

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

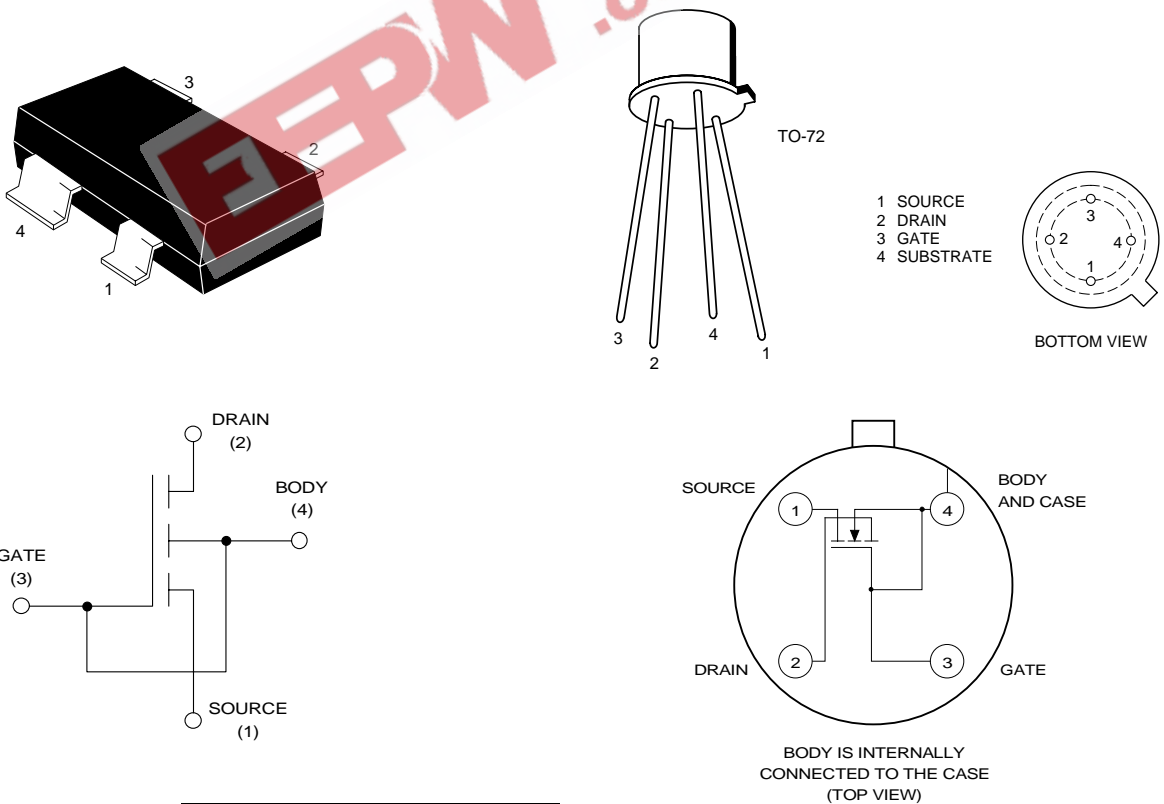
DESCRIPTION

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



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	± 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 ¹	MIN	MAX	UNIT	TEST CONDITIONS	
STATIC							
$V_{(BR)DS}$	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	± 0.05		± 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	Ω	$I_D = 100\mu\text{A}$ $V_{BS} = 0\text{V}$	$V_{GS} = 0\text{V}$
		40		50			$V_{GS} = 5\text{V}$
DYNAMIC							
g_{fs}	Forward Transconductance	8000	1000		μS	$V_{DS} = 10\text{V}$, $V_{GS} = V_{BS} = 0\text{V}$, $f = 1\text{kHz}$	
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			
SWITCHING							
$t_{d(ON)}$	Turn-ON Time	0.7			ns	$V_{DD} = 5\text{V}$, $R_L = 680\Omega$, $V_{IN} = -4\text{V}$ to -2V	
t_r		0.4					
t_{OFF}	Turn-OFF Time	5					

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