

# FAST DMOS FET Switches

## N-Channel Enhancement-Mode



### SST211 / SST213 / SST215

#### FEATURES

- High Speed Switching.....  $t_{d(ON)}$  1ns
- Low Capacitance..... 2.4pF typical
- Low ON Resistance..... 50Ω typical
- High Gain
- Surface Mount Package

#### APPLICATIONS

- Ultra High Speed Analog Switching
- Sample and Hold
- Multiplexers
- High Gain Amplifiers

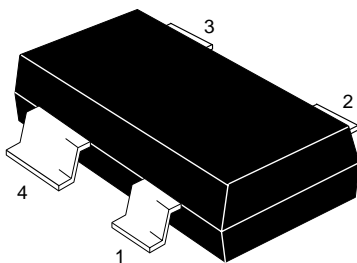
#### DESCRIPTION

Designed for audio, video and high frequency applications, the SST211 Series is a high speed, ultra low capacitance SPST analog switch. Utilizing Calogic's proprietary DMOS processing the SST211 Series features an integrated zener diode designed to protect the gate from electrical over stress.

#### ORDERING INFORMATION

Part	Package	Temperature Range
SST211	SOT-143 Surface Mount	-55°C to +125°C
SST213	SOT-143 Surface Mount	-55°C to +125°C
SST215	SOT-143 Surface Mount	-55°C to +125°C
XSST211	Sorted Chips in Carriers	-55°C to +125°C
XSST213	Sorted Chips in Carriers	-55°C to +125°C
XSST215	Sorted Chips in Carriers	-55°C to +125°C

#### PIN CONFIGURATION

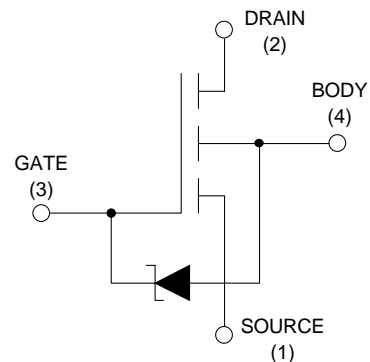


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#### PRODUCT MARKING

PRODUCT MARKING	
SST211	211
SST213	213
SST215	215

#### SCHEMATIC DIAGRAM





**ABSOLUTE MAXIMUM RATINGS** (T<sub>c</sub> = +25°C unless otherwise noted)

Parameter	SST211	SST213	SST215	Unit
<b>Breakdown Voltages</b>				
V <sub>DS</sub>	+30	+10	+20	V
V <sub>SD</sub>	+10	+10	+20	V
V <sub>DB</sub>	+30	+15	+25	V
V <sub>SB</sub>	+15	+15	+25	V
V <sub>GS</sub>	-15	-15	-25	V
	+25	+25	+30	V
V <sub>GB</sub>	-0.3	-0.3	-0.3	V
	+25	+25	+30	V
V <sub>GD</sub>	-30	-15	-25	V
	+25	+25	+30	V

I<sub>D</sub> Continous Drain Current . . . . . 50mA      T<sub>j</sub> Operating Junction Temperature Range . . -55 to +125°C  
 P<sub>T</sub> Power Dissipation (at or below T<sub>c</sub> = +25°C) . . . . 360mW      T<sub>S</sub> Storage Temperature Range . . . . . -55 to +150°C  
 Linear Derating Factor 3.6mW/°

**ELECTRICAL CHARACTERISTICS** (T<sub>c</sub> = +25°C unless otherwise noted)

SYMBOL	CHARACTERISTICS	SST211			SST213			SST215			UNIT	TEST CONDITIONS	
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX			
<b>STATIC</b>													
B <sub>VDS</sub>	Drain-Source Breakdown Voltage	30	35								V	I <sub>D</sub> = 10μA, V <sub>GS</sub> = V <sub>BS</sub> = 0	
		10	25		10	25		20	25			I <sub>D</sub> = 10nA, V <sub>GS</sub> = V <sub>BS</sub> = -5V	
B <sub>VSD</sub>	Source-Drain Breakdown Voltage	10			10			20				I <sub>S</sub> = 10nA, V <sub>GD</sub> = V <sub>BD</sub> = -5V	
B <sub>VDB</sub>	Drain-Body Breakdown Voltage	15			15			25				I <sub>D</sub> = 10nA, V <sub>GB</sub> = 0 Source OPEN	
B <sub>VSB</sub>	Source-Body Breakdown Voltage	15			15			25				I <sub>S</sub> = 10μA, V <sub>GB</sub> = 0 Drain OPEN	
I <sub>D(OFF)</sub>	Drain-Source OFF Current		0.2	10		0.2	10				nA	V <sub>DS</sub> = 10V	
									0.2	10		V <sub>GS</sub> = V <sub>BS</sub> = -5V	
I <sub>S(OFF)</sub>	Source-Drain OFF Current		0.6	10		0.6	10					V <sub>GD</sub> = V <sub>BD</sub> = -5V	V <sub>SD</sub> = 10V
									0.6	10			V <sub>SD</sub> = 20V
I <sub>GBS</sub>	Gate-Body Leakage Current			10			10				μA	V <sub>GB</sub> = 25V	
										10		V <sub>GB</sub> = 30V	V <sub>DB</sub> = V <sub>SB</sub> = 0
V <sub>GS(th)</sub>	Gate Threshold Voltage	0.5	1.0	2.0	0.1		2.0	0.1	1.0	2.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1μA, V <sub>SB</sub> = 0	
r <sub>ds(on)</sub>	Drain-Source <sup>1</sup> ON Resistance		50	70		50	70		50	70	ohms	V <sub>GS</sub> = 5V	
			30	45		30	45		30	45		V <sub>GS</sub> = 10V	I <sub>D</sub> = 1mA V <sub>SB</sub> = 0
<b>DYNAMIC</b>													
g <sub>fs</sub>	Common-Source <sup>1</sup> Foward Transcond.	10	12		10	12		10	12		mS	V <sub>DS</sub> = 10V, I <sub>D</sub> = 20mA f = 1KHz, V <sub>SB</sub> = 0	
C <sub>(gs + gd + gb)</sub>	Gate Node Capacitance		2.4	3.5		2.4	3.5		2.4	3.5	pF	V <sub>DS</sub> = 10V V <sub>GS</sub> = V <sub>BS</sub> = -15V f = 1MHz	
C <sub>(gd + db)</sub>	Drain Node Capacitance		1.3	1.5		1.3	1.5		1.3	1.5			
C <sub>(gs + sb)</sub>	Source Node Capacitance		3.5	4.0		3.5	4.0		3.5	4.0			
C <sub>(dg)</sub>	Reverse Transfer Capacitance		0.3	0.5		0.3	0.5		0.3	0.5			
t <sub>d(ON)</sub>	Turn ON Delay Time		0.7	1.0		0.7	1.0		0.7	1.0	ns	V <sub>DD</sub> = 5V, V <sub>G(ON)</sub> = 10V R <sub>L</sub> = 680, R <sub>G</sub> = 51	
t <sub>r</sub>	Rise Time		0.8	1.0		0.8	1.0		0.8	1.0			
t <sub>(OFF)</sub>	Turn OFF Time		10			10			10				

NOTE 1: Pulse Test, 80 Sec, 1% Duty Cycle  
 Typical Performance Characteristics: See SD211-215 Series