LYTIC CAPACITORS

ALUMINUM ELECTROLYTIC

			Series	Part Number	Appearance	Operating Temperature	(Working Voltage) Capacitance	Features
SURFACE MOUNT TYPE*	General Purpose		VS	ECE-VxxS/Axxx EEE-xA/Sxxxxx		-40 ~ +85ºC	(4 ~ 100 VDC) 0.1 ~ 1,500 μF	• General purpose, 2,000 hrs @ 85ºC • Very compact size
	Long Life		HA	EEV-HAxxxxx EEE-HAxxxxx		-40 ~ +105ºC	(6.3 ~ 100 VDC) 0.1 ~ 1,500 μF	• Long life, 1000 to 2,000 hrs. @ 105ºC • Very compact size
			HB	EEV-HBxxxxx EEE-HBxxxxx			(4 ~ 50 VDC) 0.1 ~ 470 μF	• Long life, 2,000 hrs. @ 105ºC • 6.0 mm height
			HC	EEE-HCxxxxx			(6.3 ~ 50 VDC) 0.1 ~ 1,000 μF	• Long life, 3,000 hrs. @ 105ºC • 5.8 mm height
			HD	EEV-HDxxxxxx			(10 ~ 100 VDC) 0.47 ~ 330 μF	• Very long life, 5,000 hrs. @ 105ºC • Industrial grade
			EB	EEV-EBxxxxx		-25 ~ +105ºC	(160 ~ 450 VDC) 2.2 ~ 100 μF	• Low impedance, 3,000 to 5,000 hrs. @ 105ºC • Large can, 10 ~ 18 mm (Dia.)
	125ºC		TA	EEV-TAxxxxx		-40 ~ +125ºC	(10 ~ 50 VDC) 10 ~ 330 μF	• High temperature, 1,000 hrs. @ 125ºC • Automotive applications
			TG	EEV-TGxxxxx EEE-TGxxxxx			(10 ~ 100 VDC) 10 ~ 4,700 μF	• High temperature, 2,000 hrs. @ 125ºC • Compact Size
			TK	EEV-TKxxxxx EEE-TKxxxxx			(10 ~ 35 VDC) 47 ~ 470 μF	• High temperature, 3,000 hrs. @ 125ºC • Low ESR
	Low ESR Long Life		FK	EEV-FKxxxxx EEE-FKxxxxx		-55 ~ +105ºC	(6.3 ~ 100 VDC) 3.3 ~ 6,800 μF	• Long life, 2,000 to 5,000 hrs. @ 105ºC • Low ESR, Tantalum replacement • Compact & wide size range, 4 ~ 18 mm (Dia.)
			FC	EEV-FCxxxxx EEE-FCxxxxx		-40 ~ +105ºC	(6.3 ~ 50 VDC) 1 ~ 1,500 μF	• 1,000 hrs. @ 105ºC • Low impedance
	Bi-Polar		VS-BP	ECE-VxxAxxxN EEE-VxxAxxxN		-40 ~ +85ºC	(6.3 ~ 50 VDC) 0.22 ~ 47 μF	• General Purpose • 5.5mm max. in height
			HB-BP	EEV-HPxxxxx EEE-HPxxxxx		-40 ~ +105ºC		• Industrial Grade • 6.1mm max. in height
RADIAL LEAD	General Purpose	Standard	M	ECA-xxMxxx		-40 ~ +85ºC (-25ºC: 160~450VDC)	(6.3 ~ 450 VDC) 0.1 ~ 22,000 μF	• General purpose, 2000 hrs. @ 85ºC • Compact size
		Miniature	KA	ECE-AxxKAxxx		-40 ~ +85ºC	(4 ~ 50 VDC) 0.1 ~ 470 μF	• General purpose, 1,000 hrs. @ 85ºC • 7 mm height
			KS	ECE-AxxKK/KSxxx			(4 ~ 50 VDC) 0.1 ~ 330 μF	• General purpose, 1000 hrs. @ 85ºC • 5 mm height
		Bi-Polar	BP-SU	ECE-AxxNxxxU/X		-40 ~ +85ºC	(6.3 ~ 50 VDC) 0.47 ~ 6,800 μF	• 2,000 hrs. @ 85ºC • Bi-Polar general purpose
	Long Life	Standard	NHG	ECA-xxHGxxx		-55 ~ +105ºC (-25ºC: 160~450VDC)	(6.3 ~ 450 VDC) 0.1 ~ 22,000 μF	• Long life, 1,000 to 2,000 hrs. @ 105ºC • Compact size
			EB	EEU-EBxxxxx		-40 ~ +105ºC (-25ºC: 160~450VDC)	(10 ~ 450 VDC) 0.47 ~ 3,300 μF	• 5,000 to 10,000 hrs. @ 105ºC • Very long life
			ED	EEU-EDxxxxx		-25 ~ +105ºC	(160 ~ 450 VDC) 10 ~ 3,30 μF	• Very long life 8,000 to 10,000 hrs. @ 105ºC • High Ripple Current
		Low Impedance	FC	EEA/U-FCxxxxx		-55 ~ +105ºC	(6.3 ~ 100 VDC) 1.0 ~ 15,000 μF	• 1,000 to 5,000 hrs. @ 105ºC • Low impedance, miniature
			FM	EEU-FMxxxxx		-40 ~ +105ºC	(6.3 ~ 50 VDC) 22 ~ 6,800 μF	• Long life, 2,000 to 7,000 hrs. @ 105ºC • Low ESR, approximately half of FC
		125ºC	TA	EEU-TAxxxxx		-40 ~ +125ºC	(10 ~ 63 VDC) 1 ~ 4,700 μF	• 2,000 hrs. @ 125ºC • Automotive applications

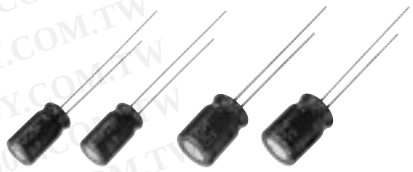
***NOTE:** Surface Mount Type RoHS Compliant Part Number Prefix:
EEE (Diameter: 3~10mm)
EEV (Diameter: 12.5~18mm)

			Series	Part Number	Appearance	Operating Temperature	(Working Voltage) Capacitance	Features
SPECIALTY POLYMER ELECTRIC DOUBLE LAYER	SURFACE MOUNT TYPE	General Purpose	FD	EEF-FDxxxxxx		-40 ~ +105°C	(2 ~ 12.5 VDC) 15 ~ 68 μF	• Low ESR, high ripple current • 1.1 mm height, ESR 28 mΩ minimum
			CD	EEF-CDxxxxxx			(2 ~ 16VDC) 2.2 ~ 150 μF	• Low ESR, high ripple current • 1.8 mm height, ESR 15 mΩ minimum
			CX	EEF-CXxxxxxx			(2 ~ 6.3 VDC) 100 ~ 220 μF	• Low ESR, high ripple current • 1.9 mm height, ESR 15 mΩ minimum
			UD	EEF-UDxxxxxx			(2 ~ 8 VDC) 68 ~ 330 μF	• Low ESR, high ripple current • 2.8 mm height, ESR 12 mΩ minimum
			UE	EEF-UExxxxxx			(2 ~ 8 VDC) 100 ~ 560 μF	• Low ESR, high ripple current • 4.2 mm height, ESR 10 mΩ minimum
		Lower ESR	S	EEF-Sxxxxxx			(2 ~ 6.3 VDC) 56 ~ 560 μF	• Lower ESR, higher ripple current • 1.8/2.0/2.8/4.2 mm height, ESR 5 to 9 mΩ max
		125°C	H	EEF-Hxxxxxx		-40 ~ +125°C	(2 ~ 8 VDC) 33 ~ 330 μF	• High reliability • Low ESR, high ripple current
	SMT		EN	EEC-ENxxxxx		-10 ~ +60°C	(3.3 VDC) 0.2 F	• SMT Re-flow solderable • Coin type, low profile
	RADIAL LEAD		SD SG	EEC-S0HDxxxx EEC-S5R5xxxx		-25 ~ +70°C	(5.5 VDC) 0.022 ~ 0.33 F (5.5 VDC) 0.47 ~ 1.5 F	• General purpose, 1,000 hrs. @ 70°C • μA range IC memory back-up
			SE	EEC-SE0Hxxx			(5.5 VDC) 0.022 ~ 0.22 F	• 1,000 hrs. @ 70°C • Lead taping for auto insertion
			NF F	EEC-F5R5Uxxx EEC-F5R5Hxxx		-25 ~ +70°C -25 ~ +85°C	(5.5 VDC) 0.1 ~ 1.5 F (5.5 VDC) 0.047 ~ 1.0 F	• 1,000 hrs. @ 70°C, general purpose • 1,000 hrs. @ 85°C, high reliability
			HW	EEC-HW0Dxxx		-25 ~ +70°C -25 ~ +60°C	(2.3 VDC) 1 ~ 22 F (2.3 VDC) 30 & 50 F (2.1 VDC) 70 F	• Large capacitance • Backup for mA - A range
LARGE CAN ALUMINUM	2 & 3 - TERMINAL SNAP-IN		TS-UP	ECO-SxxPxxx ECE-SxxPxxx ECE-3xxPxxx		-40~ +85°C (-25°C: 350~500VDC)	(16 ~ 500 VDC) 33 ~ 68,000 μF	• General purpose • 2,000 ~ 3,000 hrs. @ 85°C • 20 mm low profile available
			TS-UQ	EET-UQxxxxx		-40 ~ +85°C (-25°C: 350~450VDC)	(160 ~ 450 VDC) 82 ~ 100,000 μF	• General purpose, 85°C • 30% smaller than TS-UP
			TS-HA	ECO-SxxAxxx ECE-SxxAxxx ECE-3xxAxxx		-40 ~ +105°C (-25°C: 385~450VDC)	(10 ~ 450 VDC) 33 ~ 68,000 μF	• 2,000 ~ 3,000 hrs. @ 105°C • 20 mm low profile available
			TS-HB	ECO-SxxBxxx ECE-SxxBxxx ECE-3xxBxxx		-40 ~ +105°C (-25°C: 385~450VDC)	(160 ~ 450 VDC) 82 ~ 2,700 μF	• 3,000 hrs. @ 105°C • 20 ~ 25% smaller than TS-HA
			TS-HC	EET-HCxxxxx		-40 ~ +105°C (-25°C: 350~450VDC)	(10 ~ 450 VDC) 100 ~ 100,000 μF	• 2,000 hrs. @ 105°C • 30% smaller than TS-HB
			TS-ED	EET-EDxxxxx		-40 ~ +105°C (-25°C: 400~450VDC)	(200 ~ 450 VDC) 56 ~ 2,200 μF	• High ripple current capability • 3,000 hrs. @ 105°C
			TS-EE	EET-EExxxxx		-40 ~ +105°C (-25°C: 400~450VDC)	(200 ~ 450 VDC) 75 ~ 1,800 μF	• 3,000 hrs. @ 105°C • Very high ripple current capability
			TS-XB	EET-XBxxxxx		-40 ~ +105°C (-25°C: 315~450VDC)	(160 ~ 450 VDC) 39 ~ 2,200 μF	• Long life: 7,000 hrs. @ 105°C • Compact size
	4&5 TERMINAL SNAP-IN		T-UP	ECE-TxxPxxx (4-Pin) ECE-PxxPxxx (5-Pin)		-40 ~ +85°C (-25°C: 350~500VDC)	(16 ~ 500 VDC) 470 ~ 120,000 μF	• 3,000 hrs. @ 85°C, 4 or 5-pin • Wide capacitance range
			T-HA	ECE-TxxAxxx (4-Pin) ECE-PxxAxxx (5-Pin)		-40 ~ +105°C (-25°C: 350~450VDC)	(16 ~ 450 VDC) 390 ~ 120,000 μF	• 3,000 hrs. @ 105°C, 4 or 5-pin • Wide capacitance range

NOTE: These parts are RoHS compliant.

Radial Lead Type

Series: **GA(Bi-polar)** Type: **A**



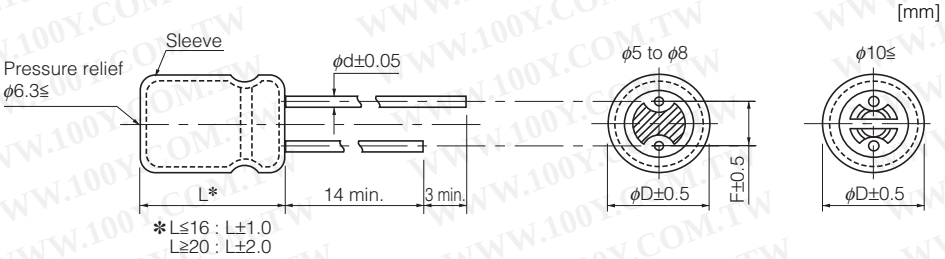
■ Features

- Endurance : 105 °C 1000 h to 2000 h
- RoHS directive compliant

■ Specifications

Category Temp. Range	−40 °C to +105 °C
Rated W.V. Range	6.3 V.DC to 50 V.DC
Nominal Cap. Range	0.47 μF to 330 μF
Capacitance Tolerance	±20 % (120 Hz/+20 °C)
DC Leakage Current	I ≦ 0.03 CV +3 (μA) After 2 minutes or I ≦ 0.03 CV or 3 (μA) After 5 minutes (Whichever is greater)
tan δ	Please see the attached standard products list
Endurance	After following life test of DC working voltage at +105 °C±2 °C when the capacitors are restored to 20 °C, the capacitors shall meet the following limits. Duration ✻ϕ5 to ϕ8 : 1000 hours (500 hours for each polarity) ✻ϕ10 : 2000 hours (1000 hours for each polarity)
	Capacitance change: ± 20% of initial measured value tan δ: ≦ 200 % of initial specified value DC leakage current: ≦ initial specified value
Shelf Life	After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment)

■ Dimensions in mm (not to scale)



(mm)

Body Dia. ϕD	5	6.3	8	10
Lead Dia. ϕd	0.5	0.5	0.6	0.6
Lead space F	2.0	2.5	3.5	5.0

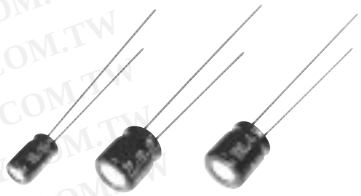
■ Standard Products (Bi-polar)

W.V.	Cap. (±20 %)	Case size		Specification		Lead Length				Part No.	Min. Packaging Q'ty	
		Dia.	Length	Ripple Current (120 Hz) (+105 °C)	tan δ (120 Hz) (+20 °C)	Lead Dia.	Lead Space				Straight Leads	Taping
							Straight	Taping ✻B	Taping ✻i			
(V)	(μF)	(mm)	(mm)	(mA r.m.s.)		(mm)	(mm)	(mm)	(mm)		(pcs)	(pcs)
6.3	100	6.3	11.2	130	0.30	0.5	2.5	5.0	2.5	ECA0JEN101( )	200	2000
	330	8	11.5	250	0.30	0.6	3.5	5.0		ECA0JEN331( )	200	1000
10	47	5	11	90	0.24	0.5	2.0	5.0	2.5	ECA1AEN470( )	200	2000
16	10	5	11	40	0.20	0.5	2.0	5.0	2.5	ECA1CEN100( )	200	2000
	22	5	11	60	0.20	0.5	2.0	5.0	2.5	ECA1CEN220( )	200	2000
	33	5	11	80	0.20	0.5	2.0	5.0	2.5	ECA1CEN330( )	200	2000
	47	6.3	11.2	100	0.20	0.5	2.5	5.0	2.5	ECA1CEN470( )	200	2000
25	10	5	11	45	0.15	0.5	2.0	5.0	2.5	ECA1EEN100( )	200	2000
	22	6.3	11.2	60	0.15	0.5	2.5	5.0	2.5	ECA1EEN220( )	200	2000
	33	6.3	11.2	90	0.15	0.5	2.5	5.0	2.5	ECA1EEN330( )	200	2000
	47	6.3	11.2	110	0.15	0.5	2.5	5.0	2.5	ECA1EEN470( )	200	2000
	100	8	11.5	180	0.15	0.6	3.5	5.0		ECA1EEN101( )	200	1000
35	33	8	11.5	100	0.15	0.6	3.5	5.0		ECA1VEN330( )	200	1000
	100	10	16	230	0.15	0.6	5.0	5.0		ECA1VEN101( )	200	500
50	0.47	5	11	10	0.15	0.5	2.0	5.0	2.5	ECA1HENR47( )	200	2000
	1	5	11	10	0.15	0.5	2.0	5.0	2.5	ECA1HEN010( )	200	2000
	2.2	5	11	18	0.15	0.5	2.0	5.0	2.5	ECA1HEN2R2( )	200	2000
	3.3	5	11	25	0.15	0.5	2.0	5.0	2.5	ECA1HEN3R3( )	200	2000
	4.7	5	11	30	0.15	0.5	2.0	5.0	2.5	ECA1HEN4R7( )	200	2000
	10	6.3	11.2	50	0.15	0.5	2.5	5.0	2.5	ECA1HEN100( )	200	2000
	22	8	11.5	90	0.15	0.6	3.5	5.0		ECA1HEN220( )	200	1000
	33	8	11.5	110	0.15	0.6	3.5	5.0		ECA1HEN330( )	200	1000
	47	10	12.5	140	0.15	0.6	5.0	5.0		ECA1HEN470( )	200	500
	100	10	20	250	0.15	0.6	5.0	5.0		ECA1HEN101( )	200	500

Endurance : 105 °C ϕ5 to ϕ8=1000 h (500 h for each polarity), ϕ10=2000 h (1000 h for each polarity)
When requesting taped product, please put the letter "B" or "i" between the "( )". Lead wire pitch ✻B=5 mm, i=2.5 mm.
The taping dimensions are explained on p.178 of our Catalog. Please use it as a reference guide.

Radial Lead Type

Series: **KA(Bi-polar)** Type: **A**



■ Features

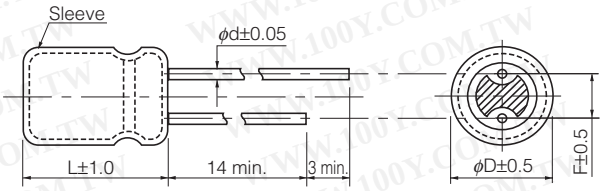
- Endurance : 85° C 1000 h
- 7 mm height
- RoHS directive compliant

■ Specifications

Category Temp. Range	–40 °C to +85 °C	
Rated W.V. Range	4 V.DC to 50 V.DC	
Nominal Cap. Range	0.1 µF to 100 µF	
Capacitance Tolerance	±20 % (120 Hz/+20 °C)	
DC Leakage Current	I ≦ 0.05 CV or 10 (µA) After 2 minutes (Whichever is greater)	
tan δ	Please see the attached standard products list	
Endurance	After 1000 hours application of DC working voltage (500 hours for each polarity) at +85 °C±2 °C, when the capacitors are restored to 20 °C, the capacitors shall meet the following limits.	
	Capacitance change	± 20% of initial measured value
	tan δ	≦200 % of initial specified value
	DC leakage current	≦initial specified value
Shelf Life	After storage for 1000 hours at +85 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance (With voltage treatment)	

■ Dimensions in mm (not to scale)

[mm]



(mm)

Body Dia. ϕD	4	5	6.3
Lead Dia. ϕd	0.45	0.45	0.45
Lead space F	1.5	2.0	2.5

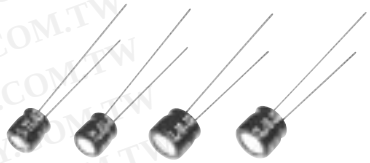
■ Standard Products (Bi-polar)

W.V.	Cap. (±20 %)	Case size		Specification		Lead Length				Part No.	Min. Packaging Q'ty	
		Dia.	Length	Ripple Current (120 Hz) (+85 °C)	tan δ (120 Hz) (+20 °C)	Lead Dia.	Lead Space				Straight Leads	Taping
							Straight	Taping ✻B	Taping ✻i			
(V)	(μF)	(mm)	(mm)	(mA r.m.s.)		(mm)	(mm)	(mm)	(mm)		(pcs)	(pcs)
4	100	6.3	7	61	0.35	0.45	2.5	5.0	2.5	ECEA0GKN101( )	200	2000
6.3	22	5	7	29	0.24	0.45	2.0	5.0	2.5	ECEA0JKN220( )	200	2000
	33	5	7	38	0.24	0.45	2.0	5.0	2.5	ECEA0JKN330( )	200	2000
	47	6.3	7	46	0.24	0.45	2.5	5.0	2.5	ECEA0JKN470( )	200	2000
10	10	4	7	25	0.20	0.45	1.5	5.0	2.5	ECEA1AKN100( )	200	2000
	22	5	7	35	0.20	0.45	2.0	5.0	2.5	ECEA1AKN220( )	200	2000
	33	6.3	7	43	0.20	0.45	2.5	5.0	2.5	ECEA1AKN330( )	200	2000
	47	6.3	7	65	0.20	0.45	2.5	5.0	2.5	ECEA1AKN470( )	200	2000
16	4.7	4	7	20	0.16	0.45	1.5	5.0	2.5	ECEA1CKN4R7( )	200	2000
	10	5	7	25	0.16	0.45	2.0	5.0	2.5	ECEA1CKN100( )	200	2000
	22	6.3	7	39	0.16	0.45	2.5	5.0	2.5	ECEA1CKN220( )	200	2000
	33	6.3	7	60	0.16	0.45	2.5	5.0	2.5	ECEA1CKN330( )	200	2000
25	3.3	4	7	16	0.16	0.45	1.5	5.0	2.5	ECEA1EKN3R3( )	200	2000
	4.7	5	7	21	0.16	0.45	2.0	5.0	2.5	ECEA1EKN4R7( )	200	2000
	10	6.3	7	28	0.16	0.45	2.5	5.0	2.5	ECEA1EKN100( )	200	2000
	22	6.3	7	55	0.16	0.45	2.5	5.0	2.5	ECEA1EKN220( )	200	2000
35	2.2	4	7	12	0.14	0.45	1.5	5.0	2.5	ECEA1VKN2R2( )	200	2000
	3.3	5	7	16	0.14	0.45	2.0	5.0	2.5	ECEA1VKN3R3( )	200	2000
	4.7	5	7	22	0.14	0.45	2.0	5.0	2.5	ECEA1VKN4R7( )	200	2000
	10	6.3	7	30	0.14	0.45	2.5	5.0	2.5	ECEA1VKN100( )	200	2000
50	0.1	4	7	1	0.12	0.45	1.5	5.0	2.5	ECEA1HKN0R1( )	200	2000
	0.22	4	7	2	0.12	0.45	1.5	5.0	2.5	ECEA1HKNR22( )	200	2000
	0.33	4	7	3	0.12	0.45	1.5	5.0	2.5	ECEA1HKNR33( )	200	2000
	0.47	4	7	5	0.12	0.45	1.5	5.0	2.5	ECEA1HKNR47( )	200	2000
	1	4	7	10	0.12	0.45	1.5	5.0	2.5	ECEA1HKN010( )	200	2000
	2.2	5	7	16	0.12	0.45	2.0	5.0	2.5	ECEA1HKN2R2( )	200	2000
	3.3	5	7	16	0.12	0.45	2.0	5.0	2.5	ECEA1HKN3R3( )	200	2000
	4.7	6.3	7	23	0.12	0.45	2.5	5.0	2.5	ECEA1HKN4R7( )	200	2000

Endurance : 85 °C 1000 h (500hours for each polarity)
When requesting taped product, please put the letter "B" or "i" between the "( )". Lead wire pitch B=5 mm, 7.5 mm, i=2.5 mm.
The taping dimensions are explained on p.178 of our Catalog. Please use it as a reference guide.

Radial Lead Type

Series: **KS(Bi-polar)** Type: **A**



■ Features

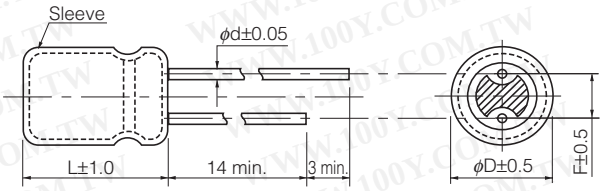
- Endurance : 85° C 1000 h
- 5 mm height
- RoHS directive compliant

■ Specifications

Category Temp. Range	–40 °C to +85 °C	
Rated W.V. Range	63 V.DC to 50 V.DC	
Nominal Cap. Range	0.1 μF to 47 μF	
Capacitance Tolerance	±20 % (120 Hz/+20 °C)	
DC Leakage Current	I ≦ 0.05 CV or 10 (μA) After 2 minutes (Whichever is greater)	
tan δ	Please see the attached standard products list	
Endurance	After 1000 hours application of DC working voltage (500 hours for each polarity) at +85 °C±2 °C, when the capacitors are restored to 20 °C, the capacitors shall meet the following limits.	
	Capacitance change	± 20% of initial measured value
	tan δ	≦200 % of initial specified value
	DC leakage current	≦initial specified value
Shelf Life	After storage for 1000 hours at +85 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance (With voltage treatment)	

■ Dimensions in mm (not to scale)

[mm]



(mm)

Body Dia. ϕD	4	5	6.3
Lead Dia. ϕd	0.45	0.45	0.45
Lead space F	1.5	2.0	2.5

■ Standard Products (Bi-polar)

W.V.	Cap. (±20 %)	Case size		Specification		Lead Length				Part No.	Min. Packaging Q'ty	
		Dia.	Length	Ripple Current (120 Hz) (+85 °C)	tan δ (120 Hz) (+20 °C)	Lead Dia.	Lead Space				Straight Leads	Taping
							Straight	Taping ✻B	Taping ✻i			
(V)	(μF)	(mm)	(mm)	(mA r.m.s.)		(mm)	(mm)	(mm)	(mm)		(pcs)	(pcs)
6.3	22	5	5	29	0.24	0.45	2.0	5.0	2.5	ECEA0JSN220( )	200	2000
	33	6.3	5	38	0.24	0.45	2.5	5.0	2.5	ECEA0JSN330( )	200	2000
	47	6.3	5	46	0.24	0.45	2.5	5.0	2.5	ECEA0JSN470( )	200	2000
10	10	4	5	25	0.20	0.45	1.5	5.0	2.5	ECEA1ASN100( )	200	2000
	22	6.3	5	35	0.20	0.45	2.5	5.0	2.5	ECEA1ASN220( )	200	2000
	33	6.3	5	43	0.20	0.45	2.5	5.0	2.5	ECEA1ASN330( )	200	2000
16	4.7	4	5	20	0.20	0.45	1.5	5.0	2.5	ECEA1CSN4R7( )	200	2000
	10	5	5	25	0.20	0.45	2.0	5.0	2.5	ECEA1CSN100( )	200	2000
	22	6.3	5	39	0.20	0.45	2.5	5.0	2.5	ECEA1CSN220( )	200	2000
25	3.3	5	5	18	0.20	0.45	2.0	5.0	2.5	ECEA1ESN3R3( )	200	2000
	4.7	5	5	21	0.20	0.45	2.0	5.0	2.5	ECEA1ESN4R7( )	200	2000
	10	6.3	5	28	0.20	0.45	2.5	5.0	2.5	ECEA1ESN100( )	200	2000
35	2.2	4	5	12	0.20	0.45	1.5	5.0	2.5	ECEA1VSN2R2( )	200	2000
50	0.1	4	5	1	0.20	0.45	1.5	5.0	2.5	ECEA1HSN0R1( )	200	2000
	0.22	4	5	2	0.20	0.45	1.5	5.0	2.5	ECEA1HSNR22( )	200	2000
	0.33	4	5	3	0.20	0.45	1.5	5.0	2.5	ECEA1HSNR33( )	200	2000
	0.47	4	5	5	0.20	0.45	1.5	5.0	2.5	ECEA1HSNR47( )	200	2000
	1	4	5	10	0.20	0.45	1.5	5.0	2.5	ECEA1HSN010( )	200	2000
	2.2	5	5	16	0.20	0.45	2.0	5.0	2.5	ECEA1HSN2R2( )	200	2000

Endurance : 85 °C 1000 h (500hours for each polarity)
When requesting taped product, please put the letter "B" or "i" between the "( )". Lead wire pitch B=5 mm, i=2.5 mm.
The taping dimensions are explained on p.178 of our Catalog. Please use it as a reference guide.

Radial Lead Type

Series: **SU(Bi-polar)** Type: **A**

■ Features

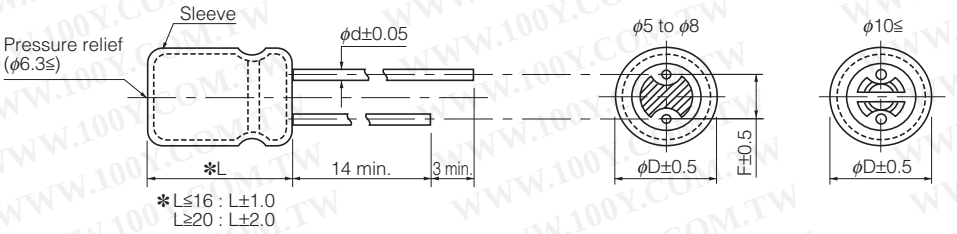
- Endurance : 85 °C 2000 h
- RoHS directive compliant

■ Specifications

Category Temp. Range	–40 °C to +85 °C	
Rated W.V. Range	6.3 V.DC to 50 V.DC	
Nominal Cap. Range	0.47 µF to 6800 µF	
Capacitance Tolerance	±20 % (120 Hz/+20 °C)	
DC Leakage Current	I ≦ 0.03 CV +3 (µA) After 5 minutes	
tan δ	Please see the attached standard products list.	
Endurance	After 2000 hours application of DC working voltage (1000 hours for each polarity) at +85 °C±2 °C, when the capacitors are restored to 20 °C, the capacitors shall meet the following limits.	
	Capacitance change	± 20 % of initial measured value
	tan δ	≦ 150 % of initial specified value
	DC leakage current	≦ initial specified value
Shelf Life	After storage for 1000 hours at +85 °C±2 °C with no voltage applied and then being stabilized at +20 °C capacitors shall meet the limits specified in Endurance. (With voltage treatment)	

■ Dimensions in mm (not to scale)

[mm]



(mm)

Body Dia. φD	5	6.3	8	10	12.5	16	18
Lead Dia. φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
Lead space F	2.0	2.5	3.5	5.0	5.0	7.5	7.5

■ Standard Products (Bi-polar)

W.V.	Cap. (±20 %)	Case size		Specification		Lead Length				Part No.	Min. Packaging Q'ty	
		Dia.	Length	Ripple Current (120 Hz) (+85 °C)	tan δ (120 Hz) (+20 °C)	Lead Dia.	Lead Space				Straight Leads	Taping
							Straight	Taping ✻B	Taping ✻i			
(V)	(μF)	(mm)	(mm)	(mA r.m.s.)	(Ω)	(mm)	(mm)	(mm)	(mm)		(pcs)	(pcs)
6.3	330	8	11.5	250	0.30	0.6	3.5	5.0		ECEA0JN331U( )	200	1000
	470	10	12.5	310	0.30	0.6	5.0	5.0		ECEA0JN471X( )	200	500
	1000	10	20	430	0.30	0.6	5.0	5.0		ECEA0JN102U( )	200	500
	2200	12.5	25	660	0.32	0.6	5.0	5.0		ECEA0JN222U( )	200	500
	3300	16	25	760	0.34	0.8	7.5	7.5		ECEA0JN332U( )	100	250
	4700	16	31.5	1170	0.36	0.8	7.5			ECEA0JN472U	100	
	6800	18	35.5	1450	0.40	0.8	7.5			ECEA0JN682U	50	
10	47	5	11	90	0.25	0.5	2.0	5.0	2.5	ECEA1AN470U( )	200	2000
	100	6.3	11.2	130	0.25	0.5	2.5	5.0	2.5	ECEA1AN101X( )	200	2000
	220	8	11.5	200	0.25	0.6	3.5	5.0		ECEA1AN221U( )	200	1000
	330	10	16	280	0.25	0.6	5.0	5.0		ECEA1AN331U( )	200	500
	470	10	16	340	0.25	0.6	5.0	5.0		ECEA1AN471U( )	200	500
	1000	12.5	20	470	0.25	0.6	5.0	5.0		ECEA1AN102X( )	200	500
	2200	16	25	690	0.27	0.8	7.5	7.5		ECEA1AN222U( )	100	250
	3300	16	31.5	1090	0.29	0.8	7.5			ECEA1AN332U	100	
	4700	18	35.5	1200	0.31	0.8	7.5			ECEA1AN472U	50	
16	10	5	11	40	0.20	0.5	2.0	5.0	2.5	ECEA1CN100U( )	200	2000
	22	5	11	60	0.20	0.5	2.0	5.0	2.5	ECEA1CN220U( )	200	2000
	33	5	11	80	0.20	0.5	2.0	5.0	2.5	ECEA1CN330U( )	200	2000
	47	6.3	11.2	100	0.20	0.5	2.5	5.0	2.5	ECEA1CN470U( )	200	2000
	220	10	12.5	260	0.20	0.6	5.0	5.0		ECEA1CN221X( )	200	500
	330	10	16	330	0.20	0.6	5.0	5.0		ECEA1CN331U( )	200	500
	470	10	20	380	0.20	0.6	5.0	5.0		ECEA1CN471U( )	200	500
	1000	12.5	25	560	0.20	0.6	5.0	5.0		ECEA1CN102U( )	200	500
	2200	16	31.5	750	0.22	0.8	7.5			ECEA1CN222U	100	
	3300	18	35.5	900	0.24	0.8	7.5			ECEA1CN332U	50	
25	10	5	11	45	0.15	0.5	2.0	5.0	2.5	ECEA1EN100U( )	200	2000
	22	5	11	60	0.15	0.5	2.0	5.0	2.5	ECEA1EN220X( )	200	2000
	33	6.3	11.2	90	0.15	0.5	2.5	5.0	2.5	ECEA1EN330U( )	200	2000
	47	6.3	11.2	110	0.15	0.5	2.5	5.0	2.5	ECEA1EN470U( )	200	2000
	100	8	11.5	180	0.15	0.6	3.5	5.0		ECEA1EN101U( )	200	1000
	220	10	16	320	0.15	0.6	5.0	5.0		ECEA1EN221U( )	200	500
	330	12.5	20	350	0.15	0.6	5.0	5.0		ECEA1EN331U( )	200	500
	470	12.5	20	430	0.15	0.6	5.0	5.0		ECEA1EN471U( )	200	500
	1000	16	25	680	0.15	0.8	7.5	7.5		ECEA1EN102U( )	100	250
	2200	18	35.5	900	0.17	0.8	7.5			ECEA1EN222U	50	
35	10	5	11	43	0.15	0.5	2.0	5.0	2.5	ECEA1VN100U( )	200	2000
	22	6.3	11.2	80	0.15	0.5	2.5	5.0	2.5	ECEA1VN220U( )	200	2000
	33	8	11.5	100	0.15	0.6	3.5	5.0		ECEA1VN330U( )	200	1000
	47	8	11.5	120	0.15	0.6	3.5	5.0		ECEA1VN470U( )	200	1000
	100	10	16	230	0.15	0.6	5.0	5.0		ECEA1VN101U( )	200	500
	220	12.5	20	360	0.15	0.6	5.0	5.0		ECEA1VN221U( )	200	500
	330	12.5	20	450	0.15	0.6	5.0	5.0		ECEA1VN331U( )	200	500
	470	12.5	25	590	0.15	0.6	5.0	5.0		ECEA1VN471U( )	200	500

Endurance: 85 °C 2000 h (1000 hours for each polarity)
When requesting taped product, please put the letter "B" or "i" between the "( )". Lead wire pitch B=5 mm, 7.5 mm, i=2.5 mm.
The taping dimensions are explained on p.178 of our Catalog. Please use it as a reference guide.

■ Standard Products (Bi-polar)

W.V.	Cap. (±20 %)	Case size		Specification		Lead Length				Part No.	Min. Packaging Q'ty	
		Dia.	Length	Ripple Current (120 Hz) (+85 °C)	tan δ (120 Hz) (+20 °C)	Lead Dia.	Lead Space				Straight Leads	Taping
							Straight	Taping ✻B	Taping ✻i			
(V)	(μF)	(mm)	(mm)	(mA r.m.s.)	(Ω)	(mm)	(mm)	(mm)	(mm)		(pcs)	(pcs)
50	0.47	5	11	10	0.15	0.5	2.0	5.0	2.5	ECEA1HNR47U( )	200	2000
	1	5	11	10	0.15	0.5	2.0	5.0	2.5	ECEA1HN010U( )	200	2000
	2.2	5	11	18	0.15	0.5	2.0	5.0	2.5	ECEA1HN2R2U( )	200	2000
	3.3	5	11	25	0.15	0.5	2.0	5.0	2.5	ECEA1HN3R3U( )	200	2000
	4.7	5	11	30	0.15	0.5	2.0	5.0	2.5	ECEA1HN4R7U( )	200	2000
	10	6.3	11.2	50	0.15	0.5	2.5	5.0	2.5	ECEA1HN100U( )	200	2000
	22	8	11.5	90	0.15	0.6	3.5	5.0		ECEA1HN220U( )	200	1000
	33	8	11.5	110	0.15	0.6	3.5	5.0		ECEA1HN330U( )	200	1000
	47	10	12.5	140	0.15	0.6	5.0	5.0		ECEA1HN470U( )	200	500
	100	10	20	250	0.15	0.6	5.0	5.0		ECEA1HN101U( )	200	500
	220	12.5	25	360	0.15	0.6	5.0	5.0		ECEA1HN221U( )	200	500
	330	16	25	450	0.15	0.8	7.5	7.5		ECEA1HN331U( )	100	250
	470	16	31.5	590	0.15	0.8	7.5			ECEA1HN471U	100	

Endurance: 85 °C 2000 h (1000 hours for each polarity)
When requesting taped product, please put the letter "B" or "i" between the "( )". Lead wire pitch B=5 mm, 7.5 mm, i=2.5 mm.
The taping dimensions are explained on p.178 of our Catalog. Please use it as a reference guide.