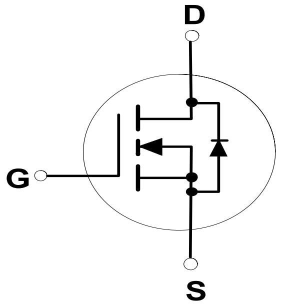
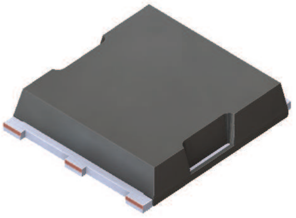
Application

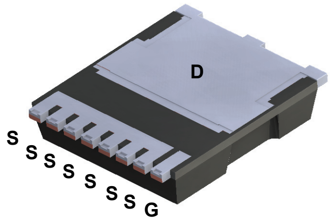
- Industrial Motor Drive
- Industrial Power Supply
- Industrial Automation
- Battery Operated tools
- Battery Protection
- Solar Inverters
- UPS and Energy Inverters
- Energy Storage
- Load Switch



Features

- Max $R_{DS(on)} = 2.6\ m\Omega$ at $V_{GS} = 10$ V, $I_D = 80$ A
- Max $Q_{g(tot)} = 116$ nC at $V_{GS} = 10$ V, $I_D = 80$ A
- UIS Capability
- RoHS Compliant


TOP



BOTTOM

MOSFET Maximum Ratings $T_C = 25$ °C unless otherwise noted.

Symbol	Parameter	Ratings	Units
V_{DS}	Drain to Source Voltage	100	V
V_{GS}	Gate to Source Voltage	±20	V
I_D	Drain Current -Continuous $T_C = 25°C$ (Note 5)	200	A
	-Continuous $T_C = 100°C$ (Note 5)	140	
	-Pulsed (Note 4)	1000	
E_{AS}	Single Pulse Avalanche Energy (Note 3)	866	mJ
P_D	Power Dissipation $T_C = 25°C$	250	W
	Power Dissipation $T_A = 25°C$ (Note 1a)	3.5	
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	°C

Thermal Characteristics

$R_{\theta JC}$	Thermal Resistance, Junction to Case (Note 1)	0.6	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (Note 1a)	43	

Electrical Characteristics T_J = 25 °C unless otherwise noted.

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
BV_{DSS}	Drain to Source Breakdown Voltage	I_D = 250 μA, V_{GS} = 0 V	100			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	I_D = 250 μA, referenced to 25 °C		53		mV/°C
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 80 V, V_{GS} = 0 V			1	μA
I_{GSS}	Gate to Source Leakage Current	V_{GS} = ±20 V, V_{DS} = 0 V			±100	nA
On Characteristics						
$V_{GS(th)}$	Gate to Source Threshold Voltage	V_{GS} = V_{DS}, I_D = 250 μA	2	2.7	4	V
$R_{DS(on)}$	Static Drain to Source On Resistance	V_{GS} = 10 V, I_D= 80 A		2.15	2.6	mΩ
$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	Gate to Source Threshold Voltage Temperature Coefficient	I_D = 250 μA, referenced to 25 °C		-13		mV/°C
g_{FS}	Forward Transconductance	V_{DS} = 10 V, I_D = 80 A		170		S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 50 V, V_{GS} = 0 V, f = 1 MHz		6175	9265	pF
C_{oss}	Output Capacitance			1330	1995	pF
C_{rss}	Reverse Transfer Capacitance			40	60	pF
R_g	Gate Resistance	V_{GS} = 0.5V, f = 1MHz		2.6		Ω
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 50 V, I_D = 80 A, V_{GS} = 10 V, R_{GEN} = 6 Ω		26	42	ns
t_r	Rise Time			34	54	ns
$t_{d(off)}$	Turn-Off Delay Time			47	75	ns
t_f	Fall Time			19	34	ns
$Q_{g(TOT)}$	Total Gate Charge	V_{GS} = 0 to 10 V V_{DD} = 50 V, I_D = 80 A		83	116	nC
$Q_{g(th)}$	Threshold Gate Charge	V_{GS} = 0 to 2 V		11	16	nC
Q_{gs}	Gate to Source Gate Charge			28		nC
Q_{gd}	Gate to Drain "Miller" Charge			16		nC
Drain-Source Diode Characteristics						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	200	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	1000	A
V_{SD}	Source to Drain Diode Forward Voltage	V_{GS} = 0 V, I_S = 80 A (Note 2)		0.8	1.3	V
		V_{GS} = 0 V, I_S = 40 A (Note 2)		0.8	1.2	
t_{rr}	Reverse Recovery Time	I_F = 80 A, di/dt = 100 A/μs		71	113	ns
Q_{rr}	Reverse Recovery Charge			121	194	nC

Notes:

1. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design.

   a) 43 °C/W when mounted on a 1 in^2 pad of 2 oz copper.

2. Pulse Test: Pulse Width < 300 μs, Duty cycle < 2.0 %.
3. E_{AS} of 866 mJ is based on starting T_J = 25 °C, L = 0.3 mH, I_{AS} = 76 A, V_{DD} = 90 V, V_{GS} = 10 V. 100% test at L = 0.1 mH, I_{AS} = 110 A.
4. Pulsed Id please refer to Figure "Forward Bias Safe Operating Area" for more details.
5. Computed continuous current limited to Max Junction Temperature only, actual continuous current will be limited by thermal & electro-mechanical application board design.

Typical Characteristics T_J = 25 °C unless otherwise noted.

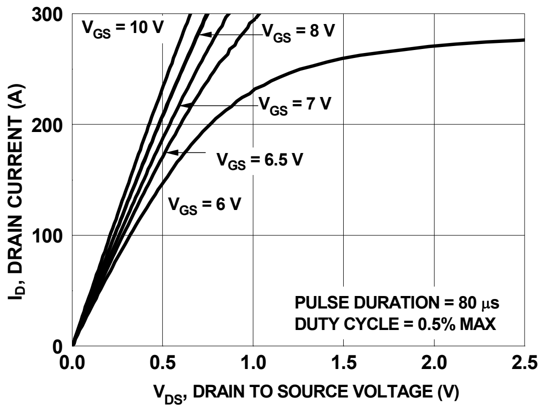


Figure 1. On Region Characteristics

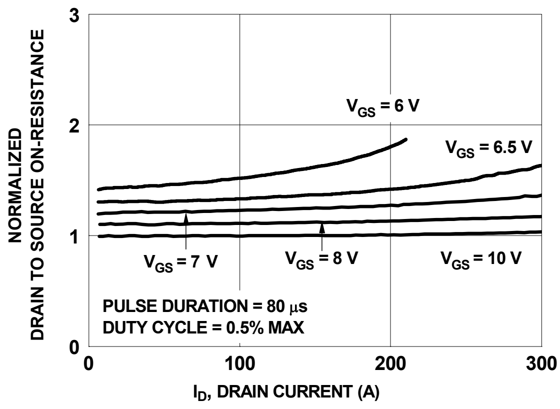


Figure 2. Normalized On-Resistance vs. Drain Current and Gate Voltage

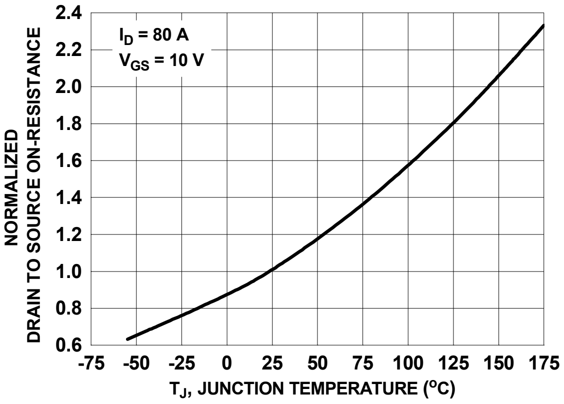


Figure 3. Normalized On Resistance vs. Junction Temperature

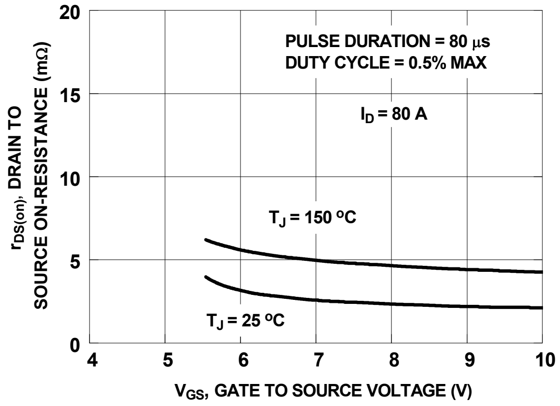


Figure 4. On-Resistance vs. Gate to Source Voltage

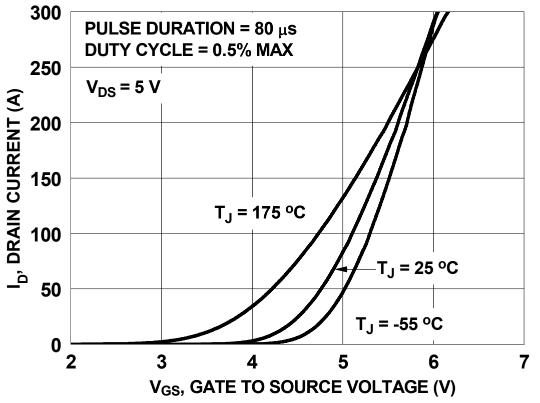


Figure 5. Transfer Characteristics

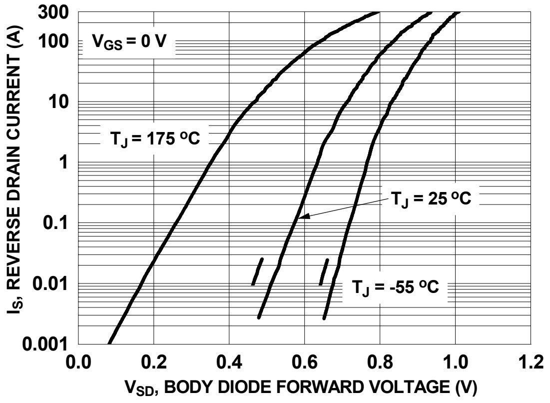


Figure 6. Source to Drain Diode Forward Voltage vs. Source Current

Typical Characteristics T_J = 25 °C unless otherwise noted.

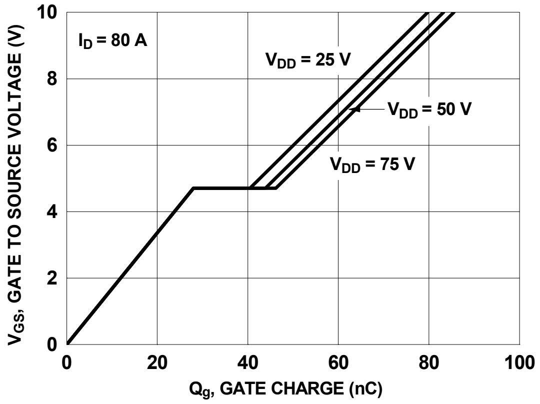


Figure 7. Gate Charge Characteristics

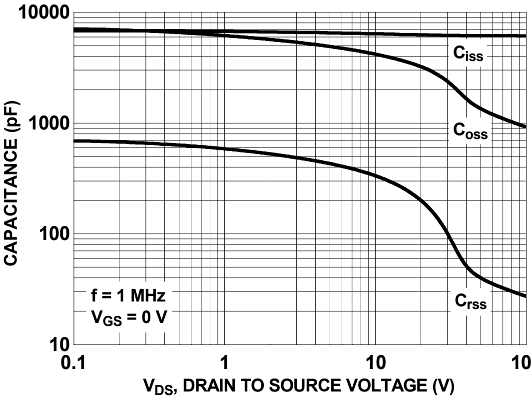


Figure 8. Capacitance vs. Drain to Source Voltage

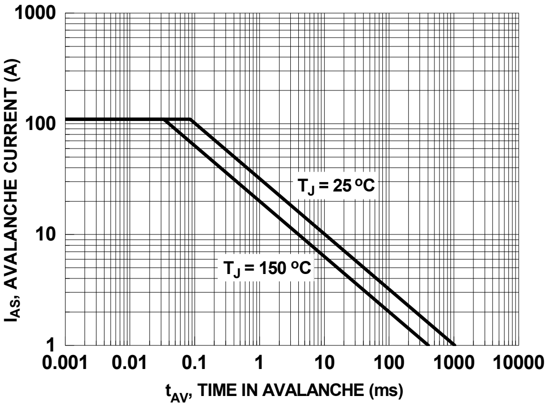


Figure 9. Unclamped Inductive Switching Capability

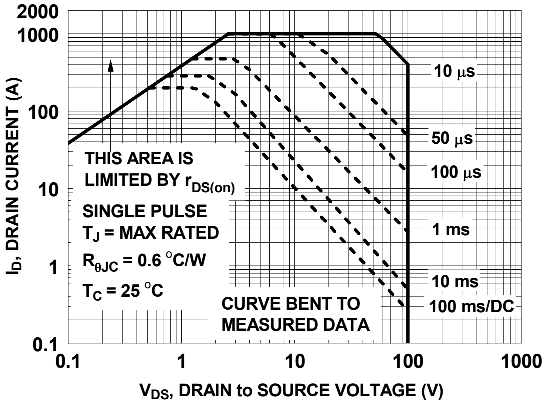


Figure 10. Forward Bias Safe Operating Area

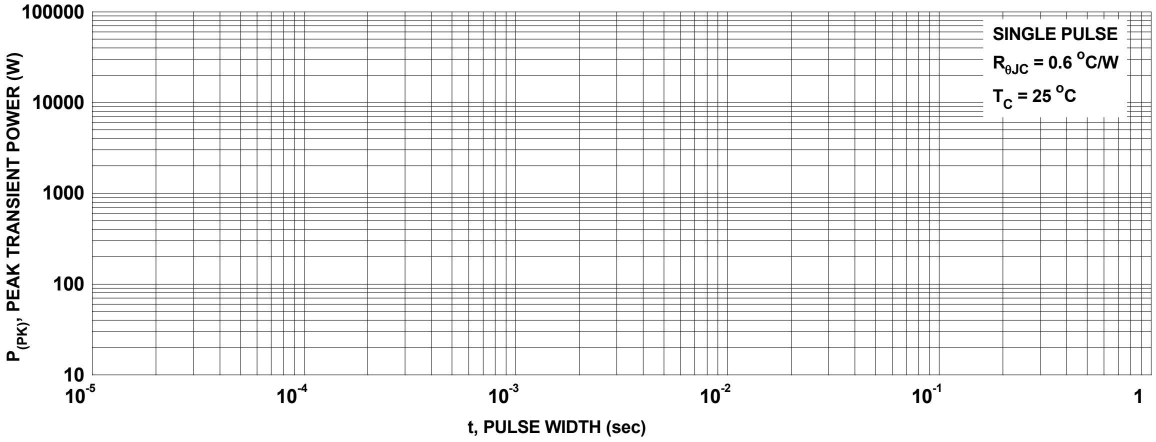


Figure 11. Single Pulse Maximum Power Dissipation

Typical Characteristics T_J = 25 °C unless otherwise noted.

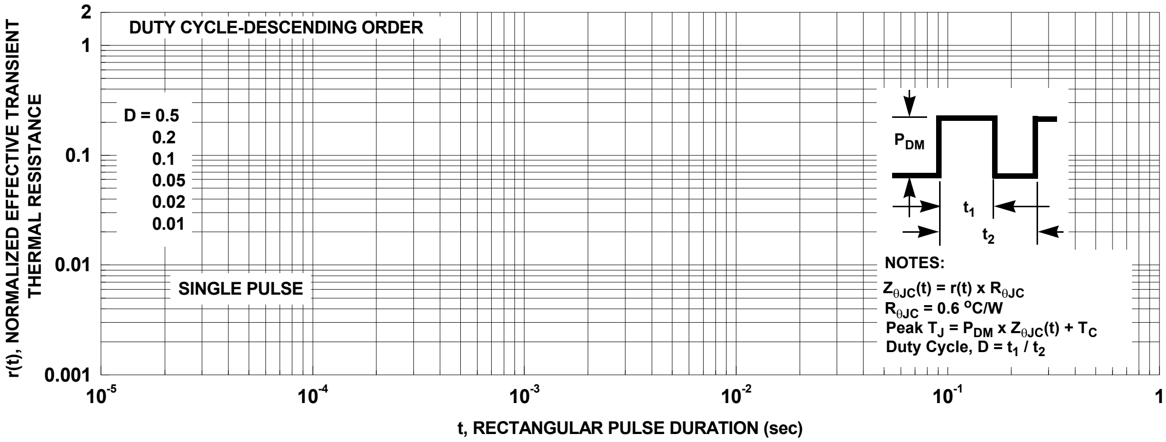
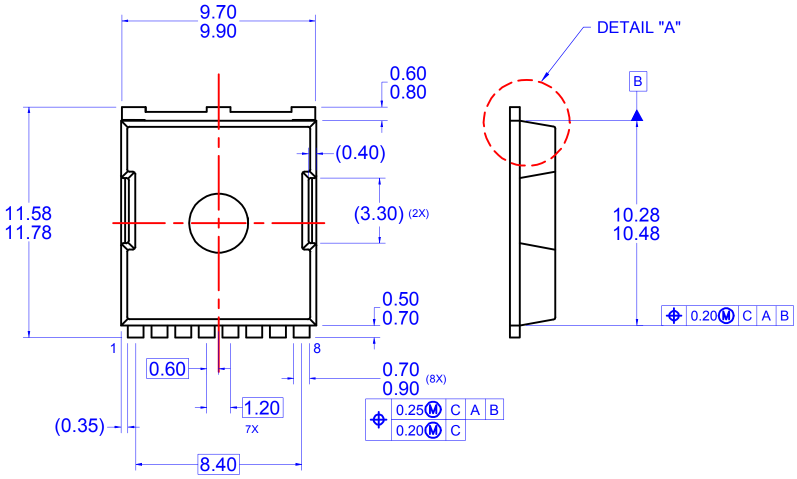
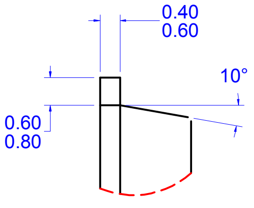


Figure 12. Junction-to-Case Transient Thermal Response Curve

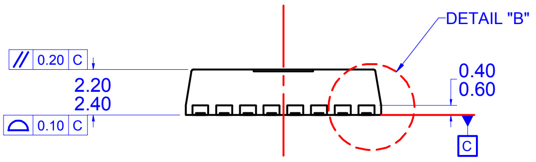
PACKAGE DIMENSIONS

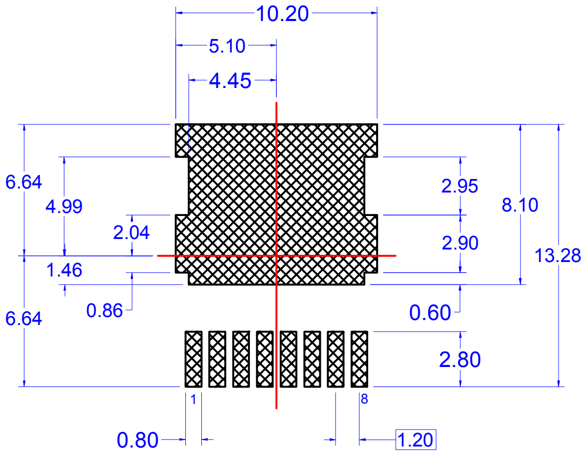


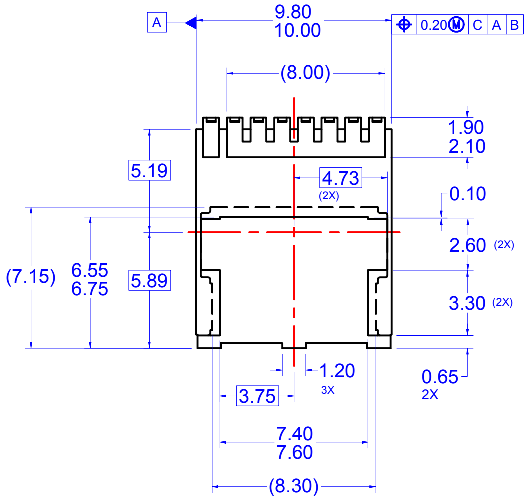
T9P VIEW

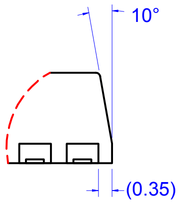


DETAIL "A"









DETAIL "B"