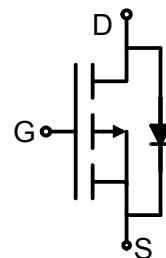


**Main Product Characteristics:**

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


**SOT-23**

**Marking and 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


**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, $V_{GS} @ 10\text{V}$ 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	$\pm 12$	V
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

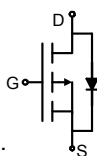
## Thermal Resistance

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

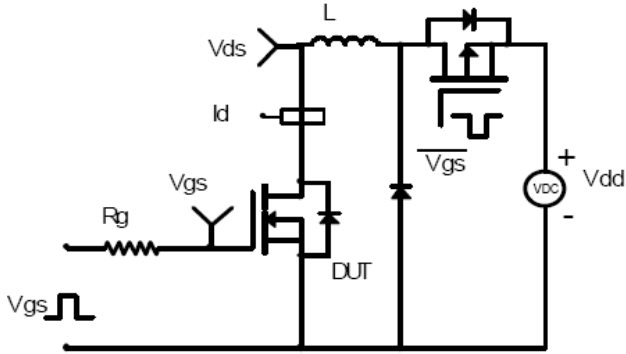
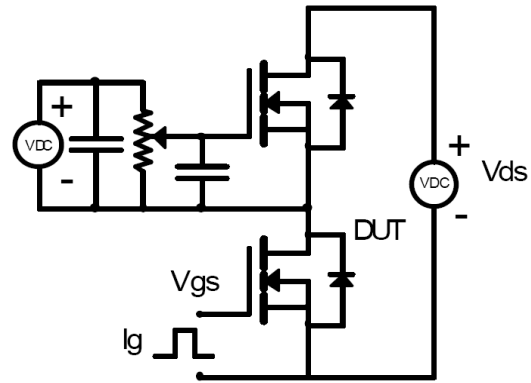
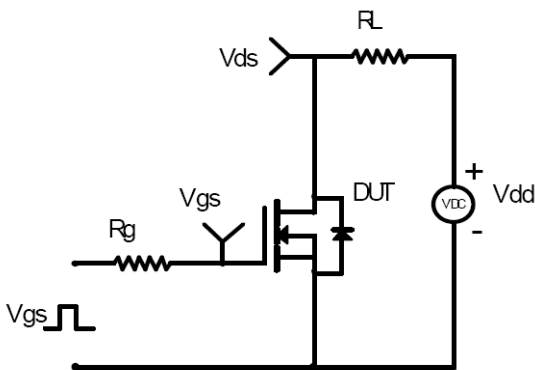
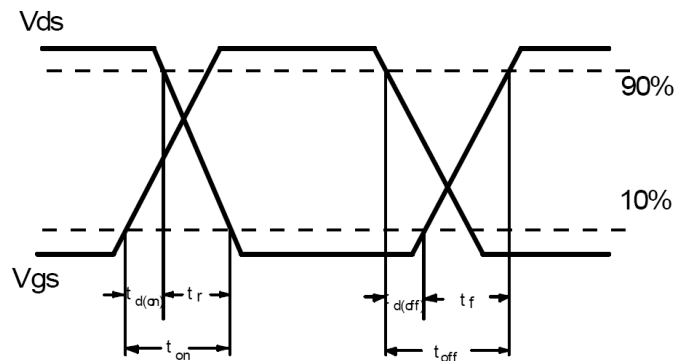
## Electrical Characterizes @ $T_A=25^{\circ}C$ unless otherwise specified

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 $\Omega$	$V_{GS}=-4.5V, I_D = -2A$
		—	166	210	m $\Omega$	$V_{GS}=-2.5V, I_D = -1A$
$V_{GS(th)}$	Gate threshold voltage	-0.5	—	-1	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
$I_{DSS}$	Drain-to-Source leakage current	—	—	-1	$\mu A$	$V_{DS} = -20V, V_{GS} = 0V$
$I_{GSS}$	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	—		
$C_{rss}$	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	

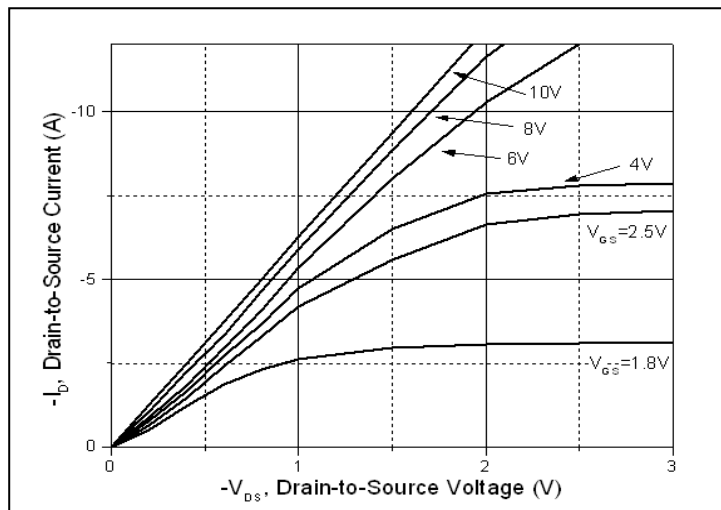
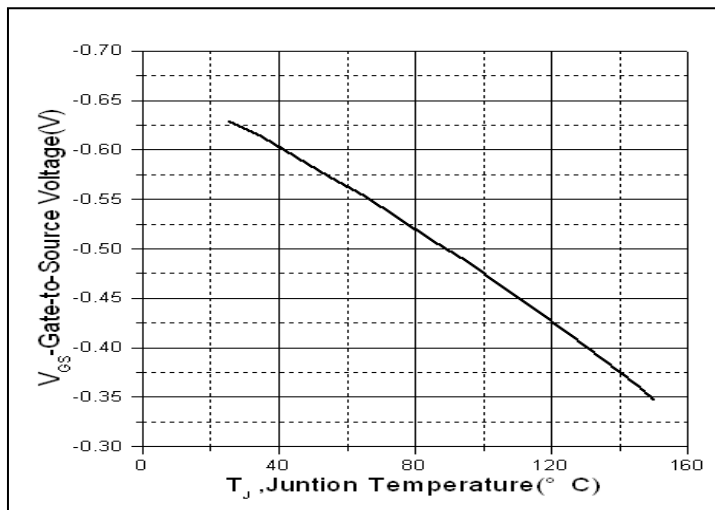
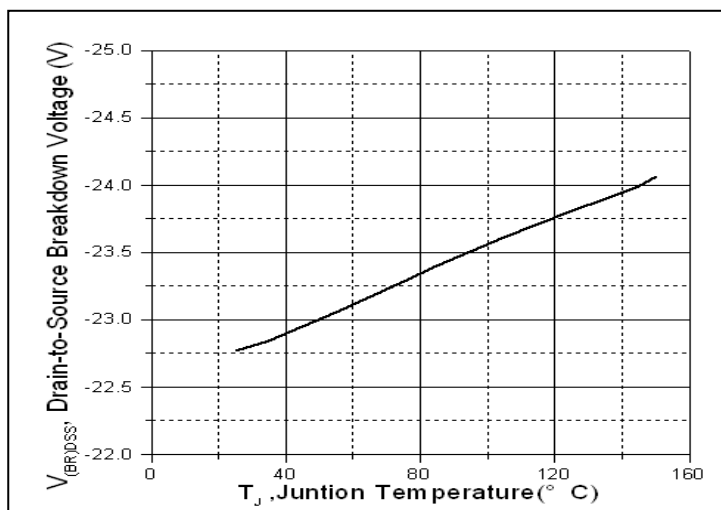
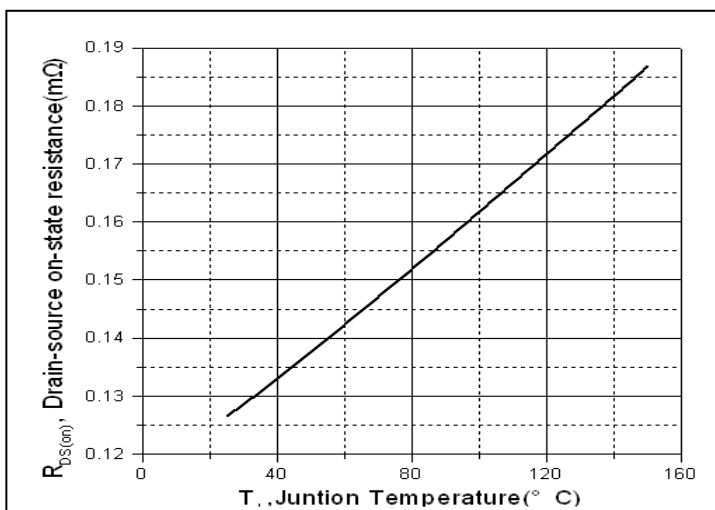
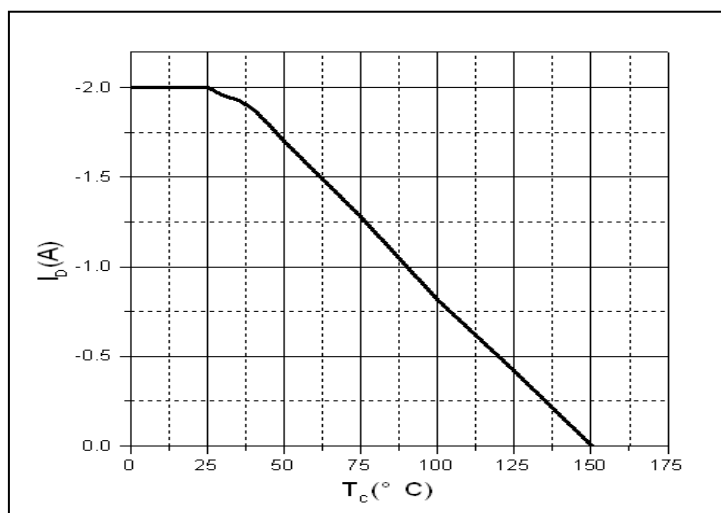
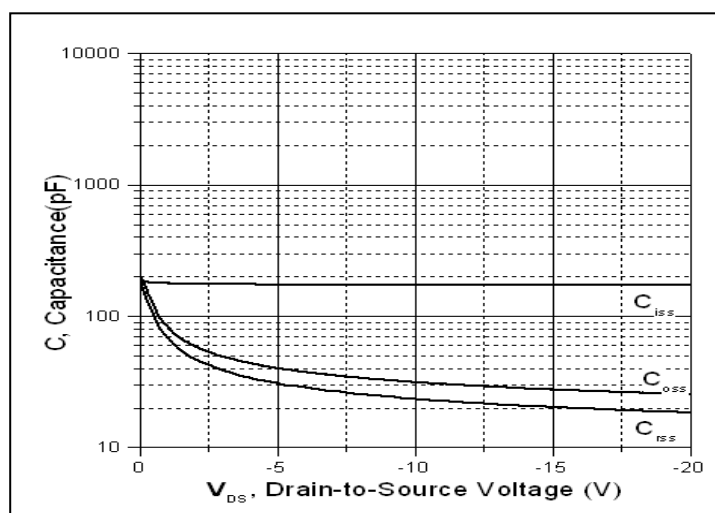
## Test Circuits and Waveforms

**EAS Test Circuit:**

**Gate Charge Test Circuit:**

**Switching Time Test Circuit:**

**Switching Waveforms:**


### Notes:

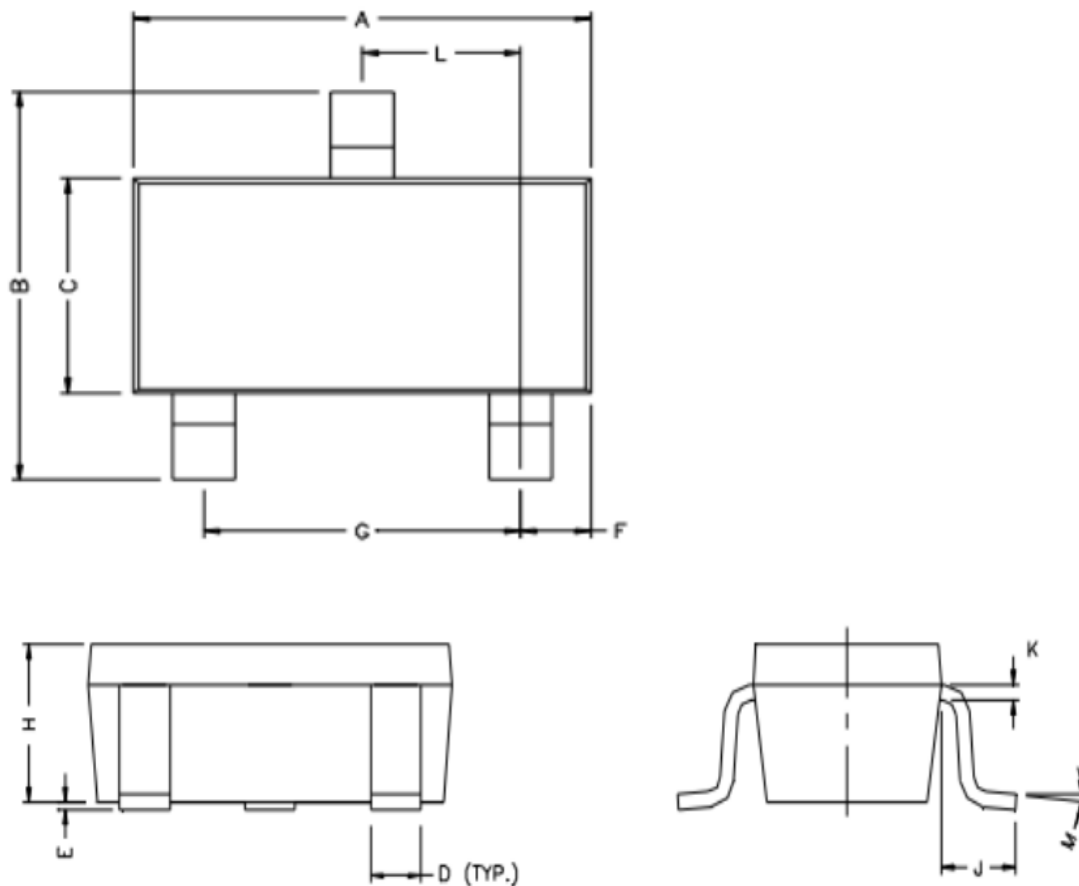
- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

### Typical Electrical and Thermal Characteristics


**Figure1. Typical Output Characteristics**

**Figure2. Gate to Source Cut-off**

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

**Figure 4.  $R_{DS(on)}$  VS. Drain Current**

**Figure5. Drain Current vs. Case Temperature**

**Figure6. Capacitance**

**Mechanical Data:**

SOT-23 Package Outline (Unit:mm)



REF.	Millimeter		REF.	Millimete	
	Min.	Max.		Min.	Max.
A	2.80	3.00	G	1.80	2.00
B	2.30	2.50	H	0.90	1.1
C	1.20	1.40	K	0.10	0.20
D	0.30	0.50	J	0.35	0.70
E	0	0.10	L	0.92	0.98
F	0.45	0.55	M	0°	10°

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