SD210 / SD214

SD210DE / SD214DE series N-Channel Enhancement Mode DMOS Lateral Switches

Description:
The SD210DE & SD214DE are enhancement-mode MOSFETs designed for high speed low-glitch switching in audio, video and high-frequency applications. The SD214DE is normally used for ±10V analog switching. These MOSFETs utilize lateral construction to achieve low capacitance and ultra-fast switching speeds. These MOSFETs do not have a gate protection Zener diode which results in lower gate leakage and ± voltage capability from gate to substrate. A poly-silicon gate is featured for manufacturing reliability.

See SD5000 and SD54000 series for quad configurations.
For zener protected versions see SD211DE / SST211 series

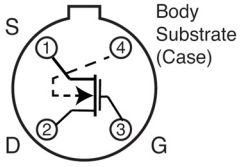
Features:
- Ultra-High Speed Switching—tON: 1ns
- Ultra-Low Reverse Capacitance: 0.2pF
- Low Guaranteed R_{DS} @5V
- Low Turn-On Threshold Voltage (1.5V max)
- N-Channel Enhancement Mode

Benefits:
- High-Speed System Performance
- Low Insertion Loss at High Frequencies
- Low Transfer Signal Loss
- Single Supply Operation & Simple Driver Requirement

Availability:
SD210DE – **TO-72** hermetic package, -55°C to +125°C
SD214DE – **TO-72** hermetic package, -55°C to +125°C
SD210DE / SD214DE - **Bare die** form

Contact Micross for full package dimensions

Pinout:



SD210 / SD214 Applications:
- Fast Analog Switching
- Fast Sample & Holds
- Pixel-Rate Switching
- DAC Deglitchers
- High-Speed Driver

MAXIMUM RATINGS	LIMIT	
	SD210DE	**SD214DE**
Gate-Drain, Gate-Source Voltage	±40V	±40V
Gate-Substrate Voltage	±30V	±30V
Drain-Source Voltage	30V	20V
Source-Drain Voltage	10V	20V
Drain -Substrate Voltage	30V	25V
Source-Substrate Voltage	15V	25V

MAXIMUM RATINGS (Continued)	LIMIT	UNIT
Drain Current	50	mA
Lead Temperature (1/16" from ease, 10s)	300	°C
Storage Temperature	-65 to 150	°C
Operating Junction Temperature	-55 to 125	°C
Power Dissipation Derate 3mW/C° above 25°C	300	mW

ELECTRICAL SPECIFICATION T_A = 25°C unless otherwise noted	SYMBOL	TEST CONDITIONS		TYP	LIMITS SD210DE MIN	LIMITS SD210DE MAX	LIMITS SD214DE MIN	LIMITS SD214DE MAX	UNIT
DRAIN-SOURCE BREAKDOWN VOLTAGE	$V_{(BR)DS}$	V_{GS} = V_{BS} = 0V, I_D = 10µA		35	30	-	-	-	V
		V_{GS} = V_{BS} = -5V, I_D = 10nA		30	10	-	20	-	
SOURCE-DRAIN BREAKDOWN VOLTAGE	$V_{(BR)SD}$	V_{GD} = V_{BD} = -5V, I_S = 10nA		22	10	-	20	-	
DRAIN-SUBSTRATE BREAKDOWN VOLTAGE	$V_{(BR)DBO}$	V_{GB} = 0V, I_D = 10nA Source Open		35	15	-	25	-	
SOURCE-SUBSTRATE BREAKDOWN VOLTAGE	$V_{(BR)SBO}$	V_{GB} = 0V, I_S = 10µA Drain Open		35	15	-	25	-	
DRAIN-SOURCE LEAKAGE	$I_{DS(off)}$	V_{GS} = V_{BS} = -5V	V_{DS} = 10V	0.4	-	10	-	-	nA
			V_{DS} = 20V	0.9	-	-	-	10	
SOURCE-DRAIN LEAKAGE	$I_{SD(off)}$	V_{GD} = V_{BD} = -5V	V_{SD} = 10V	0.5	-	10	-	-	
			V_{SD} = 20V	0.8	-	-	-	10	
GATE LEAKAGE	I_{GBS}	V_{DB} = V_{SB} = 0V, V_{GB} = ±4 0V		0.001	-	0.1	-	0.1	
THRESHOLD VOLTAGE	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 1µA, V_{SB} = 0V		0.8	0.5	1.5	0.1	1.5	Ω
DRAIN-SOURCE-ON RESISTANCE	$R_{DS(on)}$	V_{SB} = 0V, I_D = 1mA	V_{GS} = 5V	58	-	70	-	70	
			V_{GS} = 10V	38	-	45	-	45	
			V_{GS} = 15V	30	-	-	-	-	
			V_{GS} = 20V	26	-	-	-	-	
			V_{GS} = 25V	24	-	-	-	-	
FORWARD TRANSCONDUCTANCE	g_{fs}	V_{DS} = 10V, V_{SB} = 0V I_D = 20mA, f = 1kHz		11	10	-	10	-	mS
	g_{os}			0.9	-	-	-	-	
GATE NODE CAPACITANCE	$C_{(GS+GD+GB)}$	V_{DS} = 10V, f = 1MHz V_{GS} = V_{BS} = -15V		2.5	-	3.5	-	3.5	pF
DRAIN NODE CAPACITANCE	$C_{(GD+GB)}$			1.1	-	1.5	-	1.5	
SOURCE NODE CAPACITANCE	$C_{(GS+SB)}$			3.7	-	5.5	-	5.5	
REVERSE TRANSFER CAPACITANCE	C_{rss}			0.2	-	0.5	-	0.5	
TURN-ON TIME	$t_{D(on)}$	V_{SB} = 0V, V_{IN} 0 to 5V, R_G = 25Ω, V_{DD} = 5V R_L = 680Ω		0.5	-	1	-	1	ns
	t_r			0.6	-	1	-	1	
TURN-OFF TIME	$t_{D(off)}$			2	-	-	-	-	
	t_f			6	-	-	-	-	