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

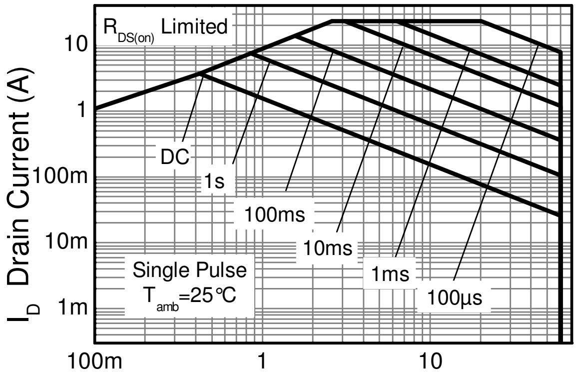
Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	60	V
Gate-Source Voltage		(Note 6)	V_{GS}	±20	V
Single Pulsed Avalanche Energy		(Note 11)	E_{AS}	37.5	mJ
Single Pulsed Avalanche Current		(Note 11)	I_{AS}	5.0	A
Continuous Drain Current	V_{GS} = 10V	(Note 8)	I_D	5.0	A
		T_A = +70°C (Note 8)		4.0	
		(Note 7)		3.7	
Pulsed Drain Current	V_{GS} = 10V	(Note 9)	I_{DM}	23	A
Continuous Source Current (Body diode)		(Note 8)	I_S	4.0	A
Pulsed Source Current (Body diode)		(Note 9)	I_{SM}	23	A

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

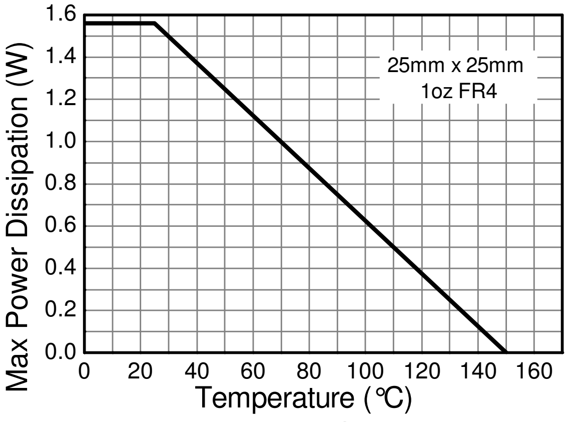
Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 7)	P_D	1.56 12.5	W mW/°C
	(Note 8)		2.81 22.5	
Thermal Resistance, Junction to Ambient	(Note 7)	$R_{\theta JA}$	80.0	°C/W
	(Note 8)		44.5	
Thermal Resistance, Junction to Lead	(Note 10)	$R_{\theta JL}$	37.0	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Notes:
6. AEC-Q101 V_{GS} maximum is ±16V.
7. For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
8. Same as note (7), except the device is measured at t ≤ 10 sec.
9. Same as note (7), except the device is pulsed with D= 0.02 and pulse width 300 µs. The pulse current is limited by the maximum junction temperature.
10. Thermal resistance from junction to solder-point (at the end of the drain lead).
11. UIS in production with L = 3.0mH, I_{AS} = 5.0A, R_G = 25Ω, V_{DD}=50V, starting T_J = +25°C.

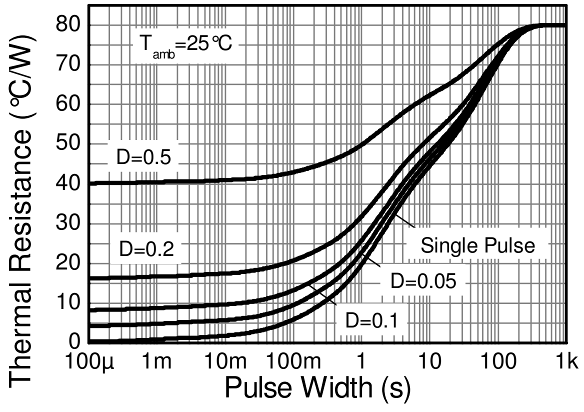
Thermal Characteristics



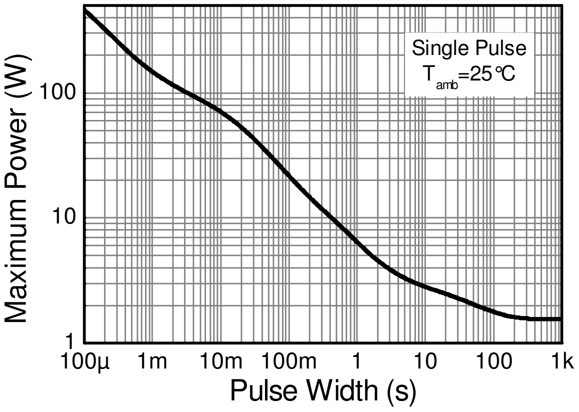
Safe Operating Area



Derating Curve



Transient Thermal Impedance



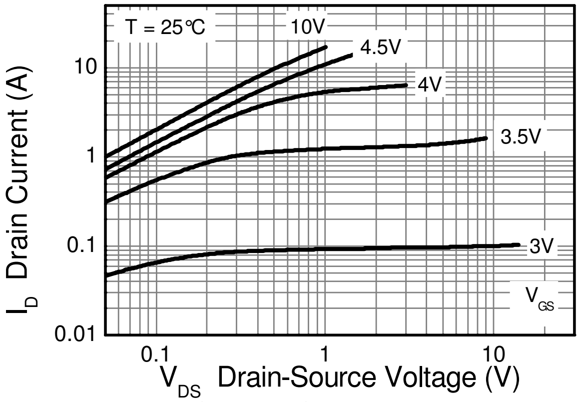
Pulse Power Dissipation

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

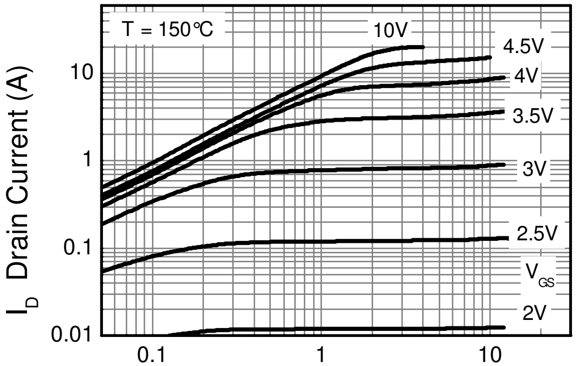
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	60	—	—	V	I_D = 250µA, V_{GS} = 0V
Zero Gate Voltage Drain Current	I_{DSS}	—	—	0.5	µA	V_{DS} = 60V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	1.0	—	3.0	V	I_D = 250µA, V_{DS} = V_{GS}
Static Drain-Source On-Resistance (Note 12)	$R_{DS\ (ON)}$	—	0.048	0.066	Ω	V_{GS} = 10V, I_D = 4.5A
			0.068	0.097		V_{GS} = 4.5V, I_D = 3.5A
Forward Transconductance (Notes 12 & 13)	g_{fs}	—	19.2	—	S	V_{DS} = 15V, I_D = 6A
Diode Forward Voltage (Note 12)	V_{SD}	—	0.89	1.15	V	I_S = 4.5A, V_{GS} = 0V
Reverse Recovery Time (Note 13)	t_{rr}		23	—	ns	I_S = 2.4A, di/dt = 100A/µs
Reverse Recovery Charge (Note 13)	Q_{rr}	—	19.7	—	nC	
DYNAMIC CHARACTERISTICS (Note 13)						
Input Capacitance	C_{iss}	—	502	—	pF	V_{DS} = 30V, V_{GS} = 0V f = 1MHz
Output Capacitance	C_{oss}	—	45.7	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	27.1	—	pF	
Total Gate Charge (Note 14)	Q_g	—	5.4	—	nC	V_{GS} = 4.5V V_{DS} = 30V I_D = 4.5A
Total Gate Charge (Note 14)	Q_g	—	10.3	—	nC	V_{GS} = 10V
Gate-Source Charge (Note 14)	Q_{gs}	—	1.7	—	nC	
Gate-Drain Charge (Note 14)	Q_{gd}	—	3.2	—	nC	
Turn-On Delay Time (Note 14)	$t_{D(on)}$	—	2.7	—	ns	V_{DD} = 30V, V_{GS} = 10V I_D = 1A, R_G ≅ 6.0Ω
Turn-On Rise Time (Note 14)	t_r	—	2.4	—	ns	
Turn-Off Delay Time (Note 14)	$t_{D(off)}$	—	14.7	—	ns	
Turn-Off Fall Time (Note 14)	t_f	—	5.4	—	ns	

Notes:
12. Measured under pulsed conditions. Pulse width ≤ 300µs; duty cycle ≤ 2%.
13. For design aid only, not subject to production testing.
14. Switching characteristics are independent of operating junction temperatures.

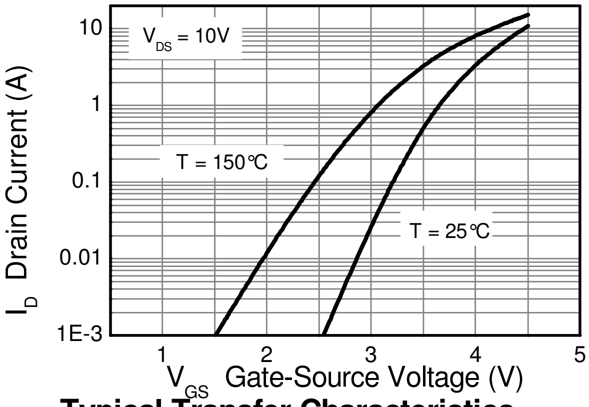
Typical Characteristics



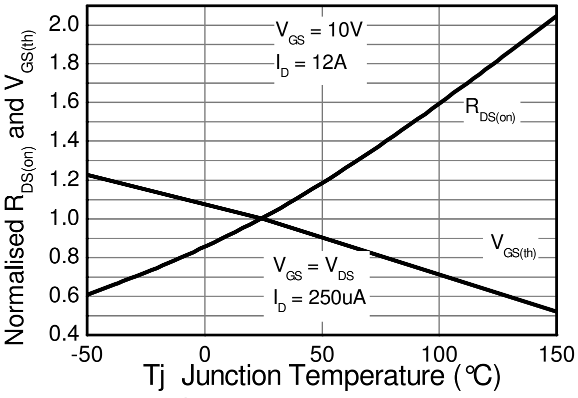
Output Characteristics



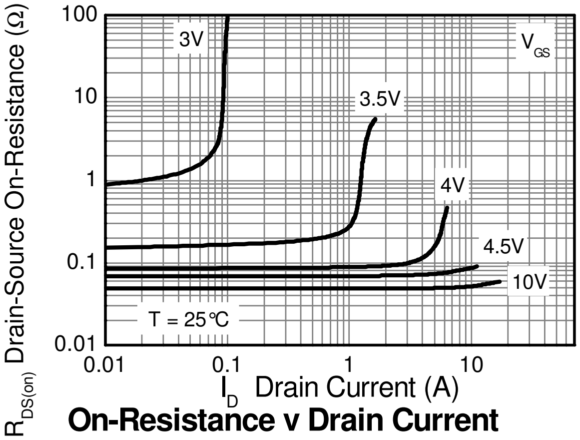
Output Characteristics



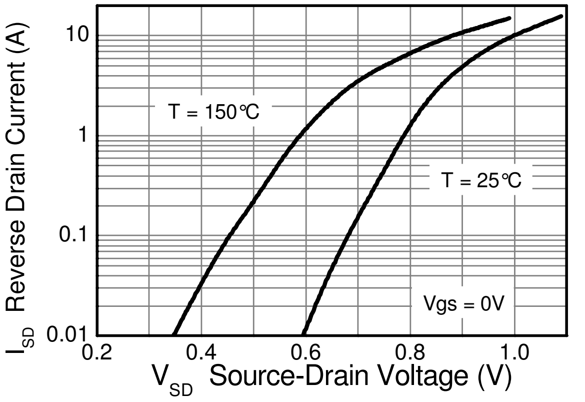
Typical Transfer Characteristics



Normalised Curves v Temperature

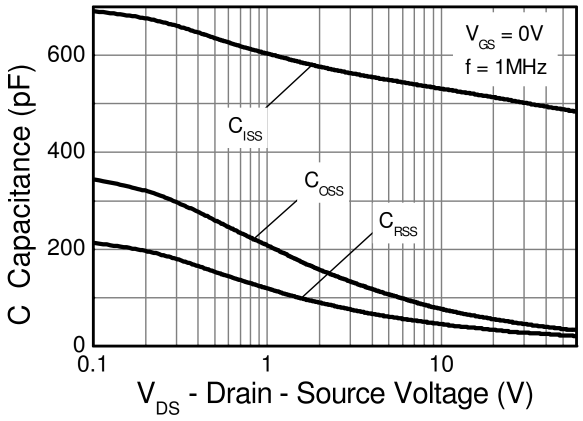


On-Resistance v Drain Current

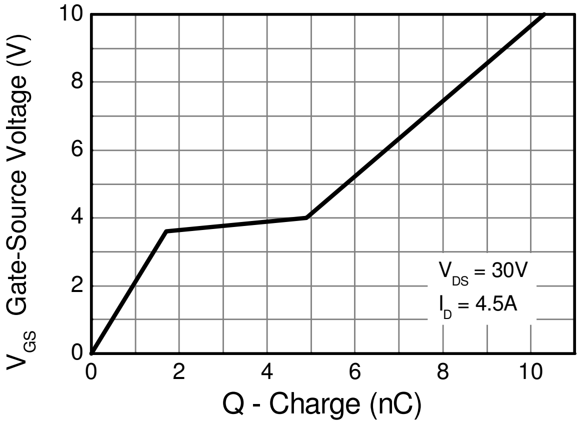


Source-Drain Diode Forward Voltage

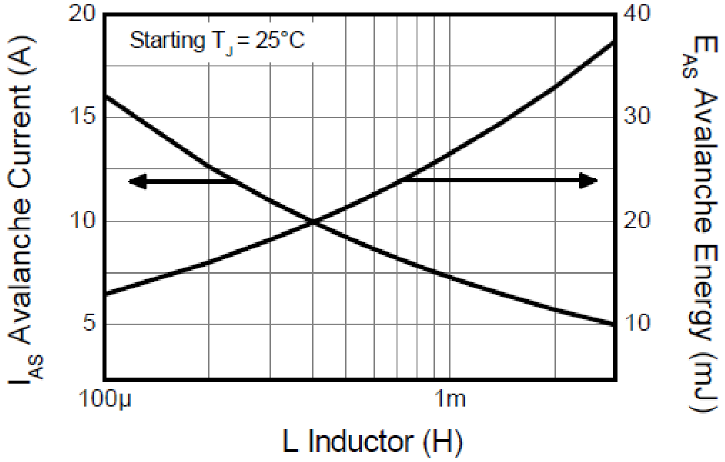
Typical Characteristics (continued)



Capacitance v Drain-Source Voltage

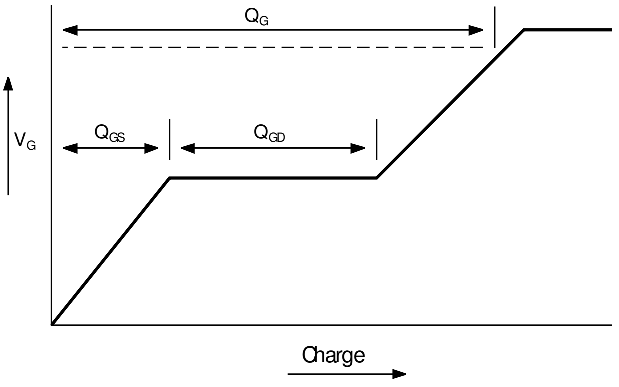


Gate-Source Voltage v Gate Charge

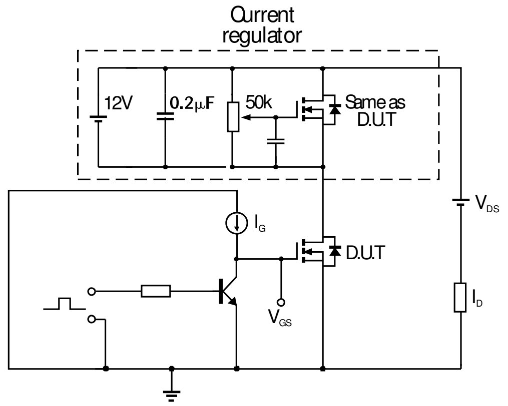


Single-Pulsed Avalanche Rating

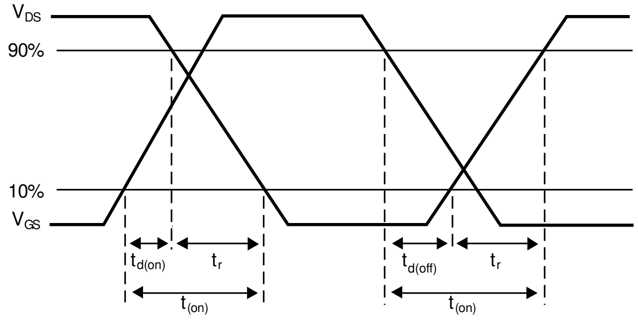
Test Circuits



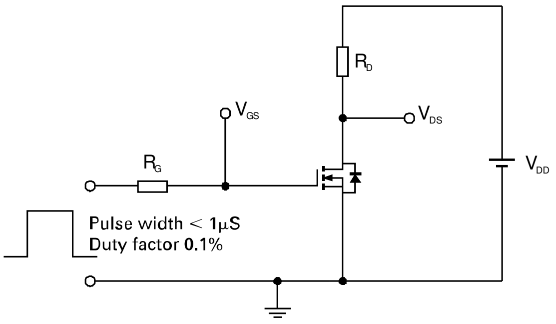
Basic gate charge waveform



Gate charge test circuit



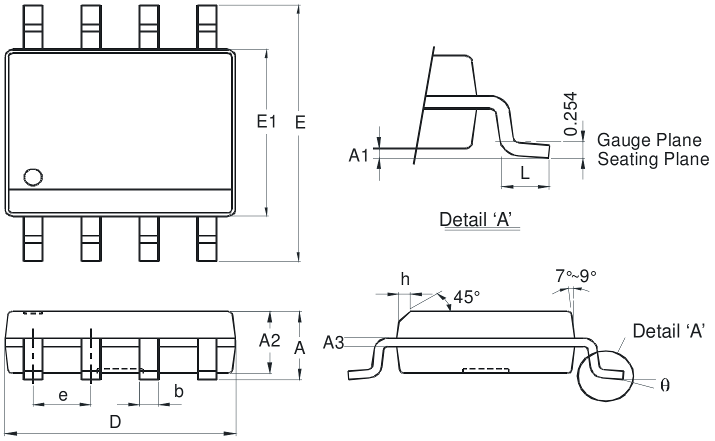
Switching time waveforms



Switching time test circuit

Package Outline Dimensions

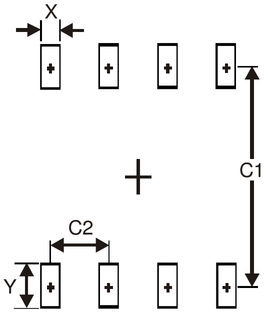
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SO-8		
Dim	**Min**	**Max**
A	-	1.75
A1	0.10	0.20
A2	1.30	1.50
A3	0.15	0.25
b	0.3	0.5
D	4.85	4.95
E	5.90	6.10
E1	3.85	3.95
e	1.27 Typ	
h	-	0.35
L	0.62	0.82
θ	0°	8°
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)
X	0.60
Y	1.55
C1	5.4
C2	1.27

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