

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 $\pm 10V$ 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 \pm 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

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 pinout & package dimensions

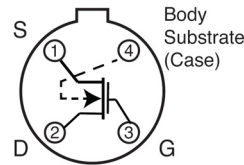
Features:

- 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

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	$\pm 40V$	$\pm 40V$
Gate-Substrate Voltage	$\pm 30V$	$\pm 30V$
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 case, 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 $T_A = 25^\circ C$ unless otherwise noted	SYMBOL	TEST CONDITIONS	TYP	LIMITS				UNIT	
				MIN	MAX	MIN	MAX		
DRAIN-SOURCE BREAKDOWN VOLTAGE	$V_{(BR)DS}$	$V_{GS} = V_{BS} = 0V, I_D = 10\mu A$	35	30	-	-	V		
			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	$V_{(BR)SBO}$	$V_{GB} = 0V, I_S = 10\mu A$ 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	-	nA	
			$V_{SD} = 20V$	0.8	-	-	10		
GATE LEAKAGE	I_{GBS}	$V_{DB} = V_{SB} = 0V, V_{GB} = \pm 4 0V$	0.001	-	0.1	-	0.1	V	
THRESHOLD VOLTAGE	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1\mu A, V_{SB} = 0V$	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	-	-	-		-
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, $R_G = 25\Omega, V_{DD} = 5V R_L = 680\Omega$	0.5	-	1	-	1	ns	
	t_r		0.6	-	1	-	1		
TURN-OFF TIME	$t_{D(off)}$		2	-	-	-	-		
	t_f		6	-	-	-	-		

Information furnished by Linear Integrated Systems and Micross Components is believed to be accurate and reliable. However, no responsibility is assumed for its use; nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Linear Integrated Systems.

Micross Components Ltd, United Kingdom, Tel: +44 1603 788967, Fax: +44 1603 788920, Email: chipcomponents@micross.com Web: www.micross.com