



Improved Standard Products®

SD-SST210/214

N-CHANNEL LATERAL DMOS SWITCH

PART NUMBER	$V_{(BR)DS}$ Min (V)	$V_{(GS)th}$ Max (V)	$r_{DS(on)}$ Max (Ω)	C_{rss} Max (pF)	t_{ON} Max (ns)
SD210DE	30	1.5	45 @ $V_{GS}=10V$	0.5	2
SD214DE	20	1.5	45 @ $V_{GS}=10V$	0.5	2
SST210	30	1.5	50 @ $V_{GS}=10V$	0.5	2
SST214	20	1.5	50 @ $V_{GS}=10V$	0.5	2

PRODUCT SUMMARY

Features

- Ultra-High Speed Switching— t_{ON} : 1ns
- Ultra-Low Reverse Capacitance: 0.2pF
- Low Guaranteed r_{DS} @5V
- Low Turn-On Threshold Voltage
- N-Channel Enhancement Mode

Benefits

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

Applications

- Fast Analog Switch
- Fast Sample-and-Holds
- Pixel-Rate Switching
- DAC Deglitchers
- High-Speed Driver

Description

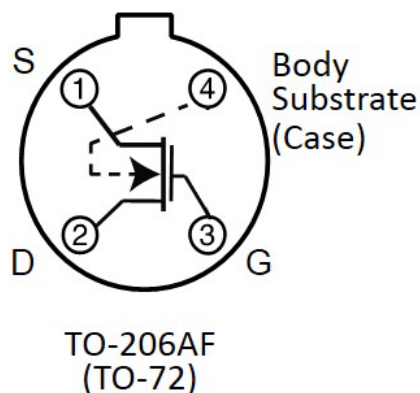
The SD210DE/214 and SST210/214 are enhancement-mode MOSFETs designed for high speed low-glitch switching in audio, video and high-frequency applications. The SD214DE and SST214 are normally used for ± 10 -V analog switching. These MOSFETs utilize lateral construction to achieve low capacitance and ultra-fast 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 polysilicon gate is featured for manufacturing reliability.

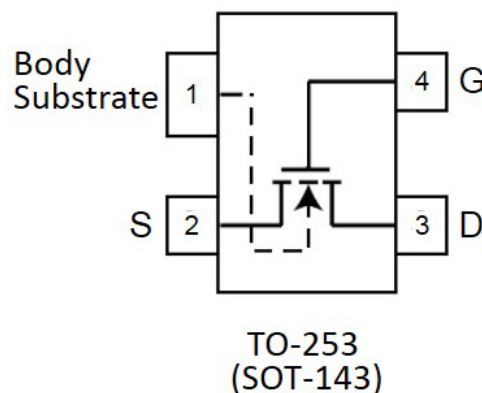
For similar products see: quad array—SD5000/5400 series, Zener protected—SD211DE/SST211 Series.

Top Views

SD210DE, SD214DE



SST210, SST214



Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Gate-Drain, Gate-Source Voltage	 ± 40V	Source-Substrate Voltage	(SD210DE/SST210) 15V
Gate-Substrate Voltage	 ± 30V		(SD210DE/SST210) 25V
Drain-Source Voltage	(SD210DE/SST210) 30V	Drain Current	 50mA
	(SD214DE/SST214) 20V	Lead Temperature (1/16" from case for 10 seconds)	 300°C
Source-Drain Voltage	(SD210DE/SST210) 10V	Storage Temperature	 -65 to 150°C
	(SD214DE/SST214) 20V	Operating Junction Temperature	 -55 to 125°C
Drain-Substrate Voltage	(SD210DE/SST210) 30V	Power Dissipation*	 300mW
	(SD214DE/SST214) 25V		

Note:

* Derate 3mW/°C above 25°C

Specifications^a

PARAMETER	SYMBOL	TEST CONDITIONS		TYP	LIMITS				UNIT
					210 Series		214 Series		
					Min	Max	Min	Max	
Static									
Drain - Source Breakdown Voltage	V _{(BR)DS}	V _{GS} = V _{BS} = 0V, I _D = 10 μA		35	30			V	
		V _{GS} = V _{BS} = -5V, I _D = 10 nA		30	10		20		
Source - Drain Breakdown Voltage	V _{(BR)SD}	V _{GD} = V _{BD} = -5V, I _S = 10 nA		22	10		20		
Drain - Substrate Breakdown Voltage	V _{(BR)DBO}	V _{GB} = 0V, I _D = 10 nA Source Open		35	15		25		
Source - Substrate Breakdown Voltage	V _{(BR)SBO}	V _{GB} = 0V, I _S = 10 μA 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				10		
Gate Leakage	I _{GBS}	V _{DB} = V _{SB} = 0V, V _{GB} = ±40V		±0.001		±100		±100	pA
Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 1 μA , V _{SB} = 0V		0.8	0.5	1.5	0.1	1.5	V
Drain – Source On-Resistance	r _{DS(on)}	V _{SB} = 0V I _D = 1mA	V _{GS} = 5V (SD Series)	58		70		70	Ω
			V _{GS} = 5V (SST Series)	60		75		75	
			V _{GS} = 10V (SD Series)	38		45		45	
			V _{GS} = 10V (SST Series)	40		50		50	
			V _{GS} = 15V	30					
			V _{GS} = 20V	26					
			V _{GS} = 25V	24					

Specifications^a

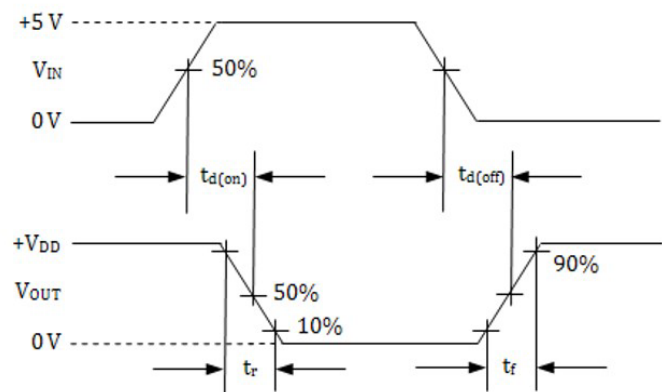
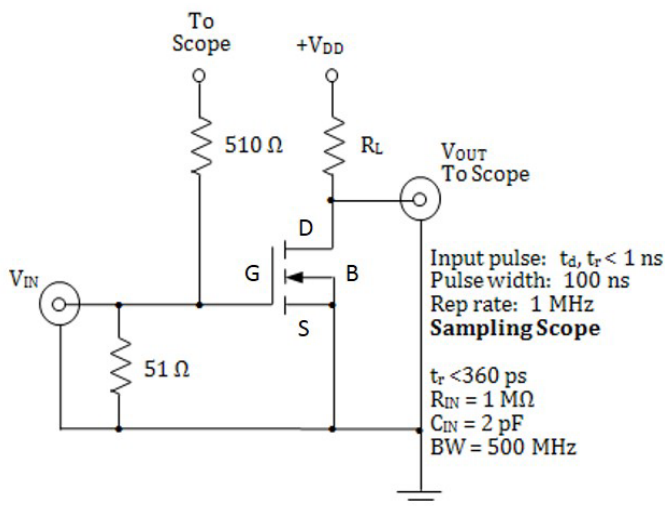
PARAMETER	SYMBOL ^b	TEST CONDITIONS ^b	TYP ^c	LIMITS				UNIT	
				210 Series		214 Series			
				Min	Max	Min	Max		
Dynamic									
Forward Transconductance	g _{fs}	V _{DS} = 10V, V _{SB} = 0V, I _D = 20mA, f = 1kHz	SD Series	11	10		10		mS
			SST Series	10.5	9		9		
	g _{os}		All	0.9					
Gate Node Capacitance	C _(GS+GD+GB)	V _{DS} = 10V, f = 1MHz V _{GS} = V _{BS} = -15V	SD Series	2.5		3.5		3.5	pF
Drain Node Capacitance	C _(GD+DB)			1.1		1.5		1.5	
Source Node Capacitance	C _(GS+SB)			3.7		5.5		5.5	
Reverse Transfer Capacitance	C _{rss}		SST Series	4.2					
			SD Series	0.2		0.5		0.5	
Switching									
Turn-On Time	t _{D(on)}	SD Series Only 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						

NOTES:

- $T_A = 25^\circ C$ unless otherwise notes.
- B is the body (substrate) and $V_{(BR)}$ is breakdown voltage.
- Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.

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Switching Time Test Circuit



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