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

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	12	V
Gate-Source Voltage			V_{GSS}	±6	V
Continuous Drain Current (Note 5) V_{GS} = 4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	1.41 1.15	A
Pulsed Drain Current (10µs pulse, duty cycle = 1%)			I_{DM}	7	A
Maximum Body Diode continuous Current			I_S	1	A

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

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 5)	T_A = +25°C	P_D	0.5	W
	T_A = +70°C		0.3	
Thermal Resistance, Junction to Ambient (Note 5)	Steady state	$R_{\theta JA}$	251	°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 6)						
Drain-Source Breakdown Voltage	BV_{DSS}	12	—	—	V	V_{GS} = 0V, I_D = 250µA
Zero Gate Voltage Drain Current T_J = +25°C	I_{DSS}	—	—	100	nA	V_{DS} = 12V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±1	µA	V_{GS} = ±6V, V_{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(th)}$	0.35	—	1.0	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	—	—	150	mΩ	V_{GS} = 4.5V, I_D = 1A
			—	185		V_{GS} = 2.5V, I_D = 1A
			—	210		V_{GS} = 1.8V, I_D = 1A
Diode Forward Voltage	V_{SD}	—	0.7	1.2	V	V_{GS} = 0V, I_S = 150mA
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	—	106	—	pF	V_{DS} =10V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	23	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	21	—	pF	
Gate resistance	R_g	—	92.4	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz
Total Gate Charge (V_{GS} = 4.5V)	Q_g	—	1.5	—	nC	V_{DS} = 4V, I_D = 1A
Gate-Source Charge	Q_{gs}	—	0.2	—	nC	
Gate-Drain Charge	Q_{gd}	—	0.2	—	nC	
Turn-On Delay Time	$t_{D(on)}$	—	4.1	—	ns	V_{DD} = 4V,V_{GS} = 6V, I_D = 1A R_G = 1Ω
Turn-On Rise Time	t_r	—	34.5	—	ns	
Turn-Off Delay Time	$t_{D(off)}$	—	57	—	ns	
Turn-Off Fall Time	t_f	—	30	—	ns	

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to product testing.

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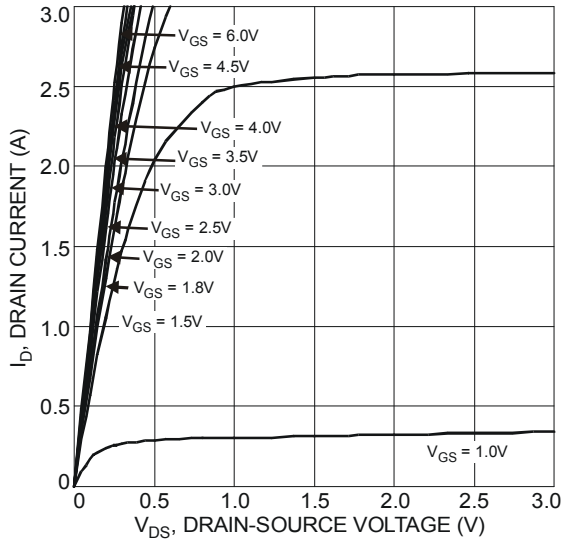

Figure 1 Typical Output Characteristic

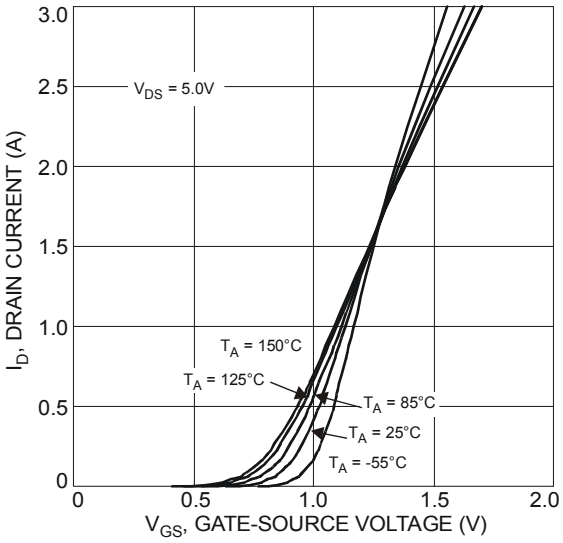

Figure 2 Typical Transfer Characteristics

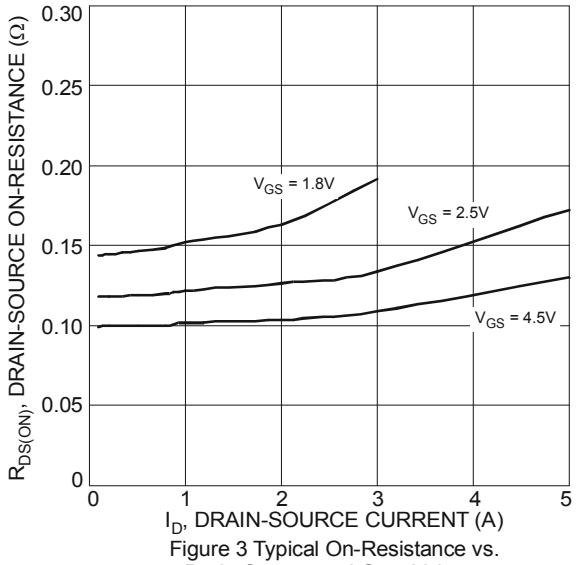

Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

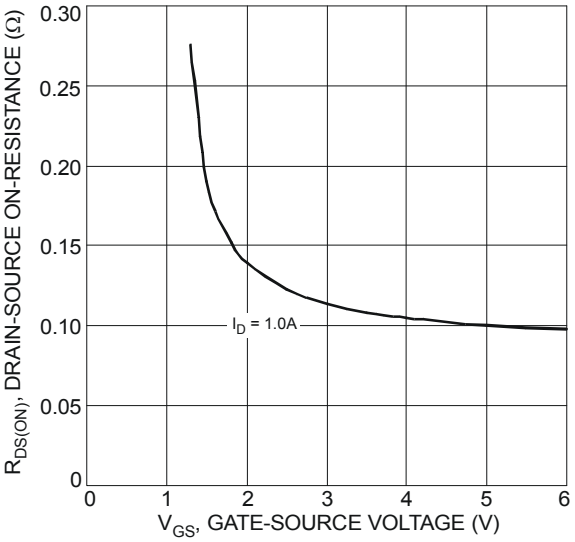

Figure 4 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

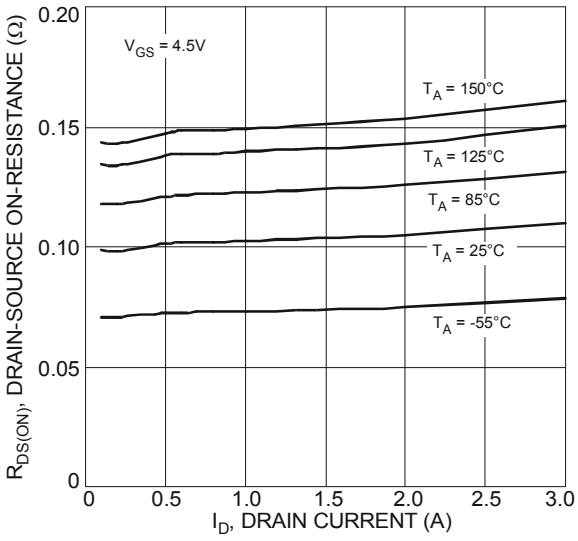

Figure 5 Typical On-Resistance vs. Drain Current and Temperature

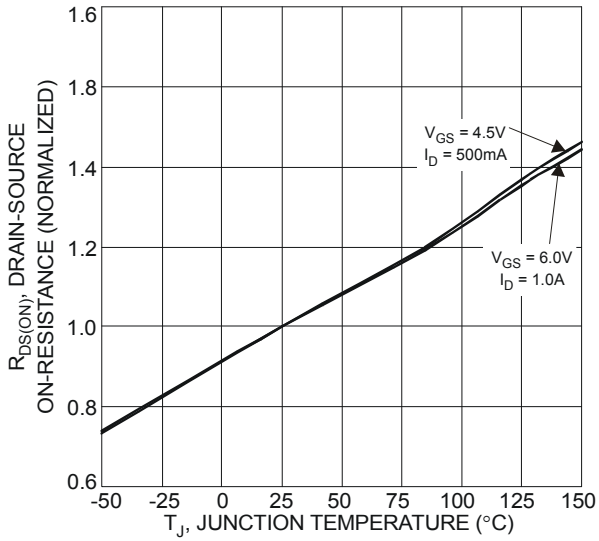

Figure 6 On-Resistance Variation with Temperature

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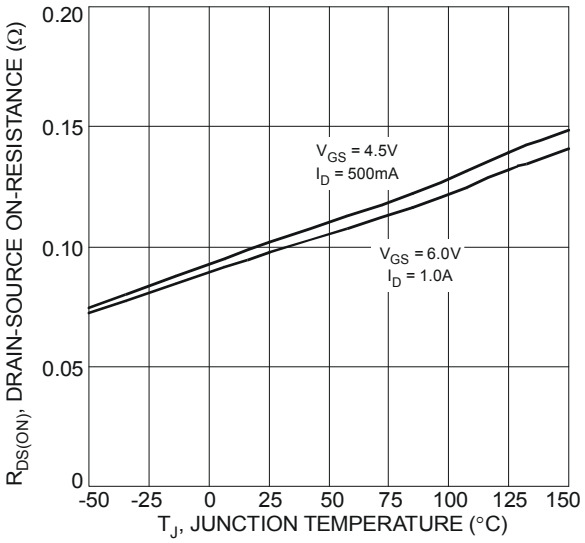

Figure 7 On-Resistance Variation with Temperature

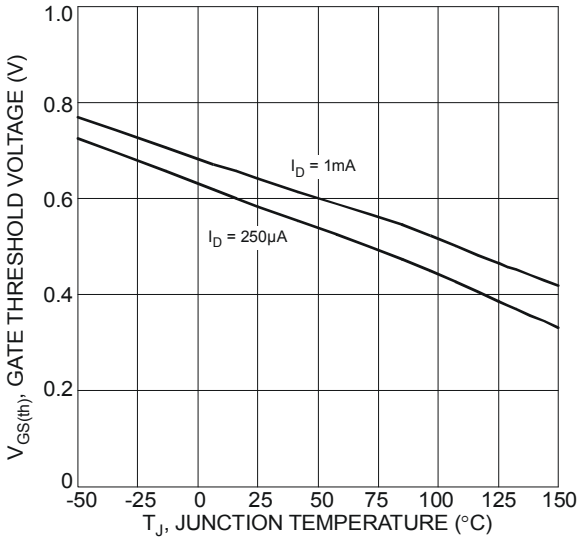

Figure 8 Gate Threshold Variation vs. Ambient Temperature

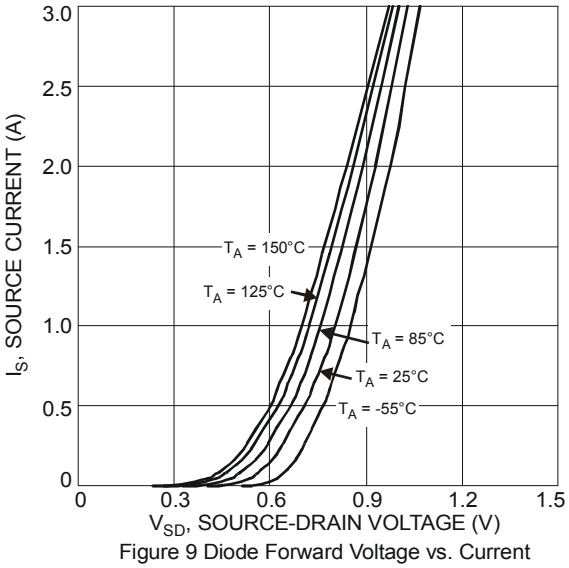

Figure 9 Diode Forward Voltage vs. Current

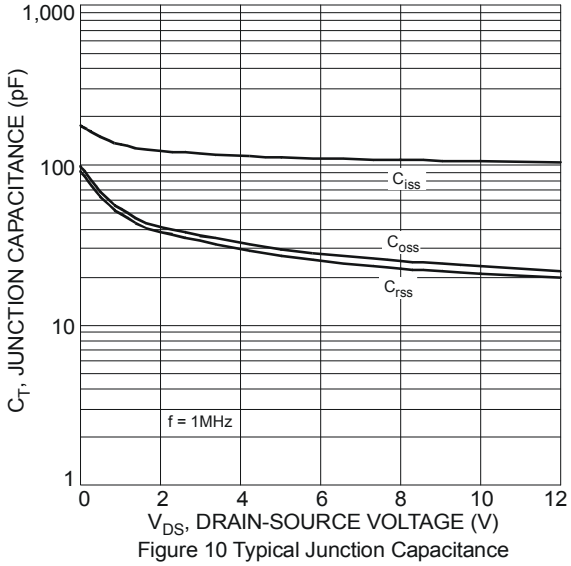

Figure 10 Typical Junction Capacitance

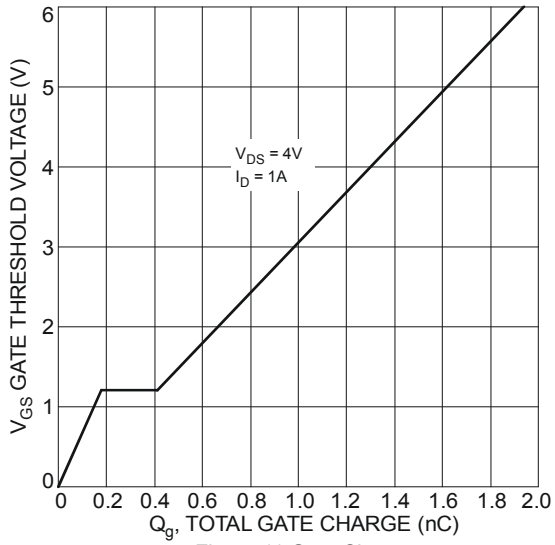

Figure 11 Gate Charge

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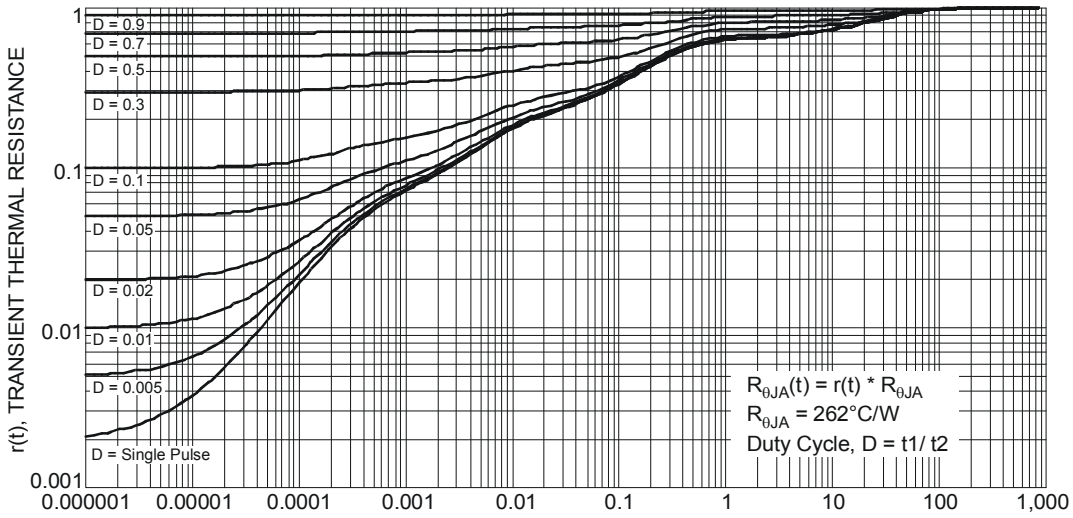
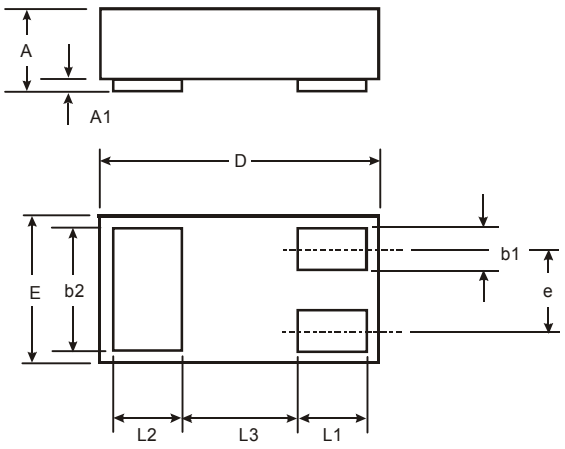


Figure 12 Transient Thermal Resistance

Package Outline Dimensions

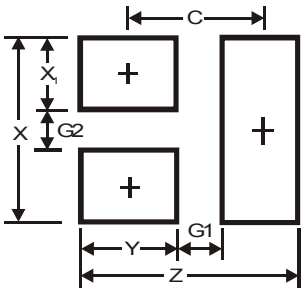
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



X1-DFN1006-3			
Dim	**Min**	**Max**	**Typ**
A	0.47	0.53	0.50
A1	0	0.05	0.03
b1	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	—	—	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	—	—	0.40
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
Z	1.1
G1	0.3
G2	0.2
X	0.7
X1	0.25
Y	0.4
C	0.7

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