

# N-Channel Depletion Mode Lateral DMOS FET



## SD2100 / SST2100

### FEATURES

- Fast Switching .....  $t_{ON}$  1.0ns
- Low Capacitance .....  $C_{rSS}$  2pf
- Low  $R_{ON}$  ..... 50Ω

### APPLICATIONS

- Analog Switches
- Amplifiers

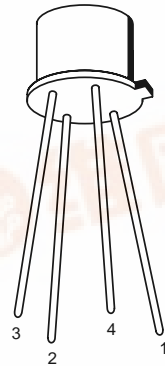
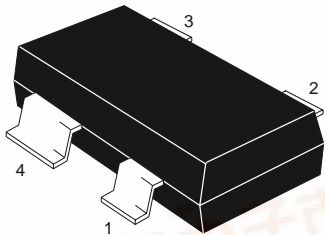
### DESCRIPTION

The SD2100/SST2100 is a depletion mode DMOS lateral FET that provides ultra high speed switching with very low capacitance. The product is available in TO-72 and surface mount SOT-143.

### ORDERING INFORMATION

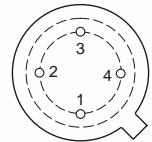
Part	Package	Temperature Range
SD2100	TO-72	-55°C to +125°C
SST2100	SOT-143	-55°C to +125°C
XSD2100	Sorted Chips in Carriers	-55°C to +125°C

### CONNECTION DIAGRAMS

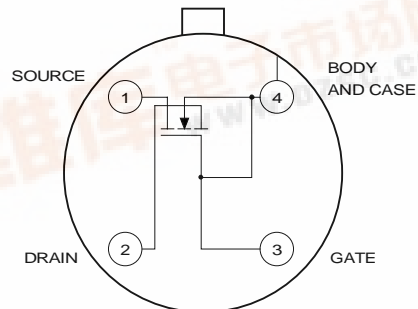
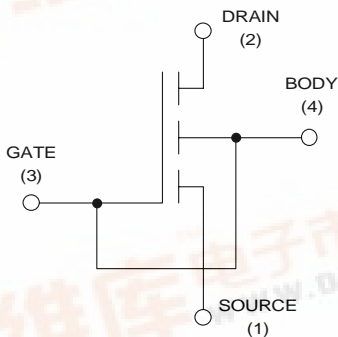


TO-72

- 1 SOURCE
- 2 DRAIN
- 3 GATE
- 4 SUBSTRATE



BOTTOM VIEW



BODY IS INTERNALLY CONNECTED TO THE CASE (TOP VIEW)

#### PART MARKING (SOT-231)

SST2100	D10
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CD1-2



**ABSOLUTE MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

SYMBOL	PARAMETERS/TEST CONDITIONS	LIMITS	UNITS
$V_{GS}$	Gate-Source Voltage	$\pm 25$	V
$V_{DS}$	Drain-Source Voltage	25	
$I_D$	Drain Current	50	mA
$P_D$	Power Dissipation	300	mW
	Power Derating	2.4	mW/ $^\circ\text{C}$
$T_J$	Operating Junction Temperature	-55 to 150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55 to 150	
$T_L$	Lead Temperature (1/16" from case for 10 sec.)	300	

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

SYMBOL	PARAMETER	TYP <sup>1</sup>	MIN	MAX	UNIT	TEST CONDITIONS	
<b>STATIC</b>							
$V_{(BR)DS}$	Drain-Source Breakdown Voltage	25	15		V	$V_{GS} = V_{BS} = -5\text{V}$ , $I_D = 1\mu\text{A}$	
$I_{GSS}$	Gate Reverse Current	$\pm 0.05$		$\pm 1$	nA	$V_{GS} = \pm 25\text{V}$ , $V_{DS} = V_{BS} = 0\text{V}$	
$I_{DSS}$	Saturation Drain Current	7	0.5	10	mA	$V_{DS} = 10\text{V}$ , $V_{GS} = V_{BS} = 0\text{V}$	
$V_{GS(OFF)}$	Gate-Source Cutoff	-1.5		-2	V	$V_{DS} = 10\text{V}$ , $I_D = 1\mu\text{A}$ , $V_{BS} = 0\text{V}$	
$V_{GS}$	Gate-Source Voltage	-0.3	-1	1		$V_{DG} = 10\text{V}$ $V_{BS} = 0\text{V}$	$I_D = 5\text{mA}$
		0.4	0	1.5			$I_D = 10\text{mA}$
$r_{DS(ON)}$	Drain-Source On-Resistance	120		200	$\Omega$	$I_D = 100\mu\text{A}$ $V_{BS} = 0\text{V}$	$V_{GS} = 0\text{V}$
		40		50			$V_{GS} = 5\text{V}$
<b>DYNAMIC</b>							
$g_{fs}$	Forward Transconductance	8000	1000		$\mu\text{S}$	$V_{DS} = 10\text{V}$ , $V_{GS} = V_{BS} = 0\text{V}$ , $f = 1\text{kHz}$	
$g_{os}$	Output Conductance	250		500			
$g_{fs}$	Forward Transconductance	10000	7000			$V_{DG} = 10\text{V}$ , $V_{BS} = 0\text{V}$ , $I_D = 10\text{mA}$ , $f = 1\text{kHz}$	
$g_{os}$	Output Conductance	350		500			
$C_{iss}$	Common-Source Input Capacitance	5		6	pF	$V_{DS} = 10\text{V}$ , $f = 1\text{MHz}$ , $V_{GS} = V_{BS} = -5\text{V}$	
$C_{rss}$	Reverse Transfer Capacitance	1		2			
<b>SWITCHING</b>							
$t_{d(ON)}$	Turn-ON Time	0.7			ns	$V_{DD} = 5\text{V}$ , $R_L = 680\Omega$ , $V_{IN} = -4\text{V}$ to $-2\text{V}$	
$t_r$		0.4					
$t_{OFF}$	Turn-OFF Time	5					

**Note1:** For design aid only, not subject to production testing.