

SD211 / SD213 / SD215

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.
- Built-in Protection Diode from Gate to Substrate

APPLICATIONS

SD211:

- Analog Switch Driver

SD213 and SD215:

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

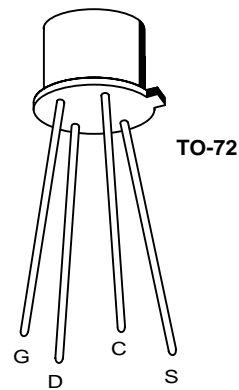
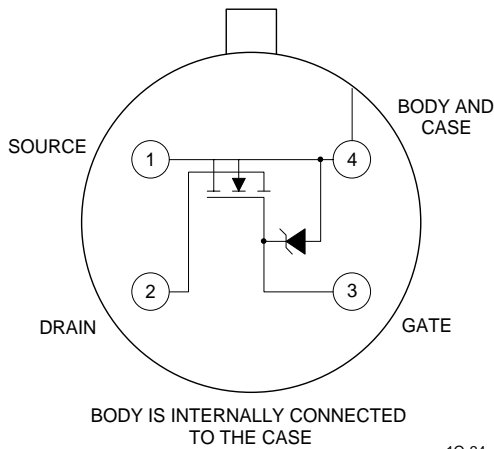
DESCRIPTION

The Calogic SD211 is a 30V analog switch driver with built-in protection diode from gate to substrate. The SD211 is used with SD213 and SD215 DMOS analog switches.

ORDERING INFORMATION

Part	Package	Temperature Range
SD211DE	Hermetic TO-72 Package	-55°C to +125°C
XSD211	Sorted Chips in Carriers	-55°C to +125°C
SD213DE	Hermetic TO-72 Package	-55°C to +125°C
XSD213	Sorted Chips in Carriers	-55°C to +125°C
SD215DE	Hermetic TO-72 Package	-55°C to +125°C
XSD215	Sorted Chips in Carriers	-55°C to +125°C

SCHEMATIC DIAGRAM (Top View)



CD1-1

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	SD211	SD212	SD215	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	-15 +25	-15 +25	-25 +30	V_{dc}
V_{GB}	Gate-to-Body	-0.3 +25	-0.3 +25	-0.3 +30	V_{dc}
V_{GD}	Gate-to-Drain	-30 +25	-15 +25	-25 +30	V_{dc}

DC CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

SYMBOL	PARAMETER	SD211			SD213			SD215			UNITS	TEST CONDITIONS
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX		
BREAKDOWN VOLTAGE												
BV_{DS}	Drain-to-Source	30	35								V	$V_{GS} = V_{BS} = 0V, I_D = 10\mu A$
		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		$V_{GB} = 0V, \text{source OPEN}, I_D = 10nA$		
BV_{SB}	Source-to-Body	15			15			25		$V_{GB} = 0V, \text{drain OPEN}, I_S = 10\mu A$		
LEAKAGE CURRENT												
$I_{DS} \text{ (OFF)}$	Drain-to-Source		1	10		1	10				nA	$V_{GS} = V_{BS} = -5V, V_{DS} = +10V$
									1	10		$V_{GS} = V_{BS} = -5V, V_{DS} = +20V$
$I_{SD} \text{ (OFF)}$	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			10			10			10		$V_{DB} = V_{SB} = 0V, V_{GS} = +30V$
V_T	Threshold Voltage	0.5	1.0	2.0	0.1	1.0	2.0	0.1	1.0	2.0	V	$V_{DS} = V_{GS} = V_T, I_S = 1\mu A, V_{SB} = 0V$
$r_{DS} \text{ (ON)}$	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			$I_D = 1.0mA, V_{SB} = 0, V_{GS} = +25V$

AC ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	SD211			SD213			SD215			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_{iss}	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_{oss}	Drain Node		1.3	1.5		1.3	1.5		1.3	1.5		
C_{rss}	Source Node		0.3	0.5		0.3	0.5		0.3	0.5		

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