

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DSS</sub>	100	V
Gate-Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current (Note 5) V <sub>GS</sub> = 10V	I <sub>D</sub>	T <sub>C</sub> = +25°C 7.5	A
		T <sub>C</sub> = +100°C 4.7	
Maximum Body Diode Forward Current (Note 6)	I <sub>S</sub>	1.5	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)	I <sub>DM</sub>	30	A
Pulsed Source Current (10µs Pulse, Duty Cycle = 1%)	I <sub>SM</sub>	30	A
Avalanche Current	I <sub>AS</sub>	L = 0.1mH 4.7	A
Avalanche Energy		L = 0.1mH 1.1	
	E <sub>AS</sub>		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>	T <sub>C</sub> = +25°C 18.7	W
		T <sub>C</sub> = +100°C 7.5	
Thermal Resistance, Junction to Ambient (Note 6)	R <sub>θJA</sub>	92	°C/W
Thermal Resistance, Junction to Case (Note 5)	R <sub>θJC</sub>	6.7	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°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>	100	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250µA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1	µA	V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 8)</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	1	1.5	2.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250µA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	179	220	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 2A
		—	228	250	mΩ	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 1A
Diode Forward Voltage	V <sub>SD</sub>	—	0.8	1.3	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 2A
<b>DYNAMIC CHARACTERISTICS (Note 7)</b>						
Input Capacitance	C <sub>iss</sub>	—	384	—	pF	V <sub>DS</sub> = 25V, f = 1MHz, V <sub>GS</sub> = 0V
Output Capacitance	C <sub>oss</sub>	—	23	—		
Reverse Transfer Capacitance	C <sub>rss</sub>	—	17	—		
Gate Resistance	R <sub>G</sub>	—	2.4	—	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>	—	3.7	—	nC	V <sub>DD</sub> = 50V, I <sub>D</sub> = 1.6A
Total Gate Charge (V <sub>GS</sub> = 10V)	Q <sub>g</sub>	—	6.7	—		
Gate-Source Charge	Q <sub>gs</sub>	—	1.3	—		
Gate-Drain Charge	Q <sub>gd</sub>	—	2	—		
Turn-On Delay Time	t <sub>D(ON)</sub>	—	6.2	—	ns	V <sub>DD</sub> = 50V, V <sub>GS</sub> = 4.5V, R <sub>G</sub> = 6.8Ω, I <sub>D</sub> = 1.0A
Turn-On Rise Time	t <sub>R</sub>	—	8.7	—		
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	7.4	—		
Turn-Off Fall Time	t <sub>F</sub>	—	4.2	—		
Body Diode Reverse Recovery Time	t <sub>RR</sub>	—	20	—	ns	I <sub>S</sub> = 1.1A, dI/dt = 100A/µs
Body Diode Reverse Recovery Charge	Q <sub>RR</sub>	—	11	—	nC	

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

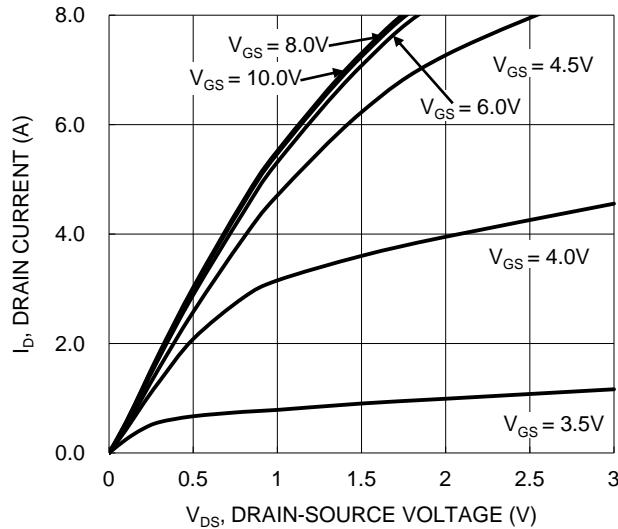


Figure 1. Typical Output Characteristic

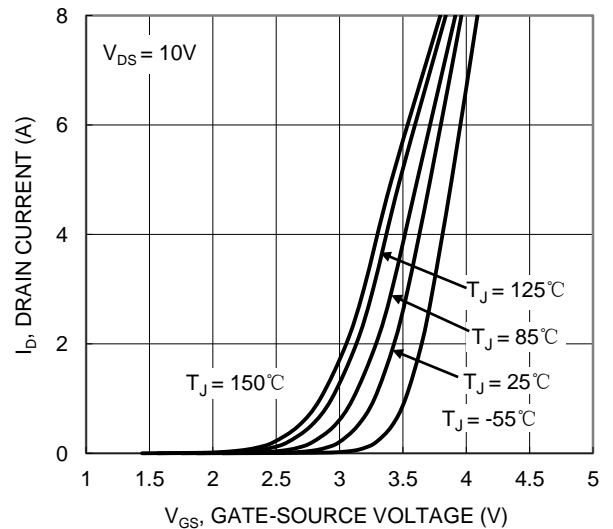


Figure 2. Typical Transfer Characteristic

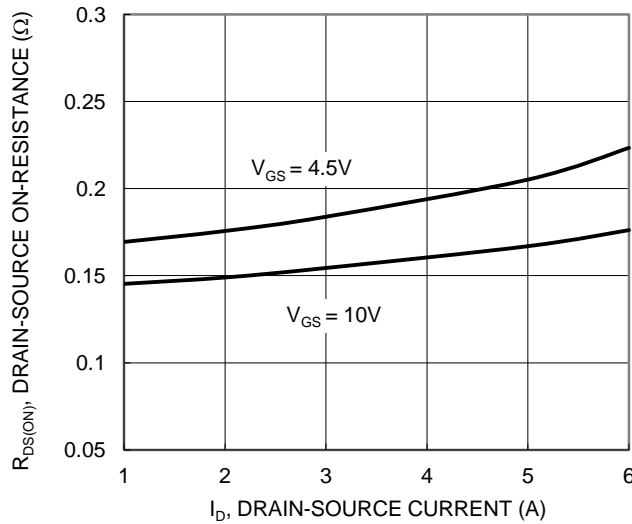


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

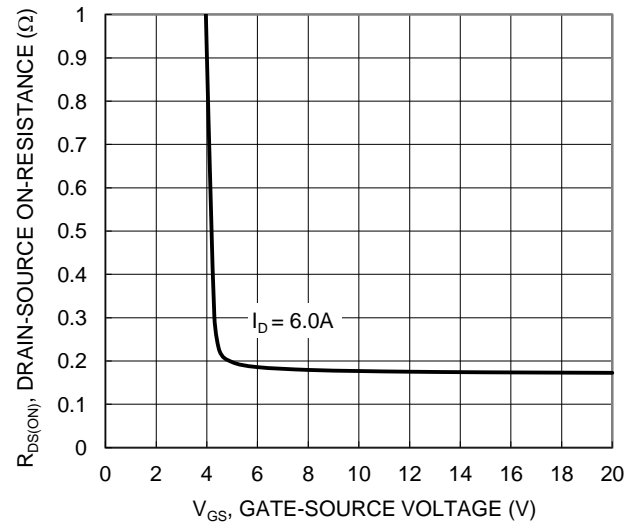


Figure 4. Typical Transfer Characteristic

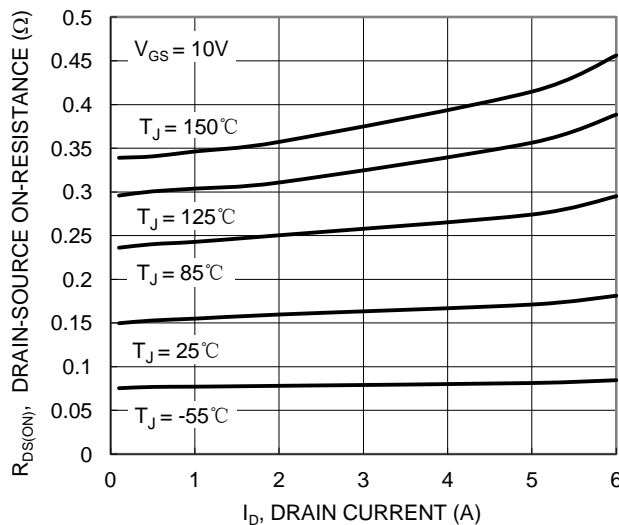


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

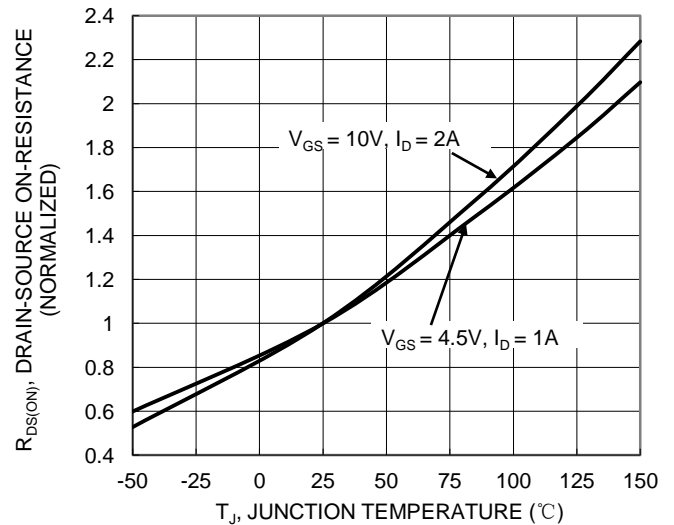


Figure 6. On-Resistance Variation with Junction Temperature

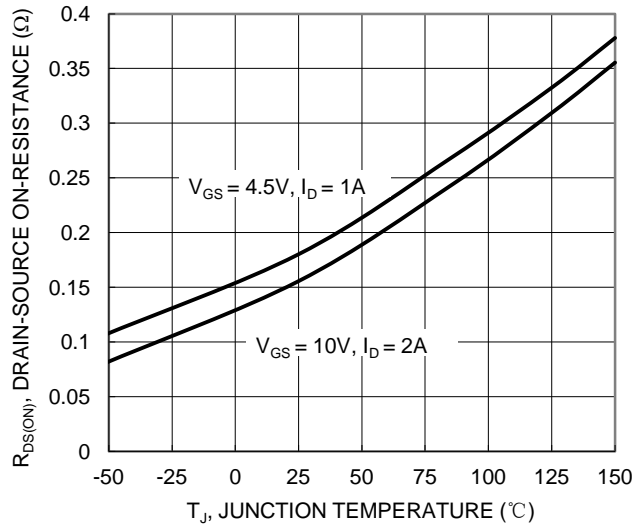


Figure 7. On-Resistance Variation with Junction Temperature

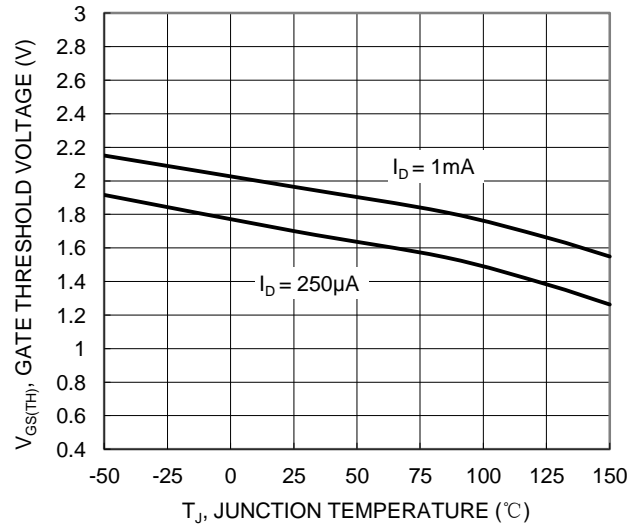


Figure 8. Gate Threshold Variation vs. Junction Temperature

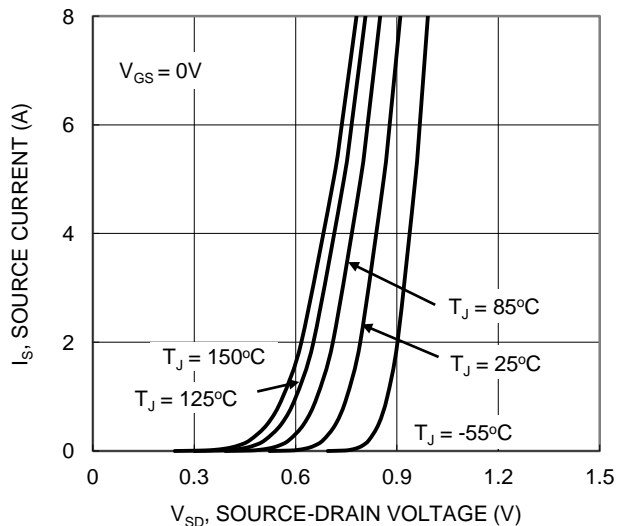


Figure 9. Diode Forward Voltage vs. Current

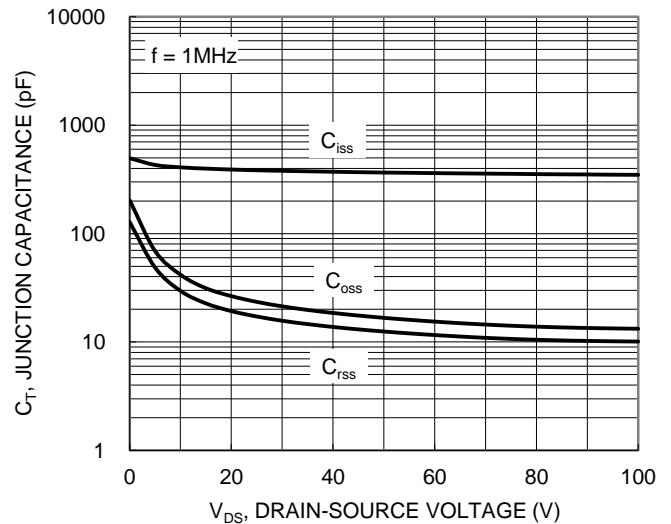


Figure 10. Typical Junction Capacitance

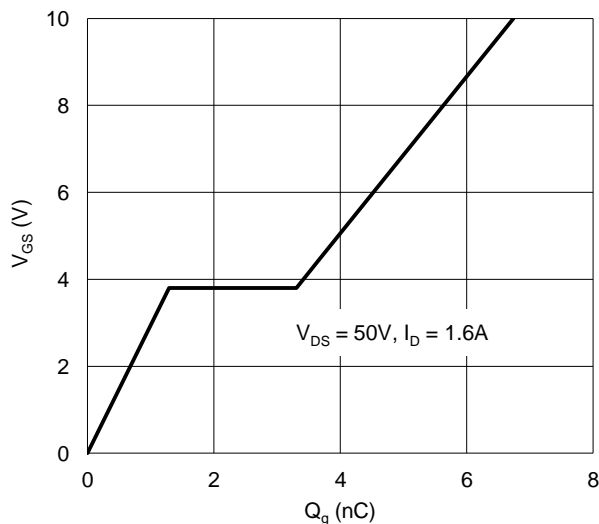


Figure 11. Gate Charge

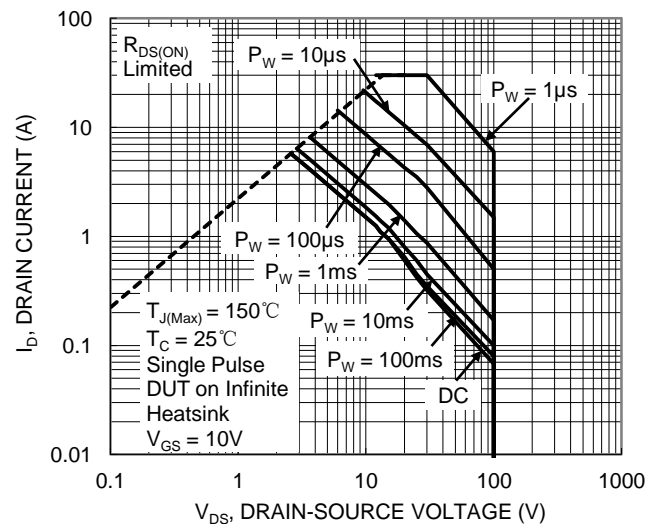


Figure 12. SOA, Safe Operation Area

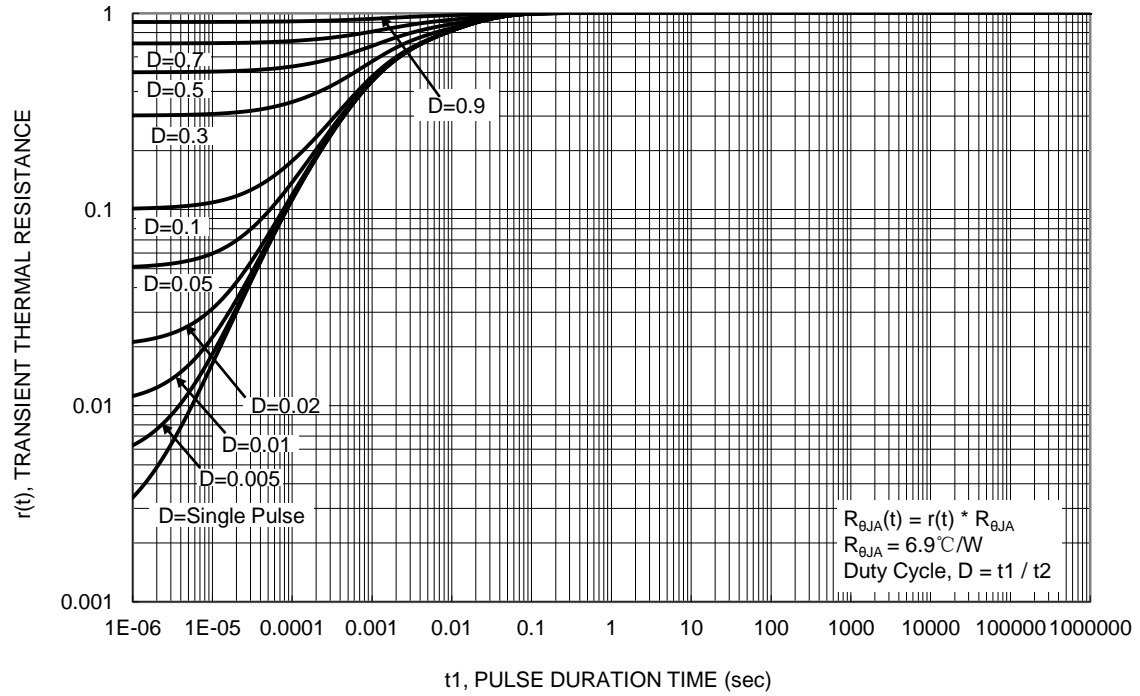
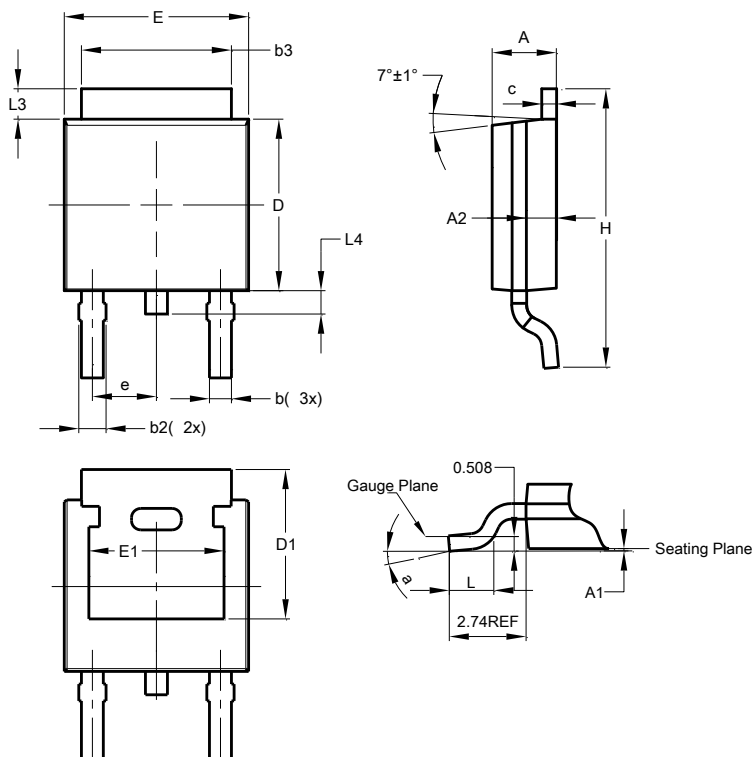


Figure 13. Transient Thermal Resistance

## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### TO252 (DPAK)

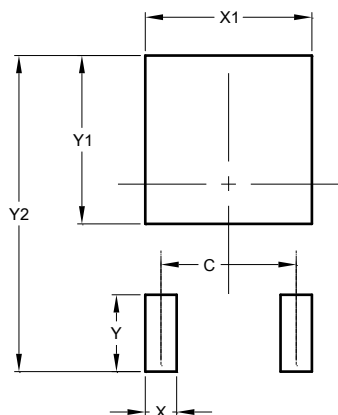


TO252 (DPAK)			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.46	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	-	-
e	-	-	2.286
E	6.45	6.70	6.58
E1	4.32	-	-
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	-
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### TO252 (DPAK)



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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