Electrical Characteristics T_J = 25°C unless otherwise noted.

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
B_{VDSS}	Drain-to-Source Breakdown Voltage	I_D = 250μA, V_{GS} = 0V	40	-	-	V
I_{DSS}	Drain-to-Source Leakage Current	V_{DS}=40V, V_{GS} = 0V, T_J = 25°C	-	-	1	μA
		V_{DS}=40V, V_{GS} = 0V, T_J = 175°C (Note 4)	-	-	1	mA
I_{GSS}	Gate-to-Source Leakage Current	V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate to Source Threshold Voltage	V_{GS} = V_{DS}, I_D = 250μA	1.0	1.8	3.0	V
$R_{DS(on)}$	Drain to Source On Resistance	I_D = 80A, V_{GS}= 4.5V	-	1.7	2.2	mΩ
		I_D = 80A, V_{GS}= 10V, T_J = 25°C	-	1.2	1.5	mΩ
		I_D = 80A, V_{GS}= 10V, T_J = 175°C (Note 4)	-	2.1	2.6	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 20V, V_{GS} = 0V, f = 1MHz	-	8600	-	pF
C_{oss}	Output Capacitance		-	2500	-	pF
C_{rss}	Reverse Transfer Capacitance		-	107	-	pF
R_g	Gate Resistance	f = 1MHz	-	2.1	-	Ω
$Q_{g(ToT)}$	Total Gate Charge	V_{GS} = 0 to 10V, V_{DD} = 32V, I_D = 80A	-	121	170	nC
$Q_{g(th)}$	Threshold Gate Charge	V_{GS} = 0 to 2V, V_{DD} = 32V, I_D = 80A	-	15	-	nC
Q_{gs}	Gate-to-Source Gate Charge	V_{DD} = 32V, I_D = 80A	-	26	-	nC
Q_{gd}	Gate-to-Drain “Miller“ Charge	V_{DD} = 32V, I_D = 80A	-	18	-	nC
Switching Characteristics						
t_{on}	Turn-On Time	V_{DD} = 20V, I_D = 80A, V_{GS} = 10V, R_{GEN} = 6Ω	-	-	90	ns
$t_{d(on)}$	Turn-On Delay		-	20	-	ns
t_r	Rise Time		-	44	-	ns
$t_{d(off)}$	Turn-Off Delay		-	67	-	ns
t_f	Fall Time		-	23	-	ns
t_{off}	Turn-Off Time		-	-	145	ns
Drain-Source Diode Characteristics						
V_{SD}	Source-to-Drain Diode Voltage	I_{SD} =80A, V_{GS} = 0V	-	-	1.25	V
		I_{SD} = 40A, V_{GS} = 0V	-	-	1.2	V
t_{rr}	Reverse-Recovery Time	I_F = 80A, dI_{SD}/dt = 100A/μs, V_{DD} = 32V	-	90	120	ns
Q_{rr}	Reverse-Recovery Charge		-	125	164	nC

Note:

4: The maximum value is specified by design at T_J = 175°C. Product is not tested to this condition in production.

Typical Characteristics

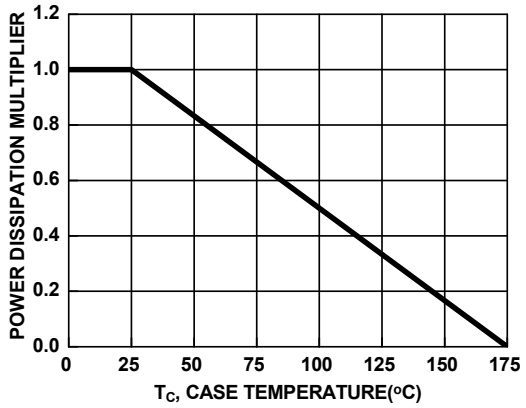


Figure 1. Normalized Power Dissipation vs. Case Temperature

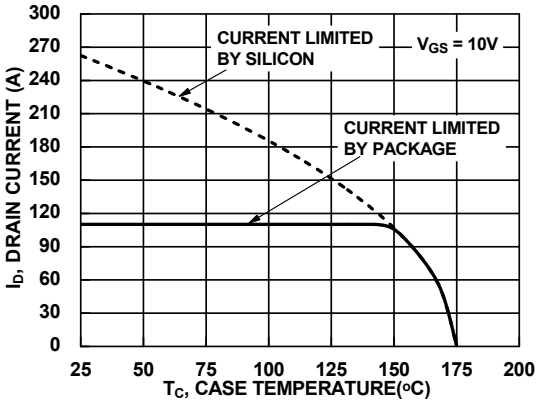


Figure 2. Maximum Continuous Drain Current vs. Case Temperature

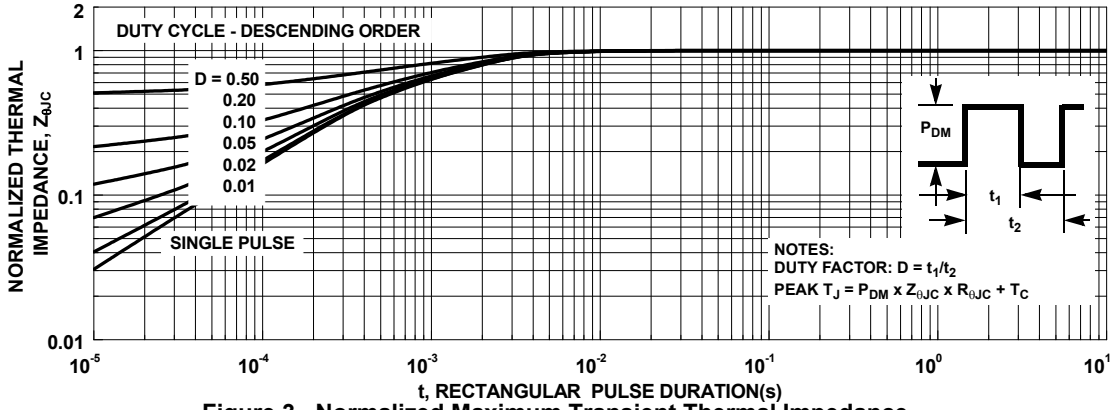


Figure 3. Normalized Maximum Transient Thermal Impedance

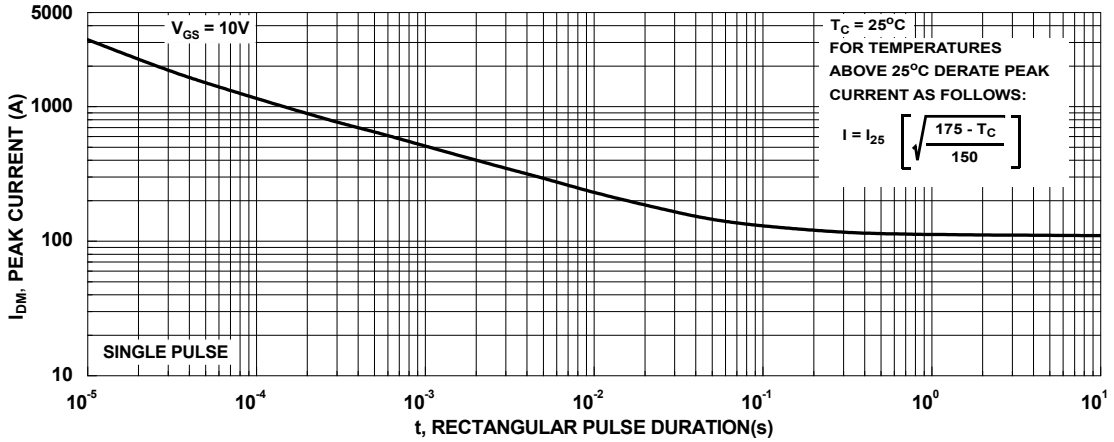


Figure 4. Peak Current Capability

Typical Characteristics

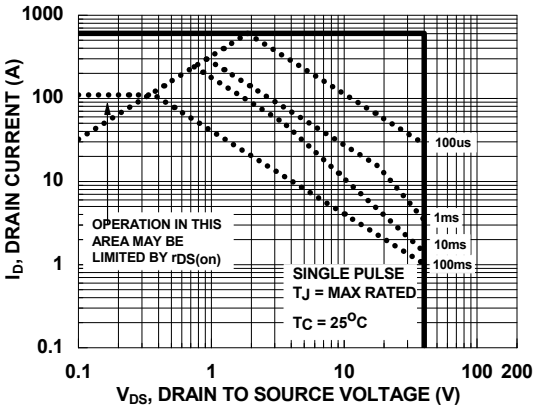
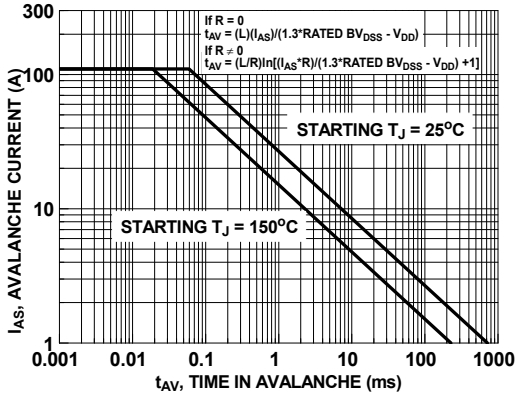


Figure 5. Forward Bias Safe Operating Area



NOTE: Refer to ON Semiconductor Application Notes AN7514 and AN7515

Figure 6. Unclamped Inductive Switching Capability

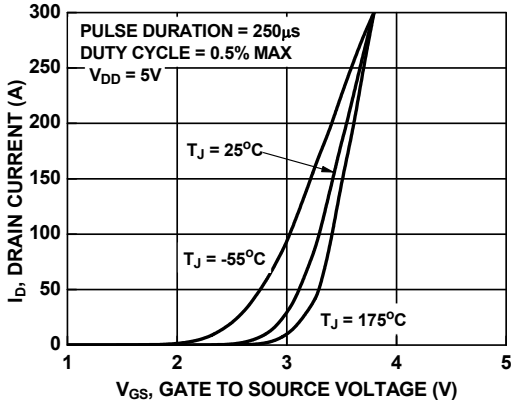


Figure 7. Transfer Characteristics

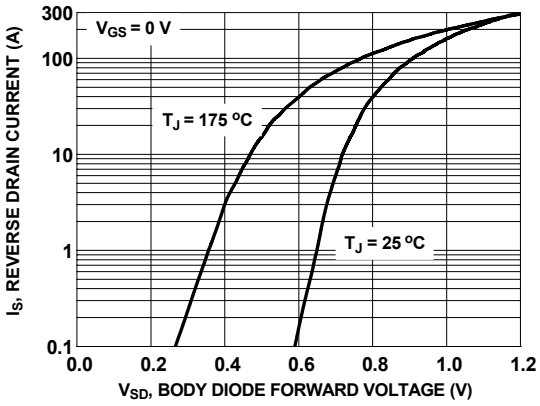


Figure 8. Forward Diode Characteristics

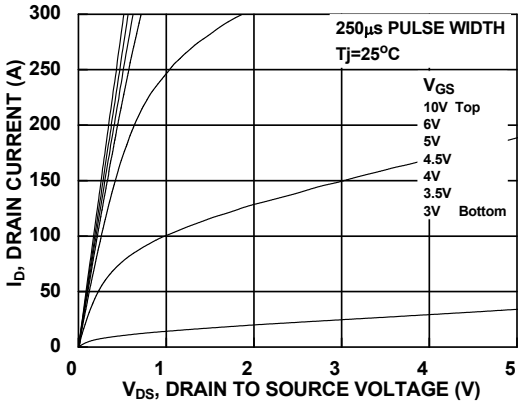


Figure 9. Saturation Characteristics

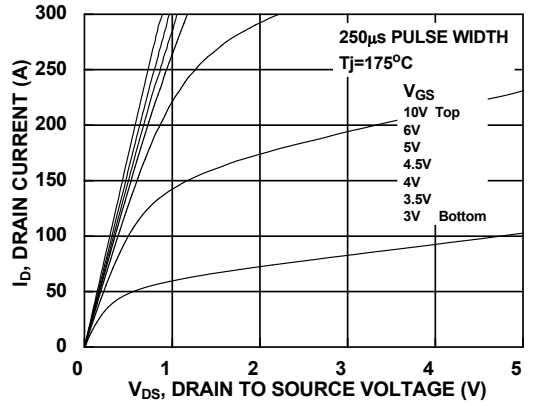


Figure 10. Saturation Characteristics

Typical Characteristics

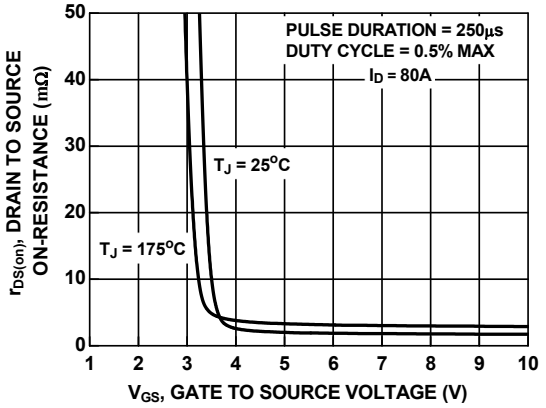


Figure 11. R_{DSON} vs. Gate Voltage

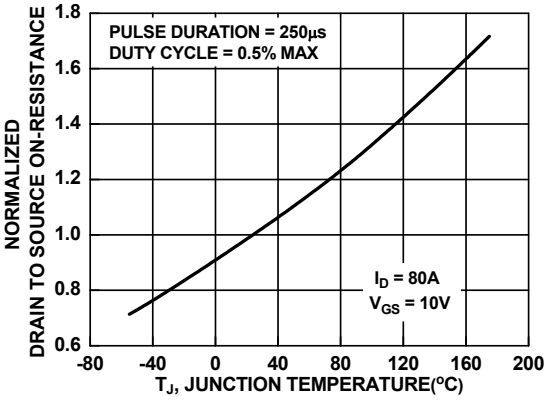


Figure 12. Normalized R_{DSON} vs. Junction Temperature

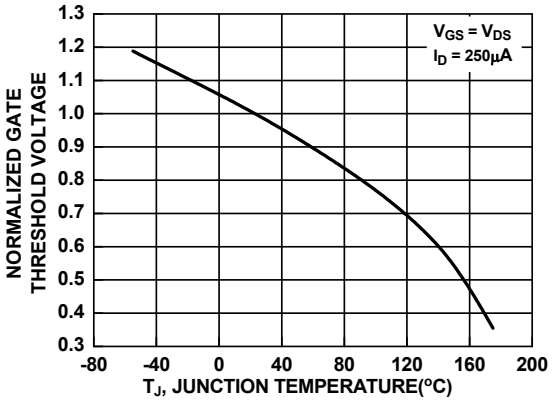


Figure 13. Normalized Gate Threshold Voltage vs. Temperature

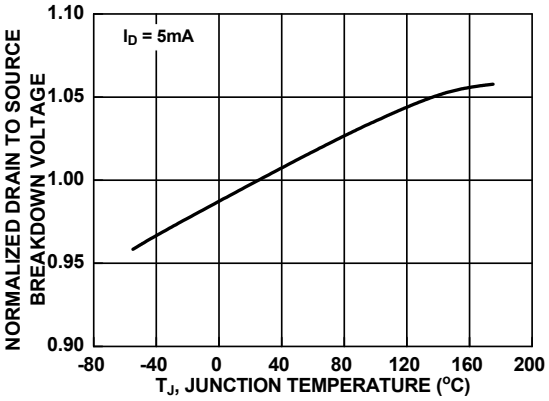


Figure 14. Normalized Drain to Source Breakdown Voltage vs. Junction Temperature

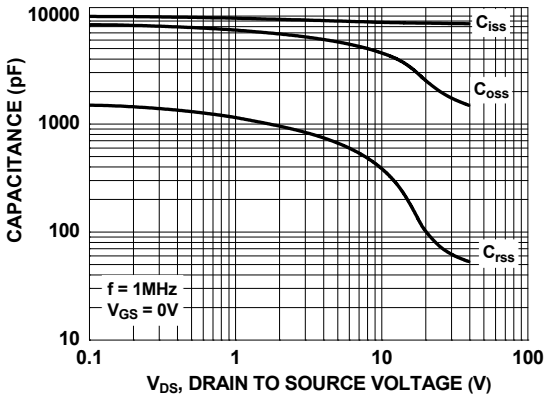


Figure 15. Capacitance vs. Drain to Source Voltage

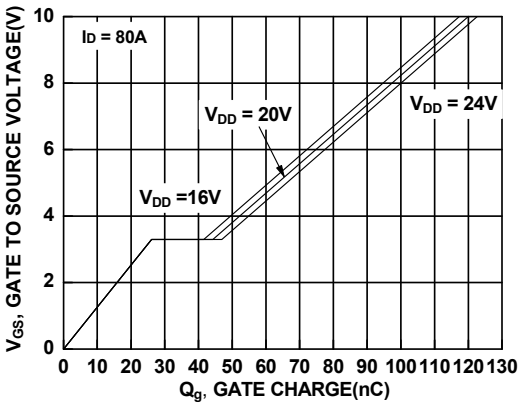


Figure 16. Gate Charge vs. Gate to Source Voltage

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