



**Electrical Characteristics** ( $T_C = 25^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=10A$	---	9	12	m $\Omega$
		$V_{GS}=4.5V, I_D=6A$	---	11	15	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.6	2.5	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	---	---	1.0	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=5V, I_D=20A$	---	48	---	S
$R_g$	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f = 1.0\text{MHz}$	---	2.0	---	$\Omega$
$Q_g$	Total Gate Charge (@ $V_{GS} = 10V$ )	$V_{DS}=50V, V_{GS}=0 \text{ to } 10V, I_D=10A$	---	21	---	nC
$Q_g$	Total Gate Charge (@ $V_{GS} = 6V$ )		---	13.9	---	
$Q_{gs}$	Gate-Source Charge		---	5.4	---	
$Q_{gd}$	Gate-Drain Charge		---	5.5	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{GS}=10V, V_{DS}=50V, R_{GEN}=6\Omega, R_L=2.5\Omega$	---	10.7	---	ns
$T_r$	Rise Time		---	20	---	
$T_{d(off)}$	Turn-Off Delay Time		---	19.5	---	
$T_f$	Fall Time		---	25	---	
$C_{ISS}$	Input Capacitance	$V_{DS}=50V, V_{GS}=0V, f = 1.0\text{MHz}$	---	1372	---	pF
$C_{OSS}$	Output Capacitance		---	291	---	
$C_{RSS}$	Reverse Transfer Capacitance		---	2.0	---	

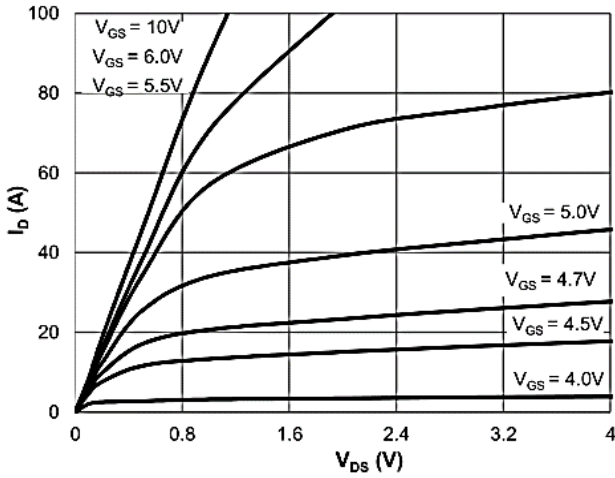
**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
$I_S$	Diode Continuous Current	$T_C = 25^\circ\text{C}$	---	---	63	A
$I_{SM}$	Pulsed Source Current		---	---	38	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_S=1A$	---	0.7	1.0	V
$t_{rr}$	Body Diode Reverse Recovery Time	$I_F=20A, dI_F/dt=100A/\mu s$	---	48	---	ns
$Q_{rr}$	Body Diode Reverse Recovery Charge		---	79	---	nC

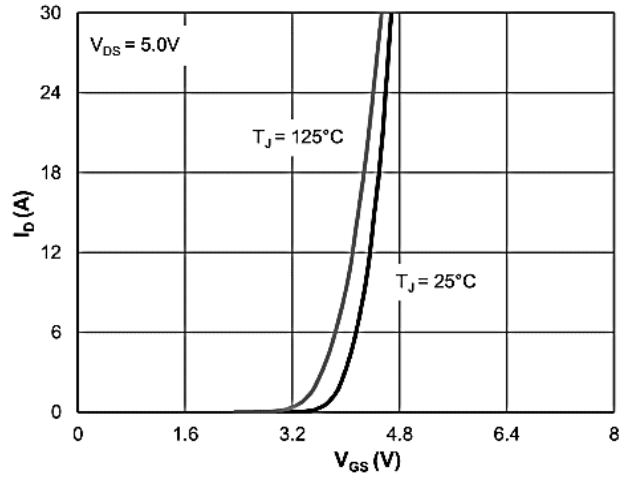
**Note:**

1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$
3. The EAS data shows Max. rating. The test condition is  $V_{DD}=50V, V_{GS}=10V, L=0.1mH, I_{AS}=24A$
4. The power dissipation is limited by  $150^\circ\text{C}$  junction temperature
5. The data is theoretically the same as  $I_D$  and  $I_{DM}$ , in real applications, should be limited by total power dissipation.

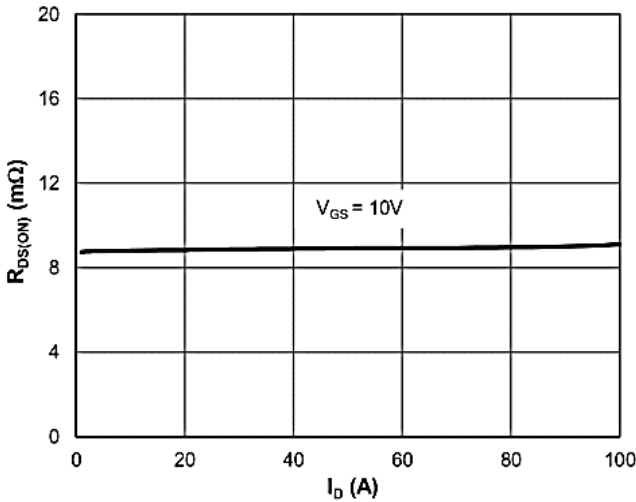
**Typical Characteristics**



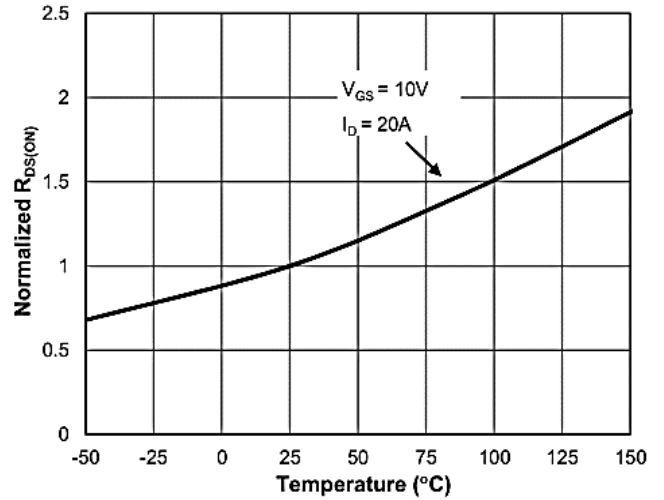
**Figure 1: Saturation Characteristics**



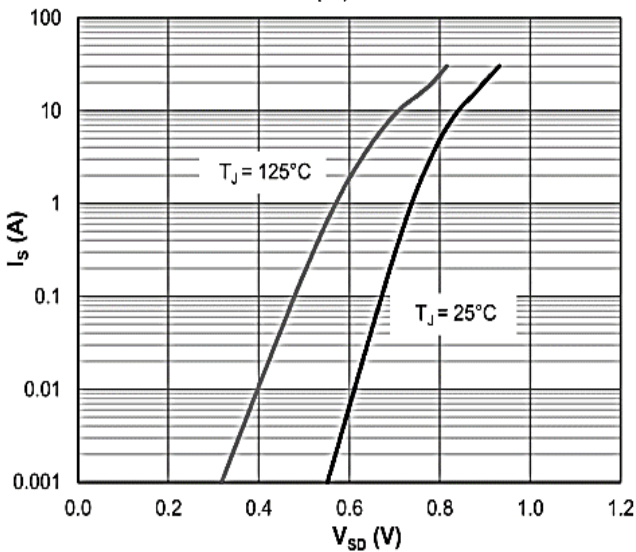
**Figure 2: Transfer Characteristics**



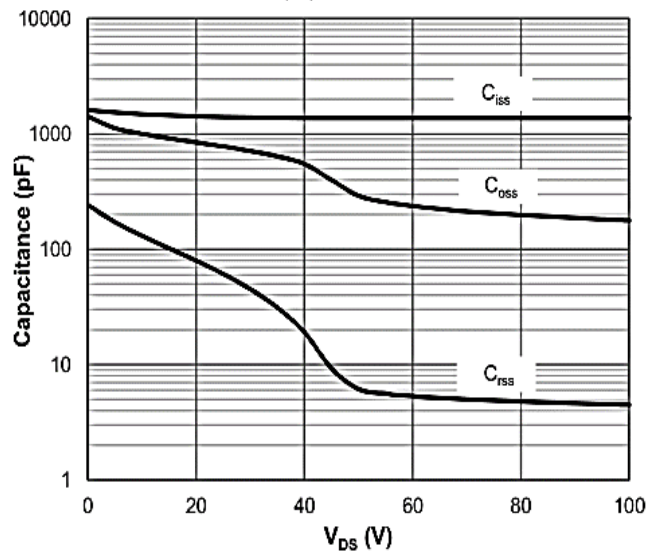
**Figure 3:  $R_{DS(ON)}$  vs. Drain Current**



**Figure 4:  $R_{DS(ON)}$  vs. Junction Temperature**



**Figure 5: Body-Diode Characteristics**



**Figure 6: Capacitance Characteristics**

Typical Characteristics (Cont.)

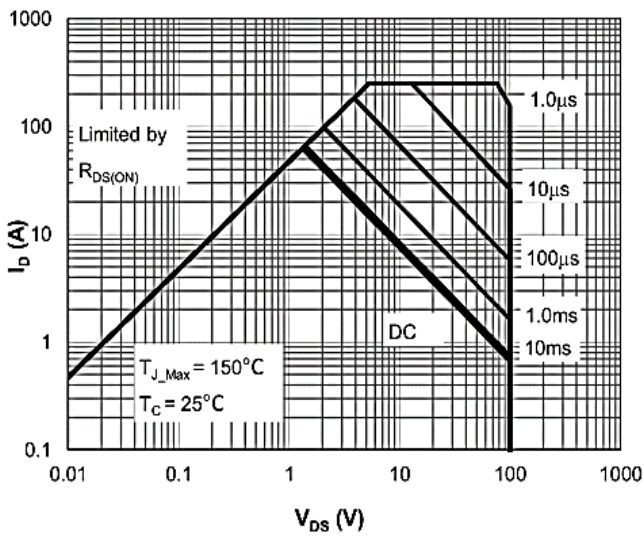


Figure 9: Maximum Safe Operating Area

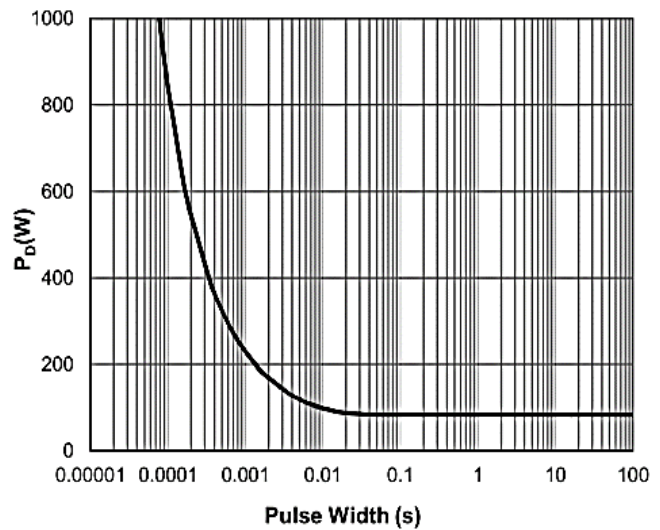


Figure 10: Single Pulse Power Rating, Junction-to-Case

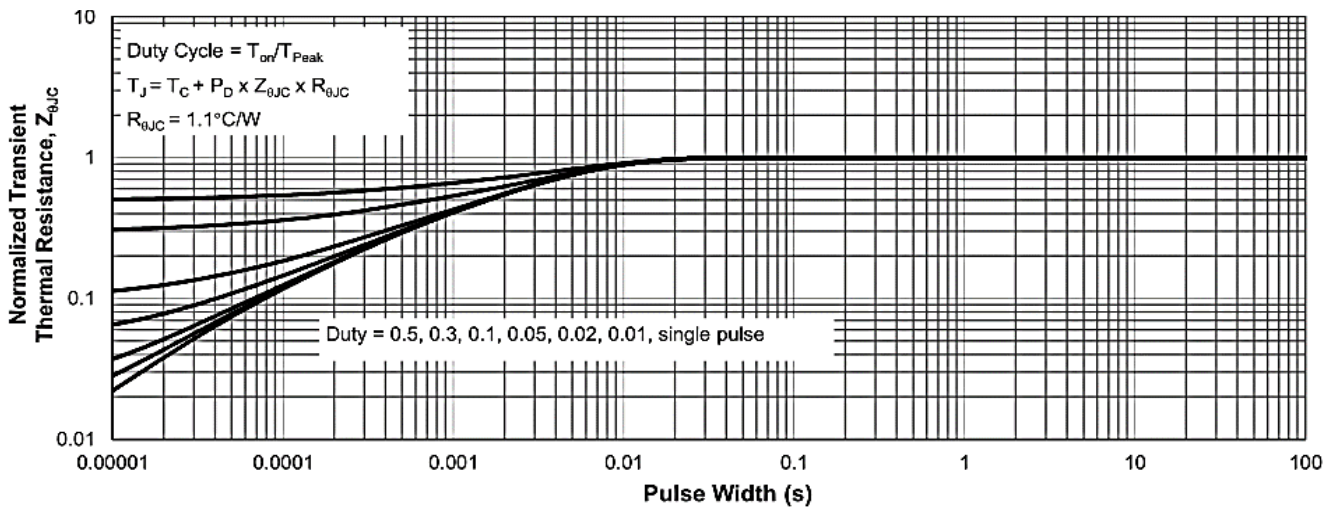
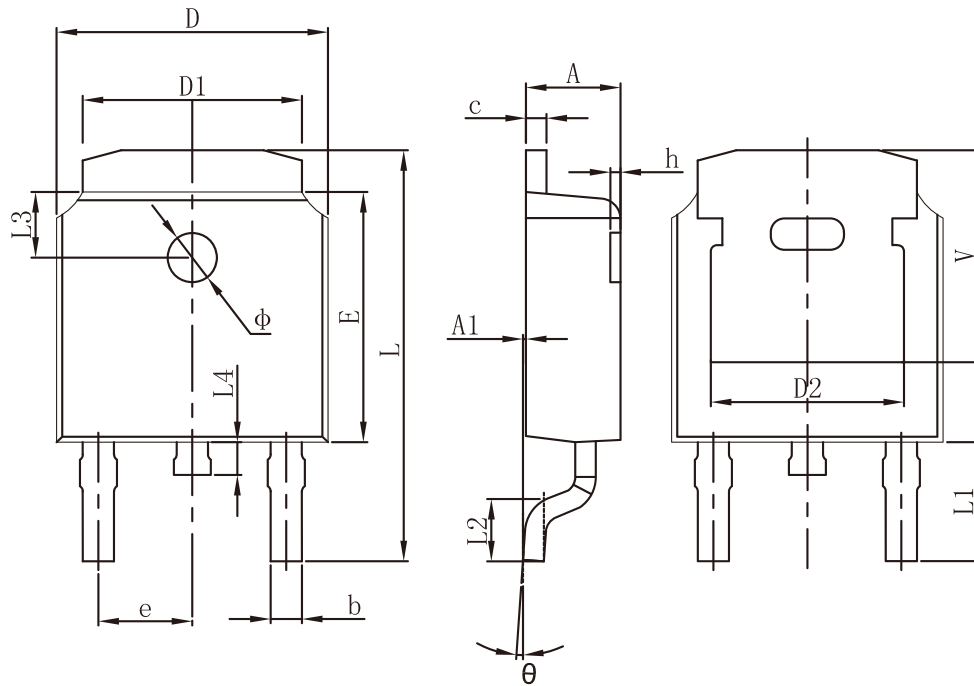


Figure 11: Normalized Maximum Transient Thermal Impedance

**Packaging information**


SYMBOL	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

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