

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V <sub>DSS</sub>	30	V
Gate-Source Voltage			V <sub>GSS</sub>	+20 -16	V
Continuous Drain Current (Note 6) V <sub>GS</sub> = 10V	Steady State	T <sub>C</sub> = +25°C T <sub>C</sub> = +70°C	I <sub>D</sub>	75 75	A
	Steady State	T <sub>A</sub> = +25°C T <sub>A</sub> = +70°C	I <sub>D</sub>	21 17	A
Pulsed Drain Current (380μs Pulse, Duty Cycle=1%)			I <sub>DM</sub>	160	A
Maximum Continuous Body Diode Forward Current (Note 6)			I <sub>S</sub>	3	A
Avalanche Current (Note 7) L=5mH			I <sub>AS</sub>	10.7	A
Avalanche Energy (Note 7) L=5mH			E <sub>AS</sub>	287	mJ

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		P <sub>D</sub>	1.9	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady state	R <sub>θJA</sub>	80	°C/W
Total Power Dissipation (Note 6)		P <sub>D</sub>	3	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady state	R <sub>θJA</sub>	50	°C/W
Thermal Resistance, Junction to Case		R <sub>θJC</sub>	1.4	°C/W
Operating and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +175	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 8)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 1mA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	-	-	10	μA	V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	100 -100	nA	V <sub>GS</sub> = +20V, V <sub>DS</sub> = 0V V <sub>GS</sub> = -16V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 8)</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	1	-	3	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	-	3.3	4	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A
		-	5.5	7		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 7A
Diode Forward Voltage	V <sub>SD</sub>	-	0.75	1	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A
<b>DYNAMIC CHARACTERISTICS (Note 9)</b>						
Input Capacitance	C <sub>iss</sub>	-	2370	-	pF	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1MHz
Output Capacitance	C <sub>oss</sub>	-	1360	-	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	-	240	-	pF	
Gate Resistance	R <sub>g</sub>	-	0.6	-	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge (V <sub>GS</sub> = 4.5V)	Q <sub>g</sub>	-	20	-	nC	V <sub>DS</sub> = 15V, I <sub>D</sub> = 20A
Total Gate Charge (V <sub>GS</sub> = 10V)	Q <sub>g</sub>	-	44	-	nC	
Gate-Source Charge	Q <sub>gs</sub>	-	7	-	nC	
Gate-Drain Charge	Q <sub>gd</sub>	-	8	-	nC	
Turn-On Delay Time	t <sub>D(ON)</sub>	-	6.2	-	ns	V <sub>DD</sub> = 15V, V <sub>GS</sub> = 10V, R <sub>L</sub> = 0.75Ω, R <sub>G</sub> = 3Ω, I <sub>D</sub> = 20A
Turn-On Rise Time	t <sub>R</sub>	-	4.3	-	ns	
Turn-Off Delay Time	t <sub>D(OFF)</sub>	-	21	-	ns	
Turn-Off Fall Time	t <sub>F</sub>	-	8	-	ns	
Reverse Recovery Time	t <sub>RR</sub>	-	25	-	ns	I <sub>F</sub> = 15A, di/dt = 500A/μs
Reverse Recovery Charge	Q <sub>RR</sub>	-	37	-	nC	

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
  - Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
  - I<sub>AS</sub> and E<sub>AS</sub> ratings are based on low frequency and duty cycles to keep T<sub>J</sub> = +25°C.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to product testing.

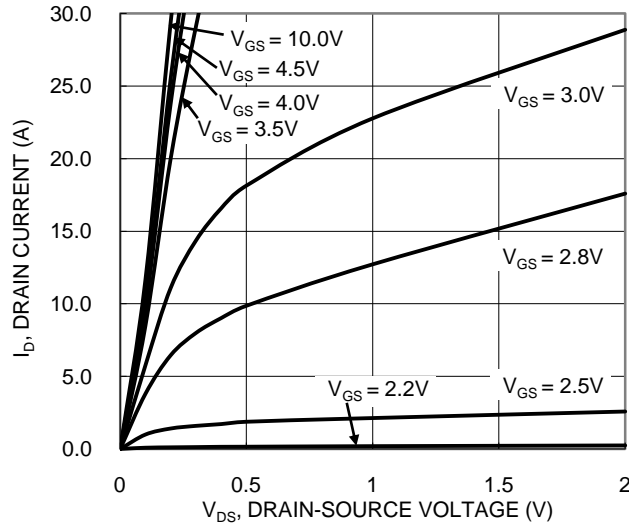


Figure 1. Typical Output Characteristic

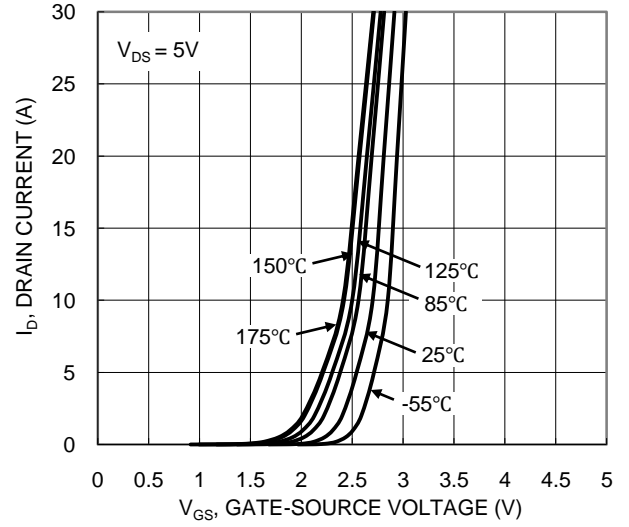


Figure 2. Typical Transfer Characteristic

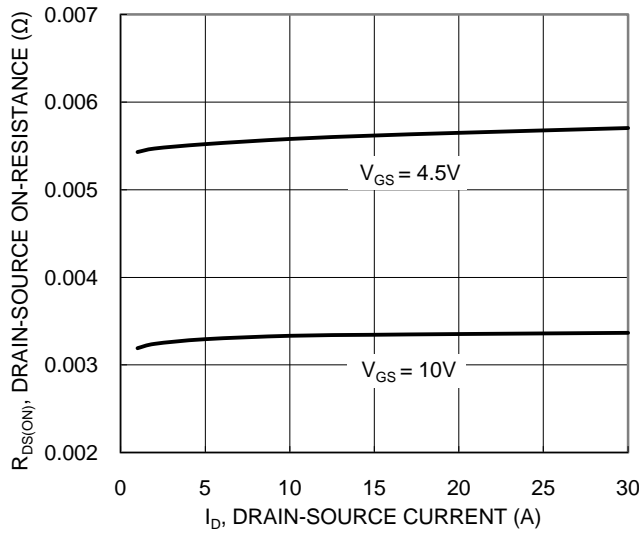


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

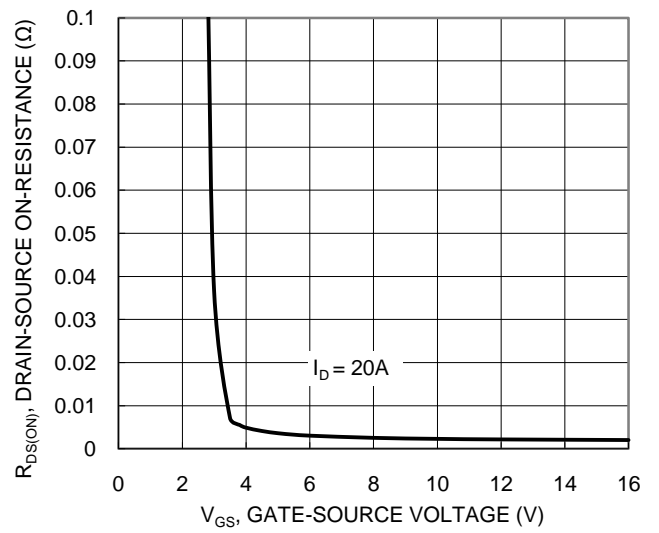


Figure 4. Typical Transfer Characteristic

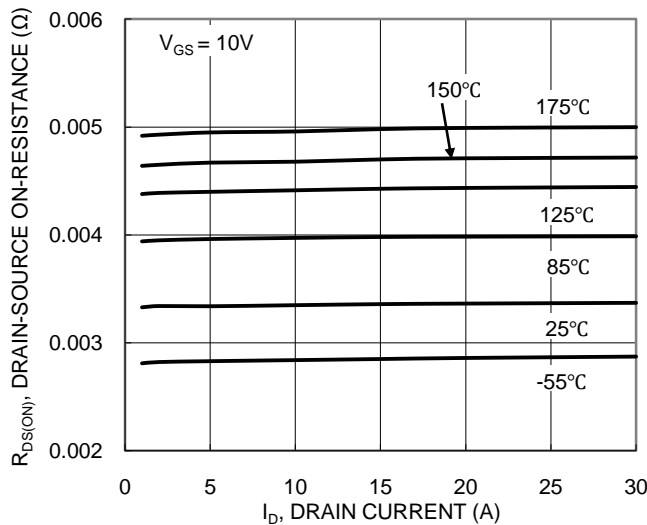


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

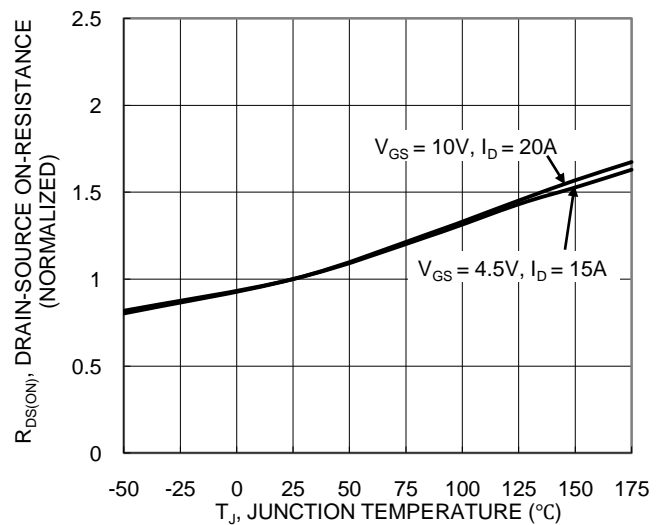


Figure 6. On-Resistance Variation with Junction Temperature

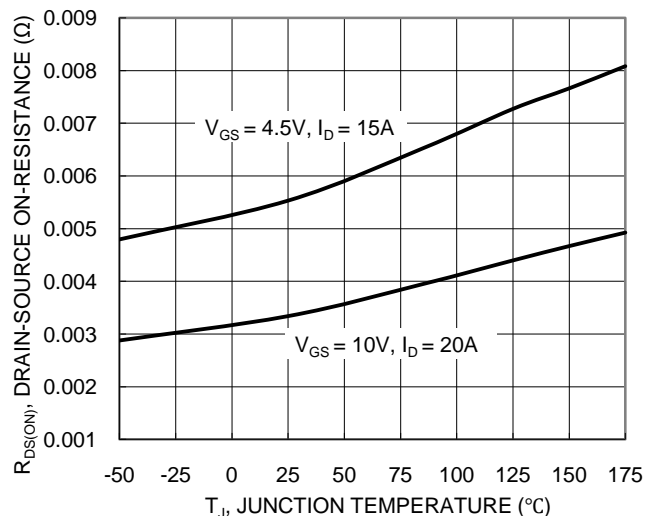


Figure 7. On-Resistance Variation with Junction Temperature

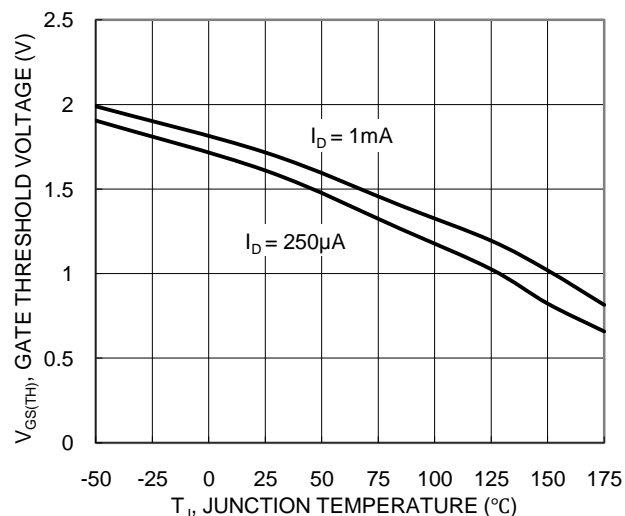


Figure 8. Gate Threshold Variation vs. Junction Temperature

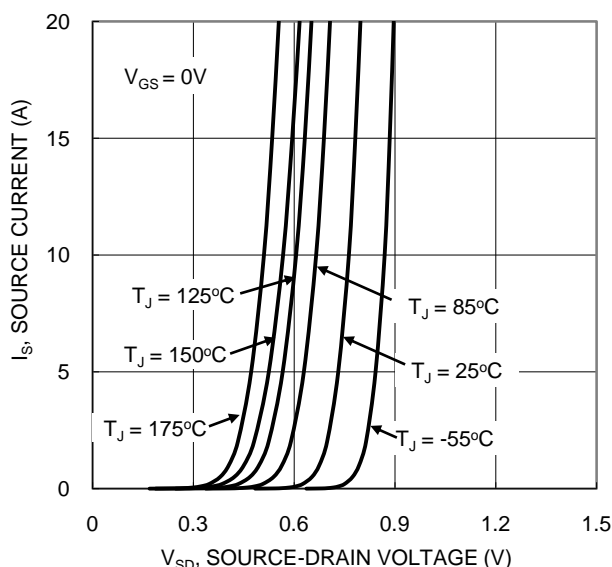


Figure 9. Diode Forward Voltage vs. Current

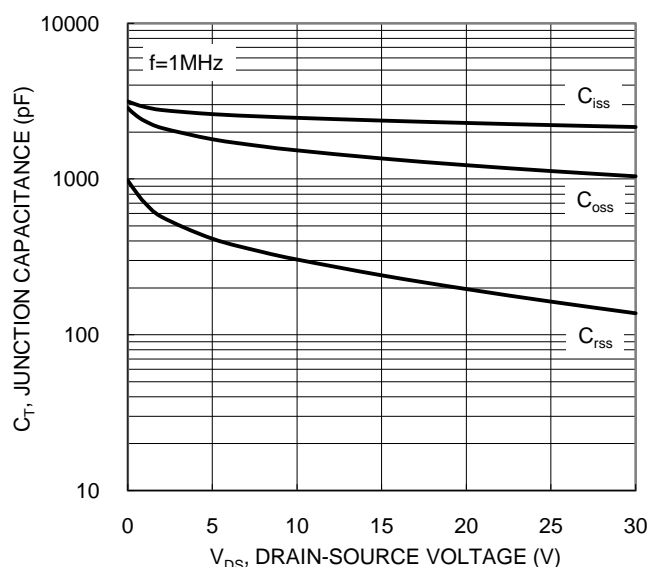


Figure 10. Typical Junction Capacitance

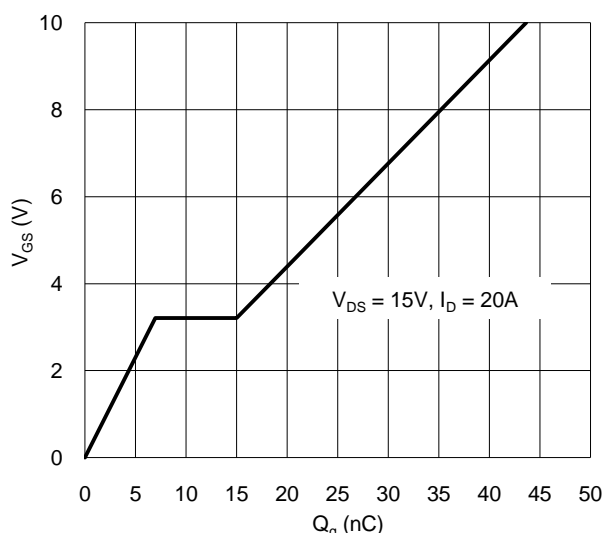


Figure 11. Gate Charge

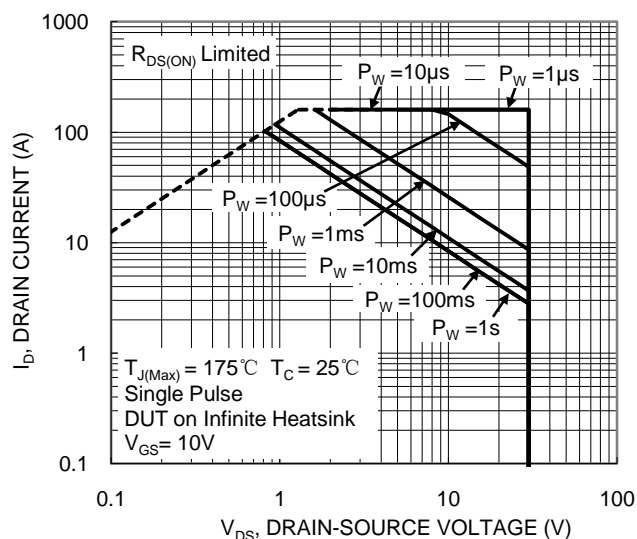
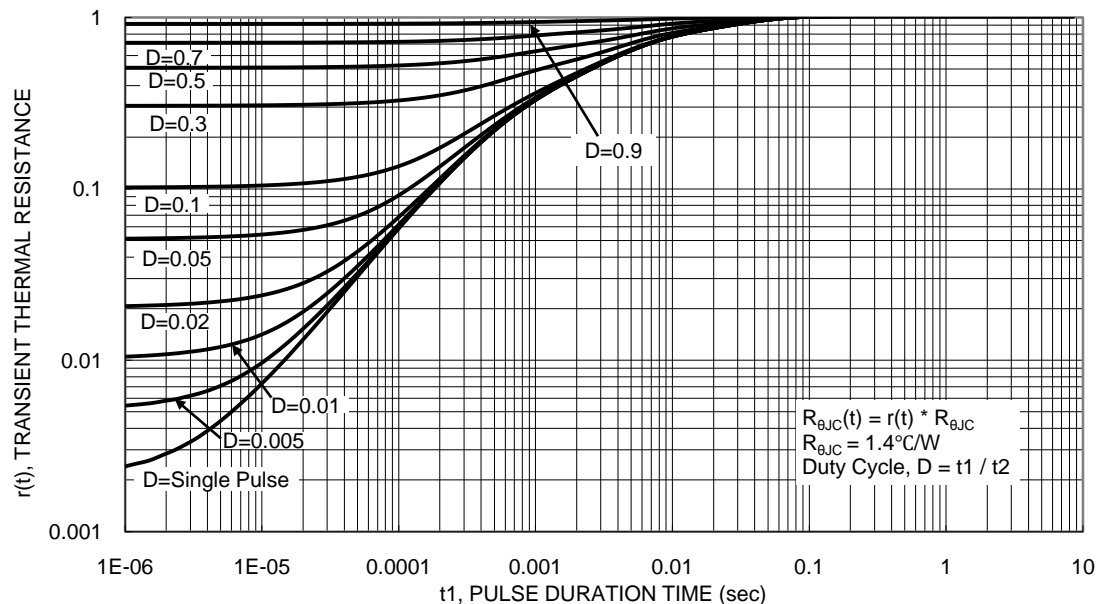
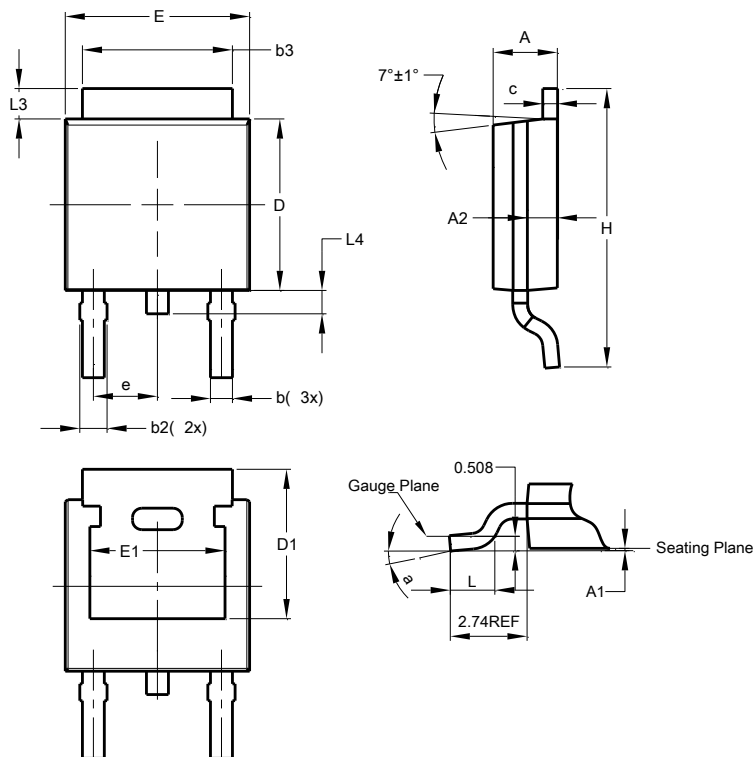


Figure 12. SOA, Safe Operation Area



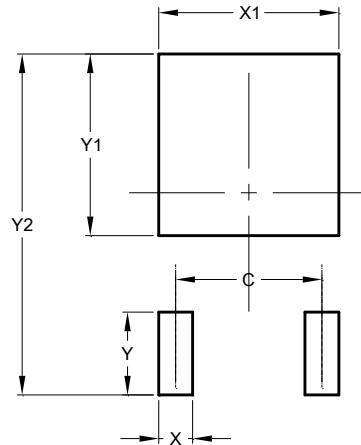
## Package Outline Dimensions

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



## Suggested Pad Layout

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



Dimensions	Value (in mm)
C	4.572
X	1.060
X1	5.632
Y	2.600
Y1	5.700
Y2	10.700

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