Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	50	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current @ T_{SP} = +25°C (Note 5)	Steady State	T_A = +25°C T_A = +100°C	I_D	500 300	mA
Pulsed Drain Current @ T_{SP} = +25°C (Notes 5 & 6)			I_{DM}	1.2	A

Thermal Characteristics

Characteristic	Symbol	Value	Units
Power Dissipation, @T_A = +25°C (Note 5)	P_D	600	mW
Thermal Resistance, Junction to Ambient @T_A = +25°C (Note 5)	$R_{\theta JA}$	200	°C/W
Power Dissipation, @T_{SP} = +25°C (Note 5)	P_D	920	mW
Thermal Resistance, @T_{SP} = +25°C (Note 5)	$R_{\theta JSP}$	136	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	50	–	–	V	V_{GS} = 0V, I_D = 250µA
Zero Gate Voltage Drain Current T_J = +25°C	I_{DSS}	–	–	0.5	µA	V_{DS} = 50V, V_{GS} = 0V
Gate-Body Leakage	I_{GSS}	–	–	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	0.4	1.0	1.5	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	–	1.3 1.6	1.8 2.0	Ω	V_{GS} = 10V, I_D = 0.22A V_{GS} = 4.5V, I_D = 0.1A
Forward Transfer Admittance	$\|Y_{fs}\|$	40	320	–	mS	V_{DS} = 10V, I_D = 0.1A
Diode Forward Voltage	V_{SD}	–	1.0	1.5	V	V_{GS} = 0V, I_S = 180mA
Source (diode forward) Current	I_S	–	–	194	mA	T_{SP} = +25°C
Peak Source (diode forward) Current	I_{SM}	–	–	1.2	A	T_{SP} = +25°C (Note 3)
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	–	21.8	40	pF	V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	–	5.6	15	pF	
Reverse Transfer Capacitance	C_{rss}	–	3.3	10	pF	
Gate Resistance	R_g	–	49	–	Ω	V_{DS} =0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge	Q_g	–	800	–	pC	V_{GS} = 10V, V_{DD} = 25V, I_D = 250mA
Gate-Source Charge	Q_{gs}	–	100	–	pC	
Gate-Drain Charge	Q_{gd}	–	100	–	pC	
Turn-On Delay Time	$t_{D(on)}$	–	2.93	–	ns	V_{DD} = 30V, V_{GEN} = 10V, R_L = 150Ω, R_{GEN} = 50Ω, I_D = 0.2A
Turn-On Rise Time	t_r	–	2.99	–	ns	
Turn-Off Delay Time	$t_{D(off)}$	–	9.45	–	ns	
Turn-Off Fall Time	t_f	–	8.3	–	ns	

Notes:
5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
6. Repetitive rating, pulse width limited by junction temperature.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to production testing.

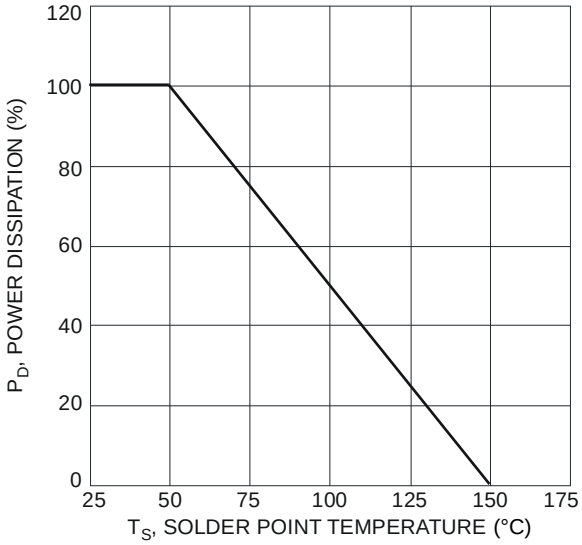


Fig 1. Normalized Total Power Dissipation as a Function of Solder Point Temperature

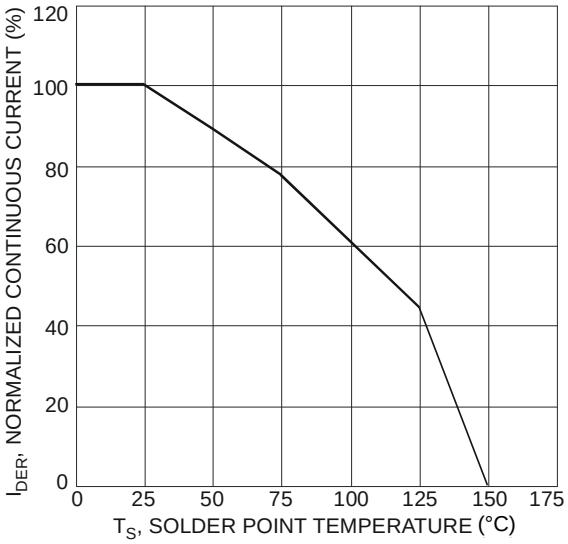


Fig 2. Normalized Continuous Current vs. Solder Point Temperature

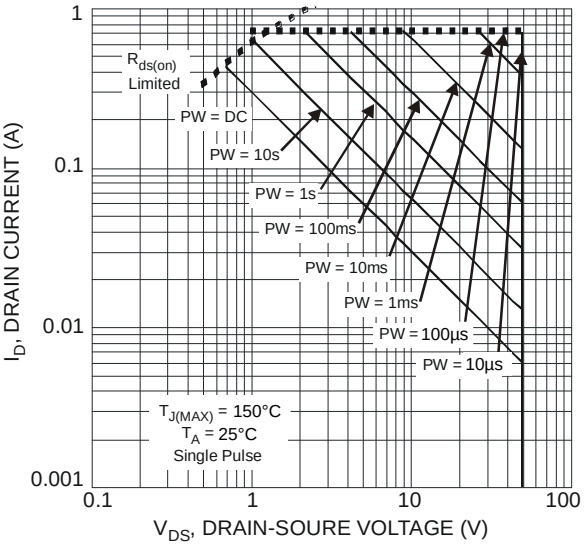


Fig. 3 SOA, Safe Operation Area

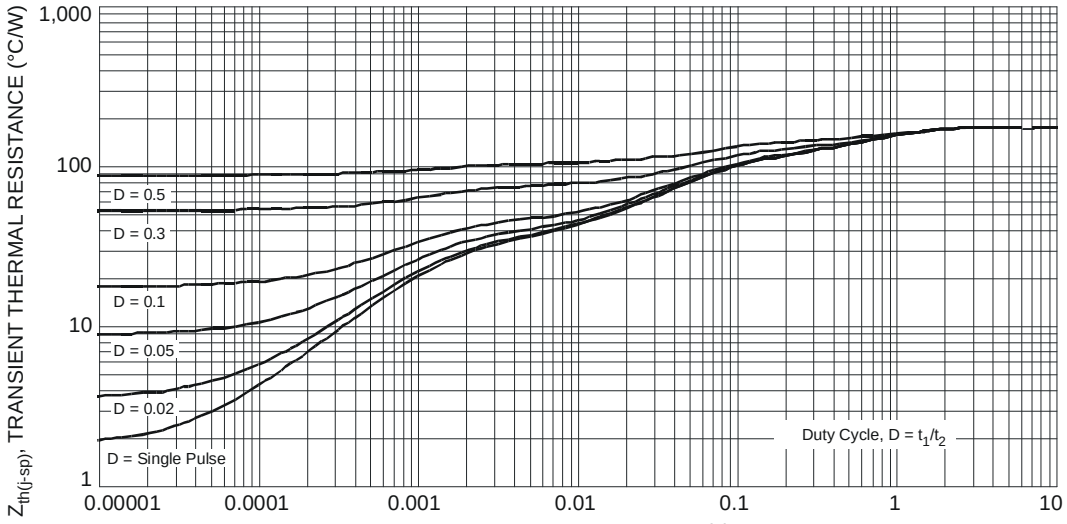


Fig. 4 Transient Thermal Response

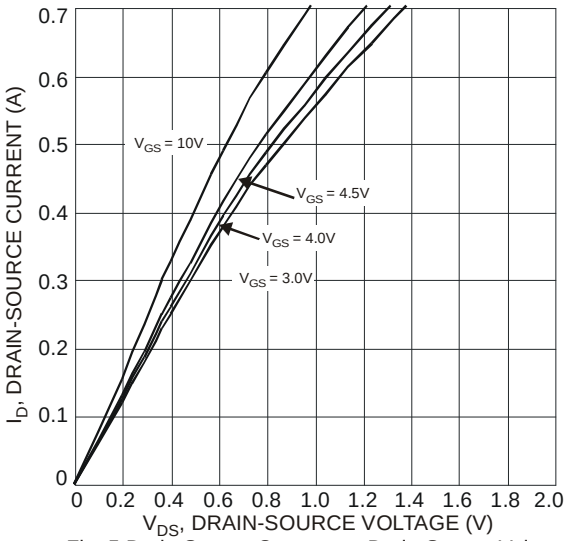


Fig. 5 Drain-Source Current vs. Drain-Source Voltage

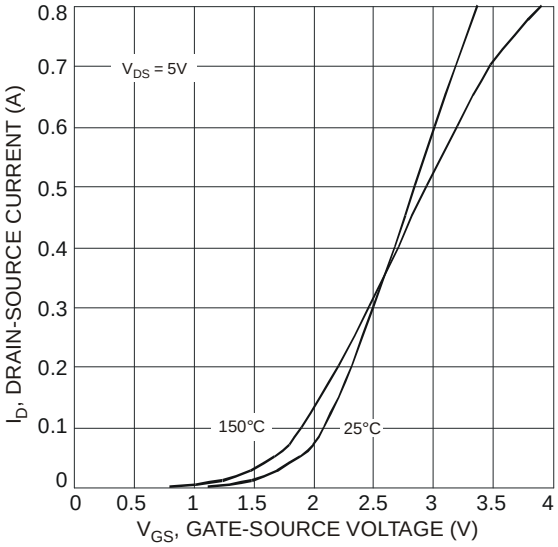


Fig. 6 Transfer Characteristics

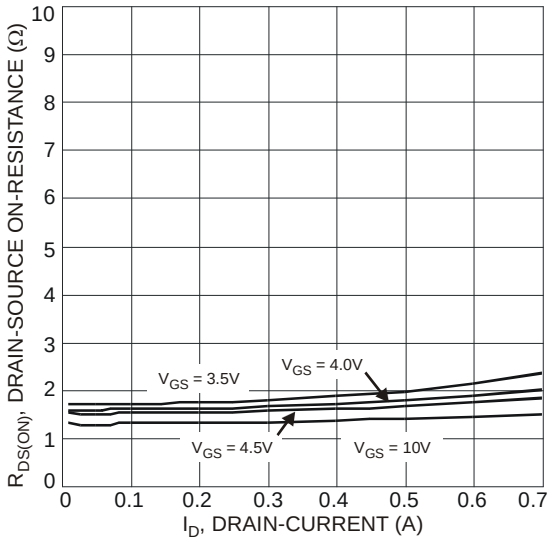


Fig. 7 Drain-Source On-Resistance vs. Drain-Current

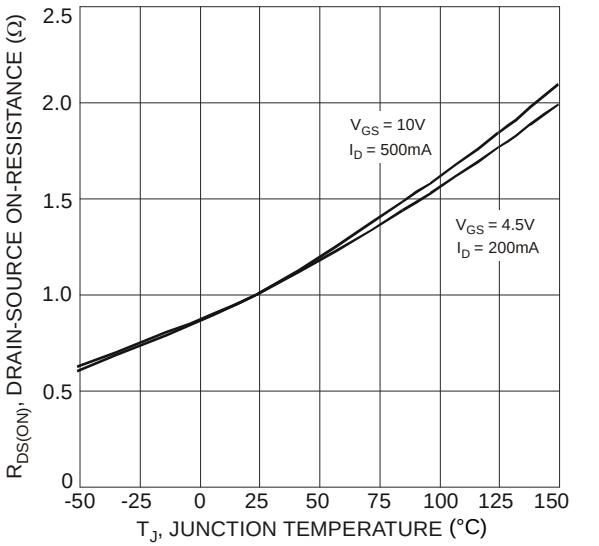


Fig. 8 Drain-Source On-Resistance vs. Junction Temperature

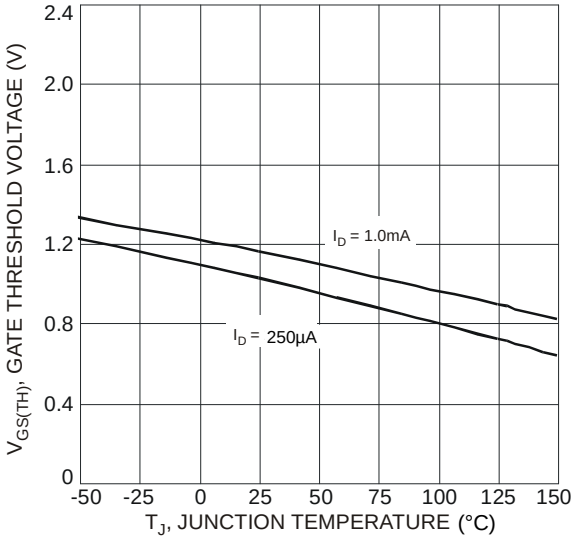


Fig. 9 Gate Threshold Voltage vs. Junction Temperature

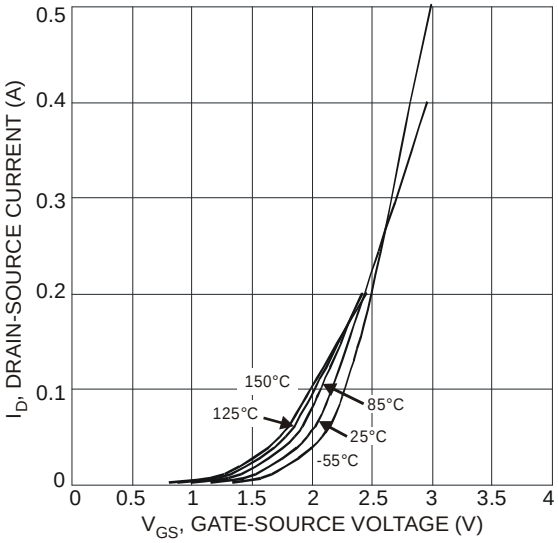


Fig. 10 Transfer Characteristics

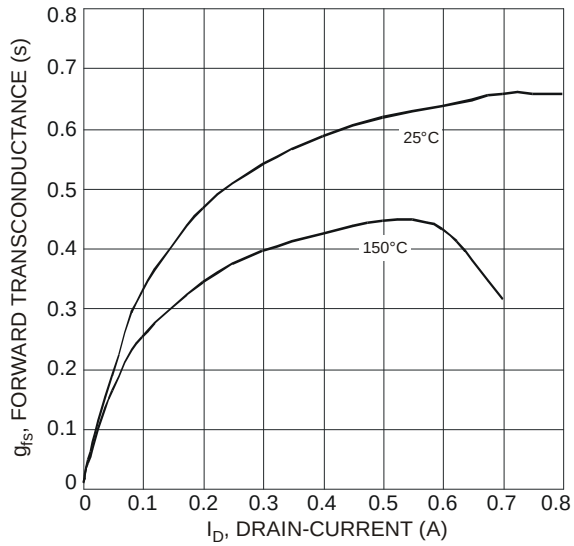


Fig. 11 Typical Transfer Characteristic

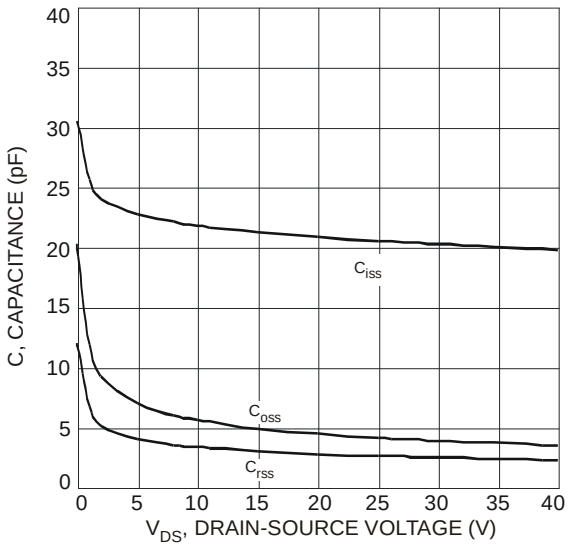


Fig. 12 Capacitance vs. Drain-Source Voltage

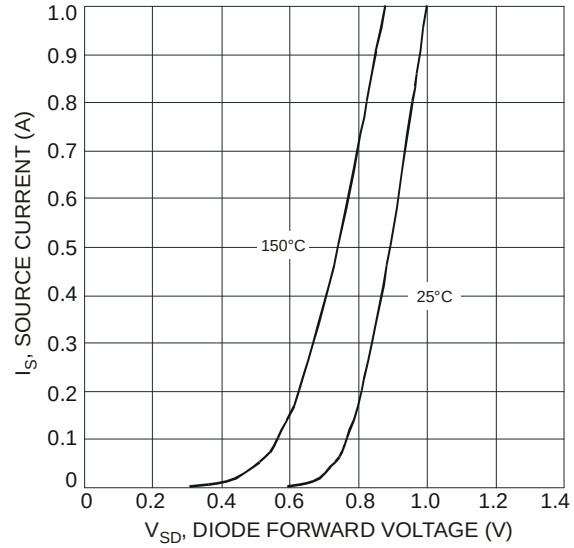
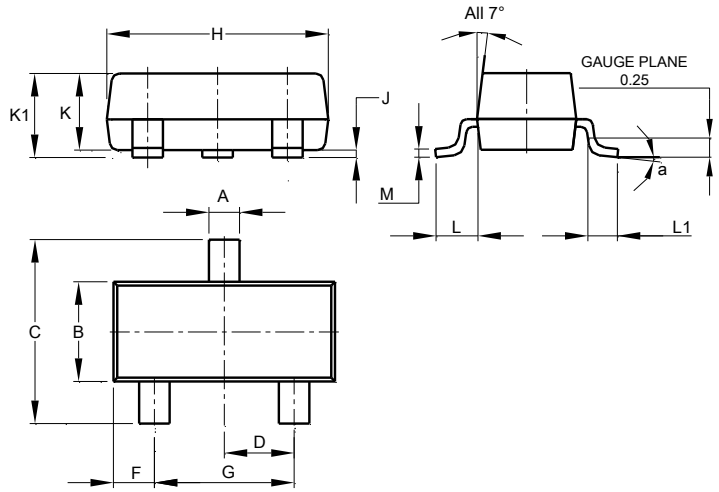


Fig. 13 Source Current vs. Diode Forward Voltage

Package Outline Dimensions

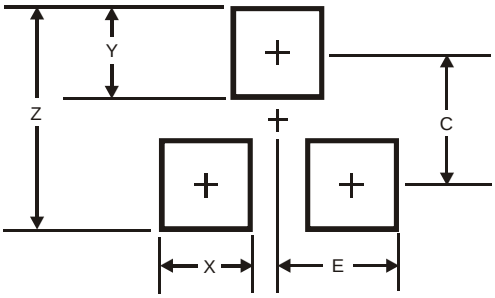
Please see http://www.diodes.com/package-outlines.html for the latest version.



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
α	8°		
All Dimensions in mm			

Suggested Pad Layout

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



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35