

**Maximum Ratings** (@  $T_A = +25^\circ\text{C}$  unless otherwise specified.)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			$V_{DSS}$	20	V
Gate-Source Voltage			$V_{GSS}$	$\pm 12$	V
Continuous Drain Current (Note 6) $V_{GS} = 10V$	Steady State	$T_A = +25^{\circ}C$	$I_D$	4.6	A
		$T_A = +70^{\circ}C$		3.7	
Maximum Body Diode Forward Current (Note 6)			$I_S$	1.2	A
Pulsed Drain Current (10 $\mu s$ Pulse, Duty Cycle = 1%)			$I_{DM}$	24	A

**Thermal Characteristics**

Characteristic		Symbol	Value	Unit
Power Dissipation (Note 5)		$P_D$	0.74	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	172	$^\circ\text{C/W}$
Power Dissipation (Note 6)		$P_D$	1.13	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	111	$^\circ\text{C/W}$
Operating and Storage Temperature Range		$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@  $T_A = +25^\circ\text{C}$  unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b> (Note 7)						
Drain-Source Breakdown Voltage	$BV_{DSS}$	20	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 100$	nA	$V_{GS} = \pm 12\text{V}, V_{DS} = 0\text{V}$
<b>ON CHARACTERISTICS</b> (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	0.4	0.6	1.2	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	27	35	m $\Omega$	$V_{GS} = 10\text{V}, I_D = 6.0\text{A}$
		—	30	40		$V_{GS} = 4.5\text{V}, I_D = 5.0\text{A}$
		—	37	60		$V_{GS} = 2.5\text{V}, I_D = 4.0\text{A}$
		—	49	91		$V_{GS} = 1.8\text{V}, I_D = 2.0\text{A}$
Diode Forward Voltage	$V_{SD}$	—	0.7	1.2	V	$V_{GS} = 0\text{V}, I_S = 1\text{A}$
<b>DYNAMIC CHARACTERISTICS</b> (Note 8)						
Input Capacitance	$C_{ISS}$	—	281	—	pF	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	$C_{OSS}$	—	50	—		
Reverse Transfer Capacitance	$C_{RSS}$	—	39	—		
Gate Resistance	$R_G$	—	3.1	—	$\Omega$	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Total Gate Charge ( $V_{GS} = 4.5\text{V}$ )	$Q_G$	—	3.6	—	nC	$V_{DS} = 10\text{V}, I_D = 6.0\text{A}$
Total Gate Charge ( $V_{GS} = 10\text{V}$ )	$Q_G$	—	7.7	—		
Gate-Source Charge	$Q_{GS}$	—	0.5	—		
Gate-Drain Charge	$Q_{GD}$	—	0.9	—	ns	$V_{GS} = 4.5\text{V}, V_{DD} = 10\text{V}, R_G = 6\Omega,$ $I_D = 6.0\text{A}$
Turn-On Delay Time	$t_{D(ON)}$	—	2.0	—		
Turn-On Rise Time	$t_R$	—	4.9	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	9.9	—		
Turn-Off Fall Time	$t_F$	—	3.3	—	ns	$I_F = 6.0\text{A}, di/dt = 100\text{A}/\mu\text{s}$
Body Diode Reverse Recovery Time	$t_{RR}$	—	5.4	—		
Body Diode Reverse Recovery Charge	$Q_{RR}$	—	0.7	—	nC	$I_F = 6.0\text{A}, di/dt = 100\text{A}/\mu\text{s}$

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
  - Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1-inch square copper plate.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to product testing.

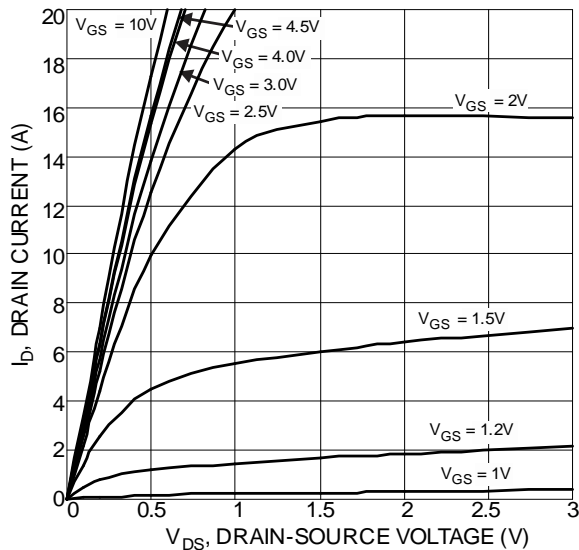


Figure 1 Typical Output Characteristic

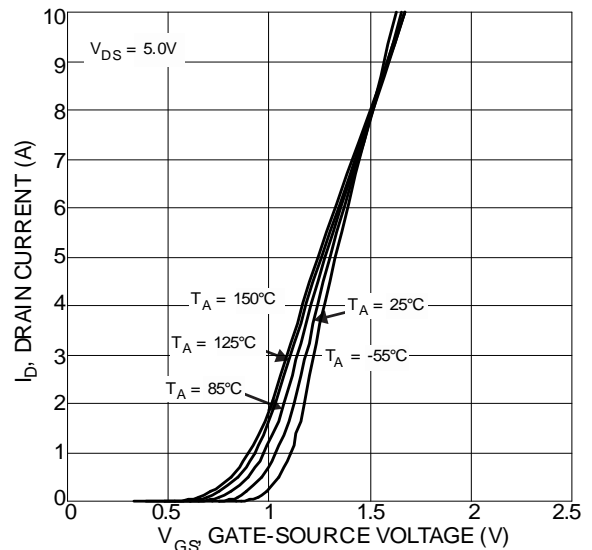


Figure 2 Typical Transfer Characteristics

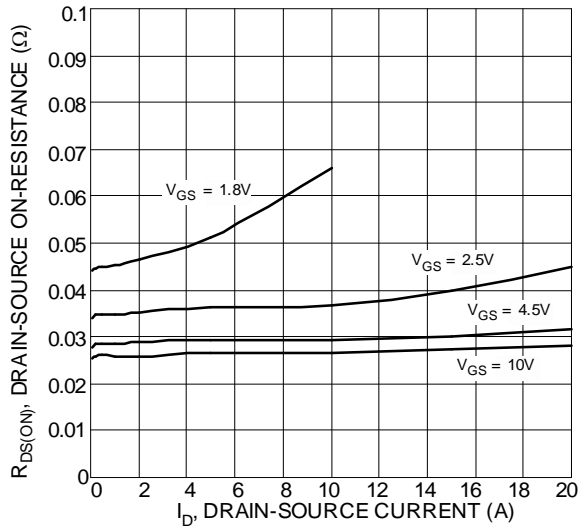


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

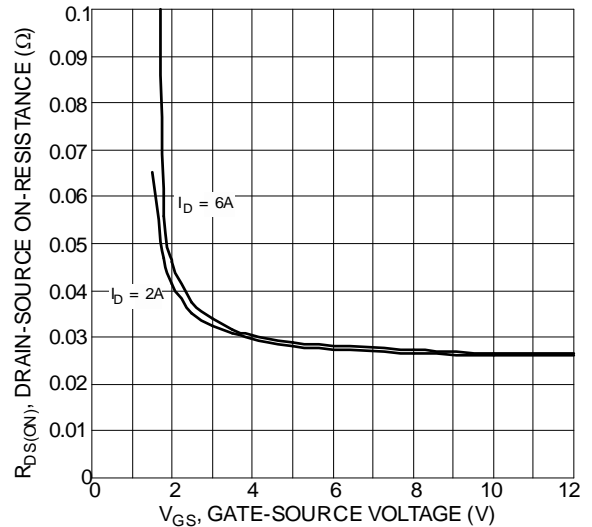


Figure 4 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

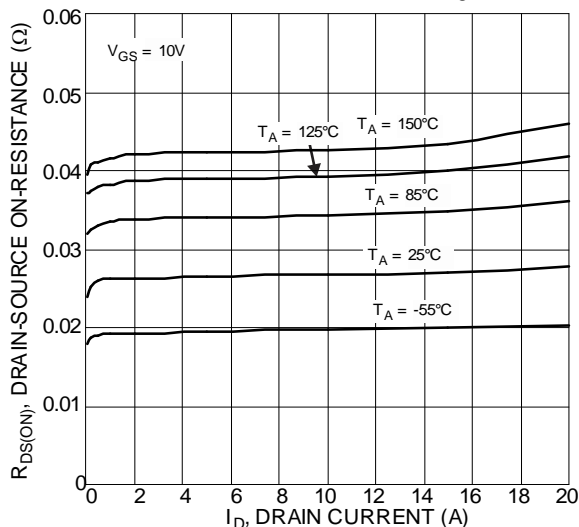


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

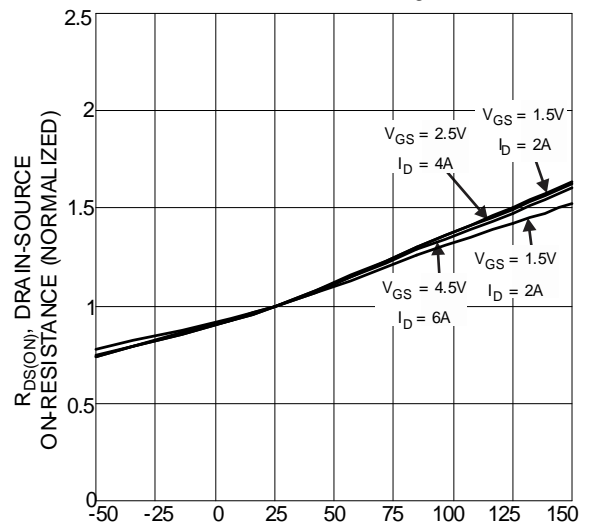
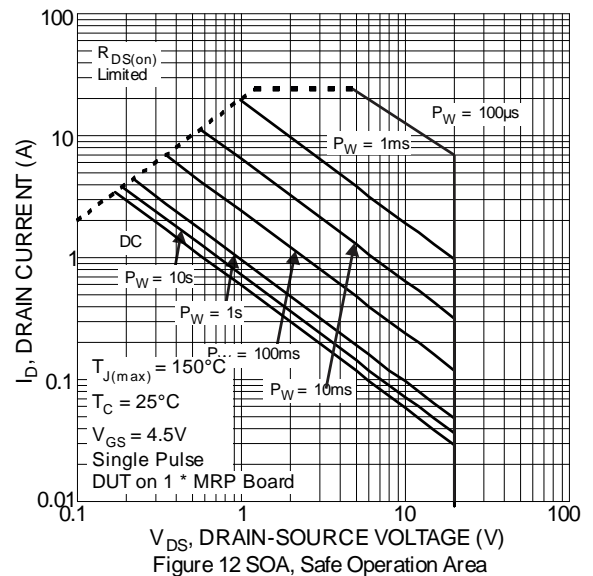
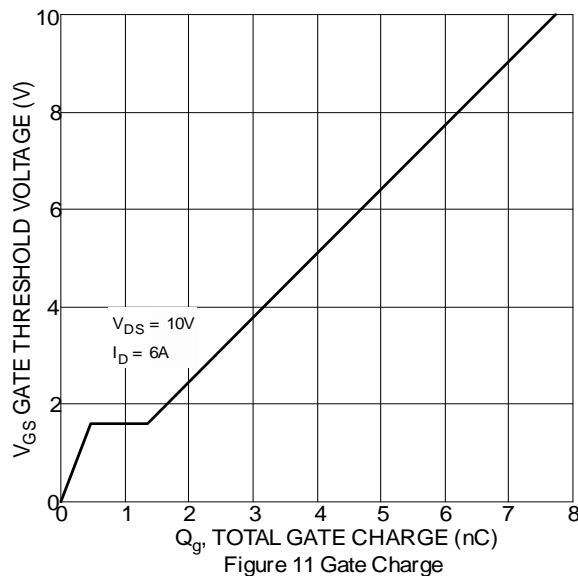
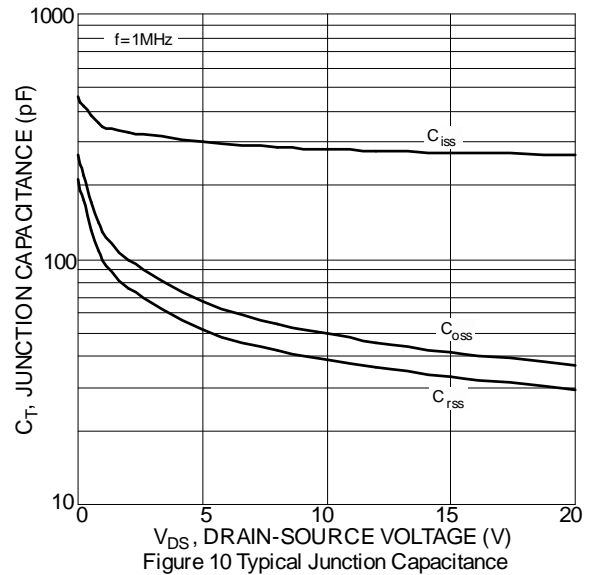
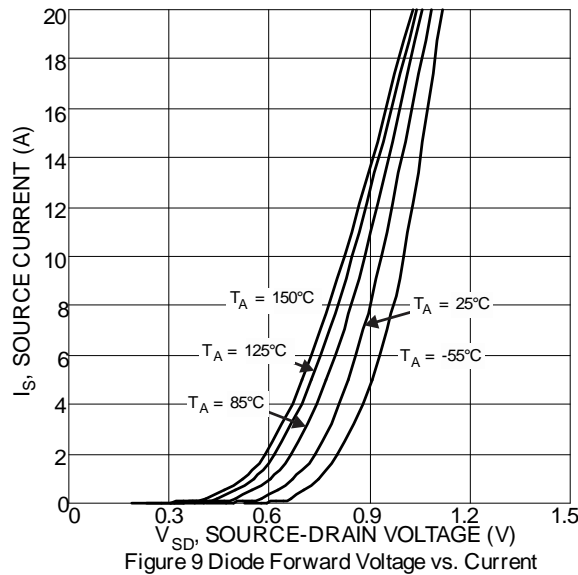
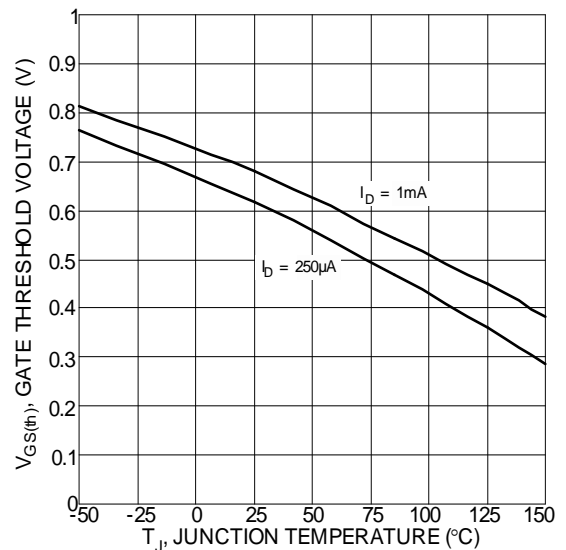
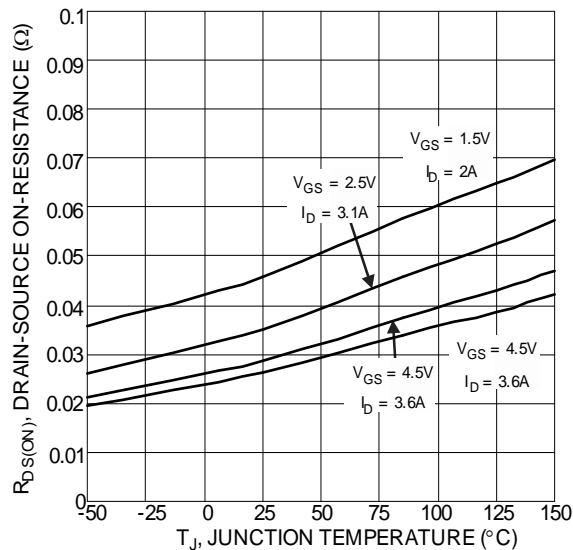
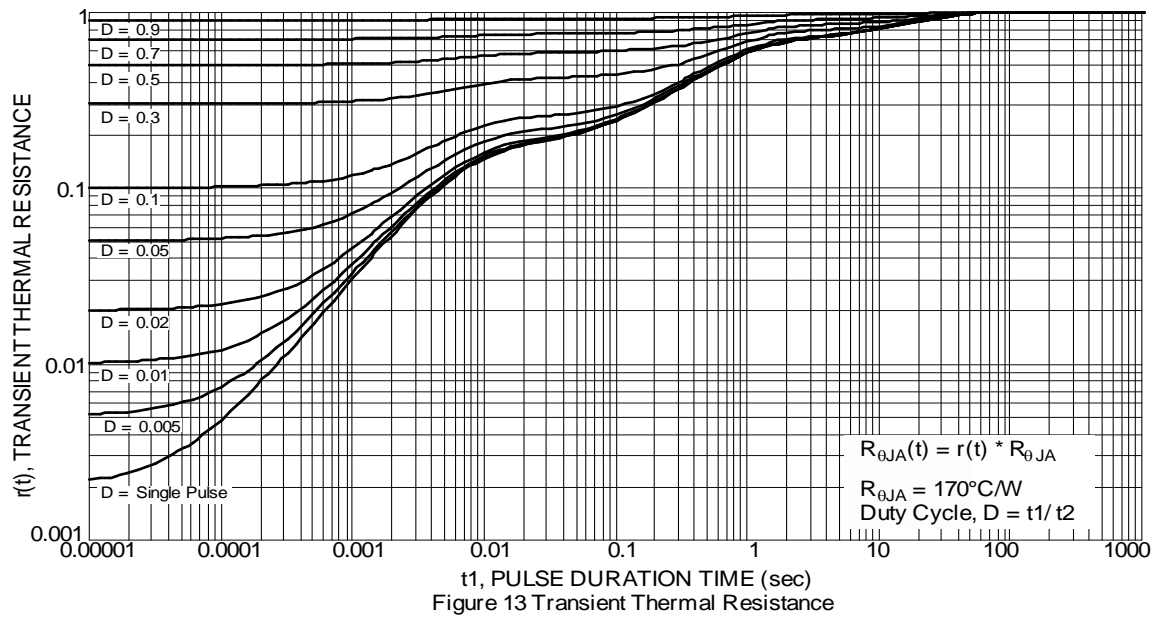


Figure 6 On-Resistance Variation with Temperature

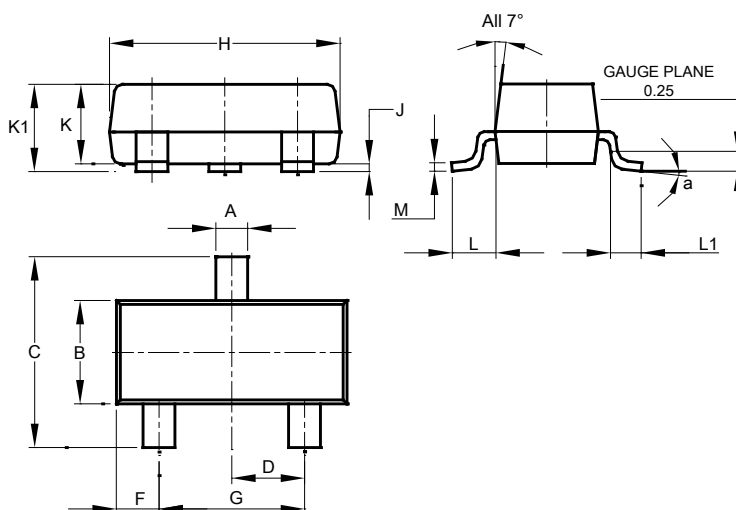




## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### SOT23

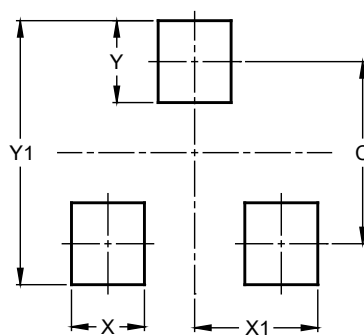


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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