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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	20	V
Gate-Source Voltage			V_{GSS}	±8	V
Continuous Drain Current (Note 5) V_{GS} = 4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	10 8	A
Continuous Drain Current (Note 5) V_{GS} = 2.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	9 7	A
Pulsed Drain Current (Note 7)			I_{DM}	80	A

Thermal Characteristics

Characteristic	Symbol	Max	Unit
Power Dissipation (Note 5)	P_D	0.78	W
Thermal Resistance, Junction to Ambient @T_A = +25°C (Note 5)	$R_{\theta JA}$	163	°C/W
Power Dissipation (Note 6)	P_D	2.14	W
Thermal Resistance, Junction to Ambient @T_A = +25°C (Note 6)	$R_{\theta JA}$	59	°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 8)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	—	—	V	V_{GS} = 0V, I_D = 250µA
Zero Gate Voltage Drain Current T_J = +25°C	I_{DSS}	—	—	1	µA	V_{DS} = 16V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±10	µA	V_{GS} = ±8V, V_{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	—	1.1	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	—	8.4	11.5	mΩ	V_{GS} = 4.5V, I_D = 8.5A
			8.5	12.0		V_{GS} = 4.0V, I_D = 8.5A
			8.6	12.5		V_{GS} = 3.5V, I_D = 8.5A
			9.0	13.5		V_{GS} = 3.1V, I_D = 8A
			9.6	14.0		V_{GS} = 2.5V, I_D = 8A
Forward Transfer Admittance	$\|Y_{fs}\|$	—	18.2	—	S	V_{DS} = 5V, I_D = 4A
Diode Forward Voltage	V_{SD}	—	—	1.2	V	V_{GS} = 0V, I_S = 8.5A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	2607	—	pF	V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	255	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	236	—	pF	
Gate Resistance	R_g	—	1.2	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = 4.5V)	Q_g	—	32.4	—	nC	V_{DS} = 10V, I_D = 8.5A
Total Gate Charge (V_{GS} = 8V)	Q_g	—	57.4	—	nC	
Gate-Source Charge	Q_{gs}	—	3.5	—	nC	
Gate-Drain Charge	Q_{gd}	—	4.0	—	nC	
Turn-On Delay Time	$t_{D(on)}$	—	8.6	—	ns	V_{DS} = 10V, I_D = 8.5A V_{GS} = 4.5V, R_G = 1.8Ω
Turn-On Rise Time	t_r	—	20.3	—	ns	
Turn-Off Delay Time	$t_{D(off)}$	—	42.5	—	ns	
Turn-Off Fall Time	t_f	—	13.7	—	ns	

Notes:
5. Device mounted on FR-4 PCB with minimum recommended pad layout, single sided.
6. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate
7. Repetitive rating, pulse width limited by junction temperature.
8. Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design. Not subject to production testing.

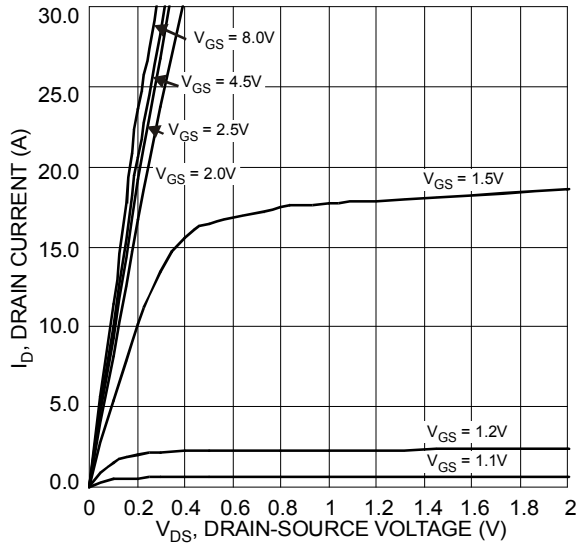


Figure 1 Typical Output Characteristic

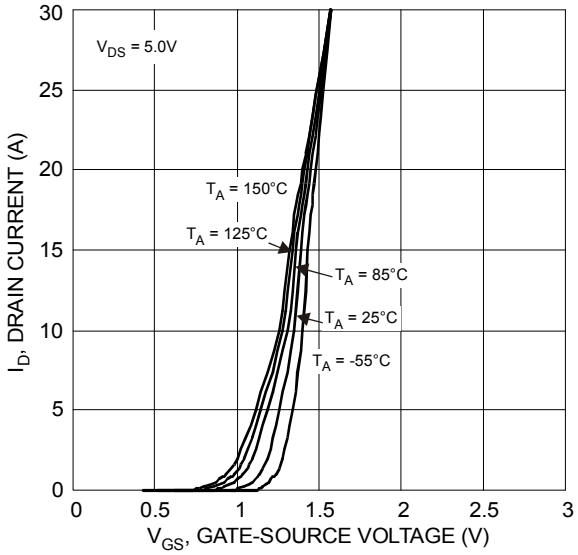


Figure 2 Typical Transfer Characteristics

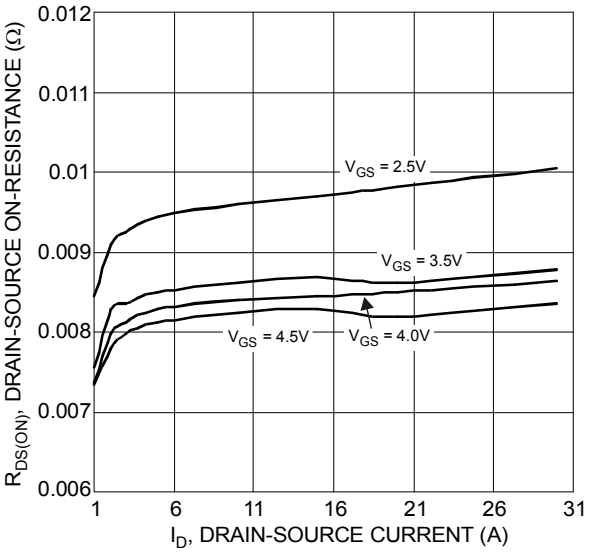


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

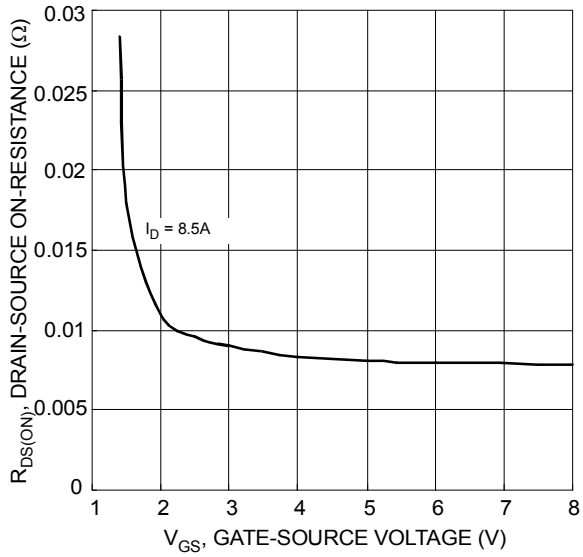


Figure 4 Typical Transfer Characteristic

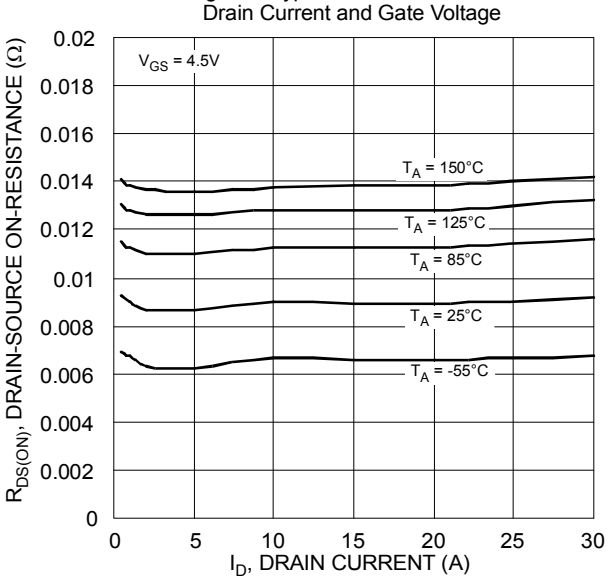


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

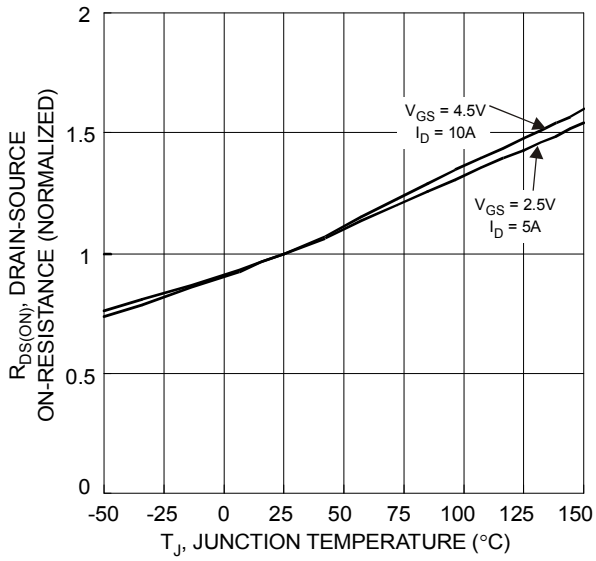


Figure 6 On-Resistance Variation with Temperature

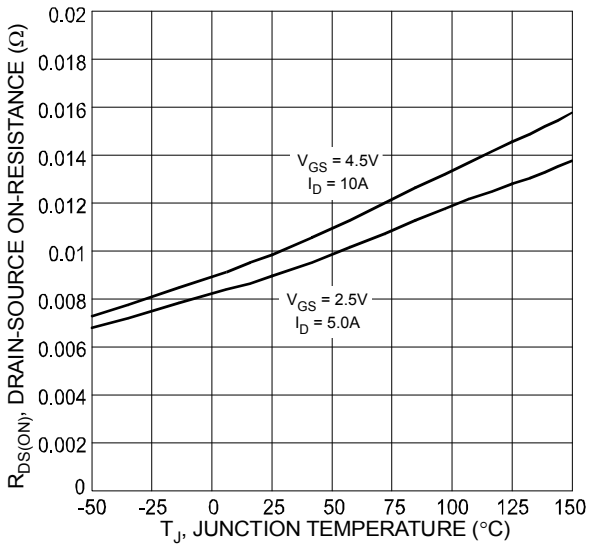


Figure 7 On-Resistance Variation with Temperature

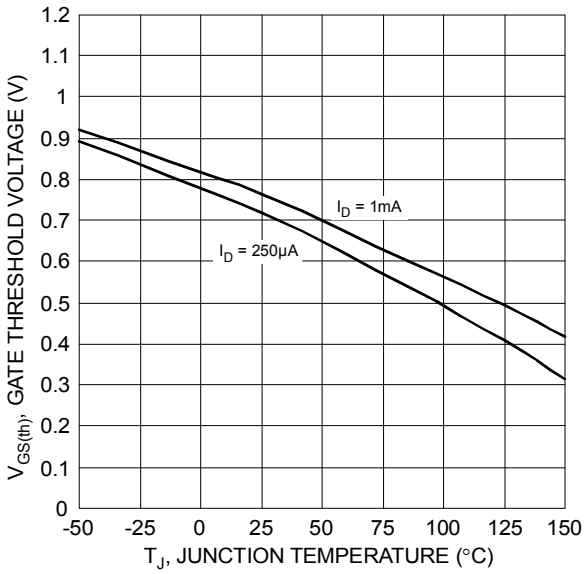


Figure 8 Gate Threshold Variation vs. Ambient Temperature

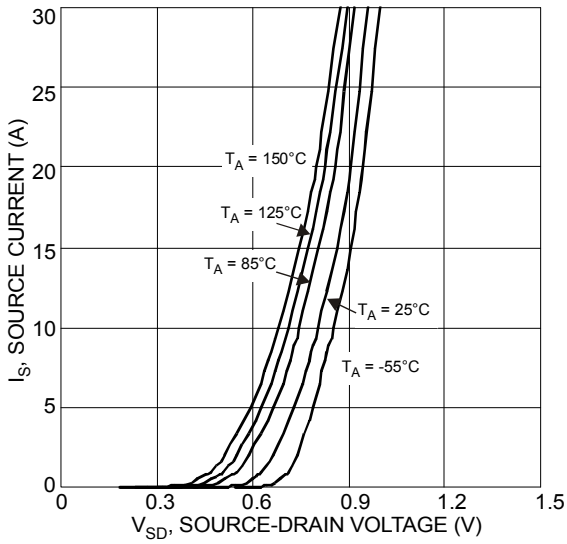


Figure 9 Diode Forward Voltage vs. Current

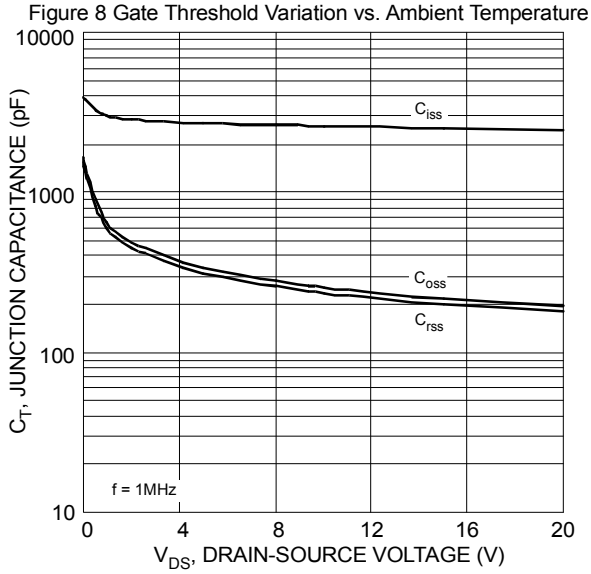


Figure 10 Typical Junction Capacitance

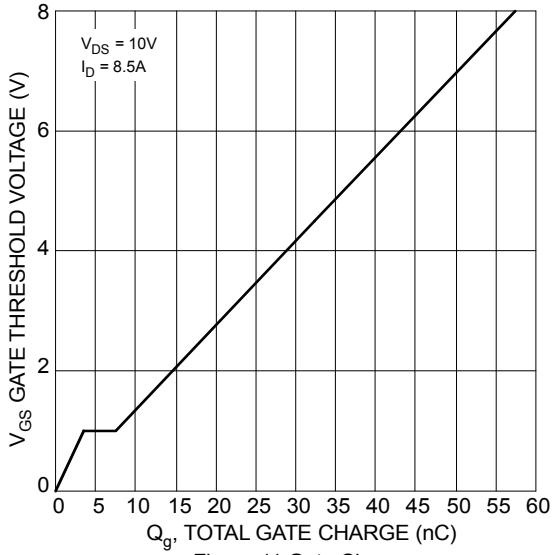
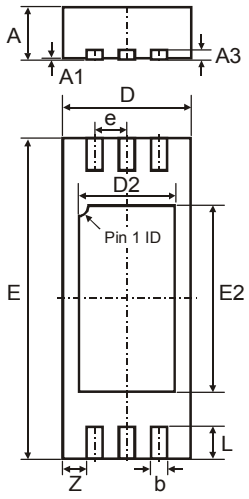


Figure 11 Gate Charge

Package Outline Dimensions

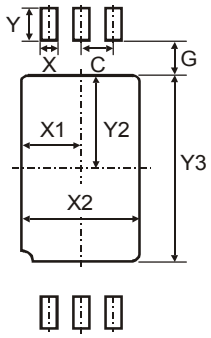
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



W-DFN5020-6			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0	0.05	0.02
A3	–	–	0.15
b	0.20	0.30	0.25
D	1.90	2.10	2.00
D2	1.40	1.60	1.50
e	–	–	0.50
E	4.90	5.10	5.00
E2	2.80	3.00	2.90
L	0.35	0.65	0.50
Z	–	–	0.375
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)
C	0.50
G	0.35
X	0.35
X1	0.90
X2	1.80
Y	0.70
Y2	1.60
Y3	3.20

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