25pF (Whichever is larger) C≤ 220pF : Q≥10,000 220pF <c≤ (proved="" 3,000="" 470pf="" 470pf<c≤1,000pf="" 5,000="" :="" c:="" capacitance="" characteristics="" failure="" large="" no="" nominal="" q≥="" satisfy="" should="" td="" th<="" thas="" that="" the=""><td>solder solution temperature for Chip Si 2.0×1.25mm 3.2×2.5mm Fix the capacitunder the samu according to the Let sit for 24±2 Step Temp. (°C)</td><td>or 24±2 hours. ze m max. Each 1 i</td><td>Preh 1minute at 10 porting jig is (10). Postuments In temperary 2</td><td>eat Condition e at 120 to 150° 0 to 120°C and then n the same mar erform the five of isted in the follo ature, then mea</td><td>OAg-0.5Cut at room C 170 to 200℃ Inner and ycles wing table sure.</td></c≤>	solder solution temperature for Chip Si 2.0×1.25mm 3.2×2.5mm Fix the capacitunder the samu according to the Let sit for 24±2 Step Temp. (°C)	or 24±2 hours. ze m max. Each 1 i	Preh 1minute at 10 porting jig is (10). Postuments In temperary 2	eat Condition e at 120 to 150° 0 to 120°C and then n the same mar erform the five of isted in the follo ature, then mea	OAg-0.5Cut at room C 170 to 200℃ Inner and ycles wing table sure.	
	to Solderi	ing Heat	Capacitance Change Q Dielectric Strength The measured and obsespecifications in the follow Item Appearance Capacitance Change	No marked defect Within ±2.5% or ±0.25pF (Whichever is larger) C≤ 220pF : Q≥10,000 220pF <c≤ (pforced="" (whichever="" 10pf≤c<30pf="" 3,000="" 470pf="" 470pf<c≤1,000pf="" 5,000="" :="" c:="" c<="" capacitance="" characteristics="" c≥30pf="" defect="" failure="" is="" larger)="" marked="" no="" nominal="" or="" q≥="" q≥275+="" q≥350="" satisfy="" should="" specifications="" table.="" td="" the="" wing="" within="" ±0.5pf="" ±5%="" ½=""><td>solder solution temperature for Chip Si 2.0×1.25mm 3.2×2.5mm Fix the capacitunder the samu according to the Let sit for 24±2 Step Temp. (°C)</td><td>or 24±2 hours. Ze m max. Each 1 r or to the support of the conditions at the cond</td><td>Preh 1minute at 10 porting jig is (10). Postuments In temperary 2</td><td>eat Condition e at 120 to 150° 0 to 120°C and then In the same manerform the five coisted in the folloature, then mea 3 Max. Operating</td><td>OAg-0.5Cut at room C Inner and ycles wing table sure. 4 Room</td></c≤>	solder solution temperature for Chip Si 2.0×1.25mm 3.2×2.5mm Fix the capacitunder the samu according to the Let sit for 24±2 Step Temp. (°C)	or 24±2 hours. Ze m max. Each 1 r or to the support of the conditions at the cond	Preh 1minute at 10 porting jig is (10). Postuments In temperary 2	eat Condition e at 120 to 150° 0 to 120°C and then In the same manerform the five coisted in the folloature, then mea 3 Max. Operating	OAg-0.5Cut at room C Inner and ycles wing table sure. 4 Room	

Continued on the following page. WWW.100Y.COM



C: Nominal Capacitance (pF)

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MMM.10

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ERB Series Specifications and Test Methods

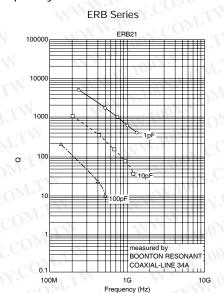
).	Item	W.1001.	Specifications	Test Method	
10	.TW 1.TW	The measured and ol	bserved characteristics should satisfy the	Apply the 24-hour heat (-10 to +65°C) and humitreatment shown below, 10 consecutive times. R 24±2 hours at room temperature, and measure. Humidity Humidity T Humidity 190-98% 190-98% 190-98% 190-98% 190-98%	, ,
Oly.		specifications in the fo		65	illianty90-9078
10		Item	Specifications	60	
٣		Appearance	No marked defect	55 50	
40		Capacitance	Within ±5% or ±0.5pF	45	
H	Humidity	Change	(Whichever is larger)	2 40	
	riamanty		C≧30pF : Q≧350	30 // // // // // // // // // // // // //	
4		Q	10pF≦C<30pF : Q≥275+ 5 C	25 25 20 +10 °C	
			C<10pF : Q≥200+10C	2 20 +10 ° -2 ° -15	
iX		I.R.	1,000MΩ min.	10 Initial measurement	++++++++++++++++++++++++++++++++++++
)X		I.R.	1,000MΩ min.	10 Initial measurement 5	
00. 017		I.R.		10 Initial measurement 5 0 Applied voltage 50Vdc	
00. 0.x		I.R.	1,000MΩ min.	10 Initial measurement 5 0 Applied voltage 50Vdc -5 -10	
00° 100 101		I.R.	1,000MΩ min.	10 Initial measurement 5 0 Applied voltage 50Vdc	
100 100		I.R.	1,000MΩ min.	10 Initial measurement Applied voltage 50Vdc One cycle 24 hours 0 1 2 3 4 5 6 7 8 9 1011121314151617	18 19 2021 22 23 24
100 100 101	X.COM.TW NY.COM.TW OOY.COM.T	IN MA N MM	1,000MΩ min. C: Nominal Capacitance (pF)	10 Initial measurement Applied voltage 50Vdc	18 19 2021 22 23 24
10' 10' 11'	Y.COM.TW OY.COM.TW OOY.COM.T OOY.COM.	IN MA N MM	1,000MΩ min. C: Nominal Capacitance (pF) bserved characteristics should satisfy the	10 Initial measurement Applied voltage 50Vdc One cycle 24 hours 0 1 2 3 4 5 6 7 8 9 1011121314151617	18 19 2021 22 23 24
101	Y.COM.TW OY.COM.TW OOY.COM.T 100Y.COM.	The measured and ol	1,000MΩ min. C: Nominal Capacitance (pF) bserved characteristics should satisfy the	10 Initial measurement Applied voltage 50Vdc One cycle 24 hours 0 1 2 3 4 5 6 7 8 9 1011121314151617	18 19 2021 22 23 24
14 44 44 44 44 44 44 44 44 44 44 44 44 4	Y.COM.TW OY.COM.TW OOY.COM.T 100Y.COM. V.100Y.COM	The measured and ol specifications in the fo	1,000MΩ min. C: Nominal Capacitance (pF) bserved characteristics should satisfy the bllowing table.	10	N N
1	V.100Y.COM	The measured and of specifications in the fo	1,000MΩ min. C: Nominal Capacitance (pF) bserved characteristics should satisfy the bllowing table. Specifications	10 Initial measurement	N N
/	High Temperature	The measured and ol specifications in the foundation of the founda	1,000MΩ min. C: Nominal Capacitance (pF) bserved characteristics should satisfy the bllowing table. Specifications No marked defect	10	ge for 1,000±1.
/	High Temperature	The measured and of specifications in the for tem Appearance Capacitance	1,000MΩ min. C: Nominal Capacitance (pF) bserved characteristics should satisfy the bllowing table. Specifications No marked defect Within ±3% or ±0.3pF	Apply 200% (500V only 150%) of the rated voltage at 125±3°C. Remove and let sit for 24±2 hours at room temperating the state of the rate of the state of the sta	ge for 1,000±1.
/		The measured and of specifications in the for tem Appearance Capacitance	1,000MΩ min. C: Nominal Capacitance (pF) bserved characteristics should satisfy the bllowing table. Specifications No marked defect Within ±3% or ±0.3pF (Whichever is larger)	10	ge for 1,000±1.
/		The measured and of specifications in the for Item Appearance Capacitance Change	1,000MΩ min. C: Nominal Capacitance (pF) bserved characteristics should satisfy the bllowing table. Specifications No marked defect Within ±3% or ±0.3pF (Whichever is larger) C≥30pF : Q≥350	Apply 200% (500V only 150%) of the rated voltage at 125±3°C. Remove and let sit for 24±2 hours at room temperating the state of the rate of the state of the sta	ge for 1,000±1: ure, then measu
/		The measured and of specifications in the for Item Appearance Capacitance Change	1,000MΩ min. C: Nominal Capacitance (pF) bserved characteristics should satisfy the bllowing table. Specifications No marked defect Within ±3% or ±0.3pF (Whichever is larger) C≥30pF: Q≥350 10pF≤C<30pF: Q≥275+ ½ C	Apply 200% (500V only 150%) of the rated voltage at 125±3°C. Remove and let sit for 24±2 hours at room temperating the state of the rate of the state of the sta	ge for 1,000±1: ure, then measu

le A-6	M.100 COM.		NW.100	Capacitance Chan	ge from 25℃ (%		$CO_{\mathcal{M}}$
Char.	Nominal Values (ppm/°C) Note 1		-55	-30	-30 —10		10
***	(ppin/c) Note i	Max.	Min.	Max.	Min.	Max.	Min.
5C	0±30	0.58	-0.24	0.40	-0.17	0.25	-0.11

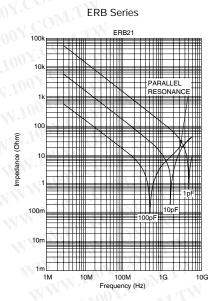
WWW.100Y.COM.T Note 1: Nominal values denote the temperature coefficient within a range of 25 to 125℃ (for 5C) WWW.100Y.CO WWW.100Y.COM.TW

ERB Series Data

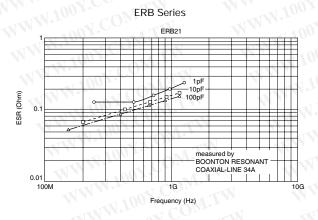
■ Q - Frequency Characteristics



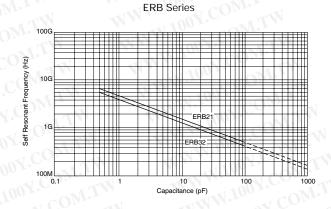
■ Impedance - Frequency Characteristics



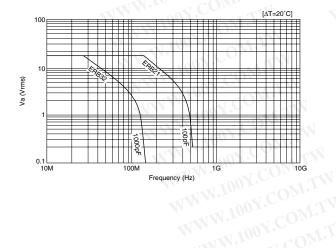
■ ESR - Frequency Characteristics



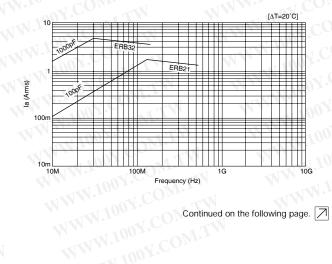
■ Self Resonant Frequency - Capacitance



■ Allowable Voltage - Frequency



■ Allowable Current - Frequency



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ERB Series Data

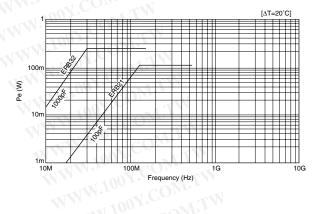
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■ Allowable Apparent Power - Frequency

[AT=20°C] W.100Y.COM Pa (WW.100Y. MAM 100A CC 108 1G Frequency (Hz) WWW.100Y.COM.TW WWW.100Y.COM.TW

■ Allowable Effective Power - Frequency



Chip Monolithic Ceramic Capacitors

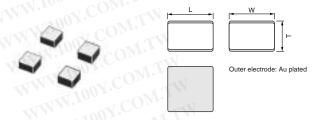


Monolithic Microchip GMA Series

■ Features

- 1. Better micro wave characteristics
- 2. Suitable for by-passing
- 3. High density mounting

- 1. Optical device for telecommunication
 2. IC, IC packaging built-in
- 3. Measuring equipment



Part Number	of CO	Dimensions (mm)	
Part Number	11005.	W	T
GMA0D3	0.38 ±0.05	0.38 ±0.05	0.3 ±0.05
GMA05X	0.5 ±0.05	0.5 ±0.05	0.35 ±0.05
GMA085	0.8 ±0.05	0.8 ±0.05	0.5 ±0.1

Capacitance Table

High Dielectric Constant Type X7R(R7)/X5R(R6) Characteristics

LxW [mm]	0.38x0.38 (0D) <015015>	N	0.5> (0 <02	(0.5 5) 02>	COM.TY	N	0.8 (0 <03	x0.8)8) 803>	COM.T	N
Rated Voltage [Vdc]	10 (1A)	100 (2A)	25 (1E)	10 (1A)	6.3 (0J)	100 (2A)	25 (1E)	10 (1A)	6.3 (0J)	W
TC	X7R (R7)	TW	X7R (R7)	N.M. 100	X5R (R6)	TW	X7R (R7)	WW.100	X5R (R6)	TY
100pF(101)	(0)	X				17.				
150pF(151)	001.0	X	N N			M.J.				
220pF(221)	ONY.CU	X	1			WILL				
330pF(331)	The C	X	j			Ohr				
470pF(471)	100 x.	X	1			OWIL				
680pF(681)	100X-	X	N	MM,	31.100 ^N .	T.Ma	N	M A.	$\alpha 100 x$	
1000pF(102)	W. Fo	CX	cW			CO	TW			
1500pF(152)	W.100	COM.	X			5	-XX			
2200pF(222)	100		X			5	1.7.			
3300pF(332)	M.M.		X			5	WELL			
4700pF(472)	WW.10		X	×	MW.L	500	W			
6800pF(682)	N N	001.	M_{II}	Х	-WW.1	5	M. I	1	WW.	UO -
10000pF(103)	3		VIII	X	M M	1007	5			
15000pF(153)	WWW		OM	X	MAN	LOOY.C	5	N		
22000pF(223)			COM.	X		N. Ivo	05	XX	WW	
33000pF(333)						W.100 1.		5		
47000pF(473)	WW					100		5	A V	
68000pF(683)		M.To	A COM.	-CXN	17/	MN.	A.COM.	5	W	1111.
0.10μF(104)		JW.10	CON	I.I.	Х	M.10,		5		WW
0.47μF(474)	N N				1	-110			5	

High Dielectric Constant Type X7R(R7)/X5R(R6) Characteristics

LxW [mm]		0.38x0.38(0D)<015015>		
Rated Volt. [Vdc		10(1A)		
Capacitance	Tolerance	Part Number		
10000pF(103)	±20%(M)	GMA0D3R71A103MA01T		

LxW [mm]	-1	0.38x0.38(0D)<015015>	W - TW 100					
Rated Volt. [Vdc		10(1A)	WWW					
Capacitance	Tolerance	Part Number	MWW.ro					
10000pF(103)	±20%(M)	GMA0D3R71A103MA01T	W.10					
WT	W	TOOY. COLUMN TOOY. COLUMN						
LxW [mm]	*X	0.5x0.5(05)<0202>						
Rated Volt. [Vdc]		100(2A)	25(1E)	10(1A)	6.3(0J)			
Capacitance	Tolerance	1 100 Y. O.M	Part Number					
100pF(101)	±20%(M)	GMA05XR72A101MA01T	TW WW	TY				
150pF(151)	±20%(M)	GMA05XR72A151MA01T	W. W.	M. T. COM.	N			
220pF(221)	±20%(M)	GMA05XR72A221MA01T	W.I.A.	M.100 COM.	_1			
330pF(331)	±20%(M)	GMA05XR72A331MA01T	WITH	1100Y.				
470pF(471)	±20%(M)	GMA05XR72A471MA01T	OM	MM. CON.	TW			
680pF(681)	±20%(M)	GMA05XR72A681MA01T	COM	TANN TOO TICON	-50			
1000pF(102)	±20%(M)	GMA05XR72A102MA01T	MITH	M. 1001.	1.7.			
1500pF(152)	±20%(M)	MMM	GMA05XR71E152MA11T	MM	WILL			
2200pF(222)	±20%(M)	TANN. IOU	GMA05XR71E222MA11T	WWW. DOWN CO	N. T.			
3300pF(332)	±20%(M)	111100	GMA05XR71E332MA11T	W.100	DM.			
4700pF(472)	±20%(M)	WW	GMA05XR71E472MA11T	WW 1007.	MITW			
6800pF(682)	±20%(M)	WW.	COM TAN	GMA05XR71A682MA01T	WIL			
10000pF(103)	±20%(M)	TW.	on COM:	GMA05XR71A103MA01T	COM			
15000pF(153)	±20%(M)	IN WW	1001. OM.TW	GMA05XR71A153MA01T	CONTA			
22000pF(223)	±20%(M)	TWW WWW	ONY CONTRACTIVE	GMA05XR71A223MA01T	Y.C. TITW			
33000pF(333)	±20%(M)		Vilon COMP.	WWW.ioe	Y CON.			
47000pF(473)	±20%(M)	WILL MAN	M.1001.	W 10	COM			
68000pF(683)	±20%(M)	WW WITE	1007.00	N NN	001. M.T.			
0.10μF(104)	±20%(M)	M. TI	MAN COM	M MMM.	GMA05XR60J104ME12T			

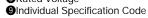
LxW [mm]	1007.	M.TV	0.8x0.8(0	08)<0303>	N.100 COM:	
Rated Volt. [Vdc	il out.	100(2A)	25(1E)	10(1A)	6.3(0J)	
Capacitance	Tolerance	COM	Part N	lumber	M. COR	
1500pF(152)	±20%(M)	GMA085R72A152MA01T	W.1001	With	Min	
2200pF(222)	±20%(M)	GMA085R72A222MA01T	11007.00	WI.IV	1007. OM	
3300pF(332)	±20%(M)	GMA085R72A332MA01T	MAN. ON C	On IV	MAL. TOON CO.	
4700pF(472)	±20%(M)	GMA085R72A472MA01T	TANN TOO	ON	TAM TON COM	
6800pF(682)	±20%(M)	GMA085R72A682MA01T	M. 100x.	CON.TW	100 L	
10000pF(103)	±20%(M)	ON COM	GMA085R71E103MA11T	COLLIN	MM 1007.00	
15000pF(153)	±20%(M)	Jan COM.	GMA085R71E153MA11T	1 COMP.	MAN. CON.CO	
22000pF(223)	±20%(M)	1 100x.	GMA085R71E223MA11T	COM.	M. Ino	
33000pF(333)	±20%(M)	TW.Co. TW	WW. 10	GMA085R71A333MA01T	M. 1001.5	
47000pF(473)	±20%(M)	M. ro. COM.	V WWW.	GMA085R71A473MA01T	MM 100%	
68000pF(683)	±20%(M)	W.100 COM.1	I. W.	GMA085R71A683MA01T	TIWW.Io	
0.10μF(104)	±20%(M)	11001.001.1	M. M.	GMA085R71A104MA01T	W.100	
0.47μF(474)	±20%(M)	M.M. CO.	THE WAY	100Y.CO	GMA085R60J474ME12T*	
		() and Unit is shown in []. <>: E fications and Test Method(2).	EIA [inch] Code	M.100X.COW.TA	M WMM.	

●Product ID 2Series **5**Temperature Characteristics **8**Capacitance Tolerance

3Dimension (LxW) **6**Rated Voltage

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD Tray.



WWW.100Y.C WWW.100Y.COM.TW

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• This PDF catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

GMA Series Specifications and Test Methods(1)

In case Non "*" is added in PNs table, please refer to GMA Series Specifications and Test Methods (1).
In case "*" is added in PNs table, please refer to GMA Series Specifications and Test Methods (2).

No.	Ite	em	Specifications	Test Method
1	Operating Tempera Range		R7: -55 to +125℃	Reference Temperature: 25℃
2	Rated Vo	ltage	See the previous pages.	The rated voltage is defined as the maximum voltage which may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, V ^{p-p} or V ^{o-p} , whichever is larger, should be maintained within the rated voltage range.
3	Appearar	nce	No defects or abnormalities	Visual inspection
4	Dimensio	ons	Within the specified dimensions	Using calipers
5	Dielectric Strength		No defects or abnormalities	No failure should be observed when a voltage of 250% of the rated voltage is applied between the both terminations for 1 to 5 seconds, provided the charge/discharge current is less than 50mA.
6	Insulation	Resistance	More than 10,000M Ω or 500 Ω F (Whichever is smaller)	The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at normal temperature and humidity and within 2 minutes of charging.
7	Capacita	nce	Within the specified tolerance	The capacitance/D.F. should be measured at reference temperature at the frequency and voltage shown in the table.
8	Dissipatio (D.F.)	on Factor	R7: W.V.: 25V min.; 0.025 max. W.V.: 16V/10V; 0.035 max.	Frequency 1±0.1kHz Voltage 1±0.2Vrms
N	WW.100	OOX.C	M.TW WWW.100Y.COM.T	The capacitance change should be measured after 5min. at each specified temp. stage. •The ranges of capacitance change compared with the Reference Temperature value over the temperature ranges shown in the table should be within the specified ranges.*
	MM.	YOUY.	COM TW WWW. 100Y.COM	Step Temperature (°C)
	Capacitance	Too	COM. CO	1 25±2
9	Temperature Characteristics	No bias	R7: Within +/–15% (–55 to +125°C)	2 -55±3
	11/1/	100	Y.Com.Th William 100x.	3 25±2
	W	MM.10	OV.COM.TW WWW.100Y.C	*Initial measurement for high dielectric constant type Perform a heat treatment at 150 +0/-10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement.
10	Mechanical	Bond Strength	Pull force: 0.03N min.	MIL-STD-883 Method 2011 Condition D Mount the capacitor on a gold metallized alumina substrate with Au-Sn (80/20) and bond a 25μm (0.001 inch) gold wire to the capacitor terminal using an ultrasonic ball bond. Then, pull wire.
	Strength	Die Shear Strength	Die Shear force: 2N min.	MIL-STD-883 Method 2019 Mount the capacitor on a gold metallized alumina substrate with Au-Sn (80/20). Apply the force parallel to the substrate.
		Appearance	No defects or abnormalities	Ramp frequency from 10 to 55Hz then return to 10Hz all within
1	Vibration	Capacitance	Within the specified tolerance	1 minute. Amplitude: 1.5 mm (0.06 inch) max. total excursion.
•	Resistance	D.F.	R7: W.V.: 25V min.; 0.025 max. W.V.: 16V/10V; 0.035 max.	Apply this motion for a period of 2 hours in each of 3 mutually perpendicular directions (total 6 hours).
		Appearance	No defects or abnormalities	The capacitor should be set for 24±2 hours at years
		Capacitance Change	R7: Within ±7.5%	The capacitor should be set for 24±2 hours at room temperature after one hour heat of treatment at 150+0/-10°C, then measure for the initial measurement. Fix the capacitor to
	Tomporatura	D.F.	R7: W.V.: 25V min.; 0.025 max. W.V.: 16V/10V; 0.035 max.	the supporting jig in the same manner and under the same conditions as (11) and conduct the five cycles according to the
2	Temperature Cycle	I.R.	More than 10,000M Ω or 500Ω F (Whichever is smaller)	temperatures and time shown in the following table. Set it for 24±2 hours at room temperature, then measure. Step 1 2 3 4
		Dielectric	No defects	Temp. (°C) Min. Operating Room Temp. +0/-3 Temp. Temp. +3/-0 Temp.
		Strength	NW.100 COM.1	Time (min.) 30±3 2 to 3 30±3 2 to 3

wn belo۱... Mounting for testing: The capacitors should be mounted on the substrate as shown below using die bonding and wire bonding when tests No.11 to 15 are performed.

Continued on the following page.





GMA Series Specifications and Test Methods(1)

(Whichever is smaller)

R7: Within ±12.5%

No defects or abnormalities

R7: W.V.: 10V min.; 0.05 max.

More than $1,000M\Omega$ or 50Ω F

(Whichever is smaller)

In case Non "*" is added in PNs table, please refer to GMA Series Specifications and Test Methods (1). In case "*" is added in PNs table, please refer to GMA Series Specifications and Test Methods (2). Continued from the preceding page Specifications No Test Method Item No defects or abnormalities Appearance Capacitance Set the capacitor for 500±12 hours at 40±2℃, in 90 to 95% R7: Within ±12.5% Change Humidity humidity. 13 (Steady State) Take it out and set it for 24±2 hours at room temperature, then D.F. R7: W.V.: 10V min.: 0.05 max. measure. More than 1,000M Ω or 50 Ω F I R (Whichever is smaller) No defects or abnormalities Appearance Capacitance Apply the rated voltage for 500 ± 12 hours at $40\pm2^{\circ}$ C. in 90 to R7: Within ±12.5% Change Humidity 95% humidity and set it for 24±2 hours at room 14 temperature, then measure. The charge/discharge current is Load D.F R7: W.V.: 10V min.; 0.05 max. less than 50mA. More than $500M\Omega$ or 25Ω F

Mounting for testing: The capacitors should be mounted on the substrate as shown below using die bonding and wire bonding when tests No.11 to 15 are performed.

A voltage treatment should be given to the capacitor, in which a DC voltage of 200% the rated voltage is applied for one hour at

the maximum operating temperature ±3°C then it should be set

for 24±2 hours at room temperature and the initial measurement

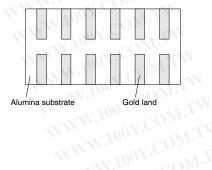
Then apply the above mentioned voltage continuously for

bath, and set it for 24±2 hours at room temperature, then

measure. The charge/discharge current is less than 50mA.

1000±12 hours at the same temperature, remove it from the

should be conducted.



I.R.

Appearance

Capacitance

Change

D.F

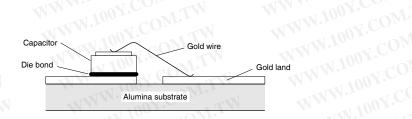
I.R.

High

Load

Temperature

15



GMA Series Specifications and Test Methods(2)

In case Non "*" is added in PNs table, please refer to GMA Series Specifications and Test Methods (1).
In case "*" is added in PNs table, please refer to GMA Series Specifications and Test Methods (2).

	l ite	em	Specifications	-1 CO		Test Method	d		
1	Operating Temperat Range		R6: -55°C to 85°C	Reference T	emperature :	25°C			
2	Rated Vol	Itage	See the previous pages.	may be appl When AC vo	ied continuou oltage is supe	usly to the ca erimposed on	aximum voltag pacitor. DC voltage, V ned within the	^{rP} or V ^{O-F}	
3	Appearan	ice	No defects or abnormalities.	Visual inspection.					
4	Dimensio	ns	Within the specified dimensions.	Using calipe		TAN TO SERVICE AND ADDRESS OF THE PARTY OF T			
5	Dielectric	Strength	No defects or abnormalities.	No failure should be observed when 250% of the ra is applied between the terminations for 1 to 5 secon ed the charge/discharge current is less than 50mA.		_			
6	Insulation Resistance		More than $50\Omega \cdot F$	The insulation resistance should be measured with a DO voltage not exceeding the rated voltage at normal temperand humidity and within 1 minutes of charging.					
7	Capacitar	nce	Within the specified tolerance.	The capacitance/D.F. should be measured at reference temperature at the frequency and voltage shown in the Capacitance Frequency Voltage C≦10µF (6.3Vmax.) 1±0.1kHz 0.5±0.1Vrms The capacitance change should be measured after 5m each specified temp. stage. The ranges of capacitance change compared with the Reference Temperature value over the temperature rar shown in the table should be within the specified range					
8	Dissipation Factor (D		R6: 0.1 max.			Voltage			
N	W.100	Y.CO	M.TW WWW.100X.COM.TW			5min. at			
	MN.10		OM.TW WWW.100Y.COM.TY			ranges			
	Capacitance		COM. TW WWW. COM.	Step	MW.	Temperati		M	
9	Temperature Characteristics	No bias	R6 : Within ±15% (–55°C to +85°C)	1 2	WW	25±2 -55±		TW	
	Citalactoristics		COM: IN WIN TOO TOO	3		25±2	2 (0)		
	MM		Y.COM.TW WW. 100Y.C.	4		85±3	3		
	MA		DY.COM.TW WWW.100Y.CO	Perform a he then let sit fo		at 150 +0/-1 at room tem	c constant type 10°C for one haperature.		
10	Mechanical	Bond Strength	Pull force : 0.03N min.	Mount the ca Au-Sn (80/2	0) and bond	gold metalliz a 25μm (0.00	D ed alumina su 11 inch) gold w ball bond. The	ire to the	
	Strength	Die Shear Strength	Die Shear force : 2N min.	Mount the ca	• \	gold metalliz	zed alumina su rallel to the su		
		Appearance	No defects or abnormalities.	001.	1.1.4		10	0 3.	
	Vibration	Capacitance	Within the specified tolerance.				return to 10H ch) max. total		
11	Resistance	D.F.	R6: 0.1 max.	Apply this m		eriod of 2 hou	irs in each of 3		
		Appearance	No defects or abnormalities.	The capacito	or should be	set for 24±2 h	nours at room	1.100	
		Capacitance Change	R6 : Within ±7.5%	then measur	re for the initi	al measurem	atment at 150- ent. Fix the ca and under the	pacitor t	
	Tama	D.F.	R6: 0.1 max.	conditions a	s (11) and co	nduct the five	e cycles accor	ding to tl	
12	Temperature Sudden	I.R.	More than $50\Omega \cdot F$		s and time sh at room temp		ollowing table.	Set it fo	
	Change		WWW. 100X.C. TITW V	Step	at room temp	2	3	4	
		Dielectric Strength	No defects	Temp. (°C	Min.	Boom	Max. Operating	Room	

Mounting for testing: The capacitors should be mounted on the substrate as shown below using die bonding and wire bonding when tests No.11 to 14 are performed. WWW.100Y.COM.T

Continued on the following page.

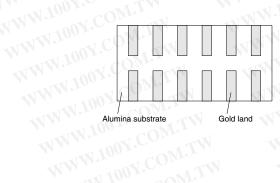


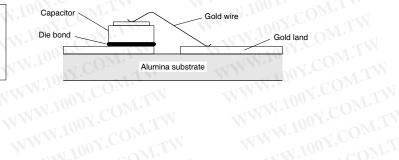
GMA Series Specifications and Test Methods(2)

In case Non "*" is added in PNs table, please refer to GMA Series Specifications and Test Methods (1).

No.	Ite	em	Specifications	Test Method
		Appearance	No defects or abnormalities.	Apply the rated voltage for 500±12 hours at 40±2°C, in 90 to
a T	I.TW	Capacitance Change	R6 : Within ±12.5%	95% humidity and set it for 24±2 hours at room temperature, then measure. The charge/discharge current is less than 50mA.
	High	D.F.	R6: 0.2 max.	
13	Temperature High Humidity (Steady)	I.R.	More than 12.5 Ω · F	 Initial measurement Perform a heat treatment at 150+0/-10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement. Measurement after test Perform a heat treatment at 150+0/-10°C for one hour and then let sit for 24±2 hours at room temperature, then measure.
00	Y.CO	Appearance	No defects or abnormalities.	Apply 150% of the rated voltage for 1000±12 hours at the
10	oy.co	Capacitance Change	R6 : Within ±12.5%	maximum operating temperature ±3°C. Let sit for 24±2 hours at room temperature, then measure. The charge/ discharge current is less than 50mA.
1 1	OOX.C.	D.F.	R6 : 0.2 max.	W. 100 r. COW. I.
14 [Durability	I.R.	More than $25\Omega \cdot F$	 Initial measurement Perform a heat treatment at 150+0/-10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement. Measurement after test
N	W.100	M.CO	W.TW WWW.100Y.COM	Perform a heat treatment at 150+0/–10°C for one hour and then let sit for 24±2 hours at room temperature, then measure.

Mounting for testing: The capacitors should be mounted on the substrate as shown below using die bonding and wire bonding when tests No.11 to 14 are performed.





WWW

Chip Monolithic Ceramic Capacitors



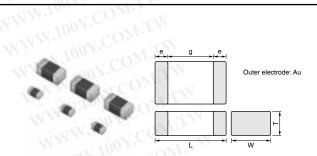
for Bonding GMD Series

■ Features

- 1. Small chip size (LxWxT: 0.6x0.3x0.3, 1.0x0.5x0.5mm)
- 2. Available for Wire/Die bonding due to Gold termination.
- 3. Suitable for Optical device for telecommunication, WW.100Y.CO IC packaging built-in.

Applications

- WWW.100Y.COM.TW WWW.100Y.COM.TW 1. Optical device for telecommunication
- 2. IC, IC packaging built-in WWW.100Y.COM.



Part Number	-x1 100	Din	nensions (n	nm)	
Part Number	N. L	W	JW	е	g min.
GMD033	0.6±0.03	0.3±0.03	0.3±0.03	0.12 to 0.22	0.16
GMD155	1.0±0.05	0.5±0.05	0.5±0.05	0.15 to 0.35	0.3

Capacitance Table

MM.100X.

LxW [mm]	NWW	0.6x0.3 (03) <0201>	OM.TV		1.0x0.5 (15) <0402>	100Y.C	0.6x0.3 (03) <0201>	1.0x (1 <04	(0.5 5)	
Rated Voltage [Vdc]	25 (1E)	16 (1C)	10 (1A)	50 (1H)	25 (1E)	16 (1C)	6.3 (0J)	10 (1A)	6.3 (0J)	
	(/	1X1.100	X7		(1-/	11.100	COM.	X5R	(55)	
Capacitance	1/1	100	(R	7)		100 100	COM	(R6)		
100pF(101)	3	10	OY.Co				DATE			
120pF(121)	3	TMN.To	CO				ON.CO			
150pF(151)	3	1.WW.1	-1 C.C				CC			
180pF(181)	3		1007.	MIN			100 1.			
220pF(221)	3	MMM	1100X·C	5			1.100 Y.C			
270pF(271)	3	TANK V	1.10	5			-7			
330pF(331)	3	T	V	5			M.100X			
390pF(391)	3	MM	VVV.1003	5			1111003			
470pF(471)	3	WV	111.	(5)			VV.100			
560pF(561)	3	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	MM.Jo.	5			WW.			
680pF(681)	3	- 11	WW.10	5			XXIVI.10			
820pF(821)	3			5	<u></u>		N N 1			
1000pF(102)	3	-	WWW.	5			WWW			
1200pF(122)	3	-1	TAN VI	5			WW			
1500pF(152)	3	N		5						
1800pF(182)		3	MM	5			MW.			
2200pF(222)		3		5			WW			
2700pF(272)		3		5						
3300pF(332)		3		5						
3900pF(392)		TW	3	5			W			
4700pF(472)		M.	3	5	32 C9					
5600pF(562)		OM.TW	3	N Y	5		; 			
6800pF(682) 8200pF(822)		TY	3	MM	5					
		CONFIL	3		5				1100 7.CO	
12000pF(123)		COM.T			5		rW.			
15000pF(153)		V.COM	L.M.	MM	5					
19000pE/193\			TW	WV	1 0		TW			
22000pF(223)				W	5		T.TW			
				``}	5		11.1			
33000pF(333)			MIN		5		M.TW			
39000pF(393)			TW	1	5		M.TW OM.TW			
47000pF(473)				a l	5		ONI.			
56000pF(563)		.100 Y.C.C. W.100 Y.C. W.100 Y.C.	COMIT	T		5	3		MMM'TO	
68000pF(683)					WWY	503	3		MAN.	
82000pF(823)			7		WW	5 00	3			
0.10μF(104)		M.100	a COM			5	3	- N		
0.12μF(124)			Y.		W			5	V	
0.15μF(154)			MY.CO				OXICO	7.1	MMA	
. \ /			CO			NWW.10	OOX.CO	5	WW	
0.18µF(184)			W F.				W -	5		
0.18μF(184) 0.22μF(224)			- 40				< / -	J J	_ <	
0.22μF(224)			100 Y.C.				1007.0	5		
			100 Y.C.				1007.0	5	N	
0.22μF(224) 0.27μF(274)			W100X 100X 100X-C					5		

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8

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High Dielectric Constant Type X7R(R7) Characteristics

xW [mm]	· ····································	25(1E)	0.6x0.3(03)<0201>	10(1A)
Rated Volt. [Vdc]		25(IE)	16(1C)	10(1A)
Capacitance	Tolerance	Mary CONT	Part Number	OX.CO. TAN
100pF(101)	±10%(K)	GMD033R71E101KA01D	N SWW.II	COM
120pF(121)	±10%(K)	GMD033R71E121KA01D	11	001.
150pF(151)	±10%(K)	GMD033R71E151KA01D	THE WIND	1007.0
180pF(181)	±10%(K)	GMD033R71E181KA01D	THE WAY	COM
220pF(221)	±10%(K)	GMD033R71E221KA01D		VIIII COM
270pF(271)	±10%(K)	GMD033R71E271KA01D	TW WW	100Y.
330pF(331)	±10%(K)	GMD033R71E331KA01D	WW WW	M. T. COL
390pF(391)	±10%(K)	GMD033R71E391KA01D	M.I.	AM. TOOM.
470pF(471)	±10%(K)	GMD033R71E471KA01D	WILLIAM W	1001. M
560pF(561)	±10%(K)	GMD033R71E561KA01D	OH W	M. Co.
680pF(681)	±10%(K)	GMD033R71E681KA01D	COM.	TANNITO TOO
820pF(821)	±10%(K)	GMD033R71E821KA01D	-oM.TW	W 1001.
1000pF(102)	±10%(K)	GMD033R71E102KA01D	CO	MM
1200pF(122)	±10%(K)	GMD033R71E122KA01D	COM.	WWW.
1500pF(152)	±10%(K)	GMD033R71E152KA01D	COWIT	100 m
1800pF(182)	±10%(K)	MM	GMD033R71C182KA11D	1/1/1007.
2200pF(222)	±10%(K)	N WWW.	GMD033R71C222KA11D	WWW
2700pF(272)	±10%(K)		GMD033R71C272KA11D	TANN TOO
3300pF(332)	±10%(K)	IN WAR	GMD033R71C332KA11D	W 1 100
3900pF(392)	±10%(K)	THE WAY	ON CONTRACTOR	GMD033R71A392KA01D
4700pF(472)	±10%(K)		Vilas COM.	GMD033R71A472KA01D
5600pF(562)	±10%(K)	1.11	M 7001.	GMD033R71A562KA01D
6800pF(682)	±10%(K)	WW WITH	1007.00	GMD033R71A682KA01D
8200pF(822)	±10%(K)	M.	MAN COM	GMD033R71A822KA01D
10000pF(103)	±10%(K)	ON.TH	11/100 COM.	GMD033R71A103KA01D

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code WWW.100Y.COM.TW

High Dielectric Constant Type X7R(R7) Characteristics

LxW [mm] Rated Volt. [Vdc]		50(1H)	1.0x0.5(15)<0402> 25(1E)	16(1C)
Capacitance	Tolerance	30(III)	Part Number	10(10)
220pF(221)	±10%(K)	GMD155R71H221KA01D	Fait Number	OX. CONT. TW
270pF(271)	±10%(K)	GMD155R71H271KA01D	N WWW.	ON COM
330pF(331)	±10%(K)	GMD155R71H331KA01D		T COM.
390pF(391)	±10%(K)	GMD155R71H391KA01D		7001.
470pF(471)	±10%(K)	GMD155R71H471KA01D	THE WINN	1007.00
560pF(561)	±10%(K)	GMD155R71H561KA01D		V.T. COMP.
680pF(681)	±10%(K)	GMD155R71H681KA01D		W.100 TOMAL
820pF(821)	±10%(K)	GMD155R71H821KA01D	M.T.W	1100 X
1000pF(102)	±10%(K)	GMD155R71H102KA01D	W W	1007.00
1200pF(122)	±10%(K)	GMD155R71H122KA01D	OM	MA-10 COM
1500pF(152)	±10%(K)	GMD155R71H152KA01D	OMIT	CONT.
1800pF(182)	±10%(K)	GMD155R71H182KA01D	W.TW	WY TOOY ON THE
2200pF(222)	±10%(K)	GMD155R71H222KA01D	COM	WWW. ONY.CO. TW
2700pF(272)	±10%(K)	GMD155R71H272KA01D	COM	TANN TOO NO.
3300pF(332)	±10%(K)	GMD155R71H332KA01D		W. 1001.
3900pF(392)	±10%(K)	GMD155R71H392KA01D	OY.CO. TY	WW. 100Y.C
4700pF(472)	±10%(K)	GMD155R71H472KA01D	CONT.	MALA COM.
5600pF(562)	±10%(K)	1111.	GMD155R71E562KA01D	COM
6800pF(682)	±10%(K)	IN NA	GMD155R71E682KA01D	100x. ON.TW
8200pF(822)	±10%(K)	TWW WWW	GMD155R71E822KA01D	WWW.100Y.CO.T.
10000pF(103)	±10%(K)		GMD155R71E103KA01D	MAN. COM.
12000pF(123)	±10%(K)	VIIII	GMD155R71E123KA01D	M. M. TON COM.
15000pF(153)	±10%(K)	WW WITH	GMD155R71E153KA01D	WW TIOON.
18000pF(183)	±10%(K)	Mr.	GMD155R71E183KA01D	M MMM CON.CO.
22000pF(223)	±10%(K)	OWIT	GMD155R71E223KA01D	TANN. TOO
27000pF(273)	±10%(K)	W.TW	GMD155R71E273KA11D	TW WWW.100Y.CO.
33000pF(333)	±10%(K)	COL	GMD155R71E333KA11D	TW WW.
39000pF(393)	±10%(K)	COMP	GMD155R71E393KA11D	WWW. COV.CO
47000pF(473)	±10%(K)	COM.III	GMD155R71E473KA11D	M.100
56000pF(563)	±10%(K)	Y.C. TW	WW 100Y.	GMD155R71C563KA11D
68000pF(683)	±10%(K)	V.COM.	MAN, ONE	GMD155R71C683KA11D
82000pF(823)	±10%(K)	COM	11/1/1/10	GMD155R71C823KA11D
0.10μF(104)	±10%(K)	00Y. M.TW	M. 1. 22 100 1.	GMD155R71C104KA11D
The part number of		() and Unit is shown in [].	IA [inch] Code	GMD155R71C104KA11D

●Product ID 2Series **5**Temperature Characteristics 8 Capacitance Tolerance

3Dimension (LxW) 6 Rated Voltage 9Individual Specification Code

4 Dimension (T) Capacitance Packaging

Packaging Code in Part Number is a code shows STD 180mm Reel Taping.



High Dielectric Constant Type X5R(R6) Characteristics

Rated Volt. [Vdc		6.3(0J)	10(1A)	6.3(0J)
Capacitance	Tolerance	M.In. COM.	Part Number	ON COMP
56000pF(563)	±10%(K)	GMD033R60J563KE11D*	1.10	COM
68000pF(683)	±10%(K)	GMD033R60J683KE11D*		OOT. OM.TH
82000pF(823)	±10%(K)	GMD033R60J823KE11D*	CW WWW.	ON.COM TW
0.10μF(104)	±10%(K)	GMD033R60J104KE11D*		Jon J COM.
0.12μF(124)	±10%(K)	1 100Y.	GMD155R61A124KE12D*	1100 . COW.I.
0.15μF(154)	±10%(K)	M.M. OOT.Co.	GMD155R61A154KE12D*	100Y.C
0.18μF(184)	±10%(K)	TANN TOO	GMD155R61A184KE12D*	M. T. COM.
0.22μF(224)	±10%(K)	W. 1001.	GMD155R61A224KE12D*	COM.
0.27μF(274)	±10%(K)	MM. 1007.C.	GMD155R61A274KE11D*	1100Y.
0.33μF(334)	±10%(K)	WWW.	GMD155R61A334KE11D*	M. O. Co.
0.39μF(394)	±10%(K)	1111.100	GMD155R61A394KE11D*	TANN TOO CON
0.47μF(474)	±10%(K)	1/1/1007	GMD155R61A474KE11D*	W. 100 F. CO.
1.0μF(105)	±10%(K)	WWW. OO	CONTAN	GMD155R60J105KE11D*
he part number c	ode is shown in (() and Unit is shown in []. < >: E fications and Test Method(2).	IEIA [inch] Code	WWW.100Y.C

The part number code is shown in () and Unit is shown in []. < >: EIA [inch] Code WWW.100Y.COM.

^{*:} Please refer to GMD series Specifications and Test Method(2). WWW.100Y.COM.TW

GMD Series Specifications and Test Methods (1)

In case Non "*" is added in PNs table, please refer to GMD Series Specifications and Test Methods (1). In case "*" is added in PNs table, please refer to GMD Series Specifications and Test Methods (2).

No.	Ite	em	Specifications		Te	est Metho	d	
1	Operating Temperat Range		R7: -55°C to 125°C	Reference	Temperature : 2	5°C		
2	Rated Vo	ltage	See the previous pages.	The rated voltage is defined as the maximum voltage which may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, V ^{p,p} or whichever is larger, should be maintained within the rated age range.				
3	Appearar	nce	No defects or abnormalities.	Visual insp	ection.	TW		
4	Dimensio	ns	Within the specified dimensions.	Using calip	ers.	-XX		
5	Dielectric	Strength	No defects or abnormality.	is applied b	should be observ between the term rge/discharge cu	ninations f	or 1 to 5 second	-
6	Insulation Resistance		More than 10,000M Ω or $500\Omega \cdot F$ (Whichever is smaller)	voltage not	ion resistance sh exceeding the r ty and within 2 n	ated volta	ge at normal te	
7	Capacita	nce	Within the specified tolerance. R7:		tance/D.F. shoule at the frequence			
8	Dissipation Factor (D		W.V. 25Vmin.: 0.025 max. W.V. 16/10V: 0.035 max.	Freque Voltage			0.1kHz 0.2Vrms	
N	N.100	Y.CO	M.TW WWW.100Y.COM.TW		tance change sh fied temp. stage.		neasured after s	ōmin. at
	MN.T	00 ^{Y.CU}	OM.TW WWW.100Y.COM.TW	Reference	s of capacitance Temperature val ne table should b	lue over th	ne temperature	ranges
	Capacitance	. NOV.	On THE WHAT TOOK CO.	Step	MA	Tempera		
9	Temperature Characteristics	No bias	R7 : Within ±15% (–55°C to +125°C)	1 2		25± –55		TW
	Glidiactoristics	0.100°	COMITY WILLIAM COM	3		25±		-XXI
	MA	W.100	OX.COM.TW WWW.100X.COM	Perform a h	surement for hig neat treatment a for 24±2 hours a e initial measure	t 150 +0/- t room ter	ic constant type 10°C for one he	
10	Mechanical	Bond Strength	Pull force : 0.03N min.	Mount the o	MIL-STD-883 Method 2011 Condition D Mount the capacitor on a gold metallized alumina subs Au-Sn (80/20) and bond a 25mm (0.001 inch) gold wir capacitor terminal using an ultrasonic ball bond. Then,			vire to the
	Strength	Die Shear Strength	Die Shear force : 2N min.	Mount the	83 Method 2019 capacitor on a go (80/20). Apply the	old metalli		
		Appearance	No defects or abnormalities.		WILL		10 · N. 10	
	Vibration	Capacitance	Within the specified tolerance.		uency from 10 to amplitude : 1.5 m			
11	Resistance	D.F.	R7: W.V. 25Vmin.: 0.025 max. W.V. 16/10V: 0.035 max.	Apply this motion for a period of 2 hours perpendicular directions (total 6 hours).		urs in each of 3		
		Appearance	No defects or abnormalities.	The capaci	tor should be se	t for 24±2	hours at room	1.100
		Capacitance Change	R7 : Within ±7.5%	then measu	e after one hour ure for the initial ting jig in the san	measurer	nent. Fix the ca	pacitor to
12	Temperature Cycle	D.F.	R7 : W.V. 25Vmin. : 0.025 max. W.V. 16/10V : 0.035 max.	conditions a	as (11) and conc es and time show at room temper	duct the five	re cycles accord following table.	ding to the
	3,000	I.R.	More than 10,000M Ω or 500 Ω · F	Step	101	2	3	4
		Dielectric	(Whichever is smaller)	Temp. (°	Min. C) Operating Temp.+0/-3	Room Temp.	Max. Operating Temp. +3/-0	Room Temp.
	Strength No defects		Time (mi	n.) 30+/–3	2 to 3	30+/-3	2 to 3	

are as shown Mounting for testing: The capacitors should be mounted on the substrate as shown below using die bonding, when tests No.11 to 15 are performed.

Continued on the following page.



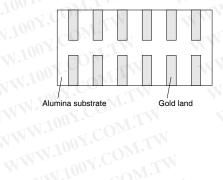


GMD Series Specifications and Test Methods

In case Non "*" is added in PNs table please refer to GMD Series Specifications and Test Methods (1)

No.	Ite	em	Specifications	Test Method	
		Appearance	No defects or abnormalities.	OOL. COMILIA	
1	LTW	Capacitance Change	R7 : Within ±12.5%	Set the capacitor for 500±12 hours at 40±2°C, in 90 to 95%	
13	Humidity (Steady State)	D.F.	R7: W.V. 25Vmin.: 0.05 max. W.V. 16/10V: 0.05 max.	humidity. Take it out and set it for 24±2 hours at room temperature, then measure.	
C	T.MO	I.R.	More than 1,000M Ω or $50\Omega \cdot F$ (Whichever is smaller)	TANN 100Y.COM.TW	
. 0	MOD.	Appearance	No defects or abnormalities.	NW.100 TCOM.	
Y	COM	Capacitance Change	R7 : Within ±12.5%	Apply the rated voltage for 500±12 hours at 40±2°C, in 90 to	
14	Humidity Load	D.F.	R7: W.V. 25Vmin.: 0.05 max. W.V. 16/10V: 0.05 max.	95% humidity and set it for 24±2 hours at room temperature, then measure. The charge/discharge current is less than 50mA.	
.1	00X.C	I.R.	More than $500M\Omega$ or $25\Omega \cdot F$ (Whichever is smaller)	WWW.1001.COM.IT	
Ń.	100 -	Appearance	No defects or abnormalities.	A voltage treatment should be given to the capacitor, in which a	
V	100X	Capacitance Change	R7 : Within ±12.5%	DC voltage of 200% the rated voltage is applied for one hour at the maximum operating temperature ±3°C then it should be set	
15	High Temperature Load	D.F.	R7: W.V. 25Vmin.: 0.05 max. W.V. 16/10V: 0.05 max.	 for 24±2 hours at room temperature and the initial measurement should be conducted. Then apply the above mentioned voltage continuously for 1000±12 hours at the same temperature, remove it from the 	

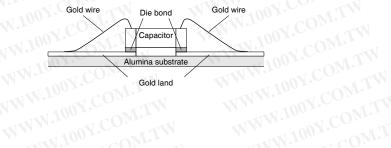
Mounting for testing: The capacitors should be mounted on the substrate as shown below using die bonding, when tests No.11 to 15 are performed.



More than 1,000M Ω or 50 Ω · F

(Whichever is smaller)

IR



bath, and set it for 24±2 hours at room temperature, then

measure. The charge/discharge current is less than 50mA.

In case Non "*" is added in PNs table, please refer to GMD Series Specifications and Test Methods (1).

In case "*" is added in PNs table, please refer to GMD Series Specifications and Test Methods (2).

No.	Ite	m	Specifications	100	T. T.	est Method	d			
1	Operating Temperat Range		R6: -55°C to 85°C	Reference Te	emperature : 2	25°C				
2	Rated Vol	tage	See the previous pages.	The rated voltage is defined as the maximum voltage may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, whichever is larger, should be maintained within the age range.			pacitor. DC voltage, V	^{r-P} or V ^{O-I}		
3	Appearan	ro 1	No defects or abnormalities.	Visual inspec	tion					
4	Dimensio	f. 11	Within the specified dimensions.	301100		- 1				
5	Dielectric	TW	No defects or abnormalities.	Using calipers. No failure should be observed when 250% of the rated voltage is applied between the terminations for 1 to 5 seconds, provided the charge/discharge current is less than 50mA.						
6	Insulation Resistance		More than $50\Omega \cdot F$	voltage not e	The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at normal temperatu and humidity and within 1 minutes of charging.					
7	Capacitar	nce	Within the specified tolerance.	· ·			sured at referen			
8	Dissipation Factor (D.F.)				R6: 0.1 max.	Capac C≦10μF (C≦10μF (citance 10Vmin.)*1 (6.3Vmax.)	Frequency 1±0.1kHz 1±0.1kHz	1.0±0.2Vrm 0.5±0.1Vrm	ns ns
-187	MN-100X-CO		W.T. COW.				olied to 0.5±0.1 easured after 5			
N	Capacitance		OM.TW WWW.100Y.COM. COM.TW WWW.100Y.COM.	The ranges of Reference Te	emperature va	change co lue over th	mpared with the temperature e specified ran	ranges		
9	Temperature	No bias	R6 : Within ±15% (–55°C to +85°C)	1	WW	25±		W.		
	Characteristics		COM:11	3		-55± 25±		10.2		
	MAI		DY.COMITH WITH 100X.C	4		85±		Mir		
	M.		TOOX.COW.TM MMM.TOOX.C	Perform a he then let sit for	,	t 150 +0/- at room tem	c constant type 10°C for one ho nperature.			
10	Mechanical	Bond Strength	Pull force : 0.03N min.	Mount the ca Au-Sn (80/20) and bond a	old metalliz 25µm (0.00	D zed alumina su 01 inch) gold w ball bond. The	ire to the		
	Strength	Die Shear Strength	Die Shear force : 2N min.	Mount the ca		old metalli:	zed alumina su arallel to the su			
		Appearance	No defects or abnormalities.	Bomp from:	nov from 10 to	. EE∐- +h - :	a roturn to 1011	سند الم		
11	Vibration	Capacitance	Within the specified tolerance.				n return to 10H ch) max. total (
11	Resistance	D.F.	R6: 0.1 max.	Apply this mo		od of 2 hou	ırs in each of 3			
		Appearance	No defects or abnormalities.		r should be se			1 1		
		Capacitance Change	R6 : Within ±7.5%	then measure	e for the initial	measurem	atment at 150- ent. Fix the ca and under the	pacitor t		
	Tomporeture	D.F.	R6 : 0.1 max.	1 ' L	_ 1		e cycles accor			
12	Temperature Sudden	I.R.	More than 50Ω · F	- 1 N . 1	and time sho t room tempe		ollowing table. n measure.	Set If 10		
	Change	Dielectric Strength	No defects	Step Temp. (°C)		Room Temp.	Max. Operating	4 Room Temp.		
		, and the second	WWW.100Y.COM.	Time (min.	Temp.+0/-3) 30±3	2 to 3	Temp. +3/–0 30±3	2 to 3		

ade as s Mounting for testing: The capacitors should be mounted on the substrate as shown below using die bonding, when tests No.11 to 14 are performed.

Continued on the following page.



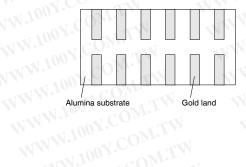
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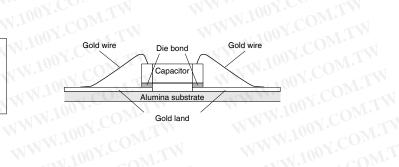
GMD Series Specifications and Test Methods

In case Non "*" is added in PNs table, please refer to GMD Series Specifications and Test Methods (1). In case "*" is added in PNs table, please refer to GMD Series Specifications and Test Methods (2). \(\subset \) Continued from the preceding page.

No.	Ite	m	Specifications	Test Method
		Appearance	No defects or abnormalities.	Apply the rated voltage for 500±12 hours at 40±2°C, in 90 to
Q)	LTW	Capacitance Change	R6 : Within ±12.5%	95% humidity and set it for 24±2 hours at room temperature, then measure. The charge/discharge current is less than 50mA.
	High	D.F.	R6: 0.2 max.	1.100 r. CONT. I.
13	Temperature High Humidity (Steady)	I.R.	More than 12.5 Ω · F	Initial measurement Perform a heat treatment at 150+0/-10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement. Measurement after test Perform a heat treatment at 150+0/-10°C for one hour and then let sit for 24±2 hours at room temperature, then measure.
00	Y.Co	Appearance	No defects or abnormalities.	Apply 150%*2 of the rated voltage for 1000±12 hours at the
10	OX.CO	Capacitance Change	R6 : Within ±12.5%	maximum operating temperature ±3°C. Let sit for 24±2 hours at room temperature, then measure. The charge/ discharge current is less than 50mA.
11	00 X.C.	D.F.	R6: 0.2 max.	W. TN. 100 r. COMPT.
	O.Y.C	017	WWW. 100Y. CONTY	*2 GMD155 R6 1A 274 to 474 are applied to 120%.
14	Durability	COM I.R.	More than $25\Omega \cdot F$	• Initial measurement Perform a heat treatment at 150+0/-10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement.
44	TN 100		WILL MANNIOUS CONTIN	Measurement after test
M	-1XN.10		OM.TW WW.100X.COM.TW	Perform a heat treatment at 150+0/–10°C for one hour and then let sit for 24±2 hours at room temperature, then measure.

Mounting for testing: The capacitors should be mounted on the substrate as shown below using die bonding, when tests No.11 to 14 are performed.





	Quantity G	1105	<1 CC		Quantity (pcs.)					
Part Nui	mber	Dim	ensions	(mm)	ø180n	ø180mm Reel ø330mm Reel				
WT	WW	L	W	T	Paper Tape	Embossed Tape	Paper Tape	Embossed Tape	Bulk Case	Bulk Bag
Packaging	g Code	WW.1	00Y.	GO_{Dr}	TVD	MONN.	100A.CO	K	С	Bulk : B Tray : T
JIM TO THE	GRM02	0.4	0.2	0.2	20,000 1)	40,000 1)		177	-	1,000
OWIL	GRM03	0.6	0.3	0.3	15,000	-	50,000	OM:	-	1,000
TV	GRM15	1.0	0.5	0.25/0.3	10,000	3/1/1/	50,000	TIV	-	1,000
CO_{MT}	N.		N . 9.0	0.5	10,000	- WW	50,000	COP	50,000	1,000
	GRM18	1.6	0.8	0.5	4,000 4,000	- "	10,000	COM	- 15,000 ²⁾	1,000 1,000
I.Com	W	WW	- 1	0.6	4,000	- 41	10,000	TANA	10,000	1,000
COM.	GRM21	2.0	1.25	0.85	4,000	- 3	10,000	4 Cons	10,000	1,000
Y.O	G		1.20	1.0/1.25	1,000	3,000	- 10,000	10,000	5,000 ²⁾	1,000
V.CON.	TIN		1/1/1/	0.6/0.85	4,000	W - 1	10,000	07.00	TW.	1,000
(0)	GRM31	3.2	1.6	1.15	1 CONI.	3,000	THE STATE OF THE S	10,000	- NN	1,000
or General	WTI	1	MAL.	1.6	1.0	2,000	M. A.	6,000	V_{JJJL}	1,000
Purpose	MI		WW	0.85	4,000	-W-	10,000	ONT.CO		1,000
1001.	M_{JJM}		144	1.15	Man	3,000	· · · · · ·	10,000	M. L	1,000
· OOY.C	GRM32	3.2	2.5	1.35		2,000	1.	8,000	-711	1,000
1.100			× 1	1.6	CO	2,000	WW	6,000	Oh:	1,000
1100Y.	-OM-T	NI .	1	1.8/2.0 2.5	1007.	1,000	-//	4,000	-OM.1	1,000
W.	COAL	4.5	1	1.15 1.35/1.6 1.8/2.0	1007.CL	1,000 1,000	- 41/	5,000 4,000	OM.TY	1,000 1,000
W.100 .	GRM43		3.2	2.5	1.100	500		2,000	COM	1,000
W 1 100	1.0			2.8	1100 Y.	500	-	1,500	agM.	500
WW.IO	A COD	TIN		1.15	-07	1,000	- 1	5,000	Y.C.	1,000
10	07.		F 0	1.35/1.6 1.8/2.0	TN.100	1,000	·	4,000	COM	1,000
WWW.1	GRM55	5.7	5.0	2.5	-100	500	-	2,000	O. T.	500
		Mr.	s ī	3.2	M. I	300	- XX	1,500	COP.	500
Power Type	GJM03	0.6	0.3	0.3	15,000	J. John	50,000	- 1	00	1,000
11 ower Type	GJM15	1.0	0.5	0.5	10,000	V.C.	50,000	11-11	50,000	1,000
	GQM18	1.6	0.8	0.7/0.8	4,000	- com	10,000		· · · · · · · · · · · · · · · · · · ·	1,000
- 1/1/1/	GQM21	2.0	1.25	0.85	4,000	001.	10,000		11001.	1,000
Frequency	ERB18 ERB21	1.6 2.0	0.8 1.25	0.9 max. 1.35 max.	4,000	3,000	10,000	10,000	1007.0	1,000
	ERB32	3.2	2.5	1.7 max.		2,000	M. 1 -	8,000	41.700	1,000 1,000
W	GMA0D	0.38	0.38	0.3	1	2,000	WI I'M		1007	400 ³⁾
	GMA05	0.5	0.5	0.35			- 11	- <	N - 201	400 ³⁾
/licrochip	GMA08	0.8	0.8	0.5	- 1	V 100	ON	-	-11/1.100	400 3)
<	GMD03	0.6	0.3	0.3	15,000	-00X	50,000	- 1	- 100	1,000
	GMD15	1.0	0.5	0.5	10,000	111.1	50,000	«I -		1,000
	GNMOM	0.9	0.6	0.45	10,000	1001	50,000	-	VY .	1,000
	GNM1M	1.37	1.0	0.5/0.6/0.8	4,000	M.	10,000	- IV	W	1,000
Array	GNM21	2.0	1.25	0.5/0.6/0.85	4,000	100	10,000	_		1,000
	GNM31	3.2	1.6	0.8/0.85	4,000	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10,000	TW -	M N	1,000
	- 1	di In		1.0/1.15	- 10 000 4)	3,000	- - FO 000 4)	10,000	- WWW	1,000
	LLL15 LLL18	0.5	1.0	0.3	10,000 4)	4,000	50,000 4)	10,000		1,000 1,000
		0.6	1.0	0.5/0.6	M.	4,000	UNI-CO.	10,000	WW	1,000
	LLL21	1.25	2.0	0.85		3,000	*** CC	10,000	- 11/	1,000
	M	1	LOON.	0.5/0.7	TW.	4,000	100.7	10,000	-	1,000
	LLL31	1.6	3.2	1.15	- TX	3,000	ON C	10,000	- 17	1,000
FOI	LLA18	1.6	0.8	0.5	1.1.7	4,000	V.100	10,000	-	1,000
ow ESL		4 VIVI	0.0	0.5	7-11	4,000	1007.	10,000	- 1	1,000
	LLA21	2.0	1.25	0.85	Mir	3,000	111.12	10,000	v	1,000
		MA	-x1 1(0.5	TELLE	4,000	-1003	10,000	-	1,000
	LLA31	3.2	1.6	0.85	Ohr.	3,000	MAI:	10,000	- W	1,000
		111		1.15	-0M-1	3,000	11 N.100	10,000	-	1,000
	LLM21	2.0	1.25	0.5	- 1	4,000	111 - 10	10,000	TW-	1,000
_	LLM31	3.2	1.6	0.5	- OF 1	4,000	4141.10	10,000	-	1,000

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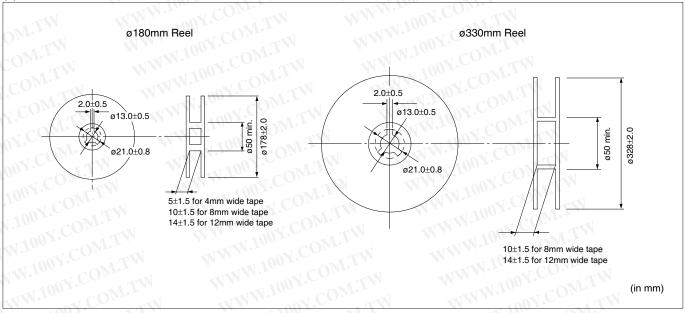


o, Iray
4) LLL15: ø180mm Reel Paper Taping Packaging Code: E, ø330mm Reel Paper Taping Packaging Code: F WWW.100Y.COM

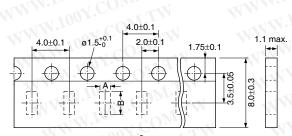
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■ Tape Carrier Packaging

(1) Dimensions of Reel

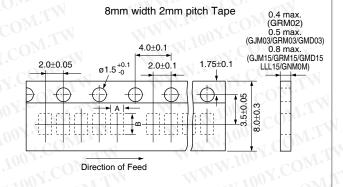


(2) Dimensions of Paper Tape



8mm width 4mm pitch Tape

Direction of Feed



Part Number	A CO	В
GRM18 GQM18 ERB18	1.05±0.1	1.85±0.1
GNM1M	1.17±0.05	1.55±0.05
GRM21 (T≦0.85mm) GQM21 GNM21	1.55±0.15	2.3±0.15
GRM31 (T≦0.85mm) GNM31 (T≦0.8mm)	2.0±0.2	3.6±0.2
GRM32 (T≦0.85mm)	2.8±0.2	3.6±0.2
	37/1/1	

Part Number	A*	B*
GRM02	0.25	0.45
GJM03 GRM03 GMD03	0.37	0.67
GJM15 GRM15 GMD15 LLL15	0.65	1.15
GNMOM	0.72	1.02

*Nominal Value

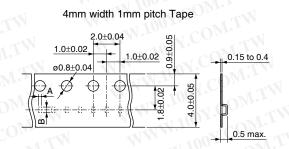
(in mm)

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(3) Dimensions of Embossed Tape

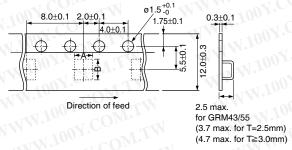


Part Number	A*	B*
GRM02	0.23	0.43

*Nominal Value

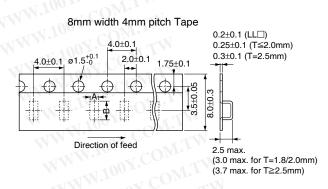
*GRM03 is also available by 4mm width 1mm pitch Tape.

12mm width 8mm pitch Tape



		4.6
Part Number	A*	B*
GRM43	3.6	4.9
GRM55	5.2	6.1

*Nominal Value

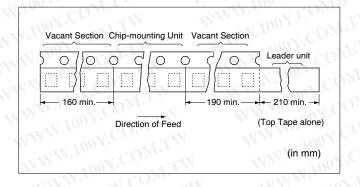


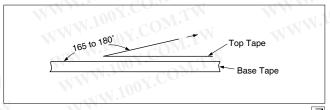
Part Number	* ACOM	В
LLL18, LLA18	1.05±0.1	1.85±0.1
GRM21 (T≧1.0mm) LLL21 LLA21, LLM21	1.45±0.2	2.25±0.2
ERB21	1.55±0.2	2.3±0.2
GRM31 (T≥1.15mm) LLL31 LLA31, LLM31 GNM31 (T≥1.0mm)	1.9±0.2	3.5±0.2
GRM32, ERB32 (T≧1.0mm)	2.8±0.2	3.5±0.2

(4) Taping Method

- 1 Tapes for capacitors are wound clockwise. The sprocket holes are to the right as the tape is pulled toward the user.
- 2 Part of the leader and part of the empty tape should be attached to the end of the tape as follows.
- 3 The top tape and base tape are not attached at the end of the tape for a minimum of 5 pitches.
- 4 Missing capacitors number within 0.1% of the number per reel or 1 pc, whichever is greater, and are not continuous.
- 5 The top tape and bottom tape should not protrude beyond the edges of the tape and should not cover sprocket holes.
- 6 Cumulative tolerance of sprocket holes, 10 pitches: ±0.3mm.
- 7 Peeling off force: 0.1 to 0.6N* in the direction shown *GRM02 below.

GRM03 0.05 to 0.5N GJM03 GMD03



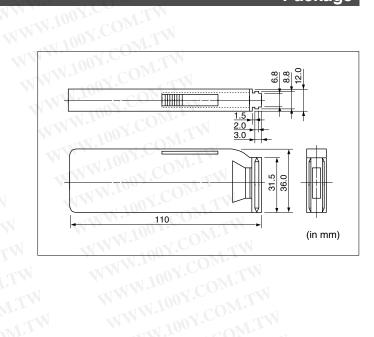


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■ Dimensions of Bulk Case Packaging The bulk case uses antistatic materials. Please contact Murata for details.



WWW.100Y

∆Caution

- Storage and Operation condition
- 1. The performance of chip monolithic ceramic capacitors may be affected by the storage conditions.
 - 1-1. Store capacitors in the following conditions: Temperature of +5°C to +40°C and a Relative Humidity of 20% to 70%.
- (1) Sunlight, dust, rapid temperature changes, corrosive gas atmosphere or high temperature and humidity conditions during storage may affect VWW.100Y.CO the solderability and the packaging performance. Please use product within six months of receipt.
 - (2) Please confirm solderability before using after six months. Store the capacitors without opening the original bag. Even if the storage period is short, do not exceed the specified atmospheric WWW.100Y.COM.TW conditions. or. WWW.100Y.COM
- 1-2. Corrosive gas can react with the termination (external) electrodes or lead wires of capacitors, and result in poor solderability. Do not store the capacitors in an atmosphere consisting of corrosive gas (e.g., hydrogen sulfide, sulfur dioxide, chlorine, ammonia gas, etc.).
- 1-3. Due to moisture condensation caused by rapid humidity changes, or the photochemical change caused by direct sunlight on the terminal electrodes and/or the resin/epoxy coatings, the solderability and electrical performance may deteriorate. Do not store capacitors under direct sunlight or in high humidity conditions. WWW.100Y.COM.T



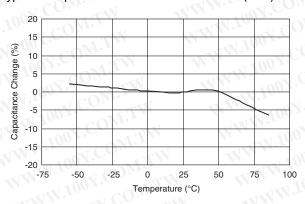
Rating

- 1. Temperature Dependent Characteristics
- 1. The electrical characteristics of the capacitor can change with temperature.
 - 1-1. For capacitors having larger temperature dependency, the capacitance may change with temperature changes.

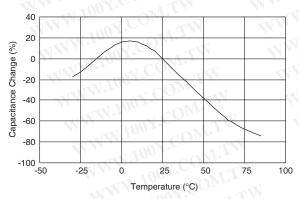
The following actions are recommended in order to insure suitable capacitance values.

(1) Select a suitable capacitance for the operating temperature range.

Typical Temperature Characteristics Char. R6(X5R)



Typical Temperature Characteristics Char. F5(Y5V)

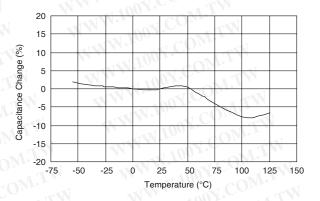


- 2. Measurement of Capacitance
- 1. Measure capacitance with the voltage and the frequency specified in the product specifications.
 - 1-1. The output voltage of the measuring equipment may decrease when capacitance is high occasionally. Please confirm whether a prescribed measured voltage is impressed to the capacitor.
 - 1-2. The capacitance values of high dielectric constant type capacitors change depending on the AC voltage applied. Please consider the AC voltage characteristics when selecting a capacitor to be used WWW.100Y.COM. in a AC circuit.

(2) The capacitance may change within the rated temperature.

When you use a high dielectric constant type capacitors in a circuit that needs a tight (narrow) capacitance tolerance. Example: a time constant circuit., please carefully consider the characteristics of these capacitors, such as their aging, voltage, and temperature characteristics. And check capacitors using your actual appliances at the intended environment and operating conditions.

Typical Temperature Characteristics Char. R7(X7R)



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WWW.100Y

Caution

Continued from the preceding page.

- 3. Applied Voltage
- 1. Do not apply a voltage to the capacitor that exceeds the rated voltage as called-out in the specifications.
 - 1-1. Applied voltage between the terminals of a capacitor shall be less than or equal to the rated voltage.
- (1) When AC voltage is superimposed on DC voltage, W.100Y.COM the zero-to-peak voltage shall not exceed the rated DC voltage.
 - When AC voltage or pulse voltage is applied, the peak-to-peak voltage shall not exceed the rated DC voltage.
- WW.100Y.CO! (2) Abnormal voltages (surge voltage, static electricity, pulse voltage, etc.) shall not exceed the rated DC voltage.

DC Voltage	DC Voltage+AC	AC Voltage	Pulse Voltage
E DIM TIN	E O	E 0	E

1-2. Influence of overvoltage

Overvoltage that is applied to the capacitor may result in an electrical short circuit caused by the WW.100Y.COM.TW breakdown of the internal dielectric lavers. The time duration until breakdown depends on the applied voltage and the ambient temperature.

- 1. When the capacitor is used in a high-frequency voltage, pulse voltage, application, be sure to take into according to the sure to take into according to capacitor.
 - 1-1. The load should be contained to the level such that when measuring at atomospheric temperature of 25°C, the product's self-heating remains below 20°C and surface temperature of the capacitor in the actual circuit remains wiyhin the maximum operating temperature.

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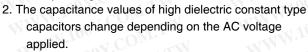


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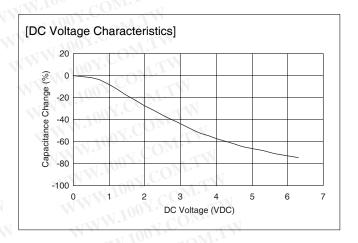
- 5. DC Voltage and AC Voltage Characteristic
- 1. The capacitance value of a high dielectric constant type capacitor changes depending on the DC voltage applied. Please consider the DC voltage characteristics when a capacitor is selected for use in a DC circuit.
 - 1-1. The capacitance of ceramic capacitors may change sharply depending on the applied voltage. (See figure)

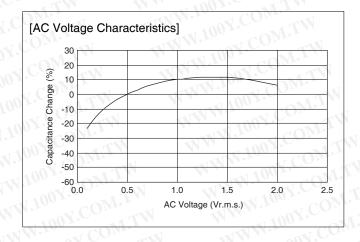
Please confirm the following in order to secure the capacitance.

- (1) Whether the capacitance change caused by the applied voltage is within the range allowed or not.
- (2) In the DC voltage characteristics, the rate of capacitance change becomes larger as voltage increases. Even if the applied voltage is below the rated voltage. When a high dielectric constant type capacitor is in a circuit that needs a tight (narrow) capacitance tolerance. Example: a time constant circuit., please carefully consider the characteristics of these capacitors, such as their aging, voltage, and temperature characteristics. And check capacitors using your actual appliances at the intended environment and operating conditions.



Please consider the AC voltage characteristics when selecting a capacitor to be used in a AC circuit.

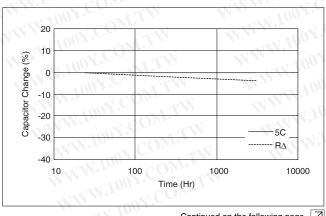




6. Capacitance Aging

1. The high dielectric constant type capacitors have the characteristic in which the capacitance value decreases with passage of time.

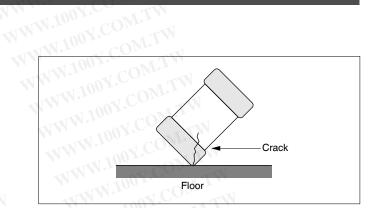
When you use a high dielectric constant type capacitors in a circuit that needs a tight (narrow) capacitance tolerance. Example: a time constant circuit., please carefully consider the characteristics of these capacitors, such as their aging, voltage, and temperature characteristics. And check capacitors using your actual appliances at the intended environment and operating conditions.

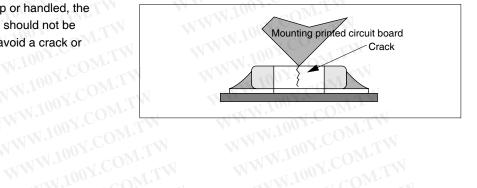


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- 7. Vibration and Shock
- 1. The capacitors mechanical actress (vibration and shock) shall be specified for the use environment. Please confirm the kind of vibration and/or shock, its condition, and any generation of resonance. Please mount the capacitor so as not to generate resonance, and do not allow any impact on the terminals.
- 2. Mechanical shock due to falling may cause damage or a crack in the dielectric material of the capacitor. Do not use a fallen capacitor because the quality and reliability may be deteriorated.
- WW.100 3. When printed circuit boards are piled up or handled, the corners of another printed circuit board should not be allowed to hit the capacitor in order to avoid a crack or other damage to the capacitor.

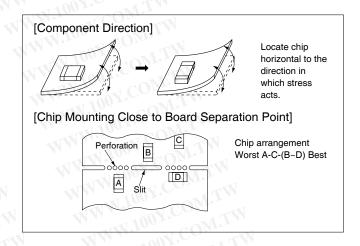




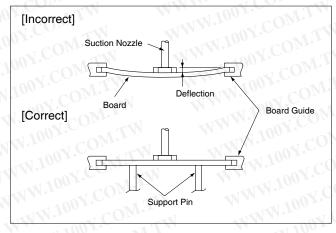
∆Caution

■ Soldering and Mounting

- 1. Mounting Position
- 1. Confirm the best mounting position and direction that minimizes the stress imposed on the capacitor during flexing or bending the printed circuit board.
 - 1-1. Choose a mounting position that minimizes the stress imposed on the chip during flexing or bending of the board.



- 2. Information before Mounting
- 1. Do not re-use capacitors that were removed from the equipment.
- 2. Confirm capacitance characteristics under actual applied voltage.
- 3. Confirm the mechanical stress under actual process and equipment use.
- 4. Confirm the rated capacitance, rated voltage and other electrical characteristics before assembly.
- 5. Prior to use, confirm the Solderability for the capacitors that were in long-term storage.
- 6. Prior to measuring capacitance, carry out a heat treatment for capacitors that were in long-term storage.
- 7. The use of Sn-Zn based solder will deteriorate the reliability of the MLCC. Please contact our sales representative or product engineers on the use of Sn-Zn based solder in advance.
- 3. Maintenance of the Mounting (pick and place) Machine
- 1. Make sure that the following excessive forces are not applied to the capacitors.
 - 1-1. In mounting the capacitors on the printed circuit board, any bending force against them shall be kept to a minimum to prevent them from any bending damage or cracking. Please take into account the following precautions and recommendations for use in your process.
 - (1) Adjust the lowest position of the pickup nozzle so as not to bend the printed circuit board.
 - (2) Adjust the nozzle pressure within a static load of 1N to 3N during mounting.
- 2. Dirt particles and dust accumulated between the suction nozzle and the cylinder inner wall prevent the nozzle from moving smoothly. This imposes greater force upon the chip during mounting, causing cracked chips. Also the locating claw, when worn out, imposes uneven forces on the chip when positioning, causing cracked chips. The suction nozzle and the locating claw must be maintained, checked and replaced periodically.



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Caution

Continued from the preceding page.

4-1. Reflow Soldering

- 1. When sudden heat is applied to the components, the mechanical strength of the components will decrease because a sudden temperature change causes deformation inside the components. In order to prevent mechanical damage to the components, preheating is required for both the components and the PCB board. Preheating conditions are shown in table 1. It is required to keep the temperature differential between the solder and the components surface (ΔT) as small as possible.
- Solderability of Tin plating termination chips might be deteriorated when a low temperature soldering profile where the peak solder temperature is below the melting point of Tin is used. Please confirm the Solderability of Tin plated termination chips before use.
- When components are immersed in solvent after mounting, be sure to maintain the temperature difference (ΔT) between the component and the solvent within the range shown in the table 1.

Table 1

Part Number	Temperature Differential
GRM02/03/15/18/21/31	W WWW.
GJM03/15	WWW.IO
LLL15/18/21/31	ΔT≦190°C
ERB18/21	TN WW
GQM18/21	WWW WWW
GRM32/43/55	M. I
LLA18/21/31	M.Th Wil
LLM21/31	ΔT≦130°C
GNM	OWI
ERB32	TOM:TW

Recommended Conditions

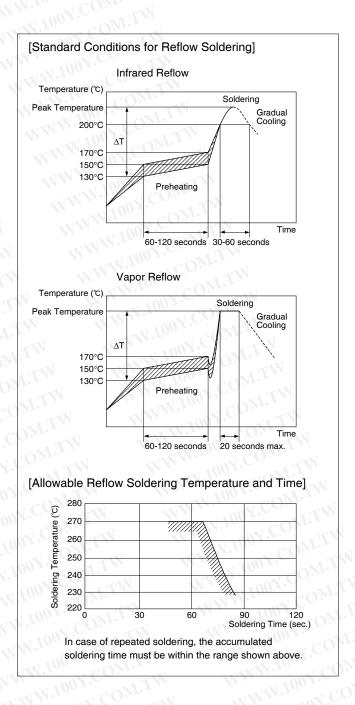
4	Pb-Sn S	Solder	Lead Free Solder
	Infrared Reflow	Vapor Reflow	Lead Free Solder
Peak Temperature	230 to 250°C	230 to 240°C	240 to 260°C
Atmosphere	Air	Air	Air or N2

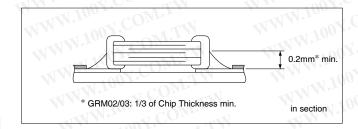
Pb-Sn Solder: Sn-37Pb Lead Free Solder: Sn-3.0Ag-0.5Cu

- 4. Optimum Solder Amount for Reflow Soldering
 - 4-1. Overly thick application of solder paste results in a excessive solder fillet height.
 - This makes the chip more susceptible to mechanical and thermal stress on the board and may cause the chips to crack.
 - 4-2. Too little solder paste results in a lack of adhesive strength on the outer electrode, which may result in chips breaking loose from the PCB.
 - 4-3. Make sure the solder has been applied smoothly to the end surface to a height of 0.2mm* min.

Inverting the PCB

Make sure not to impose any abnormal mechanical shocks to the PCB. WW.100Y









Continued from the preceding page.

4-2. Flow Soldering

1. When sudden heat is applied to the components, the mechanical strength of the components will decrease because a sudden temperature change causes deformation inside the components. In order to prevent mechanical damage in the components, preheating should be required for both of the components and the PCB board.

Preheating conditions are shown in table 2. It is required to keep temperature differential between the solder and the components surface (ΔT) as small as possible.

- 2. Excessively long soldering time or high soldering temperature can result in leaching of the outer electrodes, causing poor adhesion or a reduction in capacitance value due to loss of contact between electrodes and end termination.
- 3. When components are immersed in solvent after mounting, be sure to maintain the temperature difference (ΔT) between the component and solvent within the range shown in the table 2.
- 4. Do not apply flow soldering to chips not listed in table 2.

Table 2

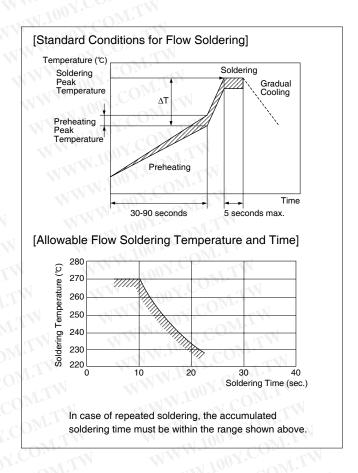
Part Number	Temperature Differential
GRM18/21/31	VICE IN THE
LLL21/31	AT<45000
ERB18/21	ΔT≦150°C
GQM18/21	M.J.

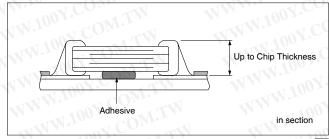
Recommended Conditions

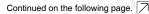
TANN Jun	Pb-Sn Solder	Lead Free Solder
Preheating Peak Temperature	90 to 110°C	100 to 120°C
Soldering Peak Temperature	240 to 250°C	250 to 260°C
Atmosphere	Air	N ₂

Pb-Sn Solder: Sn-37Pb Lead Free Solder: Sn-3.0Ag-0.5Cu

- 5. Optimum Solder Amount for Flow Soldering
 - 5-1. The top of the solder fillet should be lower than the thickness of components. If the solder amount is excessive, the risk of cracking is higher during board bending or any other stressful condition.









∆Caution

Continued from the preceding page.

4-3. Correction with a Soldering Iron

- 1. When sudden heat is applied to the components when using a soldering iron, the mechanical strength of the components will decrease because the extreme temperature change can cause deformations inside the components. In order to prevent mechanical damage to the components, preheating is required for both the components and the PCB board. Preheating conditions, (The "Temperature of the Soldering Iron Tip", "Preheating Temperature", "Temperature Differential" between the iron tip and the components and the PCB), should be within the conditions of table 3. It is required to keep the temperature differential between the soldering iron and the component surfaces (ΔT) as small as possible.
- 2. After soldering, do not allow the component/PCB to rapidly cool down.
- 3. The operating time for the re-working should be as short as possible. When re-working time is too long, it may cause solder leaching, and that will cause a reduction in the adhesive strength of the terminations.
- 4. Optimum Solder amount when re-working with a Soldering Iron
 - 4-1. In case of sizes smaller than 0603, (GRM03/15/18, GJM03/15, GQM18, ERB18), the top of the solder fillet should be lower than 2/3's of the thickness of the component or 0.5mm whichever is smaller. In case of 0805 and larger sizes, (GRM21/31/32/43/55, GQM21, ERB21/32), the top of the solder fillet should be lower than 2/3's of the thickness of the component. If the solder amount is excessive, the risk of cracking is higher during board bending or under any other stressful condition.
 - 4-2. A soldering iron with a tip of ø3mm or smaller should be used. It is also necessary to keep the soldering iron from touching the components during the re-work.
 - 4-3. Solder wire with ø0.5mm or smaller is required for soldering.

4-4. Leaded Component Insertion

1. If the PCB is flexed when leaded components (such as transformers and ICs) are being mounted, chips may crack and solder joints may break. Before mounting leaded components, support the PCB using backup pins or special jigs to prevent warping.

5. Washing

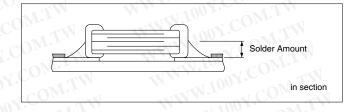
Excessive ultrasonic oscillation during cleaning can cause the PCBs to resonate, resulting in cracked chips or broken solder joints. Take note not to vibrate PCBs. WWW.100Y.COM.T

Tubic 5				
Part Number	Temperature of Soldering Iron Tip	Preheating Temperature	Temperature Differential (ΔT)	Atmosphere
GRM03/15/18/21/31 GJM03/15 GQM18/21 ERB18/21	350°C max.	150°C min.	ΔΤ≦190°C	Air
GRM32/43/55 ERB32	280°C max.	150°C min.	ΔΤ≦130°C	Air

*Applicable for both Pb-Sn and Lead Free Solder.

Pb-Sn Solder: Sn-37Pb

Lead Free Solder: Sn-3.0Ag-0.5Cu



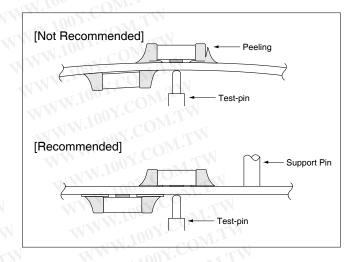
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- 6. Electrical Test on Printed Circuit Board
- 1. Confirm position of the support pin or specific jig, when inspecting the electrical performance of a capacitor after mounting on the printed circuit board.
 - 1-1. Avoid bending printed circuit board by the pressure of a test pin, etc.
 - The thrusting force of the test probe can flex the PCB, resulting in cracked chips or open solder joints. Provide support pins on the back side of the PCB to
 - 2. Avoid vibration of the board by shock when a test pin contacts a printed circuit board.

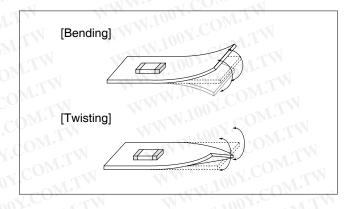


7. Printed Circuit Board Cropping

prevent warping or flexing.

- 1. After mounting a capacitor on a printed circuit board, do not apply any stress to the capacitor that is caused by bending or twisting the board.
 - 1-1. In cropping the board, the stress as shown right may cause the capacitor to crack.

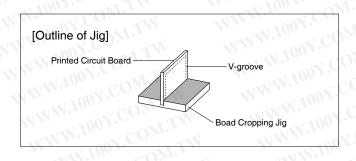
Try not to apply this type of stress to a capacitor.

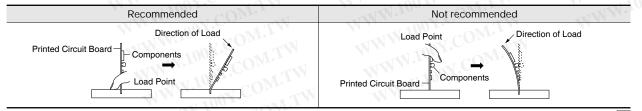


- 2. Check of the cropping method for the printed circuit board in advance.
 - 2-1. Printed circuit board cropping shall be carried out by using a jig or an apparatus to prevent the mechanical stress which can occur to the board.
 - (1) Example of a suitable jig

Recommended example: the board should be pushed as close to the near the cropping jig as possible and from the back side of board in order to minimize the compressive stress applied to capacitor.

Not recommended example* when the board is pushed at a point far from the cropping jig and from the front side of board as below, the capacitor may form a crack caused by the tensile stress applied to capacitor.





Continued on the following page.





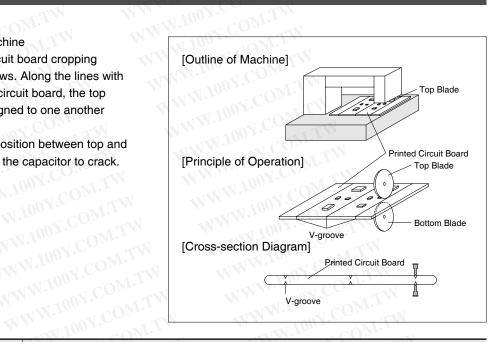
∆Caution

Continued from the preceding page.

(2) Example of a suitable machine

An outline of a printed circuit board cropping machine is shown as follows. Along the lines with the V-grooves on printed circuit board, the top and bottom blades are aligned to one another when cropping the board.

The misalignment of the position between top and bottom blades may cause the capacitor to crack.



AND Y.CO.	1/1/1/1003	CONTW	Not Recommended	Y.CO.TW
Recommended	Top-bottom N	lisalignment	Left-right Misalignment	Front-rear Misalignme
Top B		Top Blade	Top Blade	Тор
Bottom B	lade	Bottom Blade	Bottom Blade	Bottom

WWW.100

∆Caution

Others

- 1. Under Operation of Equipment
 - 1-1. Do not touch a capacitor directly with bare hands during operation in order to avoid the danger of a electric shock.
 - 1-2. Do not allow the terminals of a capacitor to come in contact with any conductive objects (short-circuit). Do not expose a capacitor to a conductive liquid, inducing any acid or alkali solutions.
 - 1-3. Confirm the environment in which the equipment will operation is under the specified conditions. Do not use the equipment under the following environment.
 - (1) Being spattered with water or oil.
 - (2) Being exposed to direct sunlight.
 - (3) Being exposed to Ozone, ultraviolet rays or radiation.
 - (4) Being exposed to toxic gas (e.g., hydrogen sulfide, sulfur dioxide, chlorine, ammonia gas, etc.)
 - (5) Any vibrations or mechanical shocks exceeding the specified limits.
 - (6) Moisture condensing environments.
 - 1-4. Use damp proof countermeasures if using under any conditions that can cause condensation.

2. Others

- 2-1. In an Emergency
 - (1) If the equipment should generate smoke, fire or smell, immediately turn off or unplug the WWW.100Y.COM WWW.100Y.COM.TW

- If the equipment is not turned off or unplugged, the hazards may be worsened by supplying continuous power.
- (2) In this type of situation, do not allow face and hands to come in contact with the capacitor or burns may be caused by the capacitors high temperature.
- 2-2. Disposal of Waste

When capacitors are disposed, they must be burned or buried by the industrial waste vender with the appropriate licenses.

2-3. Circuit Design GRM, GCM, GMA/D, LLL/A/M, ERB, GQM, GJM, GNM Series capacitors in this catalog are not safety recognized products.

2-4. Remarks

Failure to follow the cautions may result, worst case, in a short circuit and smoking when the product is

The above notices are for standard applications and conditions. Contact us when the products are used in special mounting conditions.

Select optimum conditions for operation as they determine the reliability of the product after assembly. The data herein are given in typical values, not guaranteed ratings.



WWW.100Y

Notice

Rating

- 1. Operating Temperature
 - 1. The operating temperature limit depends on the
 - 1-1. Do not apply temperatures exceeding the upper operating temperature.
 - It is necessary to select a capacitor with a suitable rated temperature which will cover the operating temperature range.
 - Also it is necessary to consider the temperature distribution in equipment and the seasonal temperature variable factor.
- WWW.100Y 1-2. Consider the self-heating of the capacitor The surface temperature of the capacitor shall be the upper operating temperature or less when including the self-heating factors.
 - 2. Atmosphere Surroundings (gaseous and liquid)
 - 1. Restriction on the operating environment of capacitors.
 - 1-1. The capacitor, when used in the above, unsuitable, operating environments may deteriorate due to the corrosion of the terminations and the WWW.100Y.COM.TW penetration of moisture into the capacitor. WWW.100Y.COM.TW

- 1-2. The same phenomenon as the above may occur when the electrodes or terminals of the capacitor are subject to moisture condensation.
- 1-3. The deterioration of characteristics and insulation resistance due to the oxidization or corrosion of terminal electrodes may result in breakdown when the capacitor is exposed to corrosive or volatile gases or solvents for long periods of time.
- 3. Piezo-electric Phenomenon
 - 1. When using high dielectric constant type capacitors in AC or pulse circuits, the capacitor itself vibrates at specific frequencies and noise may be generated. Moreover, when the mechanical vibration or shock is added to capacitor, noise may occur.



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Notice

■ Soldering and Mounting 1. PCB Design

- 1. Notice for Pattern Forms
- 1-1. Unlike leaded components, chip components are susceptible to flexing stresses since they are mounted directly on the substrate. They are also more sensitive to mechanical and thermal stresses than leaded components. Excess solder fillet height can multiply these stresses and cause chip cracking. When designing substrates, take land patterns and dimensions into consideration WWW.100Y to eliminate the possibility of excess solder fillet
- 1-2. It is possible for the chip to crack by the expansion and shrinkage of a matter? and shrinkage of a metal board. Please contact us if you want to use our ceramic capacitors on a metal WWW.100Y.CO board such as Aluminum.

Pattern Forms

NAVIA COM	Prohibited	Correct
Placing Close to Chassis	Chassis Solder (ground) Electrode Pattern	Solder Resist
Placing of Chip Components nd Leaded Components	Lead Wire	Solder Resist
Placing of Leaded Components after Chip Component	Soldering Iron Lead Wire	Solder Resist
Lateral Mounting		Solder Resist

Continued on the following page. WWW.100Y.COM





Continued from the preceding page.

2. Land Dimensions

2-1. Chip capacitor can be cracked due to the stress of PCB bending / etc if the land area is larger than needed and has an excess amount of solder. Please refer to the land dimensions in table 1 for flow soldering, table 2 for reflow soldering, table 3 for GNM & LLA, and table 4 for LLM. Please confirm the suitable land dimension by evaluating of the actual SET / PCB.

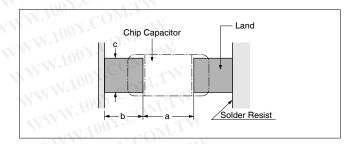


Table 1 Flow Soldering Method

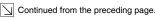
GRM18 GQM18	1.6×0.8	0.6 to 1.0	0.8 to 0.9	0.6 to 0.8
GRM21 GQM21	2.0×1.25	1.0 to 1.2	0.9 to 1.0	0.8 to 1.1
GRM31	3.2×1.6	2.2 to 2.6	1.0 to 1.1	1.0 to 1.4
LLL21	1.25×2.0	0.4 to 0.7	0.5 to 0.7	1.4 to 1.8
LLL31	1.6×3.2	0.6 to 1.0	0.8 to 0.9	2.6 to 2.8
ERB11	1.25×1.0	0.4 to 0.6	0.6 to 0.8	0.8 to 1.0
ERB21	2.0×1.25	1.0 to 1.2	0.9 to 1.0	0.8 to 1.0
ERF1D	1.4×1.4	0.5 to 0.8	0.8 to 0.9	1.0 to 1.2
2 Reflow Soldering M				

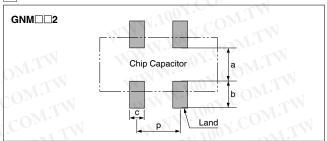
Table 2 Reflow Soldering Method

Dimensions art Number	Chip (LXW)	WWW.10ay.COM.	b W	100X.COM.TW
GRM02	0.4×0.2	0.16 to 0.2	0.12 to 0.18	0.2 to 0.23
GRM03 GJM03	0.6×0.3	0.2 to 0.3	0.2 to 0.35	0.2 to 0.4
GRM15 GJM15	1.0×0.5	0.3 to 0.5	0.35 to 0.45	0.4 to 0.6
GRM18 GQM18	1.6×0.8	0.6 to 0.8	0.6 to 0.7	0.6 to 0.8
GRM21 GQM21	2.0×1.25	1.0 to 1.2	0.6 to 0.7	0.8 to 1.1
GRM31	3.2×1.6	2.2 to 2.4	0.8 to 0.9	1.0 to 1.4
GRM32	3.2×2.5	2.0 to 2.4	1.0 to 1.2	1.8 to 2.3
GRM43	4.5×3.2	3.0 to 3.5	1.2 to 1.4	2.3 to 3.0
GRM55	5.7×5.0	4.0 to 4.6	1.4 to 1.6	3.5 to 4.8
LLL15	0.5×1.0	0.15 to 0.2	0.2 to 0.25	0.7 to 1.0
LLL18	0.8×1.6	0.2 to 0.3	0.3 to 0.4	1.4 to 1.6
LLL21	1.25×2.0	0.4 to 0.6	0.4 to 0.5	1.4 to 1.8
LLL31	1.6×3.2	0.6 to 0.8	0.6 to 0.7	2.6 to 2.8
ERB11	1.25×1.0	0.4 to 0.6	0.6 to 0.8	0.8 to 1.0
ERB21	2.0×1.25	1.0 to 1.2	0.6 to 0.8	0.8 to 1.0
ERB32	3.2×2.5	2.2 to 2.5	0.8 to 1.0	1.9 to 2.3
ERF1D	1.4×1.4	0.4 to 0.8	0.6 to 0.8	1.0 to 1.2
ERF22	2.8×2.8	1.8 to 2.1	0.7 to 0.9	2.2 to 2.6









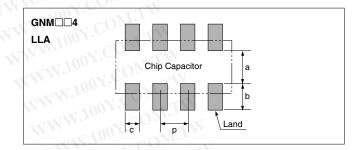
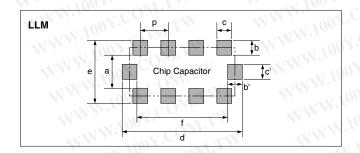


Table 3 GNM, LLA Series for Reflow Soldering Land Dimensions

Part Number		OMIL	Dimension	ons (mm)	IVI.	
Fait Number	L 1003	W	a	b	C	р
GNM0M2	0.9	0.6	0.12 to 0.20*	0.35 to 0.40*	0.3	0.45
GNM1M2	1.37	1.0	0.4 to 0.5	0.35 to 0.45	0.3 to 0.35	0.64
GNM212	2.0	1.25	0.6 to 0.7	0.5 to 0.7	0.4 to 0.5	1.0
GNM214	2.0	1.25	0.6 to 0.7	0.5 to 0.7	0.25 to 0.35	0.5
GNM314	3.2	1.6	0.8 to 1.0	0.7 to 0.9	0.3 to 0.4	0.8
LLA18	1.6	0.8	0.3 to 0.4	0.25 to 0.35	0.15 to 0.25	0.4
LLA21	2.0	1.25	0.5 to 0.7	0.35 to 0.6	0.2 to 0.3	0.5
LLA31	3.2	1.6 CO	0.7 to 0.9	0.4 to 0.7	0.3 to 0.4	0.8
I I A 31	3.2	1.6	0.7 to 0.9	0.4 to 0.7	0.3 to 0.4	W



Dark Name have 400 Y	WTI		1003	Dimensions (mn	n)		
Part Number	а	b, b'	c, c'	7.C d	е	WW f	р
LLM21	0.6 to 0.8	(0.3 to 0.5)	0.3	2.0 to 2.6	1.3 to 1.8	1.4 to 1.6	0.5
LLM31	1.0	(0.3 to 0.5)	0.4	3.2 to 3.6	1.6 to 2.0	2.6	0.8

b=(c-e)/2, b'=(d-f)/2

2. Adhesive Application

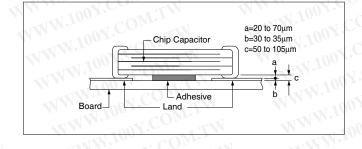
1. Thin or insufficient adhesive can cause the chips to loosen or become disconnected during flow soldering. The amount of adhesive must be more than dimension c, shown in the drawing at right, to obtain the correct bonding strength.

The chip's electrode thickness and land thickness must also be taken into consideration.

2. Low viscosity adhesive can cause chips to slip after mounting. The adhesive must have a viscosity of 5000Pa • s (500ps) min. (at 25°C).

3. Adhesive Coverage

o. Adilesive Coverage	
Part Number	Adhesive Coverage*
GRM18, GQM18	0.05mg min.
GRM21, LLL21, GQM21	0.1mg min.
GRM31, LLL31	0.15mg min.



*Nominal Value

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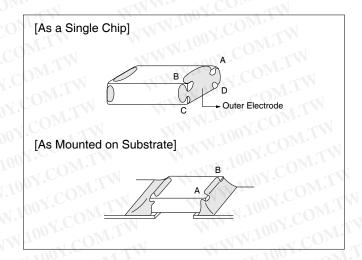
- 3. Adhesive Curing
- 1. Insufficient curing of the adhesive can cause chips to disconnect during flow soldering and causes deterioration in the insulation resistance between the outer electrodes due to moisture absorption.

Control curing temperature and time in order to prevent insufficient hardening.

- 4. Flux Application
- 1. An excessive amount of flux generates a large quantity of flux gas, which can cause a deterioration of Solderability. So apply flux thinly and evenly throughout. (A foaming system is generally used for flow soldering).
- 2. Flux containing too a high percentage of halide may cause corrosion of the outer electrodes unless there is sufficient cleaning. Use flux with a halide content of 0.2% max.
- 3. Do not use strong acidic flux.
- 4. Do not use water-soluble flux. (*Water-soluble flux can be defined as non rosin type flux including wash-type flux and non-wash-type flux.)

5. Flow Soldering

 Set temperature and time to ensure that leaching of the outer electrode does not exceed 25% of the chip end area as a single chip (full length of the edge A-B-C-D shown right) and 25% of the length A-B shown below as mounted on substrate.



6. Washing

- 1. Please evaluate a capacitor by actual cleaning equipment and condition surely for confirming the quality and select the applicable solvent.
- 2. Unsuitable cleaning solvent may leave residual flux, other foreign substances, causing deterioration of electrical characteristics and the reliability of the capacitors.
- 3. Select the proper cleaning conditions.
 - 3-1. Improper cleaning conditions (excessive or insufficient) may result in the deterioration of the performance of the capacitors.

Continued on the following page.





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7. Coating

1. A crack may be caused in the capacitor due to the stress of the thermal contraction of the resin during curing

The stress is affected by the amount of resin and curing contraction.

Select a resin with small curing contraction.

The difference in the thermal expansion coefficient between a coating resin or a molding resin and capacitor may cause the destruction and deterioration of the capacitor such as a crack or peeling, and lead to the deterioration of insulation resistance or dielectric breakdown.

- Select a resin for which the thermal expansion coefficient is as close to that of capacitor as possible.
- A silicone resin can be used as an under-coating to buffer against the stress.
- 2. Select a resin that is less hygroscopic.

Using hygroscopic resins under high humidity conditions may cause the deterioration of the insulation resistance of a capacitor.

An epoxy resin can be used as a less hygroscopic resin.

8. Die Bonding/Wire Bonding (GMA or GMD Series)

- 1. Die Bonding of Capacitors
 - · Use the following materials for the Brazing alloys: Au-Sn (80/20) 300 to 320 degree C in N2 atmosphere
 - Mounting
 - (1) Control the temperature of the substrate so it matches the temperature of the brazing alloy.
 - (2) Place the brazing alloy on the substrate and place the capacitor on the alloy. Hold the capacitor and gently apply the load. Be sure to complete the operation within 1 minute.

2. Wire Bonding

Wire

Gold wire: 25 micro m (0.001 inch) diameter

- Bonding
- (1) Thermo compression, ultrasonic ball bonding.
- (2) Required stage temperature: 150 to 200 degree C
- (3) Required wedge or capillary weight: 0.2N to 0.5N
- (4) Bond the capacitor and base substrate or other devices with gold wire. WWW.100Y.COM.T



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Notice

Others

- 1. Transportation
 - 1. The performance of a capacitor may be affected by the conditions during transportation.
 - 1-1. The capacitors shall be protected against excessive temperature, humidity and mechanical force during transportation.
 - (1) Climatic condition
 - low air temperature: -40°C
 - change of temperature air/air: -25°C/+25°C
 - low air pressure: 30 kPa
 - change of air pressure: 6 kPa/min.
 - (2) Mechanical condition

Transportation shall be done in such a way that the boxes are not deformed and forces are not WWW.100Y.COM.TW directly passed on to the inner packaging. WWW.100Y.COM

- 1-2. Do not apply excessive vibration, shock, and pressure to the capacitor.
 - (1) When excessive mechanical shock or pressure is applied to a capacitor, chipping or cracking may occur in the ceramic body of the capacitor.
 - (2) When a sharp edge of an air driver, a soldering iron, tweezers, a chassis, etc. impacts strongly on the surface of capacitor, the capacitor may crack and short-circuit.
- 1-3. Do not use a capacitor to which excessive shock was applied by dropping, etc. The capacitor dropped accidentally during processing may be damaged.



1. Solderability

(1) Test Method

Subject the chip capacitor to the following conditions. Then apply flux (an ethanol solution of 25% rosin) to the chip and dip it in 230℃ eutectic solder for 2 seconds. Conditions:

Expose prepared at room temperature (for 6 months and 12 months, respectively)

Prepared at high temperature (for 100 hours at 85℃) Prepared left at high humidity (for 100 hours under 90%RH to 95%RH at 40℃)

(2) Test Samples

GRM21: Products for flow/reflow soldering.

(3) Acceptance Criteria

With a 60-power optical microscope, measure the surface area of the outer electrode that is covered with solder.

(4) Results

Refer to Table 1. WW.100Y.COM.T

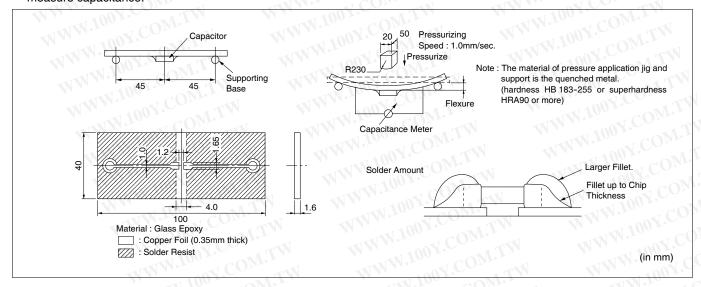
Table 1

Prepared left at high humidity (190%RH to 95%RH at 40°C)	for 100 hours un	der OM.TW				
Table 1	WW.1007	COWILL	\\	Prepared at High	Prepared at High Humidity	
Sample	Initial State		om Temperature	Temperature for	for 100 Hours at 90 to	
11001.	N 100	6 months	12 months	100 Hours at 85℃	95% RH and 40℃	
GRM21 for flow/reflow soldering	95 to 100%	95 to 100%	95%	90 to 95%	95%	

2. Board Bending Strength for Solder Fillet Height

(1) Test Method

Solder the chip capacitor to the test PCB with the amount of solder paste necessary to achieve the fillet heights. Then bend the PCB using the method illustrated and measure capacitance.



(2) Test Samples

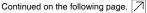
GRM21: 5C/R7/F5 Characteristics T=0.6mm

(3) Acceptance Criteria

Products should be determined to be defective if the change in capacitance has exceeded the values specified in Table 2.

Table 2

Characteristics	Change in Capacitance
5C	Within ±5% or ±0.5pF, whichever is greater
R7	Within ±12.5%
F5	Within ±20%
.,	WWW.100Y.C
	1

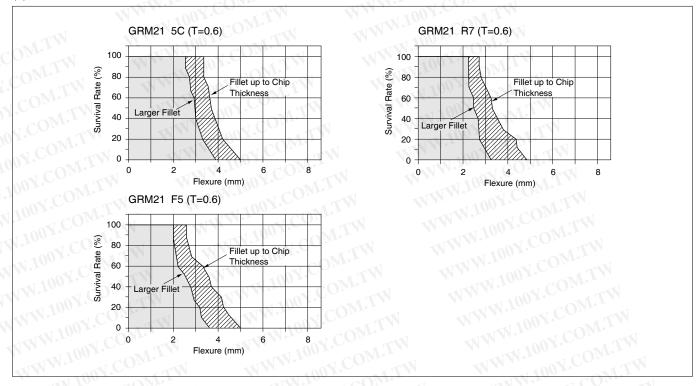






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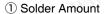
(4) Results



3. Temperature Cycling for Solder Fillet Height

(1) Test Method

Solder the chips to the substrate of various test fixtures using sufficient amounts of solder to achieve the required fillet height. Then subject the fixtures to the cycle illustrated below 200 times.



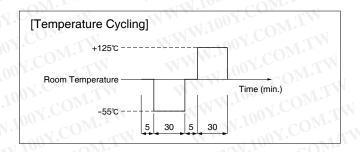
Alumina substrates are typically designed for reflow soldering.

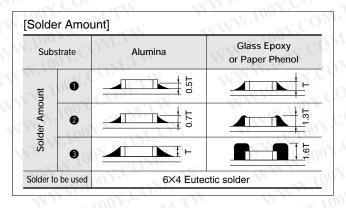
Glass epoxy or paper phenol substrates are typically used for flow soldering.

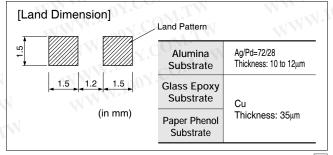
(2) Material

(Thickness: 0.64mm) Alumina Glass epoxy (Thickness: 1.64mm) Paper phenol (Thickness: 1.64mm)

3 Land Dimension







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(2) Test Samples

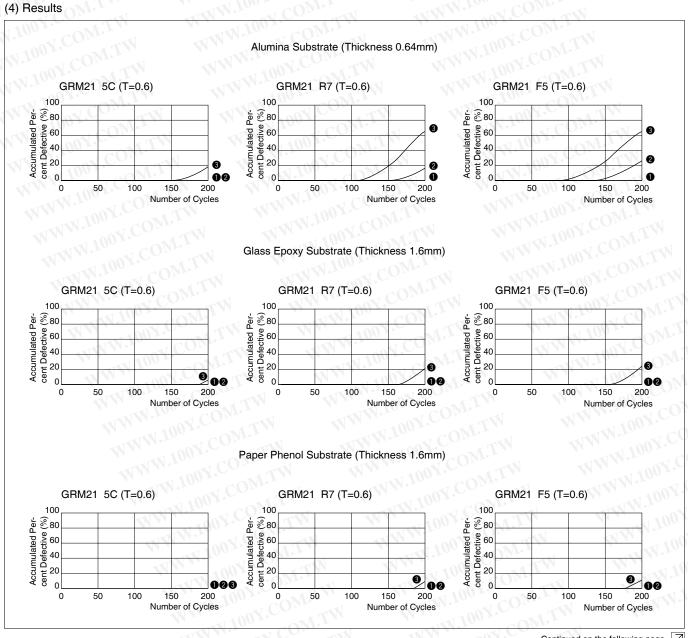
GRM21 5C/R7/F5 Characteristics T=0.6mm

(3) Acceptance Criteria

Products are determined to be defective if the change in capacitance has exceeded the values specified in Table 3.

Table 3

Characteristics	Change in Capacitance
5C	Within ±2.5% or ±0.25pF, whichever is greater
R7	Within ±7.5%
F5	Within ±20%



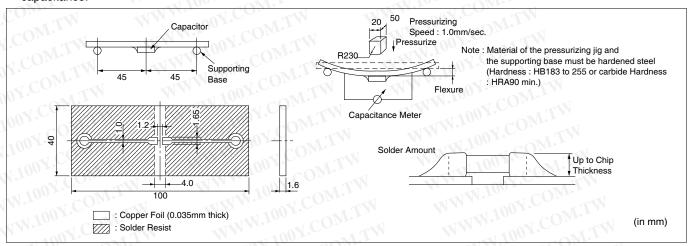
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4. Board Bending Strength for Board Material

(1) Test Method

Solder the chip to the test board. Then bend the board using the method illustrated below, to measure capacitance.



(2) Test Samples GRM21 5C/R7/F5 Characteristics T=0.6mm typical

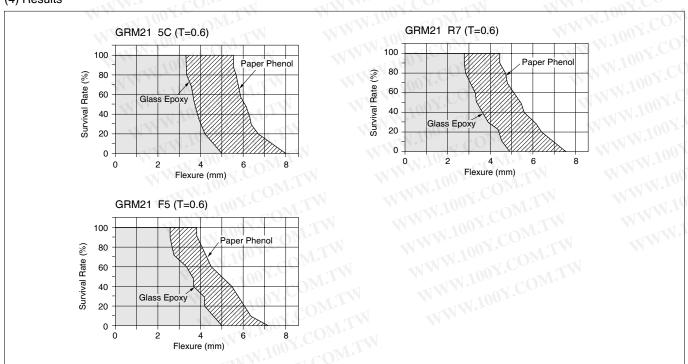
(3) Acceptance Criteria

Products should be determined to be defective if the change in capacitance has exceeded the values specified in Table 4.

Table 4

Characteristics	Change in Capacitance
5C	Within ±5% or ±0.5pF, whichever is greater
R7	Within ±12.5%
F5	Within ±20%

(4) Results





Continued from the preceding page.

5. Break Strength

(1) Test Method

Place the chip on a steel plate as illustrated on the right. Increase load applied to a point near the center of the test sample.

(2) Test Samples

GRM21 5C/R7/F5 Characteristics GRM31 5C/R7/F5 Characteristics

(3) Acceptance Criteria

Define the load that has caused the chip to break or crack, as the bending force.

(4) Explanation

Break strength, P, is proportionate to the square of the thickness of the ceramic element and is expressed as a curve of secondary degree.

(N/mm²)

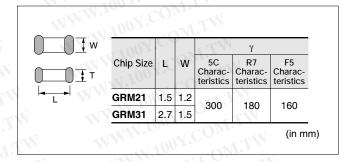
The formula is:

γ: Bending stress

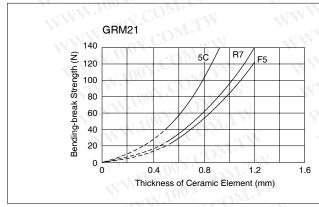
$$P = \frac{2\gamma WT^2}{3L} \quad (N)$$

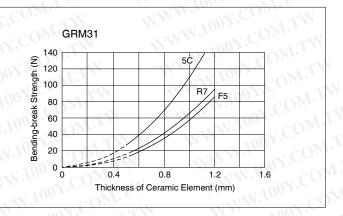
W: Width of ceramic element (mm) T: Thickness of element (mm) L: Distance between fulcrums (mm)

Pressurizina Loading Jig End Storage speed: 2.5mm/sec Amplifier φ1.0mm Load cell



(5) Results





6. Thermal Shock

(1) Test method

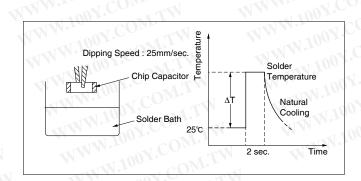
After applying flux (an ethanol solution of 25% rosin), dip the chip in a solder bath (6X4 eutectic solder) in accordance with the following conditions:

(2) Test samples

GRM21 5C/R7/F5 Characteristics T=0.6mm typical

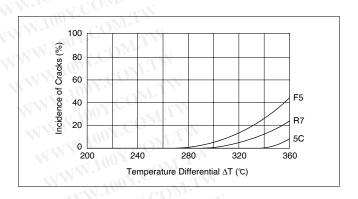
(3) Acceptance criteria

Visually inspect the test sample with a 60-power optical microscope. Chips exhibiting breaks or cracks should be determined to be defective.



Continued from the preceding page.

(4) Results



7. Solder Heat Resistance

(1) Test Method

1) Reflow soldering:

Apply about 300 µm of solder paste over the alumina substrate. After reflow soldering, remove the chip and check for leaching that may have occurred on the outer electrode.

2 Flow soldering:

After dipping the test sample with a pair of tweezers in wave solder (eutectic solder), check for leaching that may have occurred on the outer electrode.

(2) Test samples

GRM21: For flow/reflow soldering T=0.6mm

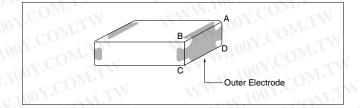
(3) Acceptance criteria

The starting time of leaching should be defined as the time when the outer electrode has lost 25% of the total edge length of A-B-C-D as illustrated:

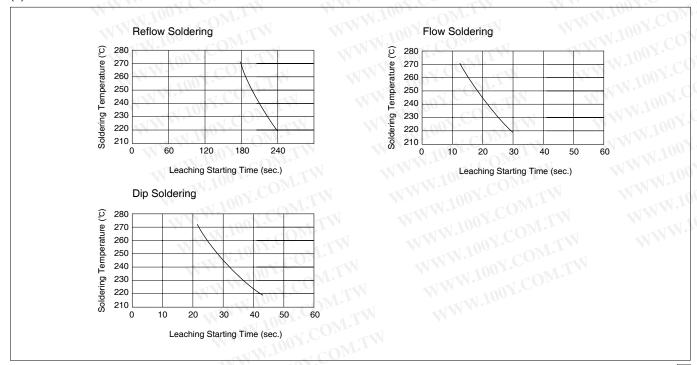
3 Dip soldering:

After dipping the test sample with a pair of tweezers in static solder (eutectic solder), check for leaching that may have occurred on the outer electrode.

4 Flux to be used: An ethanol solution of 25% rosin.



(4) Results



Continued from the preceding page.

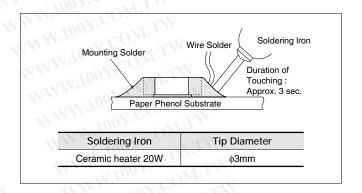
8. Thermal Shock when Making Corrections with a Soldering Iron

(1) Test Method

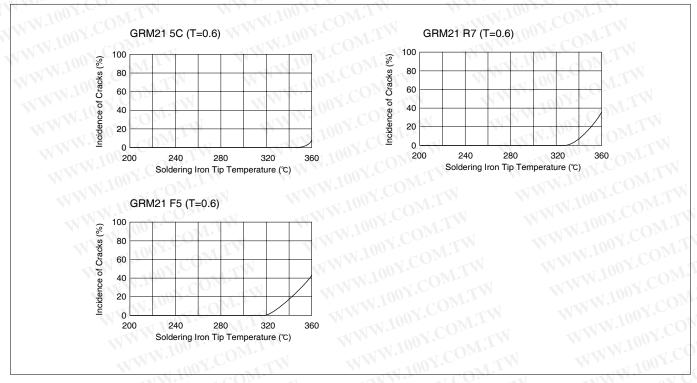
Apply a soldering iron meeting the conditions below to the soldered joint of a chip that has been soldered to a paper phenol board, while supplying wire solder. (Note: the soldering iron tip should not directly touch the ceramic element of the chip.)

(2) Test Samples GRM21 5C/R7/F5 Characteristics T=0.6mm

(3) Acceptance Criteria for Defects Observe the appearance of the test sample with a 60-power optical microscope. Those units displaying any breaks or cracks are determined to be defective.



(4) Results



Chip Monolithic Ceramic Capacitors



Medium Voltage Low Dissipation Factor

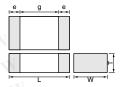
■ Features

- 1. Low-loss and suitable for high frequency circuits
- 2. Murata's original internal electrode structure realizes high flash-over voltage.
- 3. A new monolithic structure for small, surfacemountable devices capable of operating at high voltage levels
- 4. Sn-plated external electrodes realize good solderability.
- 5. Use the GRM21/31 type with flow or reflow soldering, and other types with reflow soldering only.

■ Applications

Ideal for use on high frequency pulse circuits such as snubber circuits for switching power supplies, DC-DC converters, ballasts (inverter fluorescent lamps), etc.

*: In case of use C0G char., DC630V product with pulse voltage, be sure not to use with 10kHz and less pulse or ripple voltage condition. and these product are not suitable for commercial power line voltage application, such as AC filter. For those applications, be sure to use AC voltage rating product.(GA2/GA3 series)



Part Number	(00 r.	Dimensions (mm)								
Part Number	LV	Ŵ	CVI T	e min.	g min.					
GRM21A	2.0 ±0.2	1.25 ±0.2	1.0 +0,-0.3		0.7					
GRM31A	3.2 ±0.2	1.6 ±0.2								
GRM31B	3.2 ±0.2	1.6 ±0.2	1.25 + 0, -0.3		1.5*					
GRM32A	3 2 +0 2	2.5 ±0.2	1.0 +0,-0.3	0.3	1.5					
GRM32B	3.2 10.2	2.3 ±0.2	1.25 + 0, -0.3							
GRM42A	4.5 ±0.3	2.0 ±0.2	1.0 +0,-0.3		2.9					

^{*} GRM31A7U3D, GRM32A7U3D, GRM32B7U3D: 1.8mm min.

C0G Characteristics

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GRM31A5C2J101JW01D	DC630	COG (EIA)	100 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J121JW01D	DC630	COG (EIA)	120 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J151JW01D	DC630	COG (EIA)	150 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J181JW01D	DC630	COG (EIA)	180 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J221JW01D	DC630	COG (EIA)	220 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J271JW01D	DC630	COG (EIA)	270 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J331JW01D	DC630	COG (EIA)	330 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J391JW01D	DC630	COG (EIA)	390 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J471JW01D	DC630	COG (EIA)	470 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J561JW01D	DC630	COG (EIA)	560 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31B5C2J681JW01L	DC630	COG (EIA)	680 ±5%	3.2	1.6	1.25	1.5	0.3 min.
GRM31B5C2J821JW01L	DC630	COG (EIA)	820 ±5%	3.2	1.6	1.25	1.5	0.3 min.
GRM31B5C2J102JW01L	DC630	COG (EIA)	1000 ±5%	3.2	1.6	1.25	1.5	0.3 min.

U2J Characteristics

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GRM21A7U2E101JW31D	DC250	U2J (EIA)	100 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E121JW31D	DC250	U2J (EIA)	120 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E151JW31D	DC250	U2J (EIA)	150 ±5%	2.0	1.25	1.0	0.7	0.3 min.





Continued from the preceding page.

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode (mm)
GRM21A7U2E181JW31D	DC250	U2J (EIA)	180 ±5%	2.0	1.25	1.0	0.7	0.3 min
GRM21A7U2E221JW31D	DC250	U2J (EIA)	220 ±5%	2.0	1.25	1.0	0.7	0.3 min
GRM21A7U2E271JW31D	DC250	U2J (EIA)	270 ±5%	2.0	1.25	1.0	0.7	0.3 min
GRM21A7U2E331JW31D	DC250	U2J (EIA)	330 ±5%	2.0	1.25	1.0	0.7	0.3 min
GRM21A7U2E391JW31D	DC250	U2J (EIA)	390 ±5%	2.0	1.25	1.0	0.7	0.3 min
GRM21A7U2E471JW31D	DC250	U2J (EIA)	470 ±5%	2.0	1.25	1.0	0.7	0.3 min
GRM21A7U2E561JW31D	DC250	U2J (EIA)	560 ±5%	2.0	1.25	1.0	0.7	0.3 min
GRM21A7U2E681JW31D	DC250	U2J (EIA)	680 ±5%	2.0	1.25	1.0	0.7	0.3 min
GRM21A7U2E821JW31D	DC250	U2J (EIA)	820 ±5%	2.0	1.25	1.0	0.7	0.3 mir
GRM21A7U2E102JW31D	DC250	U2J (EIA)	1000 ±5%	2.0	1.25	1.0	0.7	0.3 mir
GRM21A7U2E122JW31D	DC250	U2J (EIA)	1200 ±5%	2.0	1.25	C 1.0	0.7	0.3 mir
GRM21A7U2E152JW31D	DC250	U2J (EIA)	1500 ±5%	2.0	1.25	1.0	0.7	0.3 mir
GRM21A7U2E182JW31D	DC250	U2J (EIA)	1800 ±5%	2.0	1.25	1.0	0.7	0.3 min
GRM21A7U2E222JW31D	DC250	U2J (EIA)	2200 ±5%	2.0	1.25	1.0	0.7	0.3 mir
GRM31A7U2E272JW31D	DC250	U2J (EIA)	2700 ±5%	3.2	1.6	1.0	1.5	0.3 min
GRM31A7U2E332JW31D	DC250	U2J (EIA)	3300 ±5%	3.2	1.6	1.0	1.5	0.3 min
GRM31A7U2E392JW31D	DC250	U2J (EIA)	3900 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2E472JW31D	DC250	U2J (EIA)	4700 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2E562JW31D	DC250	U2J (EIA)	5600 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31B7U2E682JW31L	DC250	U2J (EIA)	6800 ±5%	3.2	1.6	1.25	1.5	0.3 mir
GRM31B7U2E822JW31L	DC250	U2J (EIA)	8200 ±5%	3.2	1.6	1.25	1.5	0.3 mir
GRM31B7U2E103JW31L	DC250	U2J (EIA)	10000 ±5%	3.2	1.6	1.25	1.5	0.3 mir
GRM31A7U2J100JW31D	DC630	U2J (EIA)	10 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J120JW31D	DC630	U2J (EIA)	12 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J150JW31D	DC630	U2J (EIA)	15 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J180JW31D	DC630	U2J (EIA)	18 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J220JW31D	DC630	U2J (EIA)	22 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J270JW31D	DC630	U2J (EIA)	27 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J330JW31D	DC630	U2J (EIA)	33 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J390JW31D	DC630	U2J (EIA)	39 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J470JW31D	DC630	U2J (EIA)	47 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J560JW31D	DC630	U2J (EIA)	56 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J680JW31D	DC630	U2J (EIA)	68 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J820JW31D	DC630	U2J (EIA)	82 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J101JW31D	DC630	U2J (EIA)	100 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J121JW31D	DC630	U2J (EIA)	120 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J151JW31D	DC630	U2J (EIA)	150 ±5%	3.2	1.6	1.0	1.5	0.3 min
GRM31A7U2J181JW31D	DC630	U2J (EIA)	180 ±5%	3.2	1.6	1.0	1.5	0.3 min
GRM31A7U2J221JW31D	DC630	U2J (EIA)	220 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J271JW31D	DC630	U2J (EIA)	270 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J331JW31D	DC630	U2J (EIA)	330 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J391JW31D	DC630	U2J (EIA)	390 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J471JW31D	DC630	U2J (EIA)	470 ±5%	3.2		1.0		A 100
GRM31A7U2J561JW31D					1.6		1.5	0.3 min
GRM31A7U2J681JW31D	DC630 DC630	U2J (EIA)	560 ±5%	3.2	1.6	1.0	1.5	0.3 mir 0.3 mir
	NY .	U2J (EIA)	680 ±5%	3.2	1.6			ZIN.
GRM31A7U2J821JW31D	DC630	U2J (EIA)	820 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U2J102JW31D	DC630	U2J (EIA)	1000 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM32A7U2J122JW31D	DC630	U2J (EIA)	1200 ±5%	3.2	2.5	1.0	1.5	0.3 mir
GRM32A7U2J152JW31D	DC630	U2J (EIA)	1500 ±5%	3.2	2.5	1.0	1.5	0.3 mir
GRM32A7U2J182JW31D	DC630	U2J (EIA)	1800 ±5%	3.2	2.5	1.0	1.5	0.3 mir
GRM32A7U2J222JW31D	DC630	U2J (EIA)	2200 ±5%	3.2	2.5	1.0	1.5	0.3 mir
GRM31A7U3A100JW31D	DC1000	U2J (EIA)	10 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U3A120JW31D	DC1000	U2J (EIA)	12 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U3A150JW31D	DC1000	U2J (EIA)	15 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U3A180JW31D	DC1000	U2J (EIA)	18 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U3A220JW31D	DC1000	U2J (EIA)	22 ±5%	3.2	1.6	1.0	1.5	0.3 mir
GRM31A7U3A270JW31D	DC1000	U2J (EIA)	27 ±5%	3.2	1.6	1.0	1.5	0.3 mir

☐ Continued from the preceding page.

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e
GRM31A7U3A330JW31D	DC1000	U2J (EIA)	33 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A390JW31D	DC1000	U2J (EIA)	39 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A470JW31D	DC1000	U2J (EIA)	47 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A560JW31D	DC1000	U2J (EIA)	56 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A680JW31D	DC1000	U2J (EIA)	68 ±5%	3.2	1.6	1.0	1.5	0.3 min.
RM31A7U3A820JW31D	DC1000	U2J (EIA)	82 ±5%	3.2	1.6	1.0	1.5	0.3 min.
RM31A7U3A101JW31D	DC1000	U2J (EIA)	100 ±5%	3.2	1.6	1.0	1.5	0.3 min.
RM31A7U3A121JW31D	DC1000	U2J (EIA)	120 ±5%	3.2	1.6	1.0	1.5	0.3 min.
RM31A7U3A151JW31D	DC1000	U2J (EIA)	150 ±5%	3.2	1.6	1.0	1.5	0.3 min.
RM31A7U3A181JW31D	DC1000	U2J (EIA)	180 ±5%	3.2	1.6	1.0	1.5	0.3 min.
RM31A7U3A221JW31D	DC1000	U2J (EIA)	220 ±5%	3.2	1.6	1.0	1.5	0.3 min.
RM31A7U3A271JW31D	DC1000	U2J (EIA)	270 ±5%	3.2	1.6	1.0	1.5	0.3 min.
RM31A7U3A331JW31D	DC1000	U2J (EIA)	330 ±5%	3.2	1.6	1.0	1.5	0.3 min.
RM31B7U3A391JW31L	DC1000	U2J (EIA)	390 ±5%	3.2	1.6	1.25	1.5	0.3 min.
RM31B7U3A471JW31L	DC1000	U2J (EIA)	470 ±5%	3.2	1.6	1.25	1.5	0.3 min.
RM31A7U3D100JW31D	DC2000	U2J (EIA)	10 ±5%	3.2	1.6	1.0	1.8	0.3 min.
RM31A7U3D120JW31D	DC2000	U2J (EIA)	12 ±5%	3.2	1.6	1.0	1.8	0.3 min.
RM31A7U3D150JW31D	DC2000	U2J (EIA)	15 ±5%	3.2	1.6	1.0	1.8	0.3 min.
RM31A7U3D180JW31D	DC2000	U2J (EIA)	18 ±5%	3.2	1.6	1.0	1.8	0.3 min.
RM31A7U3D220JW31D	DC2000	U2J (EIA)	22 ±5%	3.2	1.6	1.0	1.8	0.3 min.
RM31A7U3D270JW31D	DC2000	U2J (EIA)	27 ±5%	3.2	1.6	1.0	1.8	0.3 min.
RM31A7U3D330JW31D	DC2000	U2J (EIA)	33 ±5%	3.2	1.6	1.0	1.8	0.3 min.
RM31A7U3D390JW31D	DC2000	U2J (EIA)	39 ±5%	3.2	1.6	1.0	1.8	0.3 min.
RM31A7U3D470JW31D	DC2000	U2J (EIA)	47 ±5%	3.2	1.6	1.0	1.8	0.3 min.
RM31A7U3D560JW31D	DC2000	U2J (EIA)	56 ±5%	3.2	1.6	1.0	1.8	0.3 min.
RM31A7U3D680JW31D	DC2000	U2J (EIA)	68 ±5%	3.2	1.6	1.0	1.8	0.3 min.
RM32A7U3D820JW31D	DC2000	U2J (EIA)	82 ±5%	3.2	2.5	1.0	1.8	0.3 min.
RM32A7U3D101JW31D	DC2000	U2J (EIA)	100 ±5%	3.2	2.5	1.0	1.8	0.3 min.
RM32A7U3D121JW31D	DC2000	U2J (EIA)	120 ±5%	3.2	2.5	1.0	1.8	0.3 min.
RM32A7U3D151JW31D	DC2000	U2J (EIA)	150 ±5%	3.2	2.5	1.0	1.8	0.3 min.
RM32B7U3D181JW31L	DC2000	U2J (EIA)	180 ±5%	3.2	2.5	1.25	1.8	0.3 min.
RM32B7U3D221JW31L	DC2000	U2J (EIA)	220 ±5%	3.2	2.5	1.25	1.8	0.3 min.
RM42A7U3F270JW31L	DC3150	U2J (EIA)	27 ±5%	4.5	2.0	1.0	2.9	0.3 min.
RM42A7U3F330JW31L	DC3150	U2J (EIA)	33 ±5%	4.5	2.0	1.0	2.9	0.3 min.
RM42A7U3F390JW31L	DC3150	U2J (EIA)	39 ±5%	4.5	2.0	1.0	2.9	0.3 min.
RM42A7U3F470JW31L	DC3150	U2J (EIA)	47 ±5%	4.5	2.0	1.0	2.9	0.3 min.
RM42A7U3F560JW31L	DC3150	U2J (EIA)	56 ±5%	4.5	2.0	1.0	2.9	0.3 min.
RM42A7U3F680JW31L	DC3150	U2J (EIA)	68 ±5%	4.5	2.0	1.0	2.9	0.3 min.
RM42A7U3F820JW31L	DC3150	U2J (EIA)	82 ±5%	4.5	2.0	1.0	2.9	0.3 min.
RM42A7U3F101JW31L	DC3150	U2J (EIA)	100 ±5%	4.5	2.0	1.0	2.9	0.3 min.

o.	Ite	em		Specifications	-TXX 10		Te	est Method			
	Operating	Danas	-55 to +125℃	ON.TW W	W.1	OUT. COM.	TV	_			
	Temperatu		No defects or abnorma	litica		Visual inspection	TIN				
	Appearar		No defects or abnorma			Using calipers	TTV	Test Voltage 200% of the rated voltage 150% of the rated voltage 120% of the rated voltage 120% of the rated voltage DC4095V Thould be measured with DC500±51 and within 60 and seed voltage: DC250V) and within 60 and seed voltage: DC250V) and within 60 and seed voltage: DC250V) and within 60 and seed voltage: DC250V) and within 60 and seed voltage: DC250V) and within 60 and seed voltage: DC250V) and within 60 and seed voltage: DC250V) and within 60 and seed voltage: DC250V) and within 60 and seed voltage: DC250V, r.m.s.) Temperature (*C) 25±2 Min. Operating Temp.±3 25±2 Max. Operating Temp.±2 25±2 And Destring Temp.±2 25±2 And Destring Temp. and seed voltage is uniform heat shock. Tolon, 10±1s Glass Epoxy Board Fig. 1 Test jig (glass epoxy board). Expected to a simple harmonic motion of the arrow. The shock of the temperature of the tempe			
	Dimensio	IIS IIIS	Within the specified dir	nension	-3111	CO	oboon	ad whan valtag	o in Table is applied		
١(ations fo	r 1 to 5 sec., pr			
	Dielectric	Strength	No defects or abnorma	alities CONT	WW	Rated Voltag	ge				
	COM.	o a ongan	WW.11	Do.		DC250V DC630V					
1						DC1kV, DC2kV	/	120% of th	ne rated voltage		
3	4.COM	W	MM III.	TW.CO.	V	DC3.15kV		D	C4095V		
)	Insulation F (I.R.)	Resistance	More than 10,000M Ω								
\	Capacitar	nce	Within the specified tol	erance		The capacitance/Q voltage shown as for		e measured at	the frequency and		
	100	COM	r v		CIN	Capacitan		Frequency			
31	000	COM	1,000 min.		7	C<1,000p	00pF 1±0.2MHz AC0.5 to 5V(AC0.5 to 5V(r.m.s.)		
٧	1005	I.Co.	VIV.	1007.	TW	C≧1,000p	1 100	Test Voltage 200% of the rated voltage 150% of the rated voltage 120% of the rated voltage 120% of the rated voltage DC4095V e should be measured with DC500± rated voltage: DC250V) and within 6 Id be measured at the frequency and stated voltage: DC250V and within 6 Frequency Voltage 1±0.2MHz AC0.5 to 5V(r.m.s.) 1±0.2kHz AC1±0.2V(r.m.s.) rement should be made at each step Temperature (°C) 25±2 Min. Operating Temp.±3 25±2 Max. Operating Temp.±2 25±2 the testing jig (glass epoxy board) should be a care so that the soldering is unifor as heat shock.			
		A'CO	Temp. Coefficient			The capacitance measurement should be made at each specified in Table.					
V	V VV	OY.CC	C0G char.:	LOF to L105%)	MIN	Step	- N.		1112		
J	Capacitar Temperati		0±30ppm/°C (Temp. Ra 0+30, -72ppm/°C (Tem	ange : +25 to +125 c) np. Range : −55 to +25°c)	VII		- 10 L				
	Character	istics	U2J char. :	Dear 105 to 1105°0)	Olyr.	3 (1)	WW	276	V		
				np. Range : +25 to +125℃) /℃ (Temp. Range : −55 to +25℃		4	KTVI	Max. Operatir	ng Temp.±2		
		*1 100 X			MOD	5		25±	-2		
	Adhesive of Termin		No removal of the term	ninations or other defect should o	y.Cos	in Fig. 1. Then apply 10N for The soldering shoul	ce in the d be dor d with ca	direction of the ne using the relate so that the sheat shock.	e arrow. Flow method and soldering is uniform		
		Appearance	No defects or abnorma	alities		•		, , , ,			
		Capacitance	Within the specified tol	erance				•			
0	Vibration Resistance	Q	1,000 min.		WW.10	uniformly between t frequency range, fro traversed in approxi for a period of 2 hrs directions (total of 6	he appro om 10 to imately 1 . in each	oximate limits of 55Hz and return min. This motor of 3 mutually processes and the second management of 3 mutually processes and 3 mutually process	f 10 and 55Hz. The rn to 10Hz, should be ion should be applied perpendicular		
_			WWW.	100Y.COM.TW 100Y.COM.TW W.100Y.COM.TW	W	MMM.1007	V.CO	Continued of	on the following page.		

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Continued from the preceding page Specifications No Item Test Method No cracking or marking defects should occur. Solder the capacitor to the testing jig (glass epoxy board) shown in Fig. 2. Then apply a force in the direction shown in Fig. 3. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. Deflection Dimension (mm) IXW (mm) a b Flexure=1 2.0×1.25 4.0 1.65 3.2×1.6 2.2 5.0 2.0 Capacitance mete 1.0 3.2X2.5 29 (in mm) 22 5.0 45 4.5×2.0 3.5 7.0 2.4 Fig. 3 Fig. 2 Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Immerse in solder solution for 2±0.5 sec. Solderability of 75% of the terminations are to be soldered evenly Immersing speed: 25±2.5mm/s Termination and continuously Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder Appearance No marking defects Preheat the capacitor at 120 to 150°C* for 1 min. Immerse the capacitor in solder solution at 260±5°C for 10±1 sec. Capacitance Within ±2.5% Let sit at room condition* for 24±2 hrs., then measure. •Immersing speed: 25±2.5mm/s Resistance Q 1.000 min. 13 to Soldering *Preheating for more than 3.2×2.5mm IR More than $10.000M\Omega$ Heat Step Temperature Time Dielectric 100 to 120℃ 1 min. In accordance with item No.4 Strength 170 to 200℃ 1 min. Fix the capacitor to the supporting jig (glass epoxy board) shown Appearance No marking defects in Fig. 4. Capacitance Within ±2.5% Perform the 5 cycles according to the 4 heat treatments listed in Change the following table. Q 500 min. Let sit for 24±2 hrs. at room condition*, then measure. Step Temperature (°C) Time (min.) I.R More than $10,000M\Omega$ 1 Min. Operating Temp.±3 30±3 2 Room Temp. 2 to 3 Temperature 3 Max. Operating Temp. ±2 30±3 Cycle Room Temp 2 to 3 Dielectric In accordance with item No.4 Strength Glass Epoxy Board Fig. 4 No marking defects Appearance Capacitance Within ±5.0% Change Let the capacitor sit at 40±2°C and relative humidity of 90 to 95° Humidity Q 350 min. 15 (Steady Remove and let sit for 24±2 hrs. at room condition*, then I.R. More than $1,000M\Omega$ State) measure. Dielectric In accordance with item No.4 Strength Apply voltage as Table for 1,000 ±48 hrs. at maximum operating Appearance No marking defects Capacitance Within ±3.0% Remove and let sit for 24±2 hrs. at room condition*, then Change measure. Q Rated Voltage Life 16 Applied Voltage 150% of the rated voltage I.R. More than 1,000M Ω DC250V DC630V, DC1kV, 120% of the rated voltage Dielectric DC2kV, DC3.15kV In accordance with item No.4 Strength The charge/discharge current is less than 50mA.

^{* &}quot;Room condition" Temperature: 15 to 35℃, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa

Chip Monolithic Ceramic Capacitors



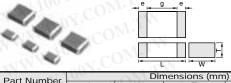
Medium Voltage High Capacitance for General Use

■ Features

- 1. A new monolithic structure for small, high capacitance capable of operating at high voltage
- 2. Sn-plated external electrodes realize good solderability.
- 3. Use the GRM18/21/31 types with flow or reflow solderring, and other types with reflow soldering

Applications

- 1. Ideal for use on diode-snubber circuits for switching power supplies.
- 2. Ideal for use as primary-secondary coupling for DC-DC converter.
- 3. Ideal for use on line filters and ringer detectors for telephones, facsimiles and modems.



Part Number	Dimensions (mm)								
rait Number	1.6 \pm 0.1 0.8 2.0 \pm 0.2 1.25 3.2 \pm 0.2 1.6 3.2 \pm 0.3 2.5 4.5 \pm 0.4 3.2	W	T	е	g min.				
GRM188	1.6 ±0.1	0.8 ±0.1	0.8 ±0.1	0.2 to 0.5	0.4				
GRM21A	20+02	1 25 +0 2	1.0 +0,-0.3		0.7				
GRM21B	2.0 ±0.2	1.25 ±0.2	1.25 ±0.2		0.7				
GRM31B	2 2 10 2	1.6 +0.2	1.25 +0,-0.3						
GRM31C	3.2 ±0.2	1.0 10.2	1.6 ±0.2		12				
GRM32Q	22102	2.5 ±0.2	1.5 + 0, -0.3	0.3 min.	1.2				
GRM32D	3.2 ±0.3	2.5 ±0.2	2.0 +0,-0.3						
GRM43Q	4 E ±0.4	3.2 ±0.3	1.5 +0,-0.3		2.2				
GRM43D	4.5 ±0.4	3.2 ±0.3	2.0 +0,-0.3		2.2				
GRM55D	5.7 ±0.4	5.0 ± 0.4	2.0 +0,-0.3		3.2				

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GRM188R72E221KW07D	DC250	X7R (EIA)	220pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM188R72E331KW07D	DC250	X7R (EIA)	330pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM188R72E471KW07D	DC250	X7R (EIA)	470pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM188R72E681KW07D	DC250	X7R (EIA)	680pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM188R72E102KW07D	DC250	X7R (EIA)	1000pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM21AR72E102KW01D	DC250	X7R (EIA)	1000pF ±10%	2.0	1.25	1.0	0.7	0.3 min.
GRM188R72E152KW07D	DC250	X7R (EIA)	1500pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM21AR72E152KW01D	DC250	X7R (EIA)	1500pF ±10%	2.0	1.25	1.0	0.7	0.3 min.
GRM188R72E222KW07D	DC250	X7R (EIA)	2200pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM21AR72E222KW01D	DC250	X7R (EIA)	2200pF ±10%	2.0	1.25	1.0	0.7	0.3 min.
GRM21AR72E332KW01D	DC250	X7R (EIA)	3300pF ±10%	2.0	1.25	d 1.0	0.7	0.3 min.
GRM21AR72E472KW01D	DC250	X7R (EIA)	4700pF ±10%	2.0	1.25	1.0	0.7	0.3 min.
GRM21AR72E682KW01D	DC250	X7R (EIA)	6800pF ±10%	2.0	1.25	1.0	0.7	0.3 min.
GRM21BR72E103KW03L	DC250	X7R (EIA)	10000pF ±10%	2.0	1.25	1.25	0.7	0.3 min.
GRM31BR72E153KW01L	DC250	X7R (EIA)	15000pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72E223KW01L	DC250	X7R (EIA)	22000pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31CR72E333KW03L	DC250	X7R (EIA)	33000pF ±10%	3.2	1.6	1.6	1.2	0.3 min.
GRM31CR72E473KW03L	DC250	X7R (EIA)	47000pF ±10%	3.2	1.6	1.6	1.2	0.3 min.
GRM31BR72E683KW01L	DC250	X7R (EIA)	68000pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM32QR72E683KW01L	DC250	X7R (EIA)	68000pF ±10%	3.2	2.5	1.5	1.2	0.3 min.
GRM31CR72E104KW03L	DC250	X7R (EIA)	0.10μF ±10%	3.2	1.6	1.6	1.2	0.3 min.
GRM32DR72E104KW01L	DC250	X7R (EIA)	0.10μF ±10%	3.2	2.5	2.0	1.2	0.3 min.
GRM32QR72E154KW01L	DC250	X7R (EIA)	0.15μF ±10%	3.2	2.5	1.5	1.2	0.3 min.
GRM43QR72E154KW01L	DC250	X7R (EIA)	0.15μF ±10%	4.5	3.2	1.5	2.2	0.3 min.
GRM32DR72E224KW01L	DC250	X7R (EIA)	0.22μF ±10%	3.2	2.5	2.0	1.2	0.3 min.
GRM43DR72E224KW01L	DC250	X7R (EIA)	0.22μF ±10%	4.5	3.2	2.0	2.2	0.3 min.
GRM43DR72E334KW01L	DC250	X7R (EIA)	0.33μF ±10%	4.5	3.2	2.0	2.2	0.3 min.
GRM55DR72E334KW01L	DC250	X7R (EIA)	0.33μF ±10%	5.7	5.0	2.0	3.2	0.3 min.
GRM43DR72E474KW01L	DC250	X7R (EIA)	0.47μF ±10%	4.5	3.2	2.0	2.2	0.3 min.
GRM55DR72E474KW01L	DC250	X7R (EIA)	0.47μF ±10%	5.7	5.0	2.0	3.2	0.3 min.
GRM55DR72E105KW01L	DC250	X7R (EIA)	1.0μF ±10%	5.7	5.0	2.0	3.2	0.3 min.
GRM31BR72J102KW01L	DC630	X7R (EIA)	1000pF ±10%	3.2	1.6	1.25	1.2	0.3 min.

☐ Continued from the preceding page.

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode (mm)
GRM31BR72J152KW01L	DC630	X7R (EIA)	1500pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72J222KW01L	DC630	X7R (EIA)	2200pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72J332KW01L	DC630	X7R (EIA)	3300pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72J472KW01L	DC630	X7R (EIA)	4700pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72J682KW01L	DC630	X7R (EIA)	6800pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72J103KW01L	DC630	X7R (EIA)	10000pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31CR72J153KW03L	DC630	X7R (EIA)	15000pF ±10%	3.2	1.6	1.6	1.2	0.3 min.
GRM32QR72J223KW01L	DC630	X7R (EIA)	22000pF ±10%	3.2	2.5	1.5	1.2	0.3 min.
GRM32DR72J333KW01L	DC630	X7R (EIA)	33000pF ±10%	3.2	2.5	2.0	1.2	0.3 min.
GRM32DR72J473KW01L	DC630	X7R (EIA)	47000pF ±10%	3.2	2.5	2.0	1.2	0.3 min.
GRM43QR72J683KW01L	DC630	X7R (EIA)	68000pF ±10%	4.5	3.2	1.5	2.2	0.3 min.
GRM43DR72J104KW01L	DC630	X7R (EIA)	0.10μF ±10%	4.5	3.2	2.0	2.2	0.3 min.
GRM55DR72J154KW01L	DC630	X7R (EIA)	0.15μF ±10%	5.7	5.0	2.0	3.2	0.3 min.
GRM55DR72J224KW01L	DC630	X7R (EIA)	0.22μF ±10%	5.7	5.0	2.0	3.2	0.3 min.
GRM31BR73A471KW01L	DC1000	X7R (EIA)	470pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR73A102KW01L	DC1000	X7R (EIA)	1000pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR73A152KW01L	DC1000	X7R (EIA)	1500pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR73A222KW01L	DC1000	X7R (EIA)	2200pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR73A332KW01L	DC1000	X7R (EIA)	3300pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR73A472KW01L	DC1000	X7R (EIA)	4700pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM32QR73A682KW01L	DC1000	X7R (EIA)	6800pF ±10%	3.2	2.5	1.5	1.2	0.3 min.
GRM32QR73A103KW01L	DC1000	X7R (EIA)	10000pF ±10%	3.2	2.5	1.5	1.2	0.3 min.
GRM32DR73A153KW01L	DC1000	X7R (EIA)	15000pF ±10%	3.2	2.5	2.0	1.2	0.3 min.
GRM32DR73A223KW01L	DC1000	X7R (EIA)	22000pF ±10%	3.2	2.5	2.0	1.2	0.3 min.
GRM43DR73A333KW01L	DC1000	X7R (EIA)	33000pF ±10%	4.5	3.2	2.0	2.2	0.3 min.
GRM43DR73A473KW01L	DC1000	X7R (EIA)	47000pF ±10%	4.5	3.2	2.0	2.2	0.3 min.
GRM55DR73A104KW01L	DC1000	X7R (EIA)	0.10μF ±10%	5.7	5.0	2.0	3.2	0.3 min.

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No.	Item	Specifications	Test Method			
	rating perature Range	−55 to +125°C	N.100Y.COM.TW -			
2 App	earance	No defects or abnormalities	Visual inspection			
3 Dim	ensions	Within the specified dimensions	Using calipers			
4 Dielectric Strength		No defects or abnormalities	No failure should be observed when 150% of the rated voltage (200% of the rated voltage in case of rated voltage: DC250V, 120% of the rated voltage in case of rated voltage: DC1kV) is applied between the terminations for 1 to 5 sec., provided the charge/discharge current is less than 50mA.			
5 Insu	lation Resistance	C≧0.01μF: More than 100MΩ • μF C<0.01μF: More than 10,000MΩ	The insulation resistance should be measured with DC500±50 (DC250±25V in case of rated voltage: DC250V) and within 60 sec. of charging.			
6 Cap	acitance	Within the specified tolerance				
	sipation tor (D.F.)	0.025 max.	The capacitance/D.F. should be measured at a frequency of 1±0.2kHz and a voltage of AC1±0.2V(r.m.s.)			
1.100	Y.COM.	MAMY 100X COM LA	The capacitance measurement should be made at each step specified in Table.			
8 Tem	acitance perature racteristics	Cap. Change Within ±15% (Temp. Range: −55 to +125°C)	Step Temperature (°C) 1 25±2 2 Min. Operating Temp.±3 3 25±2 4 Max. Operating Temp.±2 5 25±2 • Pretreatment Perform a heat treatment at 150 ±9 o ℃ for 60±5 min. and ther let sit for 24±2 hrs. at room condition*.			
	nesive Strength ermination	No removal of the terminations or other defect should occur.	Solder the capacitor to the testing jig (glass epoxy board) shown in Fig. 1. Then apply 10N force in the direction of the arrow. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. 10N (5N: Size 1.6×0.8mm only), 10±1s Glass Epoxy Board Fig. 1			
	Appearance	No defects or abnormalities	Solder the capacitor to the test jig (glass epoxy board).			
	Capacitance	Within the specified tolerance	The capacitor should be subjected to a simple harmonic motion			
10 Vibra Resis	tion stance D.F.	0.025 max.	having a total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 min. This motion should be applied for a period of 2 hrs. in each of 3 mutually perpendicular directions (total of 6 hrs.).			

^{* &}quot;Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa WWW.100Y.COM.T WWW.100Y.COM.T

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Continued from the preceding page Specifications No Item Test Method Solder the capacitor to the testing jig (glass epoxy board) shown No cracking or marking defects should occur. in Fig. 2. Then apply a force in the direction shown in Fig. 3. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. Deflection Dimension (mm) IXW (mm) a d Flexure=1 1.6X0.8 1.0 3.0 1.2 Capacitance meter 2.0×1.25 1.2 4.0 1.65 (in mm) 45 3.2×1.6 2.2 2.0 5.0 1.0 3.2X2.5 2.2 5.0 2.9 Fig. 3 4.5×3.2 3.5 3.7 5.7×5.0 4.5 8.0 5.6 Fig. 2 Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Solderability of Immerse in solder solution for 2±0.5 sec. 75% of the terminations are to be soldered evenly and continuously. Immersing speed: 25±2.5mm/s Termination Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder Preheat the capacitor at 120 to 150℃* for 1 min. Appearance No marking defects Immerse the capacitor in solder solution at 260±5°C for 10±1 Capacitance Within ±10% sec. Let sit at room condition* for 24±2 hrs., then measure. Change •Immersing speed: 25±2.5mm/s D.F 0.025 max Pretreatment Resistance Perform a heat treatment at 150 ± 10 °C for 60±5 min. and then C≥0.01μF: More than 100MΩ • μF to Soldering I.R. let sit for 24±2 hrs. at room condition*. C<0.01 μ F: More than 10,000M Ω Heat *Preheating for more than 3.2×2.5mm Dielectric Step Temperature Time In accordance with item No.4 100 to 120℃ Strength 1 min. 170 to 200℃ 2 1 min Appearance No marking defects Fix the capacitor to the supporting jig (glass epoxy board) shown Capacitance Within ±7.5% Perform the 5 cycles according to the 4 heat treatments listed in Change the following table. DF 0.025 max Let sit for 24±2 hrs. at room condition*, then measure. Step Temperature (℃) Time (min.) C≥0.01μF: More than 100MΩ • μF I.R. Min. Operating Temp.±3 30±3 C<0.01 μ F: More than 10,000M Ω 2 Room Temp. 2 to 3 3 Max. Operating Temp.±2 30±3 Room Temp. 2 to 3 Temperature Pretreatment Cycle Perform a heat treatment at 150⁺₁° ℃ for 60±5 min. and then let sit for 24±2 hrs. at room condition*. Dielectric In accordance with item No.4 Strength PM PM PM Glass Epoxy Board Fig. 4 Appearance No marking defects Let the capacitor sit at 40±2°C and relative humidity of 90 to 95% Capacitance Within ±15% Change for 500 ±24 hrs. Humidity Remove and let sit for 24±2 hrs. at room condition*, then D.F 0.05 max 15 (Steady measure. C≥0.01μF: More than 10MΩ • μF State) Pretreatment I.R. C<0.01 μ F: More than 1,000M Ω Perform a heat treatment at 150 ± 0 °C for 60±5 min. and then let sit for 24±2 hrs. at room condition*. Dielectric In accordance with item No.4 Strength

Continued on the following page.



^{* &}quot;Room condition" Temperature: 15 to 35℃, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa

No.	Ite	em	Specifications	Test Method		
		Appearance	No marking defects	Apply 120% of the rated voltage (150% of the rated voltage in		
	Capacitance Change Within ±15% (rated voltage: DC250V, DC630V) Within ±20% (rated voltage: DC1kV) D.F. 0.05 max.	case of rated voltage: DC250V, 110% of the rated voltage in case of rated voltage: DC1kV) for 1,000 ±48 hrs. at maximum				
16		D.F.	0.05 max.	operating temperature ±3°C. Remove and let sit for 24±2 hrs. at room condition*, then measure.		
	OM.TY	I.R.	C≥0.01μF: More than 10MΩ • μF C<0.01μF: More than 1,000MΩ	The charge/discharge current is less than 50mA. • Pretreatment		
		Dielectric Strength	In accordance with item No.4	Apply test voltage for 60±5 min. at test temperature. Remove and let sit for 24±2 hrs. at room condition*.		
1	COM.	Appearance	No marking defects	M. I. COM.		
	Humidity Loading	Capacitance Change	Within ±15%	Apply the rated voltage at $40\pm2^{\circ}$ C and relative humidity of 90 to 95% for 500^{+24}_{\circ} hrs.		
17	(Application:	D.F.	0.05 max.	Remove and let sit for 24±2 hrs. at room condition*, then measure.		
Ó	DC250V, DC630V item)			Pretreatment Apply test voltage for 60±5 min. at test temperature.		
	item) Z	Dielectric Strength	In accordance with item No.4	Remove and let sit for 24±2 hrs. at room condition*.		

^{* &}quot;Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa WWW.100X. WWW.100Y.COM WWW.100Y.COM. WWW.10

Chip Monolithic Ceramic Capacitors

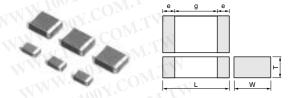


Only for LCD Backlight Inverter Circuit

■ Features

- 1. Low-loss and suitable for high frequency circuits
- 2. Murata's original internal electrode structure realizes high flash-over voltage.
- 3. A new monolithic structure for small, surfacemountable devices capable of operating at high voltage levels.
- 4. Sn-plated external electrodes realize good solderability.
- 5. Only for reflow soldering
- 6. The capacitors less than 22pF can be applied maximum 4.0kV peak to peak at 100kHz or less only for the ballast or the resonance usage in the LCD backlight inverter circuit.





Part Number	Dimensions (mm)					
Part Number	AN LUU	W	V-7-T	e min.	g min.	
GRM42A	4.5 ±0.3	2.0 ±0.2	1.0 +0, -0.3	0.3	2.9	

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode (mm)
GRM42A5C3F050DW01L	DC3150	COG (EIA)	5.0 ±0.5pF	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F100JW01L	DC3150	COG (EIA)	10 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F120JW01L	DC3150	COG (EIA)	12 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F150JW01L	DC3150	COG (EIA)	15 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F180JW01L	DC3150	COG (EIA)	18 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F220JW01L	DC3150	COG (EIA)	22 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F270JW01L	DC3150	COG (EIA)	27 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F330JW01L	DC3150	COG (EIA)	33 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F390JW01L	DC3150	COG (EIA)	39 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F470JW01L	DC3150	COG (EIA)	47 ±5%	4.5	2.0	1.0	2.9	0.3 min.

0.	Item	Specifications	Test Method
+	perating	MN. TO TO THE WINNEY	rest ivietilou
Ter	mperature Range	-55 to +125℃	TW -
Ар	pearance	No defects or abnormalities	Visual inspection
Dir	mensions	Within the specified dimension	Using calipers
Die	electric Strength	No defects or abnormalities	No failure should be observed when DC4095V is applied between the terminations for 1 to 5 sec., provided the charge/discharge current is less than 50mA.
Ins (I.R	ulation Resistance 2.)	More than 10,000M Ω	The insulation resistance should be measured with DC500±50 and within 60±5 sec. of charging.
Ca	pacitance	Within the specified tolerance	The capacitance/Q should be measured at a frequency of
Q	COMP.	1,000 min.	1±0.2MHz and a voltage of AC0.5 to 5V(r.m.s.)
00X	.com.tv		The capacitance measurement should be made at each step specified in Table. Step Temperature (°C)
Capacitance Temperature Characteristics		Temp. Coefficient	Step Temperature (℃) 1 25±2
		0±30ppm/°C (Temp. Range: +25 to +125°C) 0+30, -72ppm/°C (Temp. Range: -55 to +25°C)	2 Min. Operating Temp.±3
In	COM.	N NINN 30 OV. COLOR. TOW	3 25±2 4 Max. Operating Temp.±2
N.1	OO 1. COM		5 25±2
\\ -<1	1007.	TIM WILLIAM TO COM. FIN	Solder the capacitor to the testing jig (glass epoxy board) sho
M.	. CO.		in Fig. 1.
W	A'JOO CO		Then apply 10N force in the direction of the arrow. The soldering should be done using the reflow method and
	W.1001.		should be conducted with care so that the soldering is uniform
	Ihesive Strength Termination	No removal of the terminations or other defect should occur.	and free of defects such as heat shock.
OI.	remination		
\ 	MM.Joo		10N, 10±1s
M	1,100 x		Glass Epoxy Board
1	NW 100	Y.CO. TO WWW 1007.00	Fig. 1
	Appearance	No defects or abnormalities	Solder the capacitor to the test jig (glass epoxy board).
	Capacitance	Within the specified tolerance	The capacitor should be subjected to a simple harmonic moti having a total amplitude of 1.5mm, the frequency being varied
	WW.1		uniformly between the approximate limits of 10 and 55Hz. Th
	A A A		frequency range, from 10 to 55Hz and return to 10Hz, should traversed in approximately 1 min. This motion should be appl
Vibr	ration		for a period of 2 hrs. in each of 3 mutually perpendicular
	sistance		directions (total of 6 hrs.).
	Q	1,000 min.	
	Al .		<u> </u>
	W		Solder resist
	√XI		Glass Epoxy Board
		No cracking or marking defects should occur.	Solder the capacitor to the testing jig (glass epoxy board) sho
		WWW.	in Fig. 2. Then apply a force in the direction shown in Fig. 3.
		φ4.5	The soldering should be done using the reflow method and
			should be conducted with care so that the soldering is uniform and free of defects such as heat shock.
De	eflection	100 t:1.6	20 ⁵⁰ Pressurizing
		LXW Dimension (mm)	R230 Pressurize
		(mm) a b c d	Flexure=1
		4.5×2.0 3.5 7.0 2.4 1.0 Fig. 2	Capacitance meter
		1 19. 2	45 45 (in mm)
			Fig. 3
		W.100 F. COM.	COM.
			Continued on the following page



Specifications and Test Methods

0.	Item	Specifications	Test Method	
	rability of nation	75% of the terminations are to be soldered evenly and continuously.	Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Immerse in solder solution for 2±0.5 sec. Immersing speed: 25±2.5mm/s Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder	
MO	Appearance	No marking defects	Preheat the capacitor as table.	
CON	Capacitance Change Within ±2.5%		Immerse the capacitor in solder solution at 260±5°C for 10±1 sec. Let sit at room condition* for 24±2 hrs., then measure. •Immersing speed: 25±2.5mm/s	
Resistance to Soldering Heat	Q	1,000 min.	•inimersing speed. 2512.5hill/s	
	I.R.	More than $10,000M\Omega$	*Preheating	
	Dielectric Strength	In accordance with item No.4	Step Temperature Time 1 100 to 120℃ 1 min. 2 170 to 200℃ 1 min.	
a no Y	Appearance	No marking defects	Fix the capacitor to the supporting jig (glass epoxy board) shown	
100	Capacitance Change	Within ±2.5%	in Fig. 4. Perform the 5 cycles according to the 4 heat treatments listed in the following table.	
1.100	Q	1,000 min.	Let sit for 24±2 hrs. at room condition*, then measure.	
11.10	I.R.	More than $10,000M\Omega$	Step Temperature (°C) Time (min.)	
4 Tempera Cycle	ure Dielectric	M.TW WWW.100X.COM.TW OM.TW WWW.100X.COM.TW	1 Min. Operating Temp.±3 30±3 2 Room Temp. 2 to 3 3 Max. Operating Temp.±2 30±3 4 Room Temp. 2 to 3	
WW	Strength	In accordance with item No.4	Fig. 4	
	Appearance	No marking defects	TW WWW. LOY.COM	
Humio	Capacitance Change	Within ±5.0%	Let the capacitor sit at 40±2°C and relative humidity of 90 to 95 for 500±26 hrs.	
5 (Steady	y Q	350 min.	Remove and let sit for 24±2 hrs. at room condition*, then	
State)	I.R.	More than 1,000MΩ	measure.	
	Dielectric Strength	In accordance with item No.4	COW.LAN MAM. 100 T. COM.	
	Appearance	No marking defects	COM.	
	Capacitance Change	Within ±3.0%	Apply 120% of the rated voltage for 1,000 ±48 hrs. at maximum operating temperature ±3°C.	
6 Life	Q	350 min.	Remove and let sit for 24±2 hrs. at room condition*, then	
	I.R.	More than 1,000M Ω	measure. The charge/discharge current is less than 50mA.	
	Dielectric Strength	In accordance with item No.4	700X.COW.T.M. MANN. 100X.C	

^{* &}quot;Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa WWW.100Y.COM.TW WWW.100Y.COM.TW WWW.100Y.C

Chip Monolithic Ceramic Capacitors



1.5 +0, -0.3

2.0 +0, -0.3

3.2

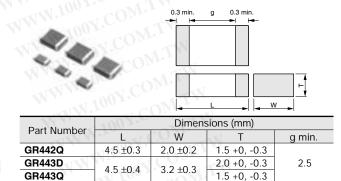
Only for Information Devices

■ Features

- 1. These items are designed specifically for telecommunications devices (IEEE802.3) in Ethernet LAN and primary-secondary coupling for DC-DC converter.
- 2. A new monolithic structure for small, high capacitance capable of operating at high voltage levels
- 3. Sn-plated external electrodes realizes good solderability.
- 4. Only for reflow soldering
- 5. The low-profile type (thickness: 1.5mm max.) is available. Fit for use on thinner type equipment.

■ Applications

- 1. Ideal for use on telecommunications devices in Ethernet LAN
- 2. Ideal for use as primary-secondary coupling for DC-DC converter



 5.0 ± 0.4

57 + 04

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e
GR442QR73D101KW01L	DC2000	X7R (EIA)	100 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D121KW01L	DC2000	X7R (EIA)	120 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D151KW01L	DC2000	X7R (EIA)	150 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D181KW01L	DC2000	X7R (EIA)	180 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D221KW01L	DC2000	X7R (EIA)	220 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D271KW01L	DC2000	X7R (EIA)	270 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D331KW01L	DC2000	X7R (EIA)	330 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D391KW01L	DC2000	X7R (EIA)	390 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D471KW01L	DC2000	X7R (EIA)	470 ±10%	4.5	2.0	d 1.5	2.5	0.3 min.
GR442QR73D561KW01L	DC2000	X7R (EIA)	560 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D681KW01L	DC2000	X7R (EIA)	680 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D821KW01L	DC2000	X7R (EIA)	820 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D102KW01L	DC2000	X7R (EIA)	1000 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D122KW01L	DC2000	X7R (EIA)	1200 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR442QR73D152KW01L	DC2000	X7R (EIA)	1500 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GR443QR73D182KW01L	DC2000	X7R (EIA)	1800 ±10%	4.5	3.2	1.5	2.5	0.3 min.
GR443QR73D222KW01L	DC2000	X7R (EIA)	2200 ±10%	4.5	3.2	1.5	2.5	0.3 min.
GR443QR73D272KW01L	DC2000	X7R (EIA)	2700 ±10%	4.5	3.2	1.5	2.5	0.3 min.
GR443QR73D332KW01L	DC2000	X7R (EIA)	3300 ±10%	4.5	3.2	1.5	2.5	0.3 min.
GR443QR73D392KW01L	DC2000	X7R (EIA)	3900 ±10%	4.5	3.2	1.5	2.5	0.3 min.
GR443DR73D472KW01L	DC2000	X7R (EIA)	4700 ±10%	4.5	3.2	2.0	2.5	0.3 min.
GR455DR73D103KW01L	DC2000	X7R (EIA)	10000 ±10%	5.7	5.0	2.0	3.2	0.3 min.

GR455D

No.	Ite	m	Specifications	OW.I	Test Method		
1	Operating Temperatu	re Range	-55 to +125℃	OON.COM.	- TV -		
2	Appearan	ice	No defects or abnormalities	Visual inspection	- TV		
3	Dimension	ns	Within the specified dimensions	Using calipers			
C.C.	OM.TV	VI	WWW.100X.COM.TW WW		e observed when voltage in ta ations, provided the charge/di		
4	Dielectric	Strength	No defects or abnormalities	Rated Voltage	Test Voltage	Tim	
			WWW.100Y.COM.TW W	DC2kV	120% of the rated voltage AC1500V(r.m.s.)	60±1 s	
5	Pulse Volt	tage	No self healing breakdowns or flash-overs have taken place in the capacitor.	The interval between impulse is 60 sec. Applied Voltage: 2.5kV zero to peak			
6	Insulation F (I.R.)	Resistance	More than $6{,}000M\Omega$	The insulation resist and within 60±5 sec	tance should be measured wi c. of charging.	th DC500	
7	Capacitar	nce	Within the specified tolerance	The capacitance/D.F. should be measured at a frequency of 1±0.2kHz and a voltage of AC1±0.2V(r.m.s.)			
8	Dissipation Factor (D.		0.025 max.				
W	W.1003	N.CO	TIM MMM.100X.COW.1	The capacitance me specified in Table.	easurement should be made a	at each s	
			M. T. W. W. TO COM.	Step	Temperature (°C	C)	
	Capacitan	00	Cap. Change	1 2	25±2 Min. Operating Tem	n +3	
9	Temperature Characteristics		within ±15%	3	25±2	1	
			(Temp. Range: -55 to +125℃)	4 5	Max. Operating Ten 25±2	np.±2	
	WW	N.100Y	Y.COM.TW WWW.100Y.COM		atment at 150±9₀℃ for 60±5 . at room condition*.	5 min. an	
10	Adhesive Strength of Termination		No removal of the terminations or other defect should occur.	Solder the capacitor to the testing jig (glass epoxy board) sin Fig. 1. Then apply 10N force in the direction of the arrow. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. Glass Epoxy Board Fig. 1			
		Appearance	No defects or abnormalities	7 ()) > '	r to the test jig (glass epoxy be	,	
		Capacitance	Within the specified tolerance		d be subjected to a simple ha tude of 1.5mm, the frequency		
11	Vibration Resistance	*	WWW.100Y.COM.TW WWW.	uniformly between t frequency range, fro traversed in approxi	he approximate limits of 10 ar om 10 to 55Hz and return to 1 mately 1 min. This motion sho in each of 3 mutually perpen	nd 55Hz. 0Hz, sho ould be a	
	Resistance D.F.		0.025 max.		22 122 122 122 122 122 122 122 122 122		

WWW.100Y.COM. * "Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa WWW.100Y.COM.TW WWW.1007.C

Continued on the following page. WWW.100Y.COM.TW





Continued from the preceding page Specifications No Item Test Method No cracking or marking defects should occur. Solder the capacitor to the testing jig (glass epoxy board) shown in Fig. 2. Then apply a force in the direction shown in Fig. 3. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. Pressurizing speed: 1.0mm/s t:1.6 Deflection Dimension (mm) I XW (mm) d a C 4.5×2.0 3.5 2.4 7.0 Flexure=1 4.5×3.2 3.5 7.0 3.7 1.0 Capacitance meter 5.7×5.0 4.5 8.0 5.6 (in mm) 45 Fig. 2 Fig. 3 Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Solderability of Immerse in solder solution for 2±0.5 sec. 13 75% of the terminations are to be soldered evenly and continuously. Termination Immersing speed: 25±2.5mm/s Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder No marking defects Preheat the capacitor as table. Appearance Immerse the capacitor in solder solution at 260 ±5 °C for 10 ±1 Capacitance Within ±10% sec. Let sit at room condition* for 24±2 hrs., then measure. Change •Immersing speed: 25±2.5mm/s D.F 0.025 max. Pretreatment Perform a heat treatment at 150⁺₋₁₀ °C for 60±5 min. and then Resistance More than 1,000M Ω I.R to Soldering let sit for 24±2 hrs. at room condition*. Heat *Preheating Dielectric In accordance with item No.4 Step Temperature Time Strength 100 to 120℃ 1 1 min. 2 170 to 200℃ 1 min Fix the capacitor to the supporting jig (glass epoxy board) shown **Appearance** No marking defects in Fig. 4. Capacitance Within ±15% Perform the 5 cycles according to the 4 heat treatments listed in Change the following table. D.F 0.05 max. Let sit for 24±2 hrs. at room condition*, then measure Time (min.) Temperature (°C) I.R. More than $3,000M\Omega$ Step Min. Operating Temp.±3 30±3 Room Temp. 2 to 3 Max. Operating Temp.±2 3 30±3 4 Room Temp. 2 to 3 Temperature Pretreatment Cycle Perform a heat treatment at 150 ± 10 °C for 60±5 min. and then let sit for 24±2 hrs. at room condition*. Dielectric In accordance with item No.4 Strength 7/7/ 1777 777 m m m Cu Glass Epoxy Board Fig. 4 Appearance No marking defects Let the capacitor sit at 40±2°C and relative humidity of 90 to 95% Capacitance for 500 +24 hrs. Within ±15% Change Humidity Remove and let sit for 24±2 hrs. at room condition*, then D.F. 16 (Steady 0.05 max. measure. Pretreatment State) I.R. More than $1,000M\Omega$ Perform a heat treatment at 150⁺₁₀ °C for 60±5 min. and then Dielectric let sit for 24±2 hrs. at room condition*. In accordance with item No.4 Strength





^{* &}quot;Room condition" Temperature: 15 to 35℃, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa

No.	lt lt	tem	Specifications	Test Method		
		Appearance	No marking defects	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	LTW	Capacitance Change	Within ±20%	Apply 110% of the rated voltage for 1,000 ± 48 hrs. at maximum operating temperature ±3°C. Remove and let sit for 24±2 hrs room condition*, then measure.		
17	Life	D.F.	0.05 max.	The charge/discharge current is less than 50mA.		
		I.R.	More than $2,000 M\Omega$	Pretreatment Apply test voltage for 60±5 min. at test temperature.		
	OM	Dielectric Strength	In accordance with item No.4	Remove and let sit for 24±2 hrs. at room condition*.		

WWW.100Y.COM.T WW.100Y.COM WWW.100Y.CO WWW.100Y.COM.TW

Chip Monolithic Ceramic Capacitors muRata

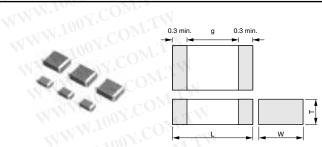
Only for Camera Flash Circuit

■ Features

- 1. Suitable for the trigger of the flash circuit, because real capacitance is stable during operating voltage.
- 2. The thin type fit for thinner camera.

- 3. Sn-plated external electrodes realizes good WWW.100Y.COM.TW solderability.
- 4. For flow and reflow soldering

■ Applications



Dort Milashan	Dimensions (mm)					
Part Number	*1 100 r.	W	T	g min.		
GR731A	11	Co.	1.0 +0, -0.3			
GR731B	3.2 ±0.2	1.6 ±0.2	1.25 +0, -0.3	1.2		
GR731C	. 00	V.Co.	1.6 ±0.2			

Applications			M.TW	GR731A GR731B GR731C	3.2 ±0	.2 1.6 ±0.2	1.0 +0, -0.3 1.25 +0, -0.3 1.6 ±0.2	1.2
or strobe circuit			COM.		WW.	TOO Y.CO	TW	
Part Number Rat	ted Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode (mm)
GR731AW0BB103KW01D	DC350	110	10000 ±10%	3.2	1.6	1.0	1.2	0.3 min.
GR731AW0BB153KW01D	DC350	W.W.	15000 ±10%	3.2	1.6	1.0	1.2	0.3 min.
GR731BW0BB223KW01L	DC350	L.W.X	22000 ±10%	3.2	1.6	1.25	1.2	0.3 min.
GR731BW0BB333KW01L	DC350	W. T.	33000 ±10%	3.2	1.6	1.25	1.2	0.3 min.
GR731CW0BB473KW03L	DC350	M-W	47000 ±10%	3.2	1.6	1.6	1.2	0.3 min.

lo.	Ite	em	Specifications	100 1. COW.1	Test Method
	Operating Temperatu	ure Range	−55 to +125°C	1001.COM.	
2	Appearar	nce	No defects or abnormalities	Visual inspection	
	Dimensio	ns	Within the specified dimensions	Using calipers	Circ
	Dielectric	Strength	No defects or abnormalities		observed when DC500V is applied between to 5 sec., provided the charge/discharge 0mA.
	Insulation F	Resistance	C≥0.01μF: More than 100MΩ • μF C<0.01μF: More than 10,000MΩ	The insulation resista and within 60±5 sec.	ance should be measured with DC250±50\ . of charging.
V	Capacita	nce	Within the specified tolerance	The conseitence/D F	should be made used at a frequency of
0	Dissipation Factor (D		0.025 max.		should be measured at a frequency of age of AC1±0.2V(r.m.s.)
0	1.CO	M.TV	MMM.100X.COM.TW	The capacitance measure specified in Table.	asurement should be made at each step
1			M. M. 1001. COW. T.	Step	Temperature (℃)
	O.Y.C		Cap. Change	111	25±2
	Capacitar		Within ±10% (Apply DC350V bias)	2 3	Min. Operating Temp.±3
	Temperat Character		Within $\stackrel{+22}{-33}$ % (No DC bias)	4	25±2 Max. Operating Temp.±2
V	Character	istics	(Temp. Range : -55 to +125℃)	5	25±2
I	M.100X.CO		M.TW WWW.100Y.COM.TW	Pretreatment Perform a heat treat let sit for 24±2 hrs.	tment at 150 $^{\pm}$ 9 $^{\circ}$ 0° for 60 \pm 5 min. and then at room condition * .
)	Adhesive of Termin		No removal of the terminations or other defect should occur.	The soldering should	e in the direction of the arrow. I be done using the reflow method and I with care so that the soldering is uniform uch as heat shock. 10N, 10±1s Glass Epoxy Board Fig. 1
1	* **	Appearance	No defects or abnormalities	Solder the capacitor	to the test jig (glass epoxy board).
		Capacitance	Within the specified tolerance	The capacitor should	be subjected to a simple harmonic motion
0	Vibration Resistance	D.F.	0.025 max.	uniformly between the frequency range, from traversed in approximate tr	W.1001.
		U.O.23 IIIAX.			- 1 - 1 - 1

^{* &}quot;Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa WWW.100Y.CO WWW.100Y.COM.TW

WWW.100Y.COM



Continued from the preceding page Specifications No Item Test Method Solder the capacitor to the testing jig (glass epoxy board) shown No cracking or marking defects should occur. in Fig. 2. Then apply a force in the direction shown in Fig. 3. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. Pressurizing speed: 1.0mm/s Deflection Dimension (mm) IXW (mm) h d Flexure=1 3.2X1.6 2.2 5.0 2.0 1.0 Capacitance mete Fig. 2 (in mm) 45 Fig. 3 Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Solderability of Immerse in solder solution for 2±0.5 sec. 12 75% of the terminations are to be soldered evenly and continuously. Termination Immersing speed: 25±2.5mm/s Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder No marking defects Appearance Preheat the capacitor at 120 to 150°C* for 1 min. Capacitance Within ±10% Immerse the capacitor in solder solution at 260±5°C for 10±1 Change sec. Let sit at room condition* for 24±2 hrs., then measure. Resistance 0.025 max. D.F 13 to Soldering •Immersing speed: 25±2.5mm/s C≥0.01 μ F: More than 100M Ω • μ F Heat Pretreatment I.R. C<0.01 μ F: More than 10,000M Ω Perform a heat treatment at 150±10 °C for 60±5 min. and then let sit for 24±2 hrs. at room condition*. Dielectric In accordance with item No.4 Strength Appearance No marking defects Fix the capacitor to the supporting jig (glass epoxy board) shown in Fig. 4. Capacitance Within ±7.5% Perform the 5 cycles according to the 4 heat treatments listed in Change the following table. D.F 0.025 max. Let sit for 24±2 hrs. at room condition*, then measure. Step Temperature (°C) Time (min.) C≥0.01 μ F: More than 100M Ω • μ F I.R. C<0.01 μ F: More than 10,000M Ω 1 Min. Operating Temp.±3 30±3 2 Room Temp. 2 to 3 3 Max. Operating Temp.±2 30±3 4 Room Temp 2 to 3 Temperature 14 Pretreatment Cycle Perform a heat treatment at 150±10° € for 60±5 min. and then let sit for 24±2 hrs. at room condition*. Dielectric In accordance with item No.4 Strength 122 1// 777 777 Solder resist Glass Epoxy Board Fig. 4 No marking defects Appearance Let the capacitor sit at 40±2°C and relative humidity of 90 to 95% Capacitance Within ±15% for 500 +24 hrs. Change Humidity Remove and let sit for 24±2 hrs. at room condition*, then D.F 0.05 max. 15 (Steady measure. C≥0.01μF: More than 10MΩ • μF State) Pretreatment I.R. C<0.01 μ F: More than 1,000M Ω Perform a heat treatment at 150⁺₁₀ °C for 60±5 min. and then let sit for 24±2 hrs. at room condition*.

In accordance with item No.4

Dielectric

Strength



^{* &}quot;Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa

No. 16	Ite	em	Specifications	Test Method		
		Appearance	No marking defects	1003. COM: 1.		
OÌ		Capacitance Change	Within ±15%	Apply DC350V for 1,000 $\stackrel{+4}{\circ}$ hrs. at maximum operating temperature $\pm 3^{\circ}$ C. Remove and let sit for 24 ± 2 hrs. at room		
16	Life	D.F.	0.05 max.	condition*, then measure. The charge/discharge current is less than 50mA.		
	OM.TV	I.R.	C≥0.01μF: More than 10MΩ • μF C<0.01μF: More than 1,000MΩ	Pretreatment Apply test voltage for 60±5 min. at test temperature.		
J.(Dielectric Strength	In accordance with item No.4	Remove and let sit for 24±2 hrs. at room condition*.		
1	COM	Appearance	No marking defects	M. In S. COM.		
0.X	Humidity Loading	Capacitance Change	Within ±15%	Apply the rated voltage at $40\pm2^{\circ}$ C and relative humidity of 90 95% for $500^{\pm24}_{\circ}$ hrs.		
17		D.F.	0.05 max.	Remove and let sit for 24±2 hrs. at room condition*, then measure.		
10		I.R.	C≥0.01μF: More than 10M Ω • μF C<0.01μF: More than 1,000M Ω	Pretreatment Apply test voltage for 60±5 min. at test temperature.		
1.1		Dielectric Strength	In accordance with item No.4	Remove and let sit for 24±2 hrs. at room condition*.		

^{* &}quot;Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa WWW.100Y.COM WWW.100Y.COM. WWW.10

Chip Monolithic Ceramic Capacitors



AC250V (r.m.s.) Type (Which Meet Japanese Law)

■ Features

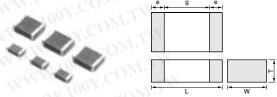
- 1. Chip monolithic ceramic capacitor for AC lines.
- 2. A new monolithic structure for small, high capacitance capable of operating at high voltage
- 3. Sn-plated external electrodes realizes good solderability.
- 4. Only for reflow soldering
- 5. Capacitance 0.01 to 0.1uF for connecting lines and 470 to 4700pF for connecting lines to earth.

■ Applications

Noise suppression filters for switching power supplies, telephones, facsimiles, modems.

■ Reference Standard

GA2 series obtains no safety approval. This series is based on the standards of the electrical appliance and material safety law of Japan (separated table 4).



	10		L	VV	
Part Number	.Voo.	Dim	ensions (mm)		
Part Number	1700	W	ŢΤ	e min.	g min.
GA242Q	4.5 ±0.3	2.0 ±0.2	1.5 +0, -0.3		
GA243D	45.04	3.2 +0.3	2.0 +0, -0.3	0.3	2.5
GA243Q	4.5 ±0.4	3.2 ±0.3	1.5 +0, -0.3	0.3	
GA255D	5.7 ±0.4	5.0 ±0.4	2.0 +0, -0.3		3.2

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Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode (mm)
GA242QR7E2471MW01L	AC250 (r.m.s.)	X7R (EIA)	470pF ±20%	4.5	2.0	1.5	2.5	0.3 min.
GA242QR7E2102MW01L	AC250 (r.m.s.)	X7R (EIA)	1000pF ±20%	4.5	2.0	1.5	2.5	0.3 min.
GA243QR7E2222MW01L	AC250 (r.m.s.)	X7R (EIA)	2200pF ±20%	4.5	3.2	1.5	2.5	0.3 min.
GA243QR7E2332MW01L	AC250 (r.m.s.)	X7R (EIA)	3300pF ±20%	4.5	3.2	1.5	2.5	0.3 min.
GA243DR7E2472MW01L	AC250 (r.m.s.)	X7R (EIA)	4700pF ±20%	4.5	3.2	2.0	2.5	0.3 min.
GA243QR7E2103MW01L	AC250 (r.m.s.)	X7R (EIA)	10000pF ±20%	4.5	3.2	1.5	2.5	0.3 min.
GA243QR7E2223MW01L	AC250 (r.m.s.)	X7R (EIA)	22000pF ±20%	4.5	3.2	1.5	2.5	0.3 min.
GA243DR7E2473MW01L	AC250 (r.m.s.)	X7R (EIA)	47000pF ±20%	4.5	3.2	2.0	2.5	0.3 min.
GA255DR7E2104MW01L	AC250 (r.m.s.)	X7R (EIA)	0.10μF ±20%	5.7	5.0	2.0	3.2	0.3 min.

Operating Temperatu Appearar Dimensio Dielectric Insulation f (I.R.) Capacitar Dissipatic Factor (D	Strength Resistance	$-55 \text{ to } +125 ^{\circ}\text{C}$ No defects or abnormalities Within the specified dimensions No defects or abnormalities More than $2,000\text{M}\Omega$ Within the specified tolerance 0.025 max.	between the terming charge/discharge of Nominal Ca C≥10, C<10, The insulation resident within 60±5 set. The capacitance/D	nations for 60± current is less the pacitance 000pF 000pF stance should be	Test Voltage AC575V (r.m.s.) AC1500V (r.m.s.) De measured with DC500±50V		
Dimensio Dielectric Insulation F (I.R.) Capacitat Dissipatic Factor (D	Strength Resistance	Within the specified dimensions $No \ defects \ or \ abnormalities$ $More \ than \ 2,000 M\Omega$ $Within \ the \ specified \ tolerance$	Using calipers No failure should between the termir charge/discharge continuation in the second se	nations for 60± current is less the pacitance 000pF 000pF stance should be	1 sec., provided the han 50mA. Test Voltage AC575V (r.m.s.) AC1500V (r.m.s.) De measured with DC500±50V		
Dielectricon Insulation F (I.R.) Capacitat Dissipation Factor (D	Strength Resistance	No defects or abnormalities $More\ than\ 2,000M\Omega$ Within the specified tolerance	No failure should between the termin charge/discharge of Nominal Ca C≥10, C<10, The insulation resisand within 60±5 se	nations for 60± current is less the pacitance 000pF 000pF stance should be	1 sec., provided the han 50mA. Test Voltage AC575V (r.m.s.) AC1500V (r.m.s.) De measured with DC500±50V		
Insulation F (I.R.) Capacitan Dissipation Factor (D	Resistance nce	More than $2,000M\Omega$ Within the specified tolerance	between the terming charge/discharge of Nominal Ca C≥10, C<10, The insulation resident within 60±5 set. The capacitance/D	nations for 60± current is less the pacitance 000pF 000pF stance should be	1 sec., provided the han 50mA. Test Voltage AC575V (r.m.s.) AC1500V (r.m.s.) De measured with DC500±50V		
(I.R.) Capacital Dissipatic Factor (D	nce	Within the specified tolerance	C<10, The insulation resident within 60±5 set The capacitance/D	000pF stance should b	AC1500V (r.m.s.) Doe measured with DC500±50V		
(I.R.) Capacital Dissipatic Factor (D	nce	Within the specified tolerance	and within 60±5 se The capacitance/D				
Dissipation Factor (D	on	W. In COM.		and within 60±5 sec. of charging.			
Factor (D		0.025 max.		The capacitance/D.F. should be measured at a frequency of			
Capacitar	Ohr.		1±0.2kHz and a vo		-7		
Capacitar	NY.COM.TW WWW.100Y.COM.TW		The capacitance measurement should be made at each step specified in Table.				
Capacitar		TW WW. 100Y. COM.TW	Step	100 >	Temperature (℃)		
	ice	Cap. Change	2	Min.	25±2 Operating Temp.±3		
Temperat	ure	Within ±15%	3	any.	25±2		
Character	istics	(Temp. Range: −55 to +125℃)	4	Max.	Operating Temp.±2 25±2		
WW.19	100 ^{Y.C}	OM.TW WWW.100Y.COM.TY			$^{\pm}_{1}$ %°C for 60 \pm 5 min. and then		
Discharge Test (Application: Nominal Capacitance C<10,000pF)	Appearance	No defects or abnormalities	R3	cd apacitor under Ω R2: 100MΩ	test Cd: 0.001µF		
Adhesive Strength of Termination				rce in the directing the reflow needs to that the so	tion of the arrow. The soldering method and should be oldering is uniform and free of — 10N, 10±1s		
	Appearance	No defects or abnormalities		, ,			
	Capacitance	Within the specified tolerance					
Vibration Resistance	D.F.	0.025 max.	uniformly between frequency range, fi traversed in approx for a period of 2 hr	the approximation 10 to 55Hz kimately 1 min. s. in each of 3 f 6 hrs.).	te limits of 10 and 55Hz. The z and return to 10Hz, should be This motion should be applied mutually perpendicular		
	Test (Application: Nominal Capacitance C<10,000pF) Adhesive of Termin	Test (Application: Nominal Capacitance C<10,000pF) Adhesive Strength of Termination Appearance Capacitance Capacitance Vibration Resistance	Test (Application: Nominal Capacitance C<10,000pF) Adhesive Strength of Termination Appearance Appearance Appearance No defects or abnormalities No removal of the terminations or other defects should occur. Appearance Appearance Capacitance Vibration Resistance No defects or abnormalities Capacitance No defects or abnormalities Capacitance Vibration Resistance	Let sit for 24±2 hrs	Let sit for 24±2 hrs. at room conditions		

^{* &}quot;Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa MMM.100A.COM



Continued from the preceding page Specifications No Item Test Method Solder the capacitor to the testing jig (glass epoxy board) shown No cracking or marking defects should occur. in Fig. 2. Then apply a force in the direction shown in Fig. 3. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. 20 50 Pressurizing speed: 1.0mm/s Deflection 100 Flexure=1 LXW Dimension (mm) (mm) d Capacitance mete С 4.5X2.0 3.5 2.4 (in mm) 7.0 45 4.5X3.2 3.5 7.0 3.7 1.0 Fig. 3 4.5 8.0 5.6 Fig. 2 Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Solderability of Immerse in solder solution for 2±0.5 sec. 75% of the terminations are to be soldered evenly and continuously. 13 Immersing speed: 25±2.5mm/s Termination Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder No marking defects Appearance Capacitance Within ±15% Change The capacitor should be subjected to 40±2°C, relative humidity of Humidity D.F 0.05 max. 90 to 98% for 8 hrs., and then removed in room condition* for 16 Insulation hrs. until 5 cycles. I.R. More than $1,000M\Omega$ Dielectric In accordance with item No.4 Strength Appearance No marking defects Preheat the capacitor as table. Immerse the capacitor in solder solution at 260±5°C for 10±1 Capacitance Within ±10% sec. Let sit at room condition* for 24±2 hrs., then measure. Change •Immersing speed: 25±2.5mm/s D.F 0.025 max. Pretreatment Resistance Perform a heat treatment at 150±18°C for 60±5 min. and then I.R. More than 2.000MΩ 15 to Soldering let sit for 24±2 hrs. at room condition*. Heat *Preheating Dielectric Step In accordance with item No.4 Temperature Time Strength 100 to 120℃ 1 min. 170 to 200℃ 1 min No marking defects Fix the capacitor to the supporting jig (glass epoxy board) shown Appearance in Fig. 4. Capacitance Within ±15% Perform the 5 cycles according to the 4 heat treatments listed in Change the following table. D.F 0.05 max. Let sit for 24±2 hrs. at room condition*, then measure. Temperature (°C) Time (min. Step I.R More than $2,000M\Omega$ Operating Temp.±3 30±3 2 Room Temp. 2 to 3 3 Max. Operating Temp.±2 30 + 34 Room Temp. 2 to 3 Temperature 16 Pretreatment Cycle Perform a heat treatment at 150 ± 18 °C for 60±5 min. and then let sit for 24±2 hrs. at room condition*. Dielectric In accordance with item No.4 Strength P/A P/A Solder resis -Cu Glass Epoxy Board Fig. 4



^{* &}quot;Room condition" Temperature: 15 to 35℃, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa

lo.	Ite	em	Specifications	Test Method				
		Appearance	No marking defects	W. John Cold Line				
	Humidity	Capacitance Change	Within ±15%	Let the capacitor sit at 40±2°C and relative humidity of 90 to 95 for 500 ±26 hrs. Remove and let sit for 24±2 hrs. at room condition*, then				
7	(Steady	D.F.	0.05 max.	measure.				
U	State)	I.R.	More than 1,000MΩ	Pretreatment Perform a heat treatment at 150 ± 18° € for 60±5 min. and the				
C	O_{M} .	Dielectric Strength	In accordance with item No.4	let sit for 24±2 hrs. at room condition*.				
		Appearance	No marking defects	Apply voltage and time as Table at maximum operating tempera				
Y	COM.	Capacitance Change	Within ±20%	±3°C. Remove and let sit for 24±2 hrs. at room condition*, ther measure. The charge / discharge current is less than 50mA.				
~	$^{\Lambda \cdot CO_{D_{A}}}$	D.F.	0.05 max.	Nominal Capacitance Test Time Test Voltage C≥10,000pF 1,000±46 hrs. AC300V (r.m.s.)				
8	Life	I.R.	More than 1,000MΩ	C<10,000pF 1,500 ⁺⁴⁸ _o hrs. AC500V (r.m.s.)*				
1.	100 ^{Y.CC}	Dielectric Strength In accordance with item No.4		AC1,000V (r.m.s.) for 0.1 sec. •Pretreatment Apply test voltage for 60±5 min. at test temperature. Remove and let sit for 24±2 hrs. at room condition*.				
V	1.700	Appearance	No marking defects	THE WHY COM TW				
N	W.100	Capacitance Change	Within ±15%	Apply the rated voltage at 40±2°C and relative humidity of 90 to 95% for 500±26 hrs. Remove and let sit for 24±2 hrs. at room condition*, then				
9	Humidity Loading	D.F.	0.05 max.	measure.				
	Loading	I.R.	More than 1,000MΩ	Pretreatment Apply test voltage for 60±5 min, at test temperature.				
N		Dielectric Strength	In accordance with item No.4	Remove and let sit for 24±2 hrs. at room condition*.				

^{* &}quot;Room condition" Temperature: 15 to 35℃, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa WWW.100Y. WWW.100Y.COM.

Table PDF catalogy has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

Chip Monolithic Ceramic Capacitors



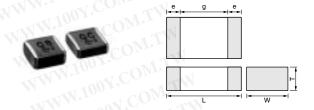
Safety Standard Recognized Type GC (UL, IEC60384-14 Class X1/Y2)

■ Features

- Chip monolithic ceramic capacitor (certified as conforming to safety standards) for AC lines.
- A new monolithic structure for small, high capacitance capable of operating at high voltage levels.
- 3. Compared to lead type capacitors, this new capacitor is greatly downsized and low-profiled to 1/10 or less in volume, and 1/4 or less in height.
- 4. The type GC can be used as an X1-class and Y2-class capacitor, line-by-pass capacitor of UL1414.
- 5. +125 degree C guaranteed
- 6. Only for reflow soldering

Applications

- Ideal for use as Y capacitor or X capacitor for various switching power supplies
- 2. Ideal for modem applications



Part Number	1003	Din	nensions (m	nm)	
Part Number	(1.)Lu	W	T	e min.	g min.
GA355D	5.7 ±0.4	5.0 ±0.4	2.0 ±0.3	0.3	4.0

■ Standard Recognition

No.	Standard No.	Class	Rated Voltage
UL	UL1414	Line By-pass	
VDE	IEC 60384-14 EN 60384-14	N.100Y.CO	LTW
BSI	EN 60065 (14.2) IEC 60384-14 EN 60384-14	X1, Y2	AC250V (r.m.s.)
SEMKO	IEC 60384-14 EN 60384-14	MM:1001.	COMITY
ESTI	EN 60065 IEC 60384-14	WWW.100Y	.COM.

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode (mm)
GA355DR7GC101KY02L	AC250 (r.m.s.)	X7R (EIA)	100 ±10%	5.7	5.0	2.0	4.0	0.3 min.
GA355DR7GC151KY02L	AC250 (r.m.s.)	X7R (EIA)	150 ±10%	5.7	5.0	2.0	4.0	0.3 min.
GA355DR7GC221KY02L	AC250 (r.m.s.)	X7R (EIA)	220 ±10%	5.7	5.0	2.0	4.0	0.3 min.
GA355DR7GC331KY02L	AC250 (r.m.s.)	X7R (EIA)	330 ±10%	5.7	5.0	2.0	4.0	0.3 min.

15

sales representatives or product engineers become ordering.

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Chip Monolithic Ceramic Capacitors



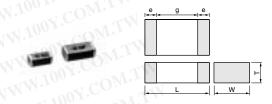
Safety Standard Recognized Type GD (IEC60384-14 Class Y3)

■ Features

- Available for equipment based on IEC/EN60950 and UL1950
- 2. The type GD can be used as a Y3-class capacitor.
- A new monolithic structure for small, high capacitance capable of operating at high voltage levels
- 4. +125 degree C guaranteed
- 5. Only for reflow soldering
- The low-profile type (thickness: 1.5mm max.) is available. Fit for use on thinner type equipment.

■ Applications

- Ideal for use on line filters and couplings for DAA modems without transformers
- 2. Ideal for use on line filters for information equipment



Part Number	4001	Dimensions (mm)							
Part Number	1.7.F	W	Ţ	e min.	g min.				
GA342A	400		1.0 +0, -0.3						
GA342D	4.5 ±0.3	2.0 ±0.2	2.0 ±0.3						
GA342Q	4.00		1.5 + 0, -0.3	0.3	2.5				
GA343D	4.5 +0.4	3.2 ±0.3	2.0 +0, -0.3						
GA343Q	4.5 ±0.4	3.2 ±0.3	1.5 +0, -0.3						

■ Standard Recognition

	Standard No.	Class	Rated Voltage
UL	UL 60950-1	1007.	TW
SEMKO	IEC 60384-14 EN 60384-14	Y3 CO	AC250V(r.m.s.)

Applications	100	
Size	Switching power supplies	Communication network devices such as a modem
45.00	7 110	

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GA342D1XGD100JY02L	AC250 (r.m.s.)	SL (JIS)	10 ±5%	4.5	2.0	2.0	2.5	0.3 min.
GA342D1XGD120JY02L	AC250 (r.m.s.)	SL (JIS)	12 ±5%	4.5	2.0	2.0	2.5	0.3 min.
GA342D1XGD150JY02L	AC250 (r.m.s.)	SL (JIS)	15 ±5%	4.5	2.0	2.0	2.5	0.3 min.
GA342D1XGD180JY02L	AC250 (r.m.s.)	SL (JIS)	18 ±5%	4.5	2.0	2.0	2.5	0.3 min.
GA342D1XGD220JY02L	AC250 (r.m.s.)	SL (JIS)	22 ±5%	4.5	2.0	2.0	2.5	0.3 min.
GA342A1XGD270JW31L	AC250 (r.m.s.)	SL (JIS)	27 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342A1XGD330JW31L	AC250 (r.m.s.)	SL (JIS)	33 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342A1XGD390JW31L	AC250 (r.m.s.)	SL (JIS)	39 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342A1XGD470JW31L	AC250 (r.m.s.)	SL (JIS)	47 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342A1XGD560JW31L	AC250 (r.m.s.)	SL (JIS)	56 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342A1XGD680JW31L	AC250 (r.m.s.)	SL (JIS)	68 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342A1XGD820JW31L	AC250 (r.m.s.)	SL (JIS)	82 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342QR7GD101KW01L	AC250 (r.m.s.)	X7R (EIA)	100 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GA342QR7GD151KW01L	AC250 (r.m.s.)	X7R (EIA)	150 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GA342QR7GD221KW01L	AC250 (r.m.s.)	X7R (EIA)	220 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GA342QR7GD331KW01L	AC250 (r.m.s.)	X7R (EIA)	330 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GA342QR7GD471KW01L	AC250 (r.m.s.)	X7R (EIA)	470 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GA342QR7GD681KW01L	AC250 (r.m.s.)	X7R (EIA)	680 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GA342QR7GD102KW01L	AC250 (r.m.s.)	X7R (EIA)	1000 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GA342QR7GD152KW01L	AC250 (r.m.s.)	X7R (EIA)	1500 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GA343QR7GD182KW01L	AC250 (r.m.s.)	X7R (EIA)	1800 ±10%	4.5	3.2	1.5	2.5	0.3 min.
GA343QR7GD222KW01L	AC250 (r.m.s.)	X7R (EIA)	2200 ±10%	4.5	3.2	1.5	2.5	0.3 min.
GA343DR7GD472KW01L	AC250 (r.m.s.)	X7R (EIA)	4700 ±10%	4.5	3.2	2.0	2.5	0.3 min.

192

Chip Monolithic Ceramic Capacitors



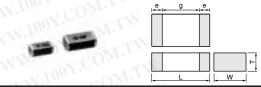
Safety Standard Recognized Type GF (IEC60384-14 Class Y2, X1/Y2)

■ Features

- 1. Available for equipment based on IEC/EN60950 and UL1950. Besides, the GA352/355 types are available for equipment based on IEC/EN60065, UL1492, and UL6500
- 2. The type GF can be used as a Y2-class capacitor.
- 3. A new monolithic structure for small, high capacitance capable of operating at high voltage
- 4. +125 degree C guaranteed
- 5. Only for reflow soldering
- 6. The low-profile type (thickness: 1.5mm max.) is available. Fit for use on thinner type equipment.

■ Applications

- 1. Ideal for use on line filters and couplings for DAA modems without transformers
- 2. Ideal for use on line filters for information equipment
- 3. Ideal for use as Y capacitor or X capacitor for various switching power supplies (GA352/355 types only)



Part Number	Dimensions (mm)									
Part Number	To L	W	T	e min.	g min.					
GA342A	- 100 X	- 1	1.0 +0, -0.3							
GA342D	4.5 ±0.3	2.0 ±0.2	2.0 ±0.2*		2.5					
GA342Q	400		1.5 +0, -0.3	0.3						
GA352Q	W.To.	2.8 ±0.3	1.5 +0, -0.3	0.3						
GA355D	5.7 ±0.4	5.0 ±0.4	2.0 +0, -0.3		4.0					
GA355Q	TN. IV	3.0 ±0.4	1.5 +0, -0.3							

GA342D1X: 2.0±0.3

Standard Recognition

	Standard	T.V.1	Status of R	Recognition	Rated
	No.	Class	Size : 4.5×2.0mm	Size: 5.7×2.8mm and over	Voltage
UL	UL1414	X1, Y2	1002	0	
UL	UL 60950-1		0 ()	- W	AC250V
VDE	IEC 60384-14	X1, Y2	N.100	~ () (©.	(r.m.s.)
SEMKO	EN 60384-14	Y2	(O)	0	

Applications		
Size	Switching power supplies	Communication network devices such as a modem
4.5×2.0mm	WA	1.00 O M
5.7×2.8mm and over	0 (N) J	

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GA342D1XGF100JY02L	AC250 (r.m.s.)	SL (JIS)	10 ±5%	4.5	2.0	2.0	2.5	0.3 min.
GA342D1XGF120JY02L	AC250 (r.m.s.)	SL (JIS)	12 ±5%	4.5	2.0	2.0	2.5	0.3 min.
GA342D1XGF150JY02L	AC250 (r.m.s.)	SL (JIS)	15 ±5%	4.5	2.0	2.0	2.5	0.3 min.
GA342D1XGF180JY02L	AC250 (r.m.s.)	SL (JIS)	18 ±5%	4.5	2.0	2.0	2.5	0.3 min.
GA342D1XGF220JY02L	AC250 (r.m.s.)	SL (JIS)	22 ±5%	4.5	2.0	2.0	2.5	0.3 min.
GA342A1XGF270JW31L	AC250 (r.m.s.)	SL (JIS)	27 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342A1XGF330JW31L	AC250 (r.m.s.)	SL (JIS)	33 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342A1XGF390JW31L	AC250 (r.m.s.)	SL (JIS)	39 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342A1XGF470JW31L	AC250 (r.m.s.)	SL (JIS)	47 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342A1XGF560JW31L	AC250 (r.m.s.)	SL (JIS)	56 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342A1XGF680JW31L	AC250 (r.m.s.)	SL (JIS)	68 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342A1XGF820JW31L	AC250 (r.m.s.)	SL (JIS)	82 ±5%	4.5	2.0	1.0	2.5	0.3 min.
GA342QR7GF101KW01L	AC250 (r.m.s.)	X7R (EIA)	100 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GA342QR7GF151KW01L	AC250 (r.m.s.)	X7R (EIA)	150 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GA342DR7GF221KW02L	AC250 (r.m.s.)	X7R (EIA)	220 ±10%	4.5	2.0	2.0	2.5	0.3 min.
GA342DR7GF331KW02L	AC250 (r.m.s.)	X7R (EIA)	330 ±10%	4.5	2.0	2.0	2.5	0.3 min.
GA342QR7GF471KW01L	AC250 (r.m.s.)	X7R (EIA)	470 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GA352QR7GF471KW01L	AC250 (r.m.s.)	X7R (EIA)	470 ±10%	5.7	2.8	1.5	4.0	0.3 min.
GA342QR7GF681KW01L	AC250 (r.m.s.)	X7R (EIA)	680 ±10%	4.5	2.0	1.5	2.5	0.3 min.
GA352QR7GF681KW01L	AC250 (r.m.s.)	X7R (EIA)	680 ±10%	5.7	2.8	1.5	4.0	0.3 min.
GA342DR7GF102KW02L	AC250 (r.m.s.)	X7R (EIA)	1000 ±10%	4.5	2.0	2.0	2.5	0.3 min.
GA352QR7GF102KW01L	AC250 (r.m.s.)	X7R (EIA)	1000 ±10%	5.7	2.8	1.5	4.0	0.3 min.
GA352QR7GF152KW01L	AC250 (r.m.s.)	X7R (EIA)	1500 ±10%	5.7	2.8	1.5	4.0	0.3 min.

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• This PDF catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

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□ Continued from the preceding page.

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode (mm)
GA355QR7GF182KW01L	AC250 (r.m.s.)	X7R (EIA)	1800 ±10%	5.7	5.0	1.5	4.0	0.3 min.
GA355QR7GF222KW01L	AC250 (r.m.s.)	X7R (EIA)	2200 ±10%	5.7	5.0	1.5	4.0	0.3 min.
GA355QR7GF332KW01L	AC250 (r.m.s.)	X7R (EIA)	3300 ±10%	5.7	5.0	1.5	4.0	0.3 min.
GA355DR7GF472KW01L	AC250 (r.m.s.)	X7R (EIA)	4700 ±10%	5.7	5.0	2.0	4.0	0.3 min.

194

Chip Monolithic Ceramic Capacitors



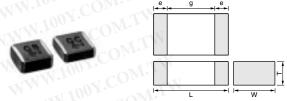
Safety Standard Recognized Type GB (IEC60384-14 Class X2)

■ Features

- 1. The type GB can be used as an X2-class capacitor.
- 2. Chip monolithic ceramic capacitor (certified as conforming to safety standards) for AC lines
- 3. A new monolithic structure for small, high capacitance capable of operating at high voltage
- 4. Compared to lead type capacitors, this new capacitor is greatly downsized and low-profiled to 1/10 or less in volume, and 1/4 or less in height.
- 5. +125 degree C guaranteed
- 6. Only for reflow soldering

Applications

WWW.100Y.COM. Ideal for use as X capacitor for various switching power supplies WWW.100Y.COM



Part Number	4007	Dimensions (mm)							
Part Number	1.14	W	T ₁	e min.	g min.				
GA355Q	- 100		1.5 +0,-0.3						
GA355D	5.7 ±0.4	5.0 ±0.4	5.0.10.4 2.0 +0,-0.3	0.3	2.0				
GA355E	5.7 ±0.4	5.0 ±0.4	2.5 +0,-0.3	0.3	3.0				
GA355X	1111.7	V CU	2.9 +0,-0.4						

■ Standard Recognition

ng 100 Y		Standard No.	Class	Rated Voltage
	VDE	W.	.1001.COM	TAL
	SEMKO	IEC 60384-14 EN 60384-14	X2	AC250V (r.m.s.)
	ESTI		W 100Y.	M.TW

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GA355QR7GB103KW01L	AC250 (r.m.s.)	X7R (EIA)	10000 ±10%	5.7	5.0	1.5	3.0	0.3 min.
GA355QR7GB153KW01L	AC250 (r.m.s.)	X7R (EIA)	15000 ±10%	5.7	5.0	1.5	3.0	0.3 min.
GA355DR7GB223KW01L	AC250 (r.m.s.)	X7R (EIA)	22000 ±10%	5.7	5.0	2.0	3.0	0.3 min.
GA355ER7GB333KW01L	AC250 (r.m.s.)	X7R (EIA)	33000 ±10%	5.7	5.0	2.5	3.0	0.3 min.
GA355ER7GB473KW01L	AC250 (r.m.s.)	X7R (EIA)	47000 ±10%	5.7	5.0	2.5	3.0	0.3 min.
GA355XR7GB563KW06L	AC250 (r.m.s.)	X7R (EIA)	56000 ±10%	5.7	5.0	2.9	3.0	0.3 min.

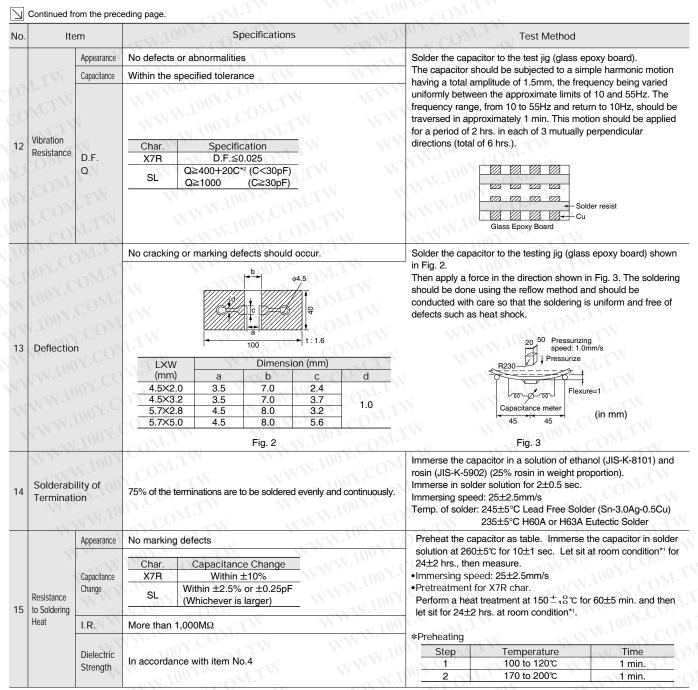
0.	Ite	m	Specifications	0.1 COW.1	Test Method	
1	Operating Temperatu	re Range	−55 to +125°C	OO. COM.	LM	
2	Appearan	ce	No defects or abnormalities	Visual inspection		
3	Dimension	าร	Within the specified dimensions	Using calipers	V.L.	
4	Dielectric	Strength	No defects or abnormalities	No failure should be observed when voltage in table is applied between the terminations for 60±1 sec., provided the charge/discharge current is less than 50mA. Test Voltage Type GB DC1075V Type GC/GD/GF AC1500V (r.m.s.)		
	Pulse Voli (Application GD/GF)	on: Type	No self healing breakdowns or flash-overs have taken place in the capacitor. $\label{eq:decomposition} \text{More than } 6{,}000\text{M}\Omega$	10 impulse of alternating polarity is subjected.		
7	Capacitar	000	Within the specified tolerance	and within 00±3 sec	2. Of Charging.	
	Dissipation Factor (D. Q		Char. Specification X7R D.F.≤0.025 SL Q≥400+20C*² (C<30pF)	The capacitance/Q/D.F. should be measured at a frequency of 1±0.2kHz (SL char.: 1±0.2MHz) and a voltage of AC1±0.2V (r.m.s.)		
	W.100Y.COM.TW WWW.100Y.COM.TV		The capacitance me specified in Table.	easurement should be made at each step		
N	WWW. 100X.COM.TW		Step	Temperature (°C)		
× 16			Char. Capacitance Change	1 2	25±2 (20±2 for SL char.) Min. Operating Temp.±3	
	Capacitan	100	X7R Within ±15% Temperature characteristic guarantee is -55 to +125°C	3	25±2 (20±2 for SL char.)	
	Temperati	perature Char. Temperature Coefficient		4 5	Max. Operating Temp.±2 25±2 (20±2 for SL char.)	
	Character	istics	SL +350 to -1000ppm/°C Temperature characteristic guarantee is +20 to +85°C	3 and step 4. • Pretreatment for X Perform a heat trea	ould be measured at even 85℃ between step	
		Appearance	No defects or abnormalities		e is made 50 times at 5 sec. intervals from	
		I.R.	More than 1,000M Ω		harged at DC voltage of specified.	
10	Discharge Test (Application: Dielectric		In accordance with item No.4		Pacitor under test Cd: 0.001µF	
11	Adhesive Strength of Termination		No removal of the terminations or other defect should occur.	Solder the capacitor in Fig. 1. Then apply 10N force should be done usin	R2: 100MΩ R3: Surge resistance to the testing jig (glass epoxy board) shown the in the direction of the arrow. The soldering the reflow method and should be to so that the soldering is uniform and free of the shock. 10N, 10±1s Glass Epoxy Board	

^{*1 &}quot;Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa WWW.100Y.COM.





^{*2 &}quot;C" expresses nominal capacitance value (pF). WWW.100Y.COM.TW



^{*1 &}quot;Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa



^{*2 &}quot;C" expresses nominal capacitance value (pF). WWW.100Y.COM.T

	۱	Specifications	Test Method		
LTW	Appearance Capacitance	No marking defects Char. Capacitance Change X7R Within ±15%	Fix the capacitor to the supporting jig (glass epoxy board) shown in Fig. 4. Perform the 5 cycles according to the 4 heat treatments listed in the following table.		
WILLIA.	Change	SL Within ±2.5% or ±0.25pF (Whichever is larger)	Let sit for 24±2 hrs. at room condition*¹, then measure. Step Temperature (°c) Time (min.) 1 Min. Operating Temp.±3 30±3		
	D.F. Q	Char. Specification X7R D.F.≤0.05 SL Q≥400+20C*² (C<30pF)	2 Room Temp. 2 to 3 3 Max. Operating Temp.±2 30±3 4 Room Temp. 2 to 3 •Pretreatment for X7R char.		
1 CON	I.R.	More than $3{,}000M\Omega$	Perform a heat treatment at 150 $^{\pm}$ 10 °C for 60 \pm 5 min. and the		
_ ^ ~ ~	Dielectric Strength	In accordance with item No.4	Solder resist Glass Epoxy Board Fig. 4		
1	Appearance	No marking defects	MMM. COM. COM		
VIV.1	Capacitance Change	Char. Capacitance Change X7R Within ±15% SL Within ±5.0% or ±0.5pF (Whichever is larger)	Before this test, the test shown in the following is performed. Item 11 Adhesive Strength of Termination (applied force is 5N) Item 13 Deflection		
1	D.F. Q	Char. Specification X7R D.F.≤0.05 SL Q≥275+5/2C*² (C<30pF)	Let the capacitor sit at $40\pm2^{\circ}$ C and relative humidity of 90 to 95% for $500^{\pm2^{\circ}}_{0}$ hrs. Remove and let sit for 24 ± 2 hrs. at room condition*¹, then measure. •Pretreatment for X7R char. Perform a heat treatment at $150\pm_{1}8^{\circ}$ C for 60 ± 5 min. and then		
WW	I.R.	More than $3{,}000{\rm M}\Omega$	let sit for 24±2 hrs. at room condition*1.		
	Dielectric Strength	In accordance with item No.4	M.TW WWW.100Y.COM.TW		
	Appearance	No marking defects	Before this test, the test shown in the following is performed. -Item 11 Adhesive Strength of Termination (apply force is 5N)		
	Capacitance Change	Char. Capacitance Change X7R Within ±20% SL Within ±3.0% or ±0.3pF (Whichever is larger)	Impulse Voltage Each individual capacitor should be subjected to a 2.5kV (Type Front time (T ₁)=1.2µs=1.67T Time to half-value (T ₂)=50µs		
	D.F. Q	Char. Specification X7R D.F.≤0.05 SL Q≥275+5/2C*² (C<30pF)	GC/GF: 5kV) Impulse (the voltage value means zero to peak) for three times. Then the capacitors are applied to life test. Apply voltage as Table for 1,000 hrs. at 125 $^{+2}_{-0}$ °C, relative		
Life	I.R.	More than $3{,}000M\Omega$	humidity 50% max.		
	Dielectric	In accordance with item No.4	Type Applied Voltage GB AC312.5V (r.m.s.), except that once each hour the voltage is increased to AC1,000V (r.m.s.) for 0.1 sec. GC GD AC425V (r.m.s.), except that once each hour the voltage is increased to AC1,000V (r.m.s.) for 0.1 sec.		
	Strength		Let sit for 24±2 hrs. at room condition*¹, then measure. •Pretreatment for X7R char. Perform a heat treatment at 150±₁8°C for 60±5 min. and then let sit for 24±2 hrs. at room condition*¹.		

^{*1 &}quot;Room condition" Temperature: 15 to 35°c, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa WWW.100Y.COM.

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^{*2 &}quot;C" expresses nominal capacitance value (pF). WWW.100Y.COM.TW

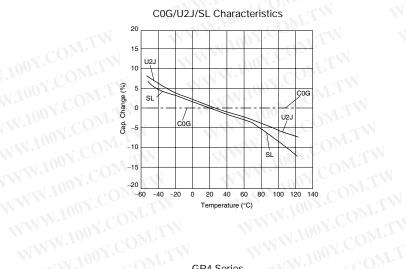
).	Ite	m	Specifications	Test Method				
		Appearance	No marking defects	TOOL STATE OF THE PARTY OF THE				
ON.	TW LTW	Capacitance Change	Char. Capacitance Change X7R Within ±15% SL Within ±5.0% or ±0.5pF (Whichever is larger)	Before this test, the test shown in the following is performed. Item 11 Adhesive Strength of Termination (apply force is 5N) Item 13 Deflection				
9	lumidity oading	D.F. Q	Char. Specification X7R D.F.≤0.05 SL Q≥275+5/2C*² (C<30pF)	Apply the rated voltage at 40±2°C and relative humidity of 90 to 95% for 500±26 hrs. Remove and let sit for 24±2 hrs. at room condition*¹, then measure. •Pretreatment for X7R char. Perform a heat treatment at 150±18°C for 60±5 min. and then				
17	$CO_{J_{i}}$	I.R.	More than $3{,}000M\Omega$	let sit for 24±2 hrs. at room condition*1.				
002	1.CO	Dielectric Strength	In accordance with item No.4	WWW.100Y.COM.				
100 N.10	00Y.CC	OM.T COM.I	WWW.100Y.COM.TW	The capacitor should be individually wrapped in at least one but not more than two complete layers of cheesecloth. The capacitor should be subjected to 20 discharges. The interval between successive discharges should be 5 sec. The UAC should be maintained for 2 min. after the last discharge.				
NV.		⁰ 7.CO ^N	M.TW WWW.100Y.COM.TW WWW.100Y.COM.TW WWW.100Y.COM.TW	S1				
	Active Flammability				The cheesecloth should not be on fire.	Öscilloscope C1,2 <td:1μf±10%< td=""> C3 <td:0.033μf±5% 10kv<="" td=""> L1 to 4:1.5mH±20% 16A Rod core choke Ct :3μF±5% 10kV R :100Ω±2% Cx : Capacitor under test UAC : UR±5% F : Fuse, Rated 16A UR : Rated Voltage Ut : Voltage applied to Ci</td:0.033μf±5%></td:1μf±10%<>		
		NWN.10	OX.COM.TW WWW.100X.COM.TW WWW.100X.COM.TW WWW.100X.COM.TW	Ux				
		MM	M.100X.COM.TM MMM.100	The capacitor under test should be held in the flame in the position which best promotes burning. Each specimen should only be exposed once to the flame. Time of exposure to flame: 30 sec. Length of flame: 12±1mm				
71	assive Tammabi	lity	The burning time should not exceed 30 sec. The tissue paper should not ignite.	Gas burner : Length 35mm min. Inside Dia. 0.5±0.1mm Outside Dia. 0.9mm max. Gas : Butane gas Purity 95% min.				
	iamina)	y	The leads paper should not ignite.	Tissue About 10mm Thick Board				

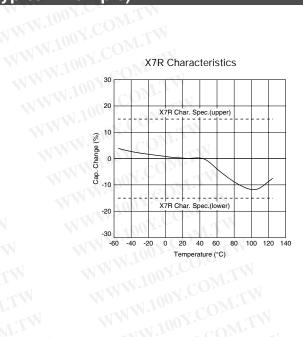
WWW.100Y.COM.TW *1 "Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa WWW.tooy.COM

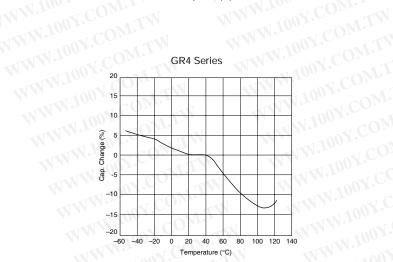
^{*2 &}quot;C" expresses nominal capacitance value (pF). WWW.100Y.COM.TW

GRM/GR4/GR7/GA2/GA3 Series Data (Typical Example) WWW.1003

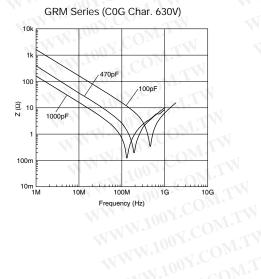
■ Capacitance - Temperature Characteristics

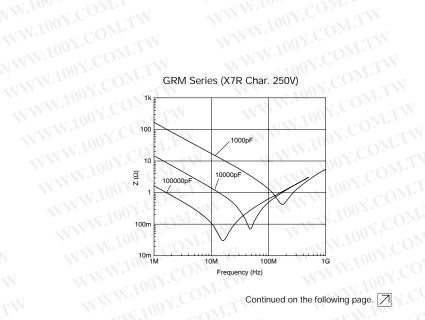






■ Impedance - Frequency Characteristics





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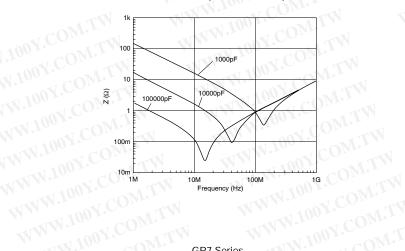


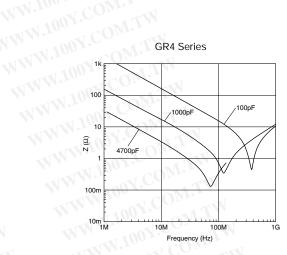
GRM/GR4/GR7/GA2/GA3 Series Data (Typical Example)

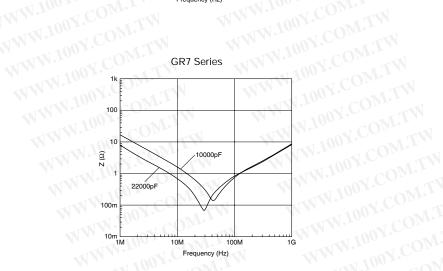
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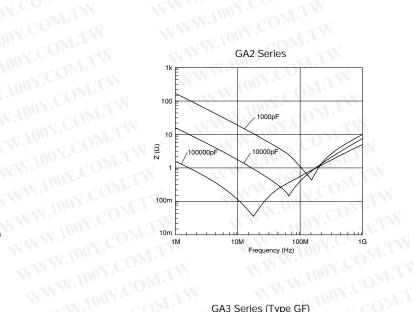
■ Impedance - Frequency Characteristics

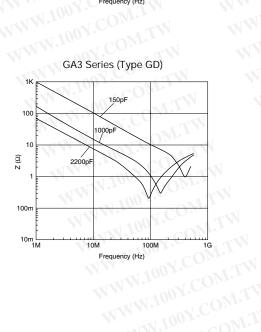
GRM Series (X7R Char. 630V)

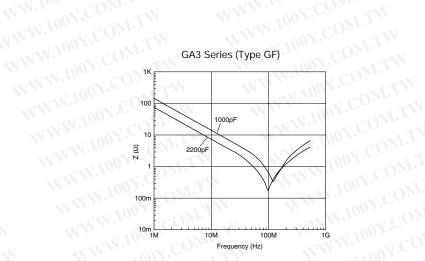












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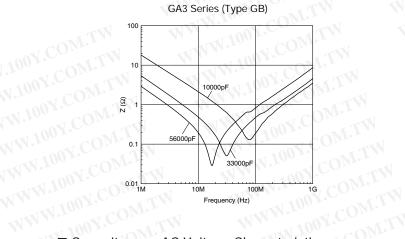




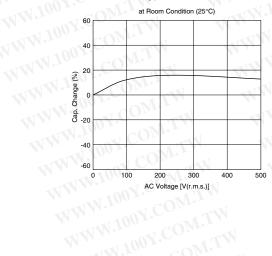
GRM/GR4/GR7/GA2/GA3 Series Data (Typical Example) WWW.100Y.COM.TV WWW.100

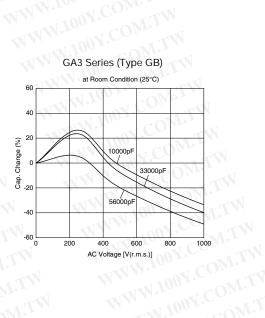
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■ Impedance - Frequency Characteristics



■ Capacitance - AC Voltage Characteristics GA3 Series (Table 2) 100Y.COM.TW





Package

Taping is standard packaging method.

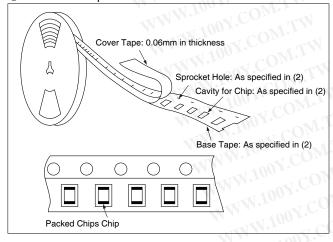
■ Minimum Quantity Guide

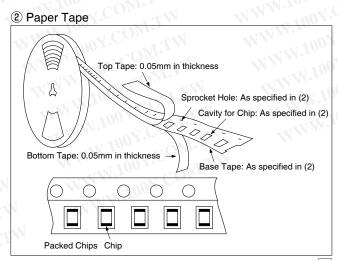
		Dimensions (mm)			Quantity (pcs.)		
Part Nui	mber	1007.	7.7.			m Reel	
Ohr.	WW	L. C.	W	T	Paper Tape	Embossed Tape	
OM.	GRM18	1.6	0.8	0.8	4,000	<u>-</u>	
WI.IV	GRM21	2.0	1.25	1.0	4,000	-	
	MIIMZI	2.0	CO 1.25	1.25	W 1003.	3,000	
COM.		WW.IO	COM	1.0	4,000	cW -	
M.T	GRM31/GR731	3.2	1.6	1.25	COM.	3,000	
N.Co.	W	NN	N.Com	1.6	W 1007.	2,000	
COM		WWW.I	W.COM	1.0	4,000	- WT	
	GRM32	3.2	2.5	1.25	CO	3,000	
Medium Voltage	GRIVI32	3.2	00 2.5	1.5	W . 100 1.	2,000	
		MM.	TOON CO	2.0	MM : 100 X'C'	1,000	
	DIVI.	VIVIV	To C	1.0	WW. N. C.	3,000	
	GRM42/GR442	4.5	2.0	1.5	100 x	2,000	
	TW			2.0	1/1/1/1007	2,000	
	GRM43/GR443	TA V	3.2	1.5	M-M	1,000	
-1N.100 1		4.5		2.0	-WW.Inc	1,000	
100				2.5	1111100	500	
MAIN	GRM55/GR455	5.7	5.0	2.0	M M	1,000	
-WW.10	GA242	4.5	2.0	1.5	- WWW.	2,000	
100504	GA243		W - W 10	1.5	- W.	1,000	
AC250V		4.5	3.2	2.0	IN - WW.	1,000	
WW.	GA255	5.7	5.0	2.0	TWW - WWW	1,000	
111	1100	1.7.		1.0	M TW	3,000	
MM.	GA342	4.5	2.0	1.5	WIM - MA	2,000	
WW	W. T. CO	TW.	WW	2.0	WW - WW	2,000	
V1 -	131.100 E	DM		1.5	OM.	1,000	
	GA343	4.5	3.2	2.0	COM.1	1,000	
Safety Std.	GA352	5.7	2.8	1.5	WIN V	1,000	
Recognition	WW.IV	COM.	<1	1.5	COMME	1,000	
		COMITY	N N	2.0	COM	1,000	
	GA355	5.7	5.0	2.5	M.T.W	500	
		A.COM.	W	2.7	OY.CON CTW	500	
		COM.		2.9	CONTRACT	500	

■ Tape Carrier Packaging

(1) Appearance of Taping

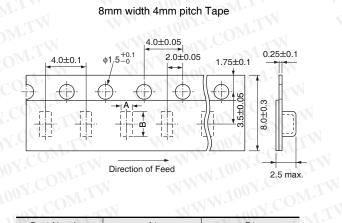
① Embossed Tape





Package

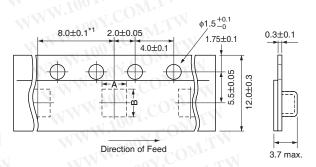
- Continued from the preceding page.
- (2) Dimensions of Tape
- ① Embossed Tape



Part Number	A*	B*
GRM21 (T≧1.25mm)	1.45	2.25
GRM31/GR731 (T≧1.25mm)	2.0	3.6
GRM32 (T≧1.25mm)	2.9	3.6

*Nominal Value

12mm width 8mm/4mm pitch Tape



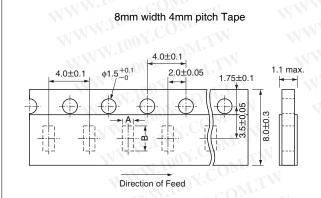
Part Number	A*	B*
GRM42/GR442/GA242/GA342	2.5	5.1
GRM43/GR443/GA243/GA343	3.6	4.9
GA352	3.2	6.1
GRM55/GR455/GA255/GA355	5.4	6.1

^{4.0±0.1}mm in case of GRM42/GR442/GA242/GA342

*Nominal Value

(in mm)

2 Paper Tape

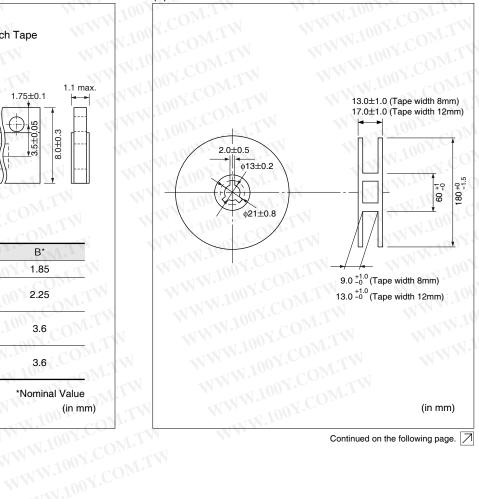


Part Number	A*	B*
GRM18	1.05	1.85
GRM21 (T=1.0mm)	1.45	2.25
GRM31/GR731 (T=1.0mm)	2.0	3.6
GRM32 (T=1.0mm)	2.9	3.6 CO

*Nominal Value (in mm)

WWW.100Y.

(3) Dimensions of Reel





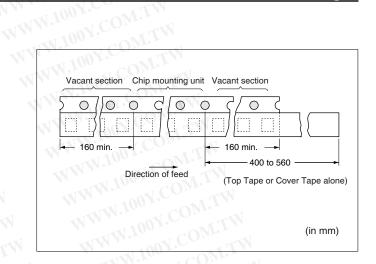


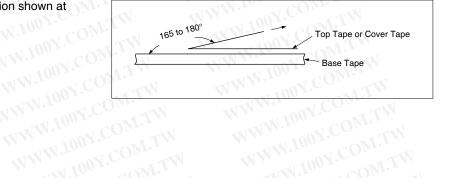
Package

Continued from the preceding page

(4) Taping Method

- 1 Tapes for capacitors are wound clockwise. The sprocket holes are to the right as the tape is pulled toward the user.
- ② Part of the leader and part of the empty tape should be attached to the end of the tape as shown at right.
- 3 The top tape or cover tape and base tape are not attached at the end of the tape for a minimum of 5 pitches.
- 4 Missing capacitors number within 0.1% of the number per reel or 1 pc, whichever is greater, and are not continuous.
- 5 The top tape or cover tape and bottom tape should not protrude beyond the edges of the tape and should not cover sprocket holes.
- 6 Cumulative tolerance of sprocket holes, 10 pitches: ±0.3mm.
- 7 Peeling off force: 0.1 to 0.6N in the direction shown at WWW.100Y.COM. right.





■ Storage and Operating Conditions

Operating and storage environment Do not use or store capacitors in a corrosive atmosphere, especially where chloride gas, sulfide

gas, acid, alkali, salt or the like are present. And avoid exposure to moisture. Before cleaning, bonding or molding this product, verify that these processes do not affect product quality by testing the performance of a cleaned, bonded or molded product in the intended equipment. Store the capacitors where the temperature and relative humidity do not exceed 5 to 40 degrees centigrade and 20 to 70%.

Check the solderability after 6 months or more.

Use capacitors within 6 months after delivered.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.

■ Handling

- 1. Vibration and impact Do not expose a capacitor to excessive shock or vibration during use.
- 2. Do not directly touch the chip capacitor, especially the ceramic body. Residue from hands/fingers may create a short circuit environment.

W.100Y.COM.TW FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY WWW.100Y.COM.TW RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WWW.100Y.COM.TW WHEN THE PRODUCT IS USED.

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■ Caution (Rating)

1. Operating Voltage

When DC-rated capacitors are to be used in AC or ripple current circuits, be sure to maintain the Vp-p value of the applied voltage or the Vo-p which contains DC bias within the rated voltage range.

When the voltage is applied to the circuit, starting or stopping may generate irregular voltage for a transit period because of resonance or switching. Be sure to use a capacitor with a rated voltage range that includes these irregular voltages.

When DC-rated capacitors are to be used in input circuits from commercial power source (AC filter), be sure to use Safety Recognized Capacitors because various regulations on withstand voltage or impulse withstand established for each equipment should be taken into considerations.

Voltage	DC Voltage	DC+AC Voltage	AC Voltage	Pulse Voltage (1)	Pulse Voltage
Positional Measurement	Vo-p	Vo-p	Vp-p	Vp-p	Vp-p

- Keep the surface temperature of a capacitor below the upper limit of its rated operating temperature. 2. Operating Temperature, Self-generated Heat, and WW.100Y.COM.TW Be sure to take into account the heat generated by the capacitor itself. When the capacitor is used in a highfrequency voltage, pulse voltage, it may self-generate heat due to dielectric loss.
- (1) In case of X7R char.

Applied voltage should be the load such as selfgenerated heat is within 20°C on the condition of atmosphere temperature 25°C. When measuring, use a thermocouple of small thermal capacity -K of Ø0.1mm in conditions where the capacitor is not affected by radiant heat from other components or surrounding ambient fluctuations. Excessive heat may lead to deterioration of the capacitor's characteristics and reliability. (Never attempt to perform measurement with the cooling fan running. Otherwise, accurate measurement cannot be ensured.) WWW.100Y.COM.T



∖Caution

Continued from the preceding page

(2) In case of COG, U2J char.

Due to the low self-heating characteristics of lowdissipation capacitors, the allowable electric power of these capacitors is generally much higher than that of X7R characteristic capacitors.

When a high frequency voltage which cause 20°C self heating to the capacitor is applied, it will exceed capacitor's allowable electric power.

The frequency of the applied sine wave voltage should be less than 500kHz (less than 100kHz in case of rated voltage: DC3.15kV). The applied voltage should be less than the value shown in figure below.

While, in case of non-sine wave which include a harmonic frequency, please contact our sales representatives or product engineers. Excessive heat may lead to deterioration of the capacitor's characteristics and reliability. (Never attempt to perform measurement with the cooling fan running. Otherwise, accurate measurement cannot be ensured.)

<C0G char., Rated Voltage: DC3.15kV>

The capacitors less than 22pF can be applied maximum 4.0kV peak to peak at 100kHz or less only for the ballast or the resonance usage in the LCD backlight inverter

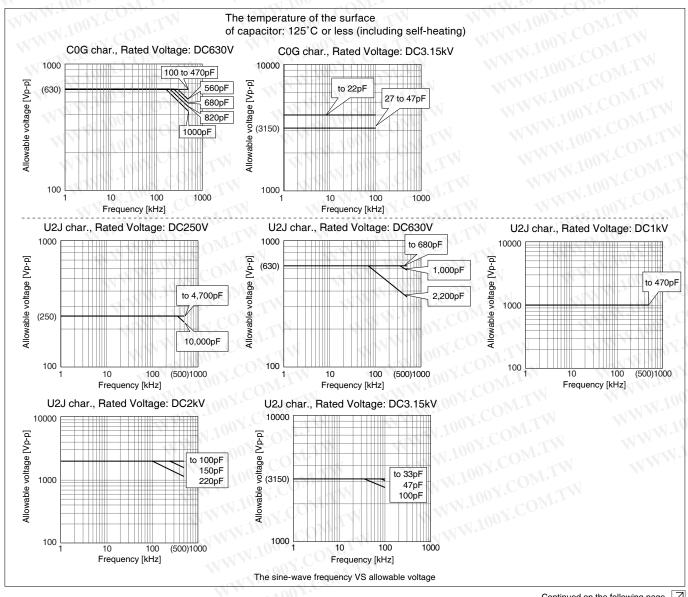
<Capacitor Selection Tool>

We are also offering free software the "capacitor selection tool: Murata Medium Voltage Capacitors Selection Tool by Voltage Form (*)" which will assist you in selecting a suitable capacitor.

The software can be downloaded from Murata's Internet Website.

(http://www.murata.com/designlib/mmcsv_e.html). By inputting capacitance values and applied voltage waveform of the specific capacitor series, this software will calculate the capacitor's power consumption and list suitable capacitors (non-sine wave is also available).

- * Subject series are below.
- Temperature Characteristics C0G, U2J



∆Caution

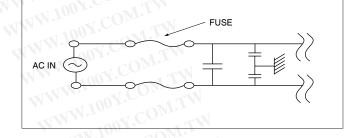


Continued from the preceding page.

3. Fail-safe

Failure of a capacitor may result in a short circuit. Be sure to provide an appropriate fail-safe function such as a fuse on your product to help eliminate possible electric shock, fire, or fumes.

Please consider using fuses on each AC line if the capacitors are used between the AC input lines and earth (line bypass capacitors), to prepare for the worst case, such as a short circuit.



4. Test Condition for AC Withstanding Voltage

(1) Test Equipment

Tests for AC withstanding voltage should be made with equipment capable of creating a wave similar to a 50/60 Hz sine wave.

If the distorted sine wave or overload exceeding the specified voltage value is applied, a defect may be caused.

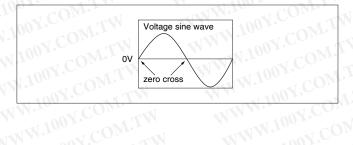
(2) Voltage Applied Method

The capacitor's leads or terminals should be firmly connected to the output of the withstanding voltage test equipment, and then the voltage should be raised from near zero to the test voltage. If the test voltage is applied directly to the capacitor without raising it from near zero, it should be applied with the zero cross*. At the end of the test time, the test voltage should be reduced to near zero, and then the capacitor's leads or terminals should be taken off the output of the withstanding voltage test equipment. If the test voltage is applied directly to the capacitor without raising it from near zero, surge voltage may occur and cause a defect.

*ZERO CROSS is the point where voltage sine wave pass 0V.

- See the figure at right -

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.



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∆Caution

Caution (Soldering and Mounting)

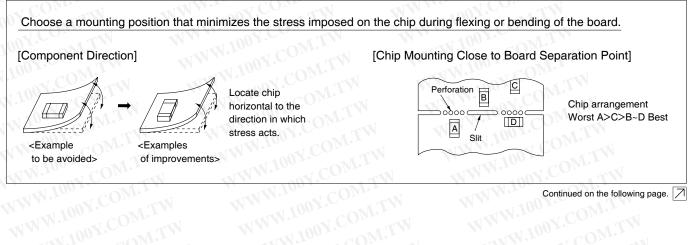
1. Vibration and Impact Do not expose a capacitor to excessive shock or vibration WWW.100Y.COM. during use.

2. Circuit Board Material

It is possible for the chip to crack by the expansion and shrinkage of a metal board.

Please contact us if you want to use our ceramic capacitors on a metal board such as Aluminum.

W.100Y.COM.TW 3. Land Layout for Cropping PC Board



Continued on the following page. WWW.100Y.COM







Continued from the preceding page.

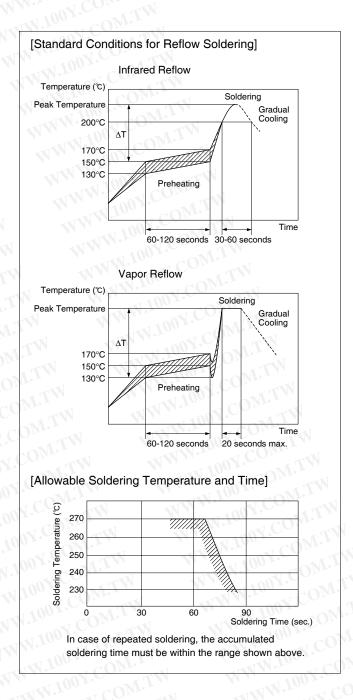
- 4. Reflow Soldering
- When sudden heat is given to the components, the mechanical strength of the components should go down because remarkable temperature change causes deformity of components inside. In order to prevent mechanical damage in the components, preheating should be required for both of the components and the PCB board. Preheating conditions are shown in Table 1. It is required to keep temperature differential between the soldering and the components surface (ΔT) as small as
- Solderability of Tin plating termination chip might be deteriorated when low temperature soldering profile where peak solder temperature is below the Tin melting point is used. Please confirm the solderability of Tin plating termination chip before use.
- When components are immersed in solvent after mounting, be sure to maintain the temperature difference (ΔT) between the component and solvent within the range shown in the Table 1.

Part Number	Temperature Differential	
G□□18/21/31	ΔΤ≦190℃	
G□□32/42/43/52/55	ΔT≦130°C	

Recommended Conditions

With	Pb-Sn S	Lead Free Solder		
MM	Infrared Reflow	Vapor Reflow	Lead Free Solder	
Peak Temperature	230-250°C	230-240°C	240-260°C	
Atmosphere	Air	Air	Air or N2	

Ph-Sn Solder: Sn-37Ph Lead Free Solder: Sn-3.0Ag-0.5Cu WW.100Y.COM

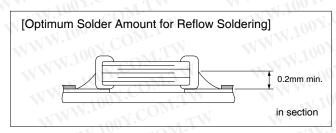


Optimum Solder Amount for Reflow Soldering

- Overly thick application of solder paste results in excessive fillet height solder. This makes the chip more susceptible to mechanical and
 - thermal stress on the board and may cause cracked
- Too little solder paste results in a lack of adhesive strength on the outer electrode, which may result in chips breaking loose from the PCB.
- Make sure the solder has been applied smoothly to the end surface to a height of 0.2mm min.

Inverting the PCB

Make sure not to impose an abnormal mechanical shock on the PCB.



Caution

Continued from the preceding page.

- 5. Flow Soldering
- When sudden heat is given to the components, the mechanical strength of the components should go down because remarkable temperature change causes deformity of components inside. And an excessively long soldering time or high soldering temperature results in leaching by the outer electrodes, causing poor adhesion or a reduction in capacitance value due to loss of contact between electrodes and end termination.
- In order to prevent mechanical damage in the components, preheating should be required for both of the components and the PCB board. Preheating conditions are shown in Table 2. It is required to keep temperature differential between the soldering and the components surface (ΔT) as small as possible.
- When components are immersed in solvent after mounting, be sure to maintain the temperature difference between the component and solvent within the range shown in Table 2.

Do not apply flow soldering to chips not listed in Table 2.

Table 2

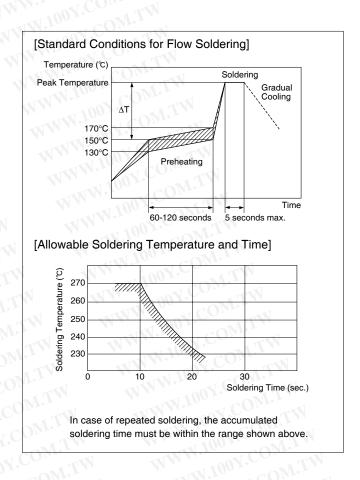
Part Number	Temperature Differential
G□□18/21/31	ΔT≦150℃

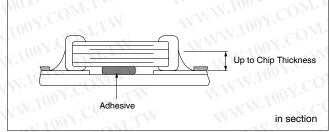
Recommended Conditions

MW.Io	Pb-Sn Solder	Lead Free Solder
Peak Temperature	240-250°C	250-260°C
Atmosphere	Air	N ₂

Pb-Sn Solder: Sn-37Pb Lead Free Solder: Sn-3.0Ag-0.5Cu

 Optimum Solder Amount for Flow Soldering The top of the solder fillet should be lower than the thickness of components. If the solder amount is excessively big, the risk of cracking is higher during board bending or under any other stressful conditions.









Continued from the preceding page.

- 6. Correction with a Soldering Iron
- When sudden heat is applied to the components by use of a soldering iron, the mechanical strength of the components will go down because the extreme temperature change causes deformations inside the components.

In order to prevent mechanical damage to the components, preheating is required for both the components and the PCB board.

Preheating conditions, (The "Temperature of the Soldering Iron Tip", "Preheating Temperature", 'Temperature Differential" between iron tip and the

Table 3

Part Number	Temperature of Soldering Iron tip	Preheating Temperature	Temperature Differential (ΔT)	Atmosphere
G□□18/21/31	350°C max.	150°C min.	ΔΤ≦190℃	air
G□□32/42/43/ 52/55	280°C max.	150°C min.	ΔT≦130℃	air C

*Applicable for both Pb-Sn and Lead Free Solder.

Pb-Sn Solder: Sn-37Pb

Lead Free Solder: Sn-3.0Ag-0.5Cu

 Optimum Solder Amount when re-working Using a Soldering Iron

In case of smaller sizes than G□□18, the top of the solder fillet should be lower than 2/3's of the thickness of the component or 0.5mm whichever is smaller.

In case of larger sizes than G□□21, the top of the solder fillet should be lower than 2/3's of the thickness of the component.

If the solder amount is excessive, the risk of cracking is higher during board bending or under any other stressful conditions.

A Soldering iron ø3mm or smaller should be used. It is also necessary to keep the soldering iron from touching the components during the re-work. Solder wire with ø0.5mm or smaller is required for solderina.

7. Washing

Excessive output of ultrasonic oscillation during cleaning causes PCBs to resonate, resulting in cracked chips or broken solder. Take note not to vibrate PCBs.

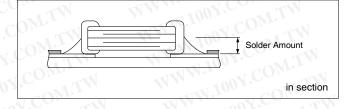
FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND FUMING WHEN THE PRODUCT IS USED. WWW.100Y.C

components and the PCB), should be within the conditions of table 3.

It is required to keep the temperature differential between the soldering Iron and the components surface (ΔT) as small as possible.

After soldering, do not allow the component/PCB to cool down rapidly.

The operating time for the re-working should be as short as possible. When re-working time is too long, it may cause solder leaching, and that will cause a reduction of the adhesive strength of the terminations.



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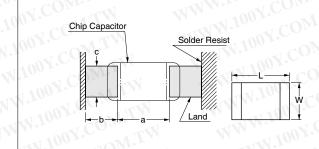
Notice

■ Notice (Soldering and Mounting)

1. Construction of Board Pattern

After installing chips, if solder is excessively applied to the circuit board, mechanical stress will cause destruction resistance characteristics to lower. To prevent this, be extremely careful in determining shape and dimension before designing the circuit board diagram.

Construction and Dimensions of Pattern (Example)



Flow Soldering

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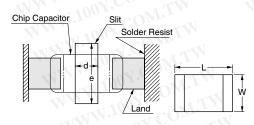
L×W	a .	b	С
1.6×0.8	0.6-1.0	0.8-0.9	0.6-0.8
2.0×1.25	1.0-1.2	0.9-1.0	0.8-1.1
3.2×1.6	2.2-2.6	1.0-1.1	1.0-1.4

Flow soldering: 3.2×1.6 or less available.

Reflow Soldering

LXW	a	b C	C
1.6×0.8	0.6-0.8	0.6-0.7	0.6-0.8
2.0×1.25	1.0-1.2	0.6-0.7	0.8-1.1
3.2×1.6	2.2-2.4	0.8-0.9	1.0-1.4
3.2×2.5	2.0-2.4	1.0-1.2	1.8-2.3
4.5×2.0	2.8-3.4	1.2-1.4	1.4-1.8
4.5×3.2	2.8-3.4	1.2-1.4	2.3-3.0
5.7×2.8	4.0-4.6	1.4-1.6	2.1-2.6
5.7×5.0	4.0-4.6	1.4-1.6	3.5-4.8

Dimensions of Slit (Example)



Preparing slit helps flux cleaning and resin coating on the back of the capacitor. But, the length of slit design should be shorter enough as much as possible to prevent the mechanical damage in the capacitor. The longer slit design might receive more severe mechanical stress from the PCB. Recommendable slit design is shown in the Table.

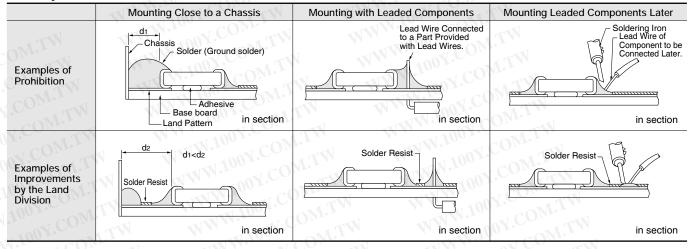
1.6×0.8 - 2.0×1.25 - 3.2×1.6 1.0-2 3.2×2.5 1.0-2 4.5×2.0 1.0-2	2.0 4.1 2.8 3.6	- -3.7 -4.6
3.2×1.6 1.0-2 3.2×2.5 1.0-2 4.5×2.0 1.0-2 4.5×3.2 1.0-2	2.0 4.1 2.8 3.6	-4.6
3.2×2.5 1.0-2 4.5×2.0 1.0-2 4.5×3.2 1.0-2	2.0 4.1 2.8 3.6	-4.6
4.5×2.0 1.0-2 4.5×3.2 1.0-2	2.8 3.6	
4.5×3.2 1.0-2	-	-4 1
NAME OF THE OWN	0.0 4.0	
E 7340 0 4 0 4	2.8 4.8	-5.3
5.7×2.8 1.0-4	4.0 4.4	-4.9
5.7×5.0 1.0-4	4.0 6.6	-7.1
1001	Mill	(in mm)



Notice

Continued from the preceding page.

Land Layout to Prevent Excessive Solder



2. Mounting of Chips

- Thickness of adhesives applied Keep thickness of adhesives applied (50-105µm or more) to reinforce the adhesive contact considering the thickness of the termination or capacitor (20-70µm) and the land pattern (30-35µm).
- Mechanical shock of the chip placer When the positioning claws and pick-up nozzle are worn, the load is applied to the chip while positioning is concentrated in one position, thus causing cracks, breakage, faulty positioning accuracy, etc. Careful checking and maintenance are necessary to prevent unexpected trouble. An excessively low bottom dead point of the suction nozzle imposes great force on the chip during mounting,

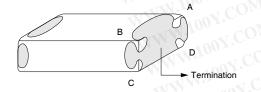
causing cracked chips. Please set the suction nozzle's bottom dead point on the upper surface of the board.

3. Soldering

(1) Limit of losing effective area of the terminations and conditions needed for soldering.

Depending on the conditions of the soldering temperature and/or immersion (melting time), effective areas may be lost in some part of the terminations.

To prevent this, be careful in soldering so that any possible loss of the effective area on the terminations will securely remain at a maximum of 25% on all edge length A-B-C-D-A of part with A, B, C, D, shown in the Figure below.



(2) Flux Application

- An excessive amount of flux generates a large quantity of flux gas, causing deteriorated solderability. So apply flux thinly and evenly throughout. (A foaming system is generally used for flow soldering.)
- Flux containing too high percentage of halide may cause corrosion of the outer electrodes unless sufficient cleaning. Use flux with a halide content of 0.2% max.
- Do not use strong acidic flux.
- Do not use water-soluble flux*. (*Water-soluble flux can be defined as non rosin type flux including wash-type flux and non-wash-type flux.)

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Notice



Continued from the preceding page

4. Cleaning

Please confirm there is no problem in the reliability of the product beforehand when cleaning it with the intended

The residue after cleaning it might cause the decrease in the surface resistance of the chip and the corrosion of the electrode part, etc. As a result it might cause reliability to deteriorate. Please confirm beforehand that there is no problem with the intended equipment in ultrasonic cleansing.

5. Resin Coating

Please use it after confirming there is no influence on the product with a intended equipment beforehand when the resin coating and molding.

A cracked chip might be caused at the cooling/heating cycle by the amount of resin spreading and/or bias thickness.

The resin for coating and molding must be selected as the stress is small when stiffening and the hygroscopic is low as possible.

■ Rating

- 1. Capacitance change of capacitor
- (1) In case of X7R char.

Capacitors have an aging characteristic, whereby the capacitor continually decreases its capacitance slightly if the capacitor is left on for a long time. Moreover, capacitance might change greatly depending on the surrounding temperature or an applied voltage. So, it is not likely to be suitable for use in a time constant circuit.

Please contact us if you need detailed information.

(2) In case of any char. except X7R Capacitance might change a little depending on the surrounding temperature or an applied voltage. Please contact us if you intend to use this product in a strict time constant circuit. WWW.100Y

2. Performance check by equipment

inductance of the circuit.

Before using a capacitor, check that there is no problem in the equipment's performance and the specifications.

Generally speaking, CLASS 2 (X7R char.) ceramic capacitors have voltage dependence characteristics and temperature dependence characteristics in capacitance. So, the capacitance value may change depending on the operating condition in the equipment. Therefore, be sure to confirm the apparatus performance of receiving influence in a capacitance value change of a capacitor, such as leakage current and noise suppression characteristics. Moreover, check the surge-proof ability of a capacitor in the equipment, if needed, because the surge voltage may exceed specific value by the

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ISO 9001 Certifications

Qualified Standards

The products listed here have been produced by ISO 9001 certified factory

	Plant
Fukui Murata Mfg.	Co., Ltd.
Izumo Murata Mfg.	Co., Ltd.
Okayama Murata M	fg. Co., Ltd.
Murata Electronics	Singapore (Pte.) Ltd.
Beijing Murata Elec	ctronics Co., Ltd.
Wuxi Murata Electr	onics Co., Ltd.



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⚠ Note:

1. Export Control

<For customers outside Japan>

No Murata products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.

<For customers in Japan>

For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.

- 2. Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.
 - 1 Aircraft equipment (2) Aerospace equipment
 - 3 Undersea equipment 4 Power plant equipment
 - (5) Medical equipment 6 Transportation equipment (vehicles, trains, ships, etc.)
 - 7) Traffic signal equipment (8) Disaster prevention / crime prevention equipment
 - (9) Data-processing equipment (f) Application of similar complexity and/or reliability requirements to the applications listed above
- 3. Product specifications in this catalog are as of Jul 2009. They are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product
- 4. Please read rating and 🗘 CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
- This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.
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International Division

7. No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.



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