

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 ±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

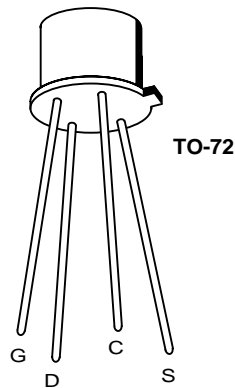
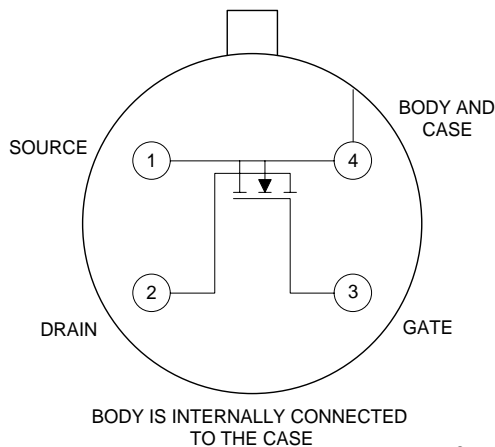
DESCRIPTION

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)



CD1-2

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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