N/IXI/N

Quad SPST CMOS Analog Switches

General Description

WWW.100Y.COM Maxim's MAX332, DG202 and DG212 are normally open, quad single-pole-single-throw (SPST) analog switches. These CMOS switches can be continuously operated with power supplies ranging from ±4.5V to ±18V. Maxim guarantees that the MAX332 and DG202/212 will not latch up if their power supplies are disconnected with input signals still connected.

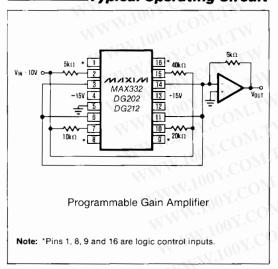
> The MAX332 and DG202/DG212 are similar to the DG201 and DG211 except for inverted control inputs. All devices have guaranteed break-before-make switching as well as essentially constant on resistance over the analog signal range. All switches conduct current in either direction and add no offset to the output signal.

> Compared to the original manufacturers products, Maxim's MAX332 and DG202/DG212 consume very little power, making them ideally suited for portable applications. Maxim has also eliminated the need for the third logic power supply (V_L), required when operating the original manufacturer's DG212, without sacrificing compatibility.

Applications

Analog Multiplexers Programmable Gain Amplifiers Communications Systems Sample/Holds Automatic Test Equipment PBX, PABX

Typical Operating Circuit



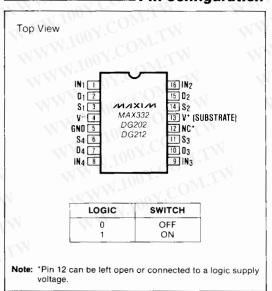
Features

- Improved 2nd Source! (See pages 3 and 5 for "MAXIM Advantage m")
- Guaranteed ±4.5V to ±18V Operation
- No V_I Supply Required
- Non-Latching with Supplies Turned-off and Input Signals Present
- CMOS and TTL Logic Compatible
- Monolithic, Low Power CMOS Design

Ordering Information

PART	TEMP. RANGE	PACKAGE
MAX332MJE	-55°C to +125°C	16 Lead CERDIP
DG202C/D	0°C to +70°C	Dice
DG202CJ	0°C to +70°C	16 Lead Plastic DIP
DG202CSE	0°C to +70°C	16 Lead Small Outline
DG202CK	0°C to +70°C	16 Lead CERDIP
DG202BSE	-25°C to +85°C	16 Lead Small Outline
DG202BK	-25°C to +85°C	16 Lead CERDIP
DG202AK	-55°C to +125°C	16 Lead CERDIP
DG212C/D	0°C to +70°C	Dice
DG212CJ	0°C to +70°C	16 Lead Plastic DIP
DG212CSE	0°C to +70°C	16 Lead Small Outline
21319 62	7 T T T T T T T T T T T T T T T T T T T	7

Pin Configuration



MIXXIM

Maxim Integrated Products 1

Call toll free 1-800-998-8800 for free samples or literature.

Quad SPST CMOS Analog Switches

ABSOLUTE MAXIMUM RATINGS (DG212)

V ⁺ to V ⁻		40V
V _{IN} to Ground		V-, V+
V _L to Ground		
V _S or V _D to V ⁺	1	0, -40V
V _S or V _D to V ⁻		0, 40V
V ⁺ to Ground		
V- to Ground		
Current, Any Terminal Except S or D		
Continuous Current, S or D		20mA
Peak Current, S or D		
(Pulsed at 1msec, 10% duty cycle max	x)	70mA

Storage Temperature	-65°C to +125°C
Operating Temperature	0°C to +70°C
Power Dissipation (Note 1)	
16 Pin Plastic DIP (Note 2)	470mW
16 Pin Small Outline (SE) (Note 3)	

Note 1: Device mounted with all leads soldered to PC board.

Note 2: Derate 6.5mW/°C above +25°C.

Note 3: Derate 7mW/°C above +25°C.

Stresses listed under "Absolute Maximum Ratings" may be applied (one at a time) to devices without resulting in permanent damage. These are stress ratings only, and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum ratings conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS (DG212)

 $(V^{+} = +15V, V^{-} = -15V, GND = 0V, T_{A} = +25^{\circ}C, unless otherwise noted)$

	100 - COM-1		-x1XV.1		L	LIMITS		-7
_ 13	PARAMETER	SYMBOL	TES	T CONDITIONS	MIN (Note 4)	TYP (Note 5)	MAX	UNITS
	Analog Signal Range	V _{ANALOG}		1007.	-15		15	OV
	Drain-Source ON Resistance	r _{DS (on)}	$V_D = \pm 10V$, $V_{IN} = 2.4V$, $I_S = 1 mA$			115	175	Ω
	Source OFF Leakage Current		V _{IN} = 0.8V	V _S = 14V, V _D = -14V	1. 7	0.01	5.0	1.100
E.	Course of Fredrings our ent	s (off)	V _{IN} - 0.60	V _S = -14V, V _D = 14V	-5.0	-0.02	1111	X1 10
DYNAMIC INPUT SWITCH	Drain OFF Leakage Current	-31	V _{IN} = 0.8V	V _S = 14V, V _D = -14V	TY.	0.01	5.0	11.5
S	Bruin 611 Leakage Guireit	D (off)	V _{IN} = 0.60	V _S = -14V, V _D = 14V	-5.0	-0.02		nA
	Drain ON Leakage Current	I _D (on)	V _S = V _D = 14	V, V _{IN} = 2.4V		0.1	5.0	
	(Note 6)	D (on)	V _S = V _D = -1	4V, V _{IN} = 2.4V	-5.0	-0.15	- 1	W.
	Input Current With Input	I _{INH}	V _{IN} = 2.4V	1007	-1.0	-0.0004		
5	Voltage High	INH	V _{IN} = 15V	WWW. COX	CO.	0.003	1.0	μА
Ž	Input Current With Input Voltage Low	I _{INL}	V _{IN} = 0V	MMM.TO	-1.0	-0.0004		WW
	Turn-ON Time	t _{on}	Sec	Switching Time	CON	460	1000	- 111
	Turn-OFF Time	t _{off1}		Test Circuit	1	360	500	ns
	Idin-Off Time	t _{off2}	V _S = 2V	$R_L = 1k\Omega$, $C_L = 35pF$	VI CO	450		W
ĕ	Source OFF Capacitance	C _{S (off)}	$V_S = 0V, V_{IN}$	= 0V, f = 1MHz		5		
Ř	Drain OFF Capacitance	C _{D (off)}	$V_D = 0V, V_{IN}$	= 0V, f = 1MHz	DOY.	5	N	pF
Δ	Channel ON Capacitance	C _{D+S(on)}	$V_D = V_S = 5$	/, V _{IN} = 0V, f = 1MHz	×7 (16	- X X I	
	OFF Isolation (Note 7)	OIRR	V - 0V B	= 1kΩ, C _L = 15pF,	100 7.	70		
	Crosstalk (Channel to Channel)	CCRR	V _S = 1VRMS	6, f = 100kHz	1001	90	TW	dB
<u></u>	Positive Supply Current	J+C	The state of the s	I WW	. 007	0.35	0.48	
SUPPLY	Negative Supply Current	1001-	V _{IN} = 0V and	1 2.4V	M.Ton	0.30	0.48	mA
S	Logic Supply Current	000			- 100	0.5	1.2	7

Note 4: The algebraic convention whereby the most negative value is a minimum, and the most positive is a maximum, is used in this data sheet.

Note 5: Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing

Note 6: I_{D(on)} is leakage from driver into "ON" switch.

Note 7: OFF Isolation = 20 $\log \frac{V_S}{V_D}$, V_S = input to OFF switch, V_D = output.

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Quad SPST CMOS Analog Switches

WWW.toox.COM.TW Significantly Reduced Power Consumption

- Third (Logic) Supply Not Required

ABSOLUTE MAXIMUM RATINGS (DG212): This device conforms to the Absolute Maximum Ratings on the adjacent

ELECTRICAL CHARACTERISTICS (DG212): Specifications below satisfy or exceed all "tested" parameters on

 $(V^+ = +15V, V^- = -15V, GND = 0V, T_A = +25^{\circ}C, unless otherwise noted)$

	-1 CONP.		MAN		di	LIMITS	///	J.V.C
	PARAMETER	SYMBOL	TES	T CONDITIONS	MIN (Note 4)	TYP (Note 5)	MAX	UNITS
	Analog Signal Range	V _{ANALOG}	TAN	100 - OM.	-15		15	V
	Drain-Source ON Resistance	r _{DS (on)}	V _D = ±10V, \	/ _{IN} = 2.4V, I _S = 1mA		115	175	Ω
	Source OFF Leakage Current	~ 1	V _{IN} = 0.8V	V _S = 14V, V _D = -14V		0.01	5.0	1300
Ď	Source OFF Leakage Current	S (off)	VIN - 0.0V	V _S = -14V, V _D = 14V	-5.0	-0.02	-11	JJ.100
SWITCH	Dunia OFF Lastran Orania	N.	V _{IN} = 0.8V	V _S = 14V, V _D = -14V	WT	0.01	5.0	nA
•	Drain OFF Leakage Current	D (off)	V _{IN} = 0.8V	V _S = -14V, V _D = 14V	-5.0	-0.02	-1111	T I'A
	Drain ON Leakage Current	17	V _S = V _D = 14	IV, V _{IN} = 2.4V	M_{II}	0.1	5.0	-XX 1
	(Note 6)	D (on)	V _S = V _D = -1	4V, V _{IN} = 2.4V	-5.0	-0.15	W	
	Input Current With Input	V . 7	V _{IN} = 2.4V	1111.100	-1.0	-0.0004		
INPUT	Voltage High	INH	V _{IN} = 15V	11007		0.003	1.0	μА
Z	Input Current With Input Voltage Low	I _{INL}	V _{IN} = 0V	WWW.100Y	-1.0	-0.0004		
	Turn-ON Time	ton	Se Se	e Switching Time	COM,	460	1000	
	Turn-OFF Time	t _{off1}		Test Circuit $V_S = 2V$, $R_L = 1k\Omega$, $C_L = 35pF$		360	500	ns
	Turn-OFF Time	t _{off2}	$V_s = 2V$			450		
Ş	Source OFF Capacitance	C _{S (off)}	V _S = OV, V _{IN}	= 0V, f = 1MHz	=1 CC	5	sī.	
DYNAMIC	Drain OFF Capacitance	C _{D (off)}	$V_D = 0V, V_{IN}$	1 = 0V, f = 1MHz	CO.T.	5		pF
2	Channel ON Capacitance	C _{D+S(on)}	$V_D = V_S = 0$	V, V _{IN} = 5V, f = 1MHz	OV.C	16	W	
	OFF Isolation (Note 8)	OIRR	V = 0V B	= 1k0, C, = 15nF	100	70		
	Crosstalk (Channel to Channel)	CCRR	V _S = 1VRM	= 1kΩ, C _L = 15p F , S, f = 100kHz	V1007	90	LM	dB
	Positive Supply Current	00 X I+	WILL	A VIV	11007	0.02	0.1	
בַ	Negative Supply Current	J. J. C	V _{IN} = 0V an	d 2.4V	11.2	0.00001	0.1	mA
SUPPLY	Logic Supply Current	ا ا ا	oM.T.		- xx 100	0.0	0.0	
S	Power Supply Range for Continuous Operation	V _{OP}	M.J		±4.5		±18	v

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ABSOLUTE MAXIMUM RATINGS (DG202)

Voltages Referenced to V ⁻	
V ⁺	44V
GND	
Digital Inputs (Note 1), VS, VD	2V. to (V+ +2V)
	A, whichever occurs first
Current, Any Terminal Except S or D	30mA
Continuous Current, S or D	
Peak Current, S or D	
(Pulsed at 1 msec, 10% duty cycle max.)) 70mA
Operating Temperature	
DG202 (A Suffix)	55°C to +125°C
(B Suffix)	25°C to +85°C
(C Suffix)	
MAX332MJE	
Character Vistant and an UAL and An IA. January B.	

Storage Temperature65°C to	+150°C
Power Dissipation (Note 2)	
16 Pin CERDIP (Note 3)	900mW
16 Pin Plastic DIP (Note 4)	
16 Pin Small Outline (SE) (Note 5)	
National Company of State of S	

Signals on S_χ , D_χ , or IN_χ exceeding V^+ or V^- on Maxim's MAX332 and DG202 will be clamped by internal diodes, Note 1: and are also internally current limited to 25mA

Note 2: Device mounted with all leads soldered to PC board.

Derate 12mW/°C above +75°C. Derate 6.5mW/°C above +25°C. Note 3: Note 4: Derate 7mW/°C above +25°C. Note 5:

Stresses listed under "Absolute Maximum Ratings" may be applied (one at a time) to devices without resulting in permanent damage. These are stress ratings only, and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum ratings conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS (DG202)

 $(V^+ = +15V, V^- = -15V, GND = 0V, T_A = +25^{\circ}C, unless otherwise noted)$

44.	ON CONTRACT	DOX. COM.T.L. MAN. MODE.		N.			LIN	AITS	7	100	1.	
XIVI	PARAMETER	SYMBOL	TEST	CONDIT	IONS CC	ZAF.	DG202A		- <	DG202B,	С	UNITS
	A.100 X.COM.			NW.	(N) ₹ . C	MIN (Note 6	TYP (Note 7)	MAX	MIN (Note 6	TYP (Note 7)	MAX	
	Analog Signal Range	V _{ANALOG}		TXX	100	-15	1.1	15	-15		15	V
NV	Drain-Source ON Resistance	r _{DS (on)}	V _D = ±10V, V	1 _{IN} = 2.4V,	I _S = 1mA		115	175		115	200	n
DYNAMIC INPUT SWITCH	Source OFF Leakage	WIL	V _{IN} = 0.8V	V _S = 141	V, V _D = -14V		0.01	1.0		0.01	5.0	. 10
	Current	S (off)	VIN - 0.64	V _S = -14	IV, V _D = 14V	-5.0	-0.02	-41				1.20
	Drain OFF Leakage	T.T.	V _{IN} = 0.8V	V _S = 14	V, V _D = -14V	1.	0.01	1.0		0.01	5.0	$\propto 1$
	Current	D (off)	VIN - 0.64	V _S = -14	IV, V _D = 14V	-5.0	-0.02				WW	nA
	Drain ON Leakage	OMIL	V _S = -14V, V	IN = 2.4V	VIV. IU	10 -	0.1	1.0	-1	0.1	5.0	WW.
PUT	Current (Note 8)	D (on)	V _D = 14V, V _{IN} = 2.4V			-1.0	-0.15	TI	-5.0	-0.15		
	Input Current With	COM.	V _{IN} = 2.4V			-1.0	-0.0004	MA	-1.0	-0.0004	11	WY
Ď	Input Voltage High	V _{IN} = 15V		-733	100	0.003	1.0	1	0.003	1.0	μА	
Ž	Input Current With Input Voltage Low	I _{INL}	V _{IN} = 0V		-1.0	-0.0004		-1.0	-0.0004		**	
	Turn-ON Time	ton	See	Switching	Time	. 40	480	600	T	480	600	1
	Turn-OFF Time	t _{off}	M.r.	Test Circu	it	M.r.	370	450	N.F.	370	450	ns
INPUT	Charge Injection	Q		000pF, V _G R _{GEN} = 01			20	, C(M.	20		pC
	Source OFF Capacitance	C _{S (off)}	V _S = 0V, V _{IN}	= 0V			5	-7 (MO	5	1	
Ž	Drain OFF Capacitance	C _{D (off)}	S 51, 1N	11	f = 140kHz	4 -	5	17.		5	**	pF
ā	Channel ON Capacitance	C _{D (on)} + C _{S (on)}	V _D = V _S = 0V	, V _{IN} = 5V	1	M	16	OY.	Co.	16	N	
	OFF Isolation	N. P.	V _{IN} = 0V, Z _L	= 75kΩ		WW	70	003	C	70	M	
	Crosstalk (Channel to Channel)	W.100	V _S = 2.0V, f =	100kHz		N.	90	ino	v.C	90		dB
۲ ۲	Positive Supply Current	11/1/10	All Channel	s ON or C)FF		0.9	2		0.9	2	mA
SUP	Negative Supply Current	I-	All Channels	s ON or C	FF	-1	-0.3		-1	-0.3		1 ""

The algebraic convention whereby the most negative value is a minimum, and the most positive is a maximum, is used in this data sheet.

Note 7: Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.

I_{D(on)} is leakage from driver into "ON" switch.

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W/IXI/VI

Quad SPST CMOS Analog Switches

- ♦ Significantly Reduced Power Consumption
- **♦ Lower Input Current Over Temperature**
- ♦ No Input Current Spike

ABSOLUTE MAXIMUM RATINGS (MAX332, DG202): This device conforms to the Absolute Maximum Ratings

ELECTRICAL CHARACTERISTICS (MAX332, DG202): Specifications below satisfy or exceed all "tested" parameters on adjacent page.

(V⁺ = +15V, V⁻ = -15V, GND = 0V, T_A = +25°C, unless otherwise noted)

4	Analog Signal Range Drain-Source ON Resistance (Note 9) Source OFF Leakage Current Drain OFF Leakage Current Drain ON Leakage Current (Note 8) Input Current With	T .	N W	V.CO		N	LIN	IITS	1	. 00	V.C	
	DADAMETER	SYMBOL	TEST COND	NTIONS O	MAX	332/DG	202A		G202B,	С	UNITS	
N	PARAMETER	STMBUL	TEST COND	1003	MIN (Note 6)	TYP (Note 7)	MAX	MIN (Note 6)	TYP (Note 7)	MAX	5	
111	Analog Signal Range	V _{ANALOG}	1111	100 Y.	-15	IM	15	-15	M	15	V	
		r _{DS (on)}	$V_D = \pm 10V$, $V_{IN} = 2.4$	IV, I _S = 1mA		115	175		115	200	Ω	
퐀		EXX	V _{IN} = 0.8V V _S =	14V, V _D = -14V	Co	0.01	1.0		0.01	5.0	100	
SWITCH	Current	S (off)	V _S =	-14V, V _D = 14V	-1.0	-0.02		-5.0	-0.02		Tra.	
S		I _{D (off)}		14V, V _D = -14V		0.01	1.0		0.01	5.0	nA	
	Current	'D (off)	V _S =	-14V, V _D = 14V	-1.0	-0.02		-5.0	-0.02		1	
		I _{D (on)}	$V_S = -14V_1 V_{IN} = 2.4$			0.1	1.0	ļ	0.1	5.0	W.	
	Current (Note 8)	(on)	$V_D = 14V, V_{IN} = 2.4V$		-1.0	-0.15		-5.0	-0.15	11		
-		O _{INH}	V _{IN} = 2.4V	-1.0	-0.0004		-1.0	-0.0004	- 476	WW		
Ē	Input Voltage High	INH	V _{IN} = 15V	M. J.	1003	0.003	1.0		0.003	1.0	μА	
Z	Input Current With Input Voltage Low	ClinL	V _{IN} = 0V		-1.0	-0.0004		-1.0	-0.0004	1		
	Turn-ON Time	ton	See Switch			480	600	T	480	600	ns	
	Turn-OFF Time	t _{off1}	Test Ci	rcuit	N.Tu	370	450	1. 1	370	450	1110	
	Charge Injection	Q	C _L = 1000pF, R _{GEN} =	V _{GEN} = 0V, = 0Ω	W.1	20		M.T	20		рС	
DYNAMIC	Source OFF Capacitance	C _{S (off)}	V _S = 0V, V _{IN} = 0V	N.	MIN	5		OM.	5			
×	Drain OFF Capacitance	C _{D (off)}	WILL	f = 140kHz		5	7.		5		pF	
	Channel ON Capacitance	C _{D (on)} + C _{S (on)}	$V_D = V_S = 0V, V_{IN} =$	5V		16	OY.		16	N		
	OFF Isolation	1.5	$V_{IN} = 0V, Z_{L} = 75k\Omega$	1	NIN!	70	.01	CO	70	N.		
	Crosstalk (Channel to Channel)	W.100	V _S = 2.0V, f = 100kH	1z		90	Tao.	v.C	90	TW	dB	
>	Positive Supply Current	1110	All Channels ON o	or OFF		0.02	0.1		0.02	0.1	mA	
SUPPLY	Negative Supply Current	1-	All Channels ON	or OFF	-0.1	-0.01	- 10	-0.1	-0.01		IIIA	
SU	Power Supply Range for Continuous Operation	V _{OP}	ON.COM.	TW	±4.5	NW	±18	±4.5	CO	±18	v	

The algebraic convention whereby the most negative value is a minimum, and the most positive is a maximum, is used in this Note 6:

Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing Note 7:

Note 8:

I_{D(on)} is leakage from driver into "ON" switch. Electrical characteristics, such as ON Resistance, will change when power supplies other than ±15V, are used. Note 9:

Quad SPST CMOS Analog Switches

ELECTRICAL CHARACTERISTICS (DG202)

(V+ = +15V, V- = -15V, GND = 0V, TA = Full Operating Temperature Range

CC V.C	M.T.	TXV	100 .			Mr				
	PARAMETER	SYMBOL	TEST	CONDITIONS		DG202A	DG202B,C			UNITS
	OM.	WWV	1007	CONTRA	MIN (Note 6)	TYP MAX (Note 7)	MIN TYP (Note 6) (Note 7)		MAX	TY
	Analog Signal Range	V _{ANALOG}	N.F	CONT	-15	15	-15	N.	15	V
	Drain-Source ON Resistance	r _{DS (on)}	V _D = ±10V, V	/ _{IN} = 2.4V, I _S = 1mA	ı.	250	M.T.		250	Ω
ī	Source OFF Leakage		V _{IN} = 0.8V	V _S = 14V, V _D = -14V		100	STAN.	Ina.	100	nA
SWITCH	Current	S (off)	VIN - 0.0V	V _S = -14V, V _D = 14V	-100	N.	-100	100	N.	
SW	Drain OFF Leakage	ID (off)	V _{IN} = 0.8V	V _S = 14V, V _D = -14V		100	WW	0.3	100	
	Current			$V_S = -14V, V_D = 14V$	-100		-100	x 10	N F	
	Drain ON Leakage		V _S = -14V, V	N = 2.4V		200	NW	1	200	Co
s 11	Current (Note 10)	D (on)	V _D = 14V, V _{II}	y = 2.4V	-200		-200		V	1.00
MA.	Input Current With		V _{IN} = 2.4V	1007	-1.0		-10		100	1.
INPUT	Input Voltage High	INH	V _{IN} = 15V	N. T. CO	M. Fr.	-10		MAA	-10	I-J.C
Z	Input Current With Input Voltage Low	I _{INL}	V _{IN} = 0V	W.100 - C	-10		-10	WV	1.10	μА

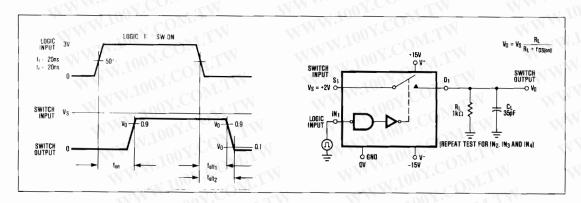
Note 10: 1 D(on) is leakage from driver into "ON" switch.

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Switching Time Test Circuit

Switch output waveform shown for $V_S=\mbox{constant}$ with logic input waveform as shown. Note that V_S may be +ve or -ve as per switching times test circuit.

 $\rm V_{\rm O}$ is the steady state output with switch on. Feed-through via gate capacitance may result in spikes at leading and trailing edge of output waveform.



Typical R_{DS(ON)} vs. Power Supplies for Maxim's MAX332, DG202/DG212

POWER SUPPLIES	R _{DS(ON)} AT ANALOG SIGNAL LEVEL									
	-5V	+5V	-10V	+10V	-15V	+15V				
±5V	350Ω	380Ω	TV							
±10V	T.W.T	0	165Ω	250Ω						
±15V		001.	125Ω	160Ω	135Ω	155Ω				

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NIXIN

Quad SPST CMOS Analog Switches

Quad SPST CI ELECTRICAL CHARACTERISTICS (MAX332, DG202):

 $(V^+ = +15V, V^- = -15V, GND = 0V, T_A = full operating temperature range)$

	COM.		W.Inc	COM	LIMITS						
	PARAMETER	SYMBOL	TEST	CONDITIONS	MAX	32/DG202A	DG202B,C			UNITS	
i al	Y.CONTW	N/	WW.55	00 X . CO.	MIN (Note 6)	TYP MAX (Note 7)	MIN TYP MAX (Note 6) (Note 7)			UNITS	
1	Analog Signal Range	VANALOG		- ON CO	-15	15	-15	100	15	٧	
	Drain-Source ON Resistance (Note 11)	r _{DS (on)}	V _D = ±10V, \	/ _{IN} = 2.4V, I _S = 1mA	TW	250	MM	11.10	250	CO	
	Source OFF Leakage		V _{IN} = 0.8V	V _S = 14V, V _D = -14V	1.	100	-1	M.L.	100	of CC	
	Current	Is (off)	VIN - 0.0V	$V_S = -14V, V_D = 14V$	-100		-100	_ 1	00	nA	
SW	Drain OFF Leakage		V _{IN} = 0.8V	V _S = 14V, V _D = -14V	1	100	11	11/1/11	100		
	Current	D (off)	VIN - 0.8V	$V_S = -14V, V_D = 14V$	-100		-100		\mathcal{I}_{R}		
	Drain ON Leakage		V _S = -14V, V	IN = 2.4V		200		1	200		
_ <	Current (Note 10)	I _D (on)	V _D = 14V, V _{II}	_V = 2.4V	-200	- 1	-200	-11VV	Nº3		
Ϊ.Λ.	Input Current With	(IN	V _{IN} = 2.4V	1007.	-1.0		-1.0		XXI	100	
INPUT	Input Voltage High	INH	V _{IN} = 15V	NIN W.	1.0		1.0		1.0	μΑ	
Z	Input Current With Input Voltage Low	I _{INL}	V _{IN} = OV	MMM Too	-1.0	M	-1.0	W	N	1.50	

Note 10: ID(on) is leakage from driver into "ON" switch.

Note 11: Electrical characteristics, such as ON Resistance, will change when power supplies other than ±15V, are used.

Fault conditions occur when power supplies are turned off when input signals are still present or when over voltages occur at the inputs during normal operation. In either case, source-to-body diodes can be forward biased and conduct current from the signal source. If this current is required to be kept to

signal source. If this current is required to be kept to low (μA) levels then the addition of external protection diodes is recommended. To provide protection for over-voltages up to 20V above the supplies, a 1N4001 or 1N914 type diode

To provide protection for over-voltages up to 20V above the supplies, a 1N4001 or 1N914 type diode should be placed in series with the positive and negative supplies as shown in Fig. 1. The addition of these diodes will reduce the analog signal range to 1 volt below the positive supply and 1 volt above the negative supply.

Protecting Against Fault Conditions

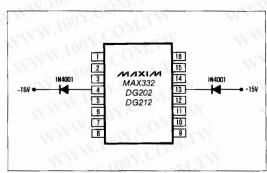
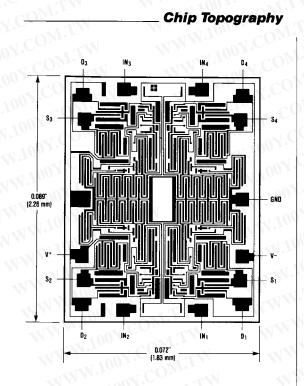
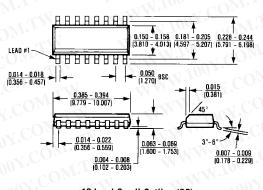


Figure 1. Protection Against Fault Conditions

Quad SPST CMOS Analog Switches



Package Information



16 Lead Small Outline (SE) $\theta_{\rm JA} = 110^{\circ}{\rm C/W}$ $\theta_{\rm JC} = 60^{\circ}{\rm C/W}$

