



High-Speed Analog N-Channel DMOS FETs

SD210 / SD212 / SD214

FEATURES

- High Input to Output Isolation 120dB
- Low On Resistance 30 Ohm
- Low Feedthrough and Feedback Transients
- Low Capacitance:
 - Input (Gate) 2.4pF typ.
 - Output 1.3pF typ.
 - Feedback 0.3pF typ.
- No protection Diode from Gate to Substrate for Very High Impedance Applications
- Maximum Gate Voltage $\pm 40V$

APPLICATIONS

SD210:

- Analog Switch Driver

SD212 and SD214:

- Analog Switches
- High-Speed Digital Switches
- Multiplexers
- A to D Converters
- D to A Converters
- Choppers
- Sample & Hold

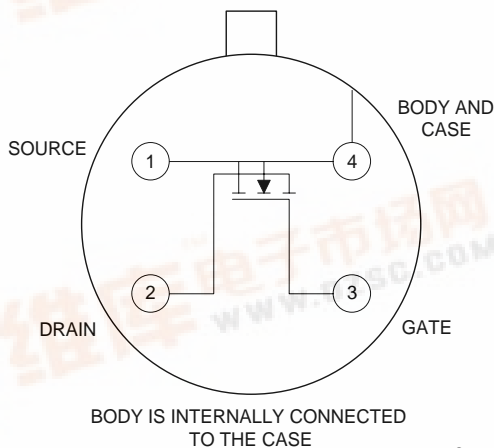
DESCRIPTION

The Calogic SD210 is a 30V analog switch driver without a built-in protection diode from gate to substrate for use with SD212 and SD214 DMOS analog switches.

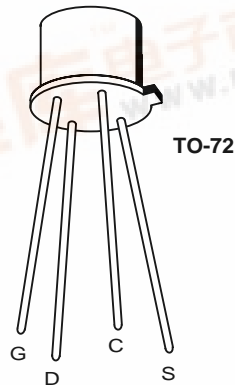
ORDERING INFORMATION

Part	Package	Temperature Range
SD210E	Hermetic TO-72 Package	-55°C to +125°C
XSS210	Sorted Chips in Carriers	-55°C to +125°C
SD212DE	Hermetic TO-72 Package	-55°C to +125°C
XSD212	Sorted Chips in Carriers	-55°C to +125°C
SD214DE	Hermetic TO-72 Package	-55°C to +125°C
XSD214	Sorted Chips in Carriers	-55°C to +125°C

SCHEMATIC DIAGRAM (Top View)



1Q-23



SD210 / SD212 / SD214



ABSOLUTE MAXIMUM RATINGS

Drain Current 50mA
 Total Device Dissipation at 25°C Case Temperature . . . 1.2W
 Storage Temperature Range -65°C to +200°C
 Lead Temperature (1/16" from case for 10 sec.) 300°C
 Operating Temperature Range -55°C to +125°C

PARAMETER	SD210	SD212	SD214	UNIT
V _{DS} Drain-to-Source	+30	+10	+20	V _{dc}
V _{SD} Source-to-Drain	+10	+10	+20	V _{dc}
V _{DB} Drain-to-Body	+30	+15	+25	V _{dc}
V _{SB} Source-to-Body	+15	+15	+25	V _{dc}
V _{GS} Gate-to-Source	±40	±40	±40	V _{dc}
V _{GB} Gate-to-Body	±40	±40	±40	V _{dc}
V _{GD} Gate-to-Drain	±40	±40	±40	V _{dc}

DC CHARACTERISTICS (T_A = 25°C, unless otherwise specified)

SYMBOL	PARAMETER	SD210			SD212			SD214			UNITS	TEST CONDITIONS
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX		
BREAKDOWN VOLTAGE												
BV _{DS}	Drain-to-Source	30	35								V	V _{GS} = V _{BS} = 0V, I _D = 10μA
		10	25		10	25		20	25			V _{GS} = V _{BS} = -5V, I _S = 10nA
BV _{SD}	Source-to Drain	10			10			20				V _{GD} = V _{BD} = -5V, I _D = 10nA
BV _{DB}	Drain-to-Body	15			15			25				V _{GB} = 0V, source OPEN, I _D = 10nA
BV _{SB}	Source-to-Body	15			15			25				V _{GB} = 0V, drain OPEN, I _S = 10μA
LEAKAGE CURRENT												
I _{DS} (OFF)	Drain-to-Source		1	10		1	10				nA	V _{GS} = V _{BS} = -5V, V _{DS} = +10V
									1	10		V _{GS} = V _{BS} = -5V, V _{DS} = +20V
I _{SD} (OFF)	Source-to-Drain		1	10		1	10					V _{GS} = V _{BD} = -5V, V _{SD} = +10V
									1	10		V _{GS} = V _{BD} = -5V, V _{SD} = +20V
I _{GBS}	Gate			0.1			0.1			0.1		V _{DB} = V _{SB} = 0V, V _{GS} = ±40V
V _T	Threshold Voltage	0.5	1.0	2.0	0.1	1.0	2.0	0.1	1.0	2.0	V	V _{DS} = V _{GS} = V _T , I _S = 1μA, V _{SB} = 0V
r _{DS} (ON)	Drain-to-Source Resistance		50	70		50	70		50	70	Ω	I _D = 1.0mA, V _{SB} = 0, V _{GS} = +5V
			30	45		30	45		30	45		I _D = 1.0mA, V _{SB} = 0, V _{GS} = +10V
			23			23			23			I _D = 1.0mA, V _{SB} = 0, V _{GS} = +15V
			19			19			19			I _D = 1.0mA, V _{SB} = 0, V _{GS} = +20V
			17			17			17			I _D = 1.0mA, V _{SB} = 0, V _{GS} = +25V

AC ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	SD210			SD212			SD214			UNITS	TEST CONDITIONS
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX		
g _{fs}	Forward Transconductance	10	15		10	15		10	15		ms	V _{DS} = 10V, V _{SB} = 0V, I _D = 20mA, f = 1kHz
SMALL SIGNAL CAPACITANCES												
C _(GS+GD+GB)	Gate Node		2.4	3.5		2.4	3.5		2.4	3.5	pF	V _{DS} = 10V, f = 1MHz V _{GS} = V _{BS} = -15V
C _(GD+DB)	Drain Node		1.3	1.5		1.3	1.5		1.3	1.5		
C _(GS+SB)	Source Node		3.5	5.5		3.5	5.5		3.5	5.5		
C _{DG}	Reverse Transfer		0.3	0.5		0.3	0.5		0.3	0.5		

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