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CORPORATION

High-Speed Analo N-Channel DMOS FETs

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**

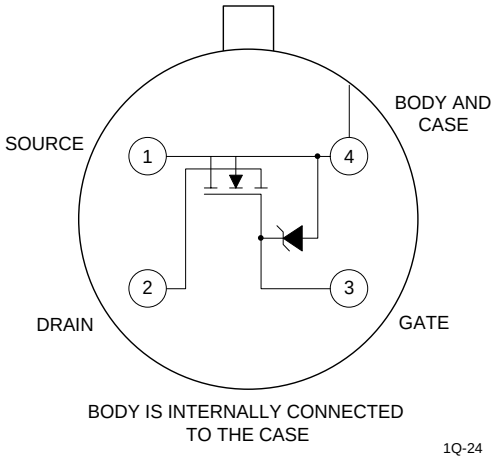
DESCRIPTION

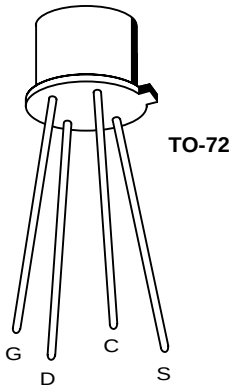
The Calogic SD211 is a 30V analog switch driver with built-in protection diode from gate to substrate The SD211 is used with SD213 and SD215 DMOS analog switches.

ORDERING INFORMATION

Part	Package	Temperature Range
SD211E	Hermetic TO-72 Package	-55°C to +125°C
XSS211	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)





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ABSOLUTE MAXIMUM RATINGS

Drain Current 50mA
Total Device Dissipation at 25°C Case Temperature . . . 1.2W
Storage Temperatue 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°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 = 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			10			10			10		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			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		
gfs	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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