

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	650	V
Gate-Source Voltage	V _{GSS}	±30	V
Continuous Drain Current (Note 5) V _{GS} = 10V	I _D	9.0 7.0	A
Pulsed Drain Current (Note 6) 10us pulse, pulse duty cycle ≤ 1%	I _{DM}	30	A
Avalanche Current (Note 7) V _{DD} = 100V, V _{GS} = 10V, L = 60mH	I _{AR}	2.7	A
Repetitive Avalanche Energy (Note 7) V _{DD} = 100V, V _{GS} = 10V, L = 60mH	E _{AR}	260	mJ

Thermal Characteristics

Characteristic	Symbol	Max	Unit
Power Dissipation (Note 5) T _C = +25°C T _C = +70°C	P _D	165 100	W
Thermal Resistance, Junction to Case (Note 5)	R _{θJC}	0.7	°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}	650	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	—	—	1.0	μA	V _{DS} = 650V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±30V, V _{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	V _{GS(th)}	3	—	5	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	0.7	1.3	Ω	V _{GS} = 10V, I _D = 4.5A
Forward Transfer Admittance	Y _{fs}	—	8.5	—	S	V _{DS} = 40V, I _D = 4.5A
Diode Forward Voltage	V _{SD}	—	0.7	1.0	V	V _{GS} = 0V, I _S = 1A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	—	2,310	—	pF	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	122	—		
Reverse Transfer Capacitance	C _{rss}	—	2.2	—		
Gate Resistance	R _g	—	2.2	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge V _{GS} = 10V	Q _g	—	39	—	nC	V _{GS} = 10V, V _{DS} = 520V, I _D = 8A
Gate-Source Charge	Q _{gs}	—	8.5	—		
Gate-Drain Charge	Q _{gd}	—	11.9	—		
Turn-On Delay Time	t _{D(on)}	—	39	—	ns	V _{GS} = 10V, V _{DS} = 325V, R _G = 25Ω, I _D = 8A
Turn-On Rise Time	t _r	—	29	—	ns	
Turn-Off Delay Time	t _{D(off)}	—	122	—	ns	
Turn-Off Fall Time	t _f	—	28	—	ns	dI/dt = 100A/μs, V _{DS} = 100V, I _F = 8A
Body Diode Reverse Recovery Time	t _{rr}	—	570	—	ns	
Body Diode Reverse Recovery Charge	Q _{rr}	—	4.17	—	μC	

- Notes:
- Device mounted on an infinite heatsink.
 - Repetitive rating, pulse width limited by junction temperature.
 - I_{AR} and E_{AR} rating are based on low frequency and duty cycles to keep T_J = +25°C.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to production testing.

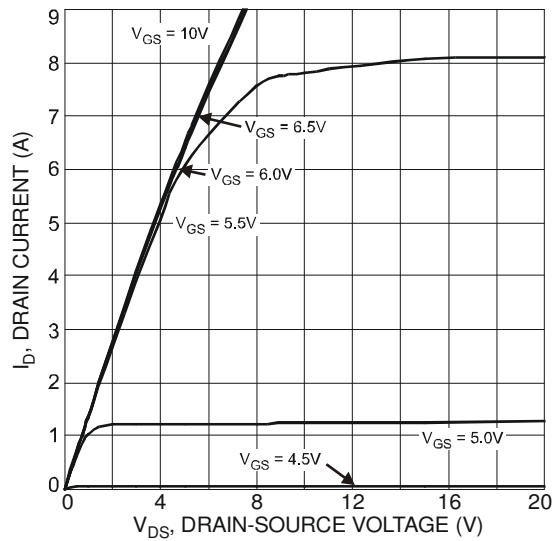


Fig. 1 Typical Output Characteristic

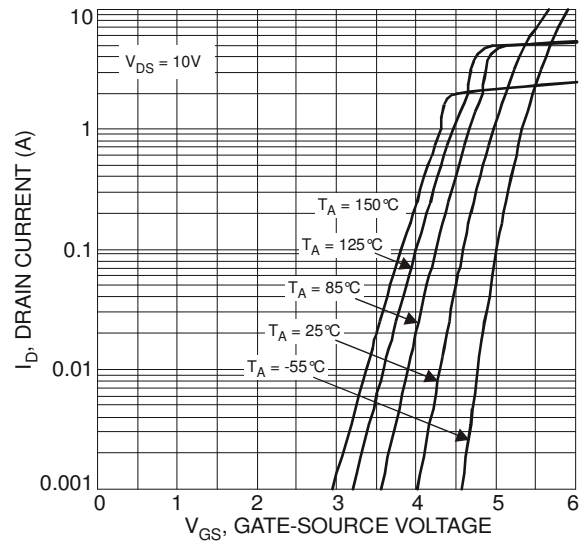


Fig. 2 Typical Transfer Characteristics

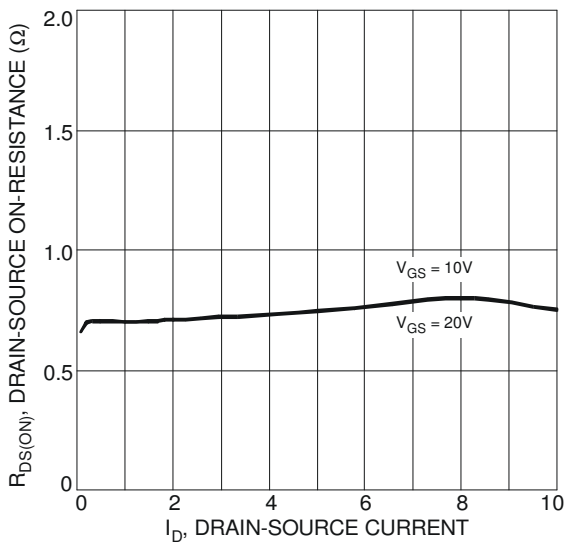


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

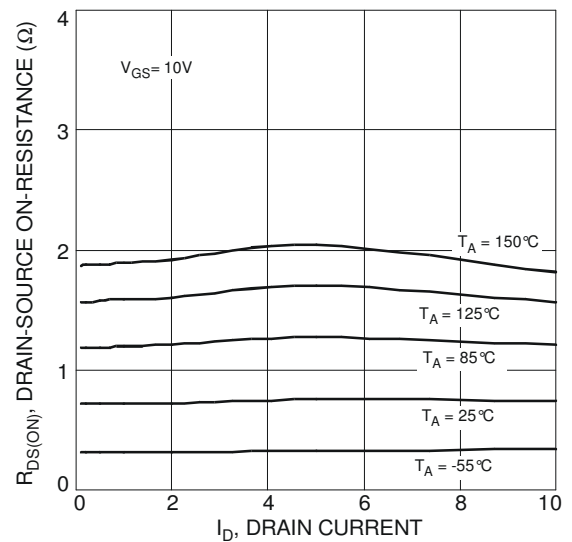


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

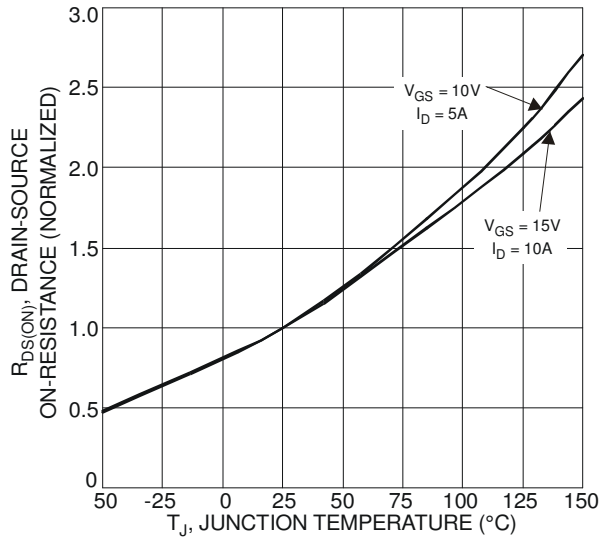


Fig. 5 On-Resistance Variation with Temperature

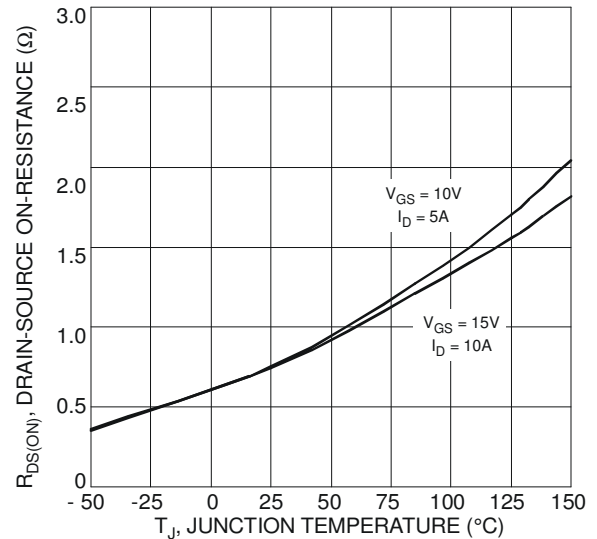


Fig. 6 On-Resistance Variation with Temperature

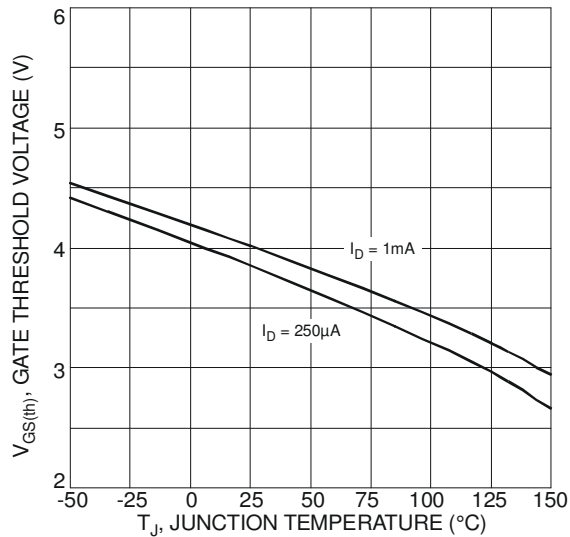


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

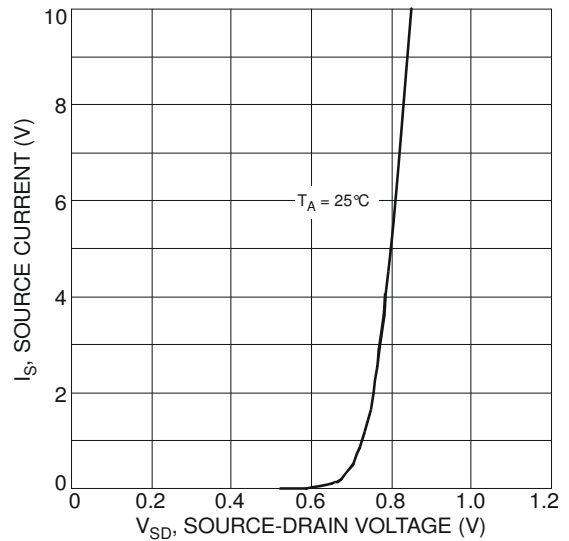
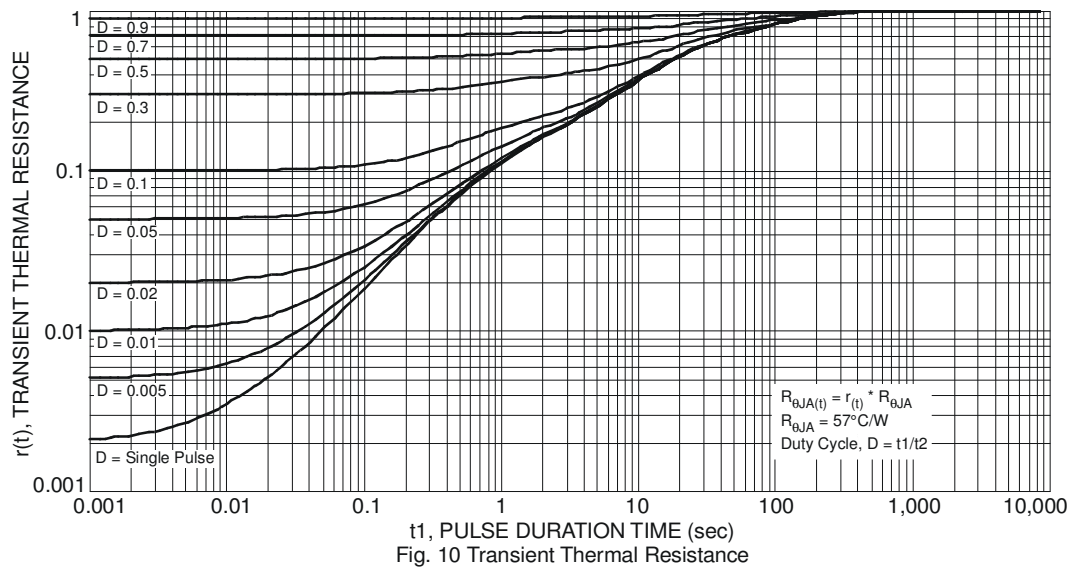
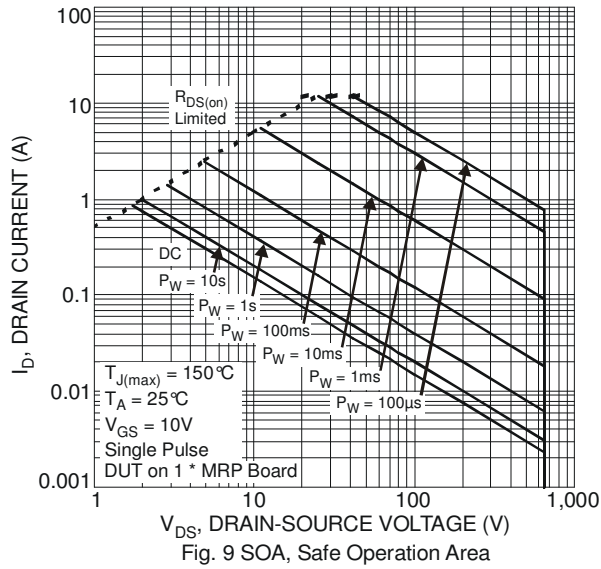
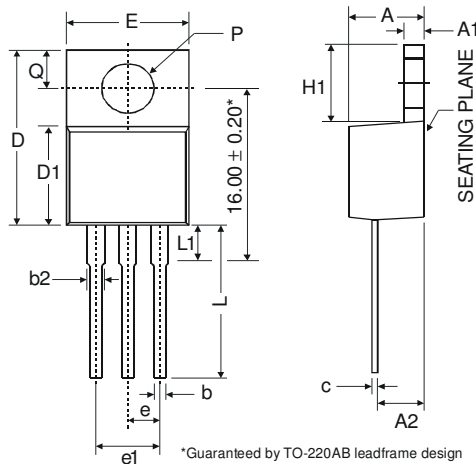


Fig. 8 Diode Forward Voltage vs. Current



Package Outline Dimensions

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



TO220AB			
Dim	Min	Typ	Max
A	3.56	-	4.82
A1	0.51	-	1.39
A2	2.04	-	2.92
b	0.39	0.81	1.01
b2	1.15	1.24	1.77
c	0.356	-	0.61
D	14.22	-	16.51
D1	8.39	-	9.01
e	2.54		
e1	5.08		
E	9.66	-	10.66
H1	5.85	-	6.85
L	12.70	-	14.73
L1	-	-	6.35
P	3.54	-	4.08
Q	2.54	-	3.42
All Dimensions in mm			

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