

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

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V _{DSS}	100	V
Gate-Source Voltage		V _{GSS}	±20	V
Continuous Drain Current (Note 5) V _{GS} = 10V	T _A = +25°C	I _D	10	A
	T _A = +70°C		8.0	
	T _C = +25°C	I _D	42	A
T _C = +100°C	26			
Maximum Continuous Body Diode Forward Current (Note 5)		I _S	1.5	A
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)		I _{DM}	75	A
Avalanche Current (L = 3mH)		I _{AS}	7.5	A
Avalanche Energy (L = 3mH)		E _{AS}	85	mJ

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

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5) T _A = +25°C	P _D	2.0	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	61	°C/W
Total Power Dissipation T _C = +25°C	P _D	35	W
Thermal Resistance, Junction to Case	R _{θJC}	3.5	°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 6)						
Drain-Source Breakdown Voltage	BV _{DSS}	100	—	—	V	V _{GS} = 0V, I _D = 1mA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	μA	V _{DS} = 80V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	V _{GS(TH)}	1.4	2.0	3.5	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	10.8	13.5	mΩ	V _{GS} = 10V, I _D = 20A
		—	13.3	18		V _{GS} = 6.0V, I _D = 20A
		—	17.9	23.5		V _{GS} = 4.5V, I _D = 20A
Diode Forward Voltage	V _{SD}	—	0.9	1.3	V	V _{GS} = 0V, I _S = 20A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C _{iss}	—	1,871	—	pF	V _{DS} = 50V, V _{GS} = 0V f = 1MHz
Output Capacitance	C _{oss}	—	261	—		
Reverse Transfer Capacitance	C _{rss}	—	6.9	—		
Gate Resistance	R _G	—	0.75	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge	Q _g	—	33.3	—	nC	V _{DD} = 50V, I _D = 10A, V _{GS} = 10V
Gate-Source Charge	Q _{gs}	—	6.9	—		
Gate-Drain Charge	Q _{gd}	—	5.1	—		
Turn-On Delay Time	t _{D(ON)}	—	6.5	—	ns	V _{DD} = 50V, V _{GS} = 10V, I _D = 10A, R _G = 6Ω
Turn-On Rise Time	t _r	—	7.0	—		
Turn-Off Delay Time	t _{D(OFF)}	—	19.7	—		
Turn-Off Fall Time	t _f	—	8.1	—		
Reverse Recovery Time	t _{RR}	—	37.9	—	ns	I _F = 10A, di/dt = 100A/μs
Reverse Recovery Charge	Q _{RR}	—	51.9	—	nC	

- Notes:
5. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1 inch square copper plate.
 6. Short duration pulse test used to minimize self-heating effect.
 7. Guaranteed by design. Not subject to product testing.

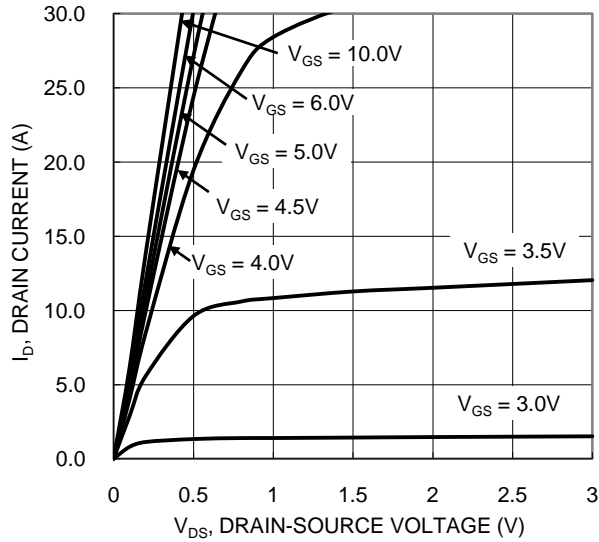


Figure 1. Typical Output Characteristic

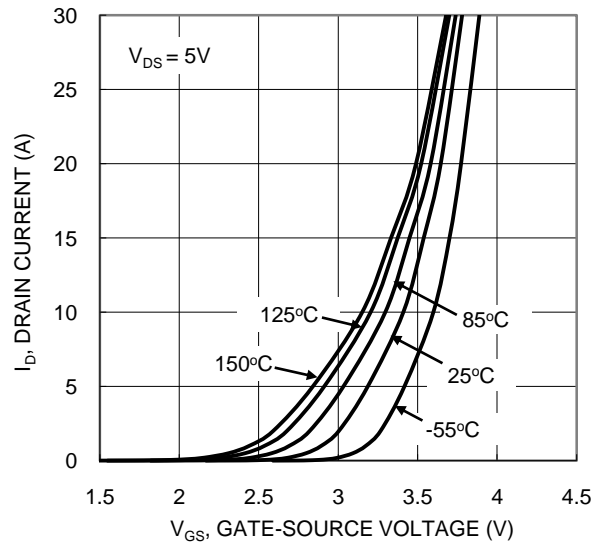


Figure 2. Typical Transfer Characteristic

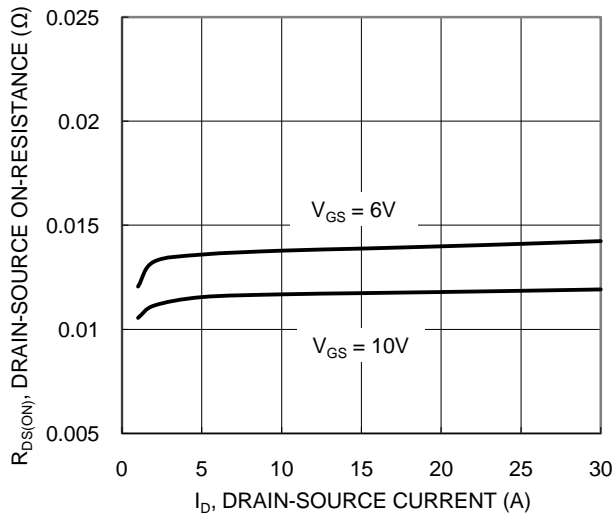


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

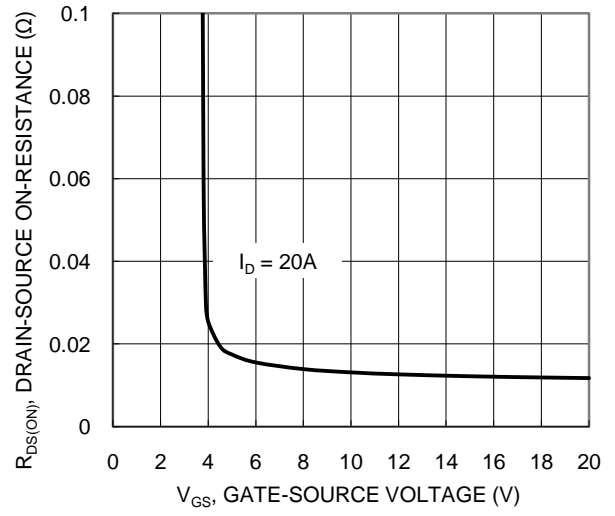


Figure 4. Typical Transfer Characteristic

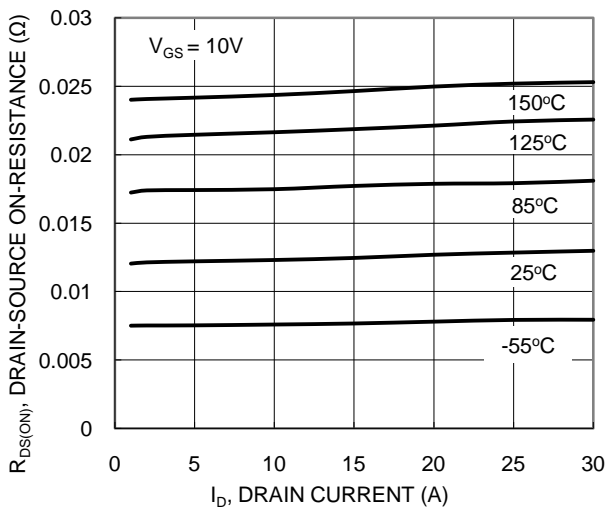


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

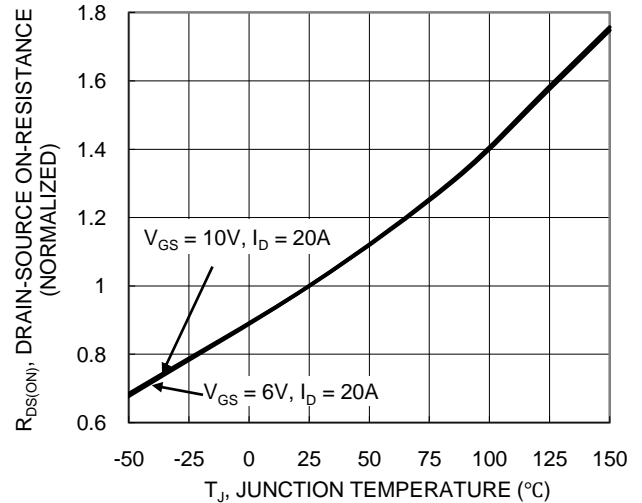


Figure 6. On-Resistance Variation with Junction Temperature

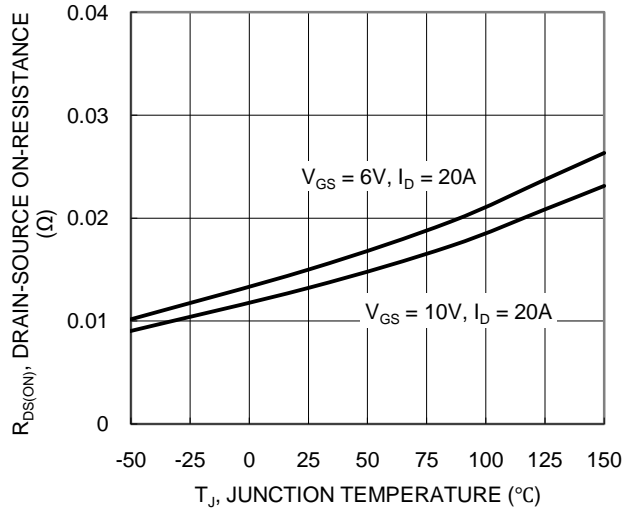


Figure 7. On-Resistance Variation with Junction Temperature

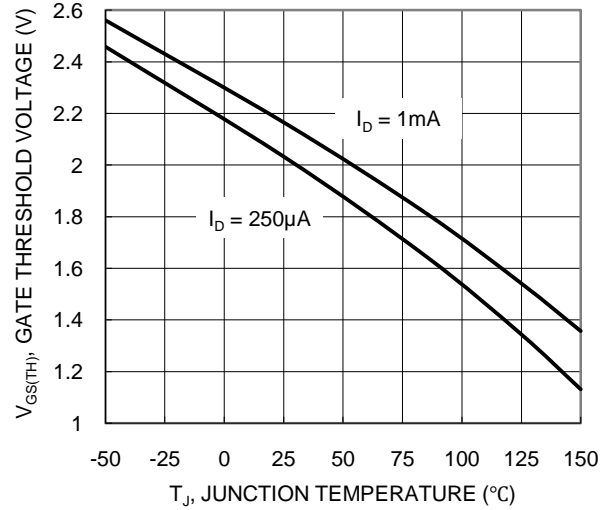


Figure 8. Gate Threshold Variation vs. Junction Temperature

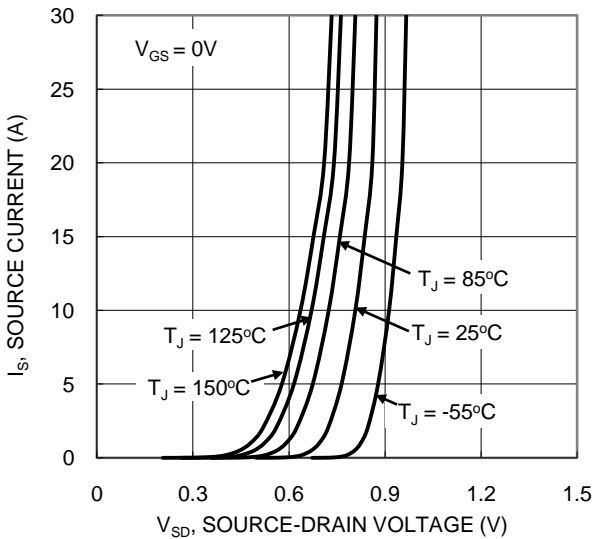


Figure 9. Diode Forward Voltage vs. Current

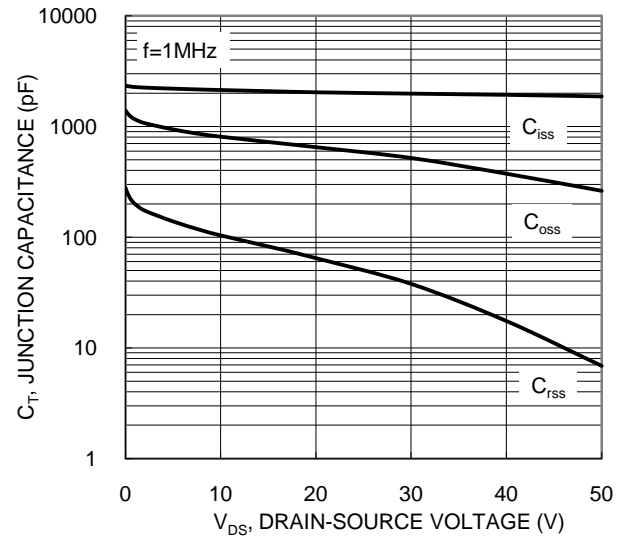


Figure 10. Typical Junction Capacitance

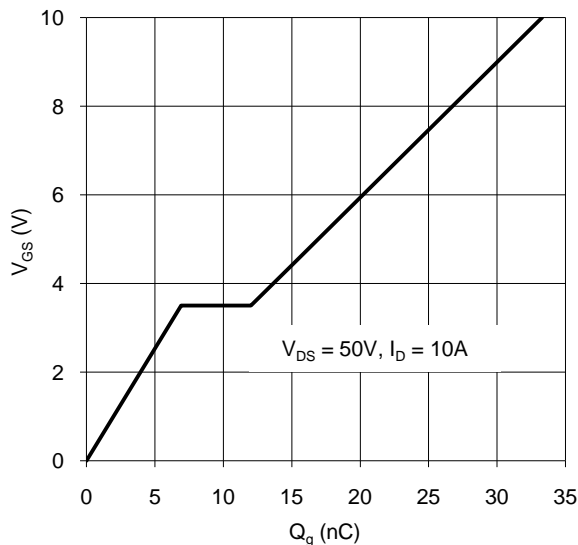


Figure 11. Gate Charge

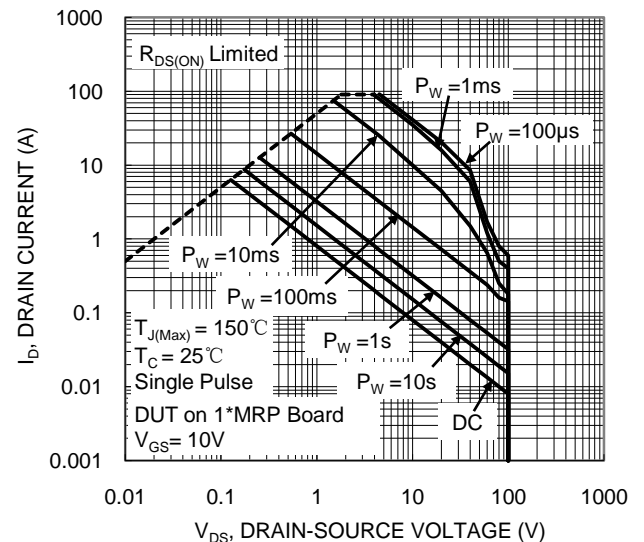


Figure 12. SOA, Safe Operation Area

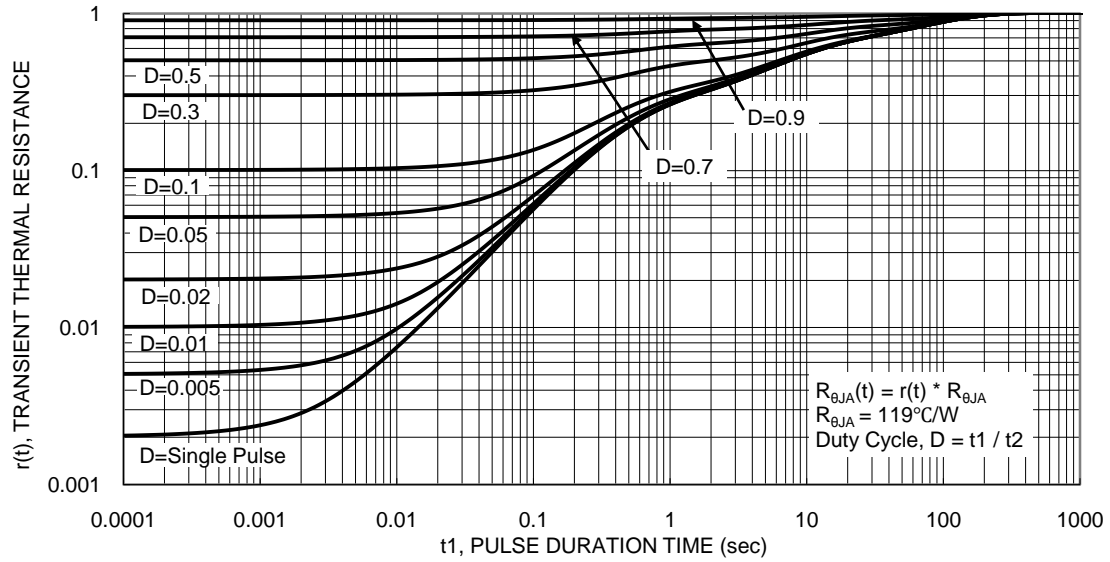


Figure 13. Transient Thermal Resistance

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PowerDI3333-8			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0.00	0.05	0.02
A3	—	—	0.203
b	0.27	0.37	0.32
b2	0.15	0.25	0.20
D	3.25	3.35	3.30
D2	2.22	2.32	2.27
E	3.25	3.35	3.30
E2	1.56	1.66	1.61
E3	0.79	0.89	0.84
E4	1.60	1.70	1.65
e	—	—	0.65
L	0.35	0.45	0.40
L1	—	—	0.39
z	—	—	0.515
All Dimensions in mm			

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

Dimensions	Value (in mm)
C	0.650
X	0.420
X1	0.420
X2	0.230
X3	2.370
Y	0.700
Y1	1.850
Y2	2.250
Y3	3.700
Y4	0.540

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