

N-CHANNEL DMOS FET SWITCH

SST211/215

Description:

The SST211/215 series consists of enhancement-mode MOSFETs designed for high speed low-glitch switching in audio, video, and high-frequency applications. The SST211 is optimized as a +/-10V Switch driver. The SST215 is optimized as an Analog Switch with a 25V Source to Body breakdown and low Drain Leakage.

The SST211/215 series uses CALMOS TECHNOLOGIES ULTRA REL DMOS Process for reliability and robust performance. These MOSFETs utilize lateral construction to achieve low capacitance and ultra-fast switching speeds. An integrated Zener diode provides ESD protection.

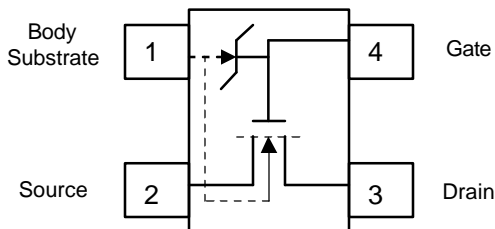
FEATURES:

- High Input to Output Isolation – 120dB typical
- Low feed through and feedback transients
- Low Inter-electrode Capacitances
- 35V Drain-to Source breakdown for SST211/215

APPLICATIONS:

- High Frequency Drivers
- Video Switches
- A to D Converters

SOT-143 Package Lead Code Identification (top view)

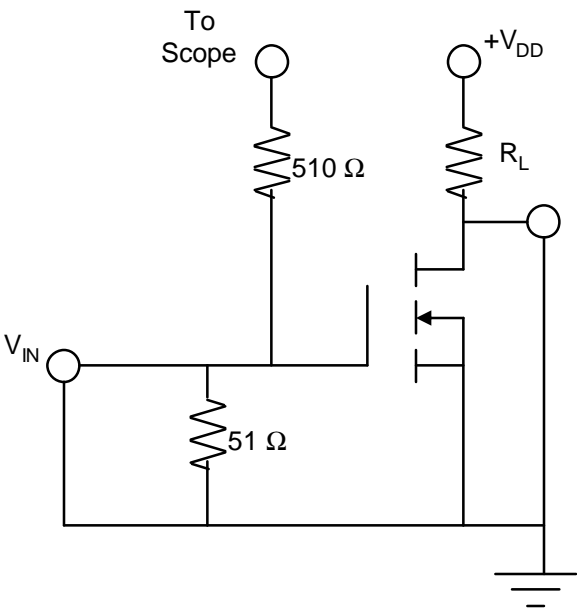


Electrical Specifications ($T_C = +25^\circ\text{C}$ unless otherwise noted)

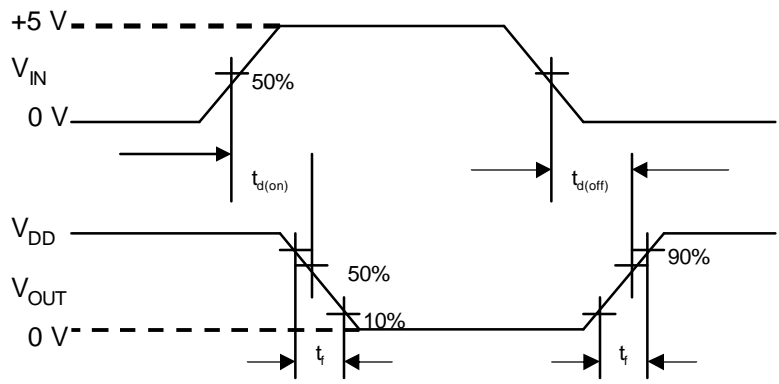
Parameter	Symbol	Test Conditions	SD211			SD215			Units	
			Min	Typ	Max	Min	Typ	Max		
STATIC	Drain-Source Breakdown Voltage	BV_{DS} BV_{DS}	$I_D=10\ \mu\text{A}$ $V_{GS}=V_{BS}=0$ $I_D=10\ \text{nA}$ $V_{GS}=V_{BS}=0$	30 10	35 25		20 25		V	
	Source-Drain Breakdown Voltage	BV_{SD}	$I_S=10\ \text{nA}$ $V_{GD}=V_{BD}=-5$	10	25		20		V	
	Drain-Substrate Breakdown Voltage	BV_{DB}	$I_D=10\ \text{nA}$, $V_{GB}=0$ Source Open	15			25		V	
	Source-Substrate Breakdown Voltage	BV_{SB}	$I_D=10\ \mu\text{A}$, $V_{GB}=0$ Drain Open	15			25		V	
	Drain-Source Leakage	$I_{D(OFF)}$	$V_{GS/BS}=-5$	$V_{DS}=10\text{V}$		1	10			nA
				$V_{DS}=20\text{V}$				1	10	nA
	Source - Drain Leakage	$I_{S(OFF)}$	$V_{GD/BS}=-5$	$V_{DS}=10\text{V}$		1	10			nA
				$V_{DS}=20\text{V}$				1	10	nA
	Gate Leakage	I_{GBS}	$V_{DB/SB}=0$	$V_{GS}=20\text{V}$		1	10	1	10	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=1\ \mu\text{A}$ $V_{SB}=0$	0.5	1.0	2.0	0.1	1.0	2.0	V	
Drain-Source ON Resistance	$r_{DS(ON)}$	$I_D=1\ \text{mA}$ $V_{SB}=0\text{V}$	$V_{GS}=5\text{V}$		50	70	50	70	Ohm	
			$V_{GS}=10\text{V}$		30	45	30	45	Ohm	

Parameter	Symbol	Test Conditions	SD211			SD215			Units	
			Min	Typ	Max	Min	Typ	Max		
DYNAMIC	Common-Source Forward Transconductance	g_{fs}	$V_{DS}=10\text{V}$ $I_D=20\text{mA}$ $f=1\text{MHz}$, $V_{SB}=0$ Pulsed	10	15		10	15	V	
	Gate Node Capacitance	$C_{(gs+gd+gb)}$	$V_{DS}=10\text{V}$ $V_{GS}=V_{BS}=-15\text{V}$ $f=1\text{MHz}$		2.4	3.5		2.4	3.5	pF
	Drain Node Capacitance	$C_{(gd+db)}$			1.3	1.5		1.3	1.5	pF
	Source Node Capacitance	$C_{(gs+sb)}$			3.5	4.0		3.5	4.0	pF
	Reverse Transfer Capacitance	$C_{(dg)}$			0.3	0.5		0.3	0.5	pF
	Turn On Delay Time	$t_{d(on)}$	$V_\infty=10\text{V}$ $V_{G(on)}=10\text{V}$ $R_L=680\ \Omega$ $R_G=51\ \Omega$ $CL=1.5\text{pF}$		0.7	1.0		0.7	1.0	ns
	Rise Time	t_r			0.8	1.0		0.8	1.0	ns
Turn Off Delay Time	$T_{d(off)}$			1.5			1.5		ns	

Switching Time Test Circuit



Input Pulse: $t_d, t_r < 1\text{ ns}$
 Pulse width: 100 ns
 Rep rate: 1 MHz
Sampling Scope
 $T_r < 360\text{ ps}$
 $R_{IN} = 1\text{ M}\Omega$
 $C_{IN} = 2\text{ pF}$
 $BW = 500\text{ MHz}$



Absolute Maximum Ratings, $T_c = +25^\circ\text{C}$

Parameter	Unit	Absolute Maximum ^[1]
		SOT-143
Drain-Source Voltage	V	+30 / +20
Gate-Source Voltage	V	-15 / +20
Gate-Drain Voltage	V	-25 / +20
Continuous Drain Current	mA	50
Power dissipation $T_c=25$	mW	300
Linear Derating Factor	mW/C	3
Junction Temperature	$^\circ\text{C}$	-55 to +125
Storage Temperature	$^\circ\text{C}$	-55 to +125

Notes:

1. Operation in excess of any one of these conditions may result in permanent damage to the device
2. $T_c = +25^\circ\text{C}$, where T_c is defined to be the temperature at the package pins where contact is made to the circuit board.

ESD WARNING: Handling Precautions Should Be Taken To Avoid Static Discharge.

Part Number Ordering Information

SOT – 143 Package	SST211SM	SST215SM
Sorted Chips By Carriers	SST211CP	SST215CP
Die In Wafer Form	SST211W	SST215W

www.calmotech.com

Data subject to change

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