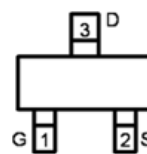
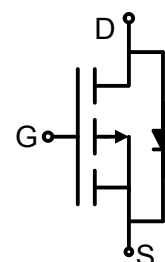


Main Product Characteristics:

V_{DSS}	-20V
$R_{DS(on)}$	126m Ω (typ.)
I_D	-2A


SOT-23

Pin Assignments

Schematic Diagram
Features and Benefits

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150°C operating temperature
- AEC-Q101 qualified


Description:

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

Absolute Max Rating:

Symbol	Parameter	Max.	Units
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}^{\text{①}}$	-2	A
I_{DM}	Pulsed Drain Current ^②	-6	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation ^③	1.25	W
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-to-Source Voltage	± 12	V
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

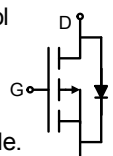
Thermal Resistance

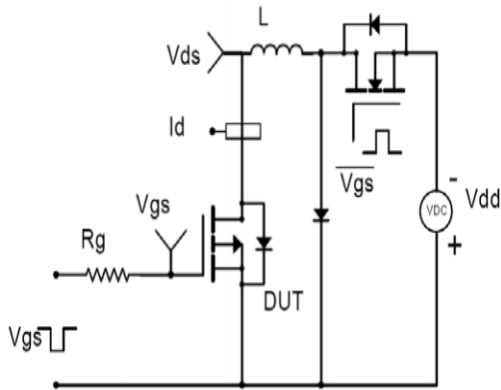
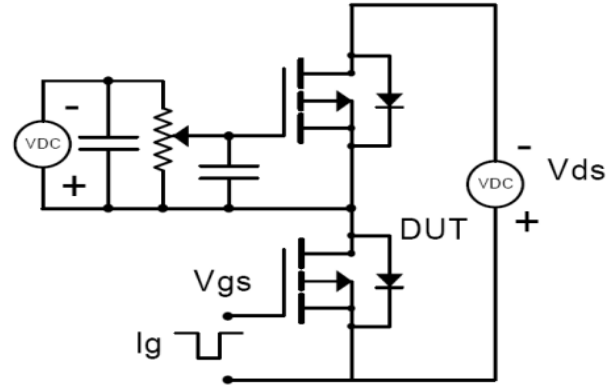
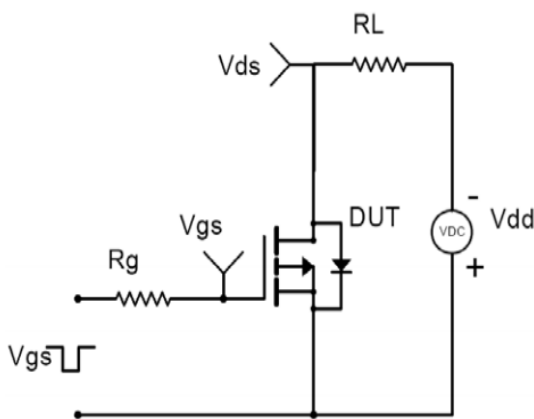
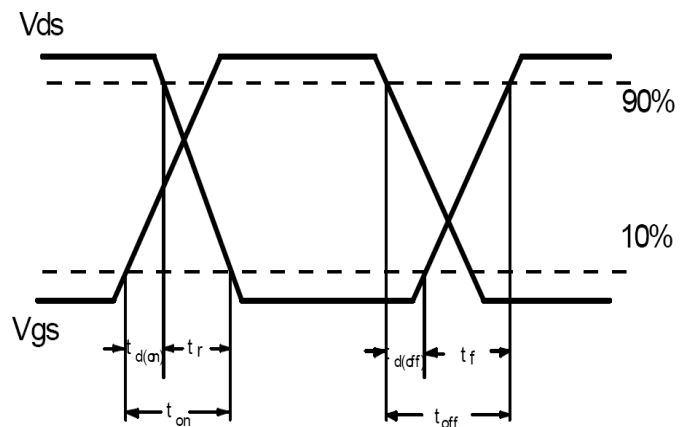
Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ^③	—	100	$^{\circ}C/W$

Electrical Characterizes @ $T_A=25^{\circ}C$ unless otherwise specified

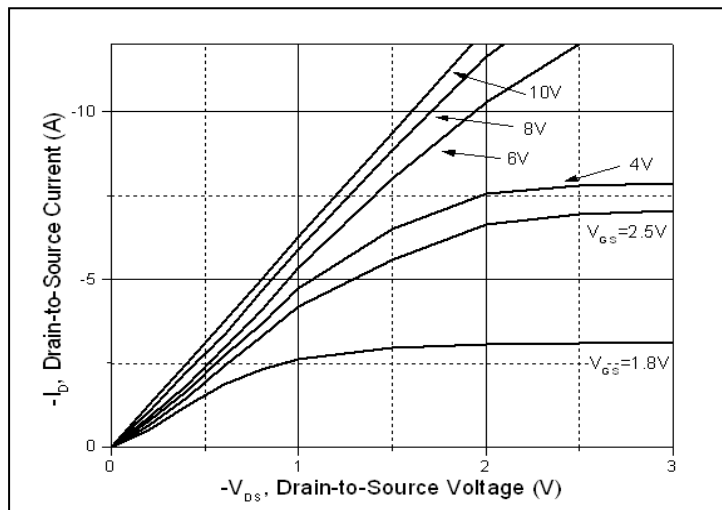
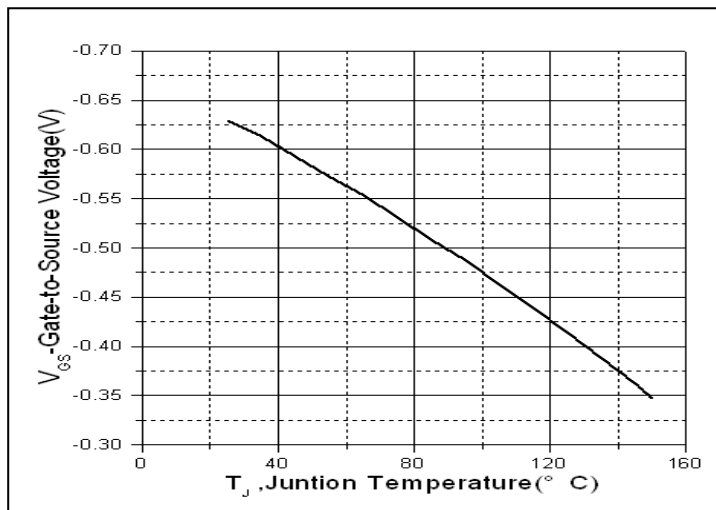
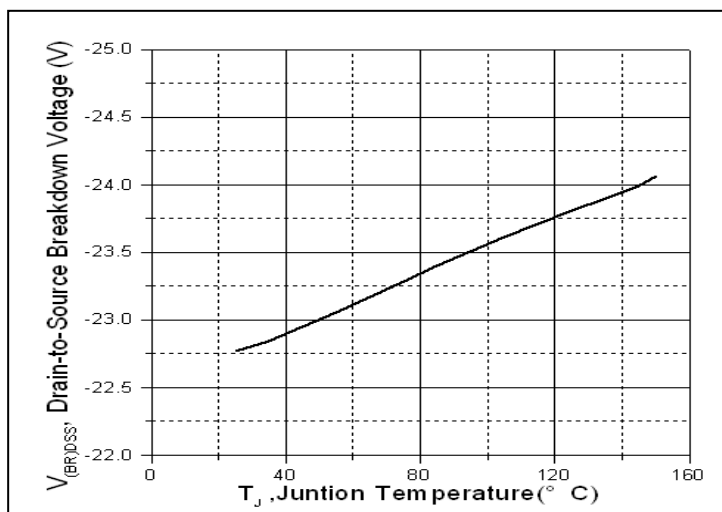
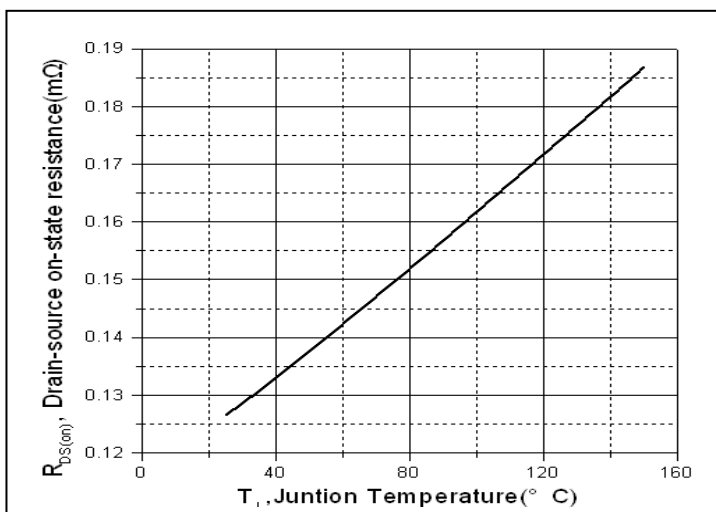
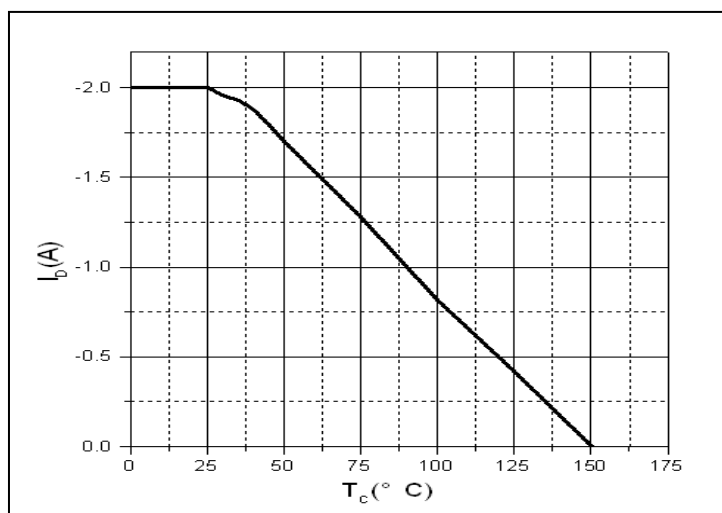
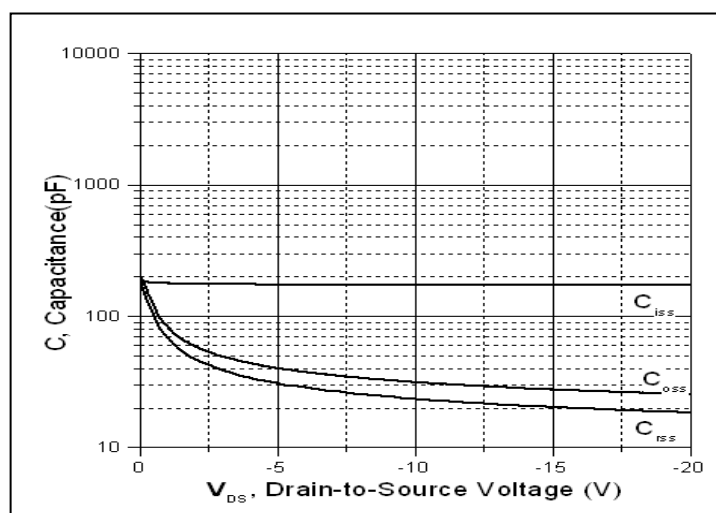
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-20	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	126	160	m Ω	$V_{GS}=-4.5V, I_D = -2A$
		—	166	210	m Ω	$V_{GS}=-2.5V, I_D = -1A$
$V_{GS(th)}$	Gate threshold voltage	-0.5	—	-1	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
I_{DSS}	Drain-to-Source leakage current	—	—	-1	μA	$V_{DS} = -20V, V_{GS} = 0V$
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 12V$
		—	—	-100		$V_{GS} = -12V$
Q_g	Total gate charge	—	9.4	—	nC	$I_D = -3A,$ $V_{DS}=-10V,$ $V_{GS} = -4.5V$
Q_{gs}	Gate-to-Source charge	—	0.9	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	2.4	—		
$t_{d(on)}$	Turn-on delay time	—	5	—	ns	$V_{GS}=-4.5V, V_{DD}=-20V,$ $R_{GEN}=3\Omega$ $R_L=10\Omega$
t_r	Rise time	—	13.6	—		
$t_{d(off)}$	Turn-Off delay time	—	11.6	—		
t_f	Fall time	—	2.9	—		
C_{iss}	Input capacitance	—	171	—	pF	$V_{GS} = 0V$ $V_{DS} = 50V$ $f = 100KHz$
C_{oss}	Output capacitance	—	25	—		
C_{riss}	Reverse transfer capacitance	—	19	—		

Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-2	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	-6	A	
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	$I_S=-1A, V_{GS}=0V$

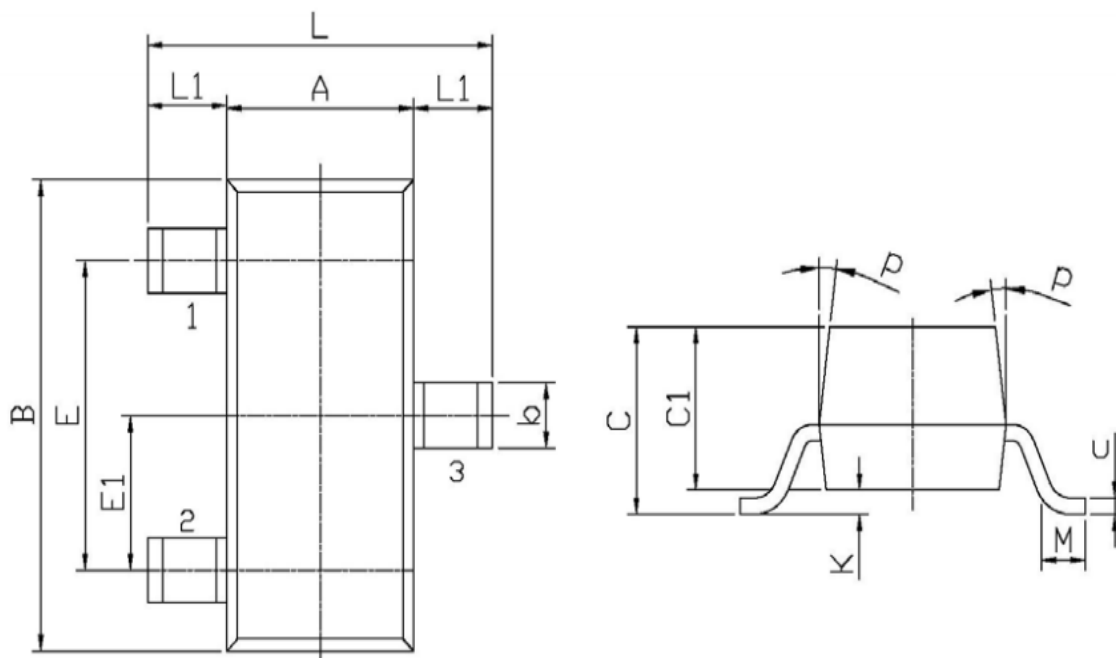
Test Circuits and Waveforms
EAS Test Circuit:

Gate Charge Test Circuit:

Switching Time Test Circuit:

Switching Waveforms:

Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

Typical Electrical and Thermal Characteristics

Figure1. Typical Output Characteristics

Figure2. V_{th} vs Junction Temperature

Figure3. Drain-to-Source Breakdown Voltage vs. Junction Temperature

Figure4. $R_{DS(on)}$ VS. Drain Current

Figure5. Drain Current vs. Case Temperature

Figure6. Capacitance

Mechanical Data:

SOT-23 Package Outline(Unit:mm)



Symbol	Dimensions in Millimeter		Symbol	Dimensions in Millimeter	
	Min	Max		Min	Max
L	2.2	2.7	C	1.30 Max	
L1	0.45	0.65	C1	0.90	1.20
A	1.15	1.50	c	0.05	0.20
B	2.70	3.10	K	0	0.10
E	1.70	2.10	M	0.20 Min	
E1	0.85	1.05	P	7°	
b	0.35	0.55			

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