

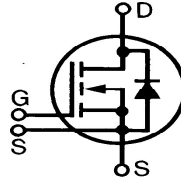
GigaMOS™ TrenchT2

HiperFET™

Power MOSFET

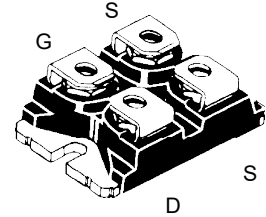
IXFN360N15T2

N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



$$\begin{aligned} V_{DSS} &= 150V \\ I_{D25} &= 310A \\ R_{DS(on)} &\leq 4.0m\Omega \\ t_{rr} &\leq 150ns \end{aligned}$$

miniBLOC, SOT-227
 E153432



G = Gate D = Drain
S = Source

Either Source Terminal S can be used as the Source Terminal or the Kelvin Source (Gate Return) Terminal.

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 175°C	150	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 175°C , $R_{GS} = 1M\Omega$	150	V
V_{GSS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$ (Chip Capability)	310	A
$I_{L(RMS)}$	External Lead Current Limit	200	A
I_{DM}	$T_C = 25^\circ\text{C}$, Pulse Width Limited by T_{JM}	900	A
I_A	$T_C = 25^\circ\text{C}$	100	A
E_{AS}	$T_C = 25^\circ\text{C}$	2.5	J
dv/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 175^\circ\text{C}$	20	V/ns
P_D	$T_C = 25^\circ\text{C}$	1070	W
T_J		-55 ... +175	$^\circ\text{C}$
T_{JM}		175	$^\circ\text{C}$
T_{stg}		-55 ... +175	$^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMS $t = 1$ minute	2500	V~
	$I_{ISOL} \leq 1\text{mA}$ $t = 1$ second	3000	V~
M_d	Mounting Torque	1.5/13	Nm/lb.in.
	Terminal Connection Torque	1.3/11.5	Nm/lb.in.
Weight		30	g

Features

- International Standard Package
- miniBLOC, with Aluminium Nitride Isolation
- Isolation voltage 2500 V~
- High Current Handling Capability
- Fast Intrinsic Diode
- Avalanche Rated
- Low $R_{DS(on)}$

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- Synchronous Rectification
- DC-DC Converters
- Battery Chargers
- Switched-Mode and Resonant-Mode Power Supplies
- DC Choppers
- AC Motor Drives
- Uninterruptible Power Supplies
- High Speed Power Switching Applications

Symbol	Test Conditions	Characteristic Values	
	($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Min.	Typ.
BV_{DSS}	$V_{GS} = 0V$, $I_D = 3\text{mA}$	150	
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 8\text{mA}$	2.5	5.0
I_{GSS}	$V_{GS} = \pm 20V$, $V_{DS} = 0V$		± 200 nA
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0V$		50 μA 5 mA
	$T_J = 150^\circ\text{C}$		
$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 60A$, Note 1		4.0 m Ω

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{V}$, $I_D = 60\text{A}$, Note 1	140	230	S
C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$		47.5	nF
C_{oss}			3060	pF
C_{rss}			665	pF
R_{GI}	Gate Input Resistance		2.7	Ω
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 100\text{A}$ $R_G = 1\Omega$ (External)		50	ns
t_r			170	ns
$t_{d(off)}$			115	ns
t_f			265	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 180\text{A}$		715	nC
Q_{gs}			185	nC
Q_{gd}			200	nC
R_{thJC}				0.14°C/W
R_{thCS}		0.05		$^\circ\text{C/W}$

Source-Drain Diode

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
I_S	$V_{GS} = 0\text{V}$			360 A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			1440 A
V_{SD}	$I_F = 60\text{A}$, $V_{GS} = 0\text{V}$, Note 1			1.2 V
t_{rr}	$I_F = 160\text{A}$, $V_{GS} = 0\text{V}$ $-di/dt = 100\text{A}/\mu\text{s}$ $V_R = 60\text{V}$			150 ns
Q_{RM}		500		nC
I_{RM}		9		A

Note 1. Pulse test, $t \leq 300\mu\text{s}$; duty cycle, $d \leq 2\%$.

Littelfuse reserves the right to change limits, test conditions, and dimensions.

LF MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338 B2
4,860,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478 B2	7,071,537	

Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

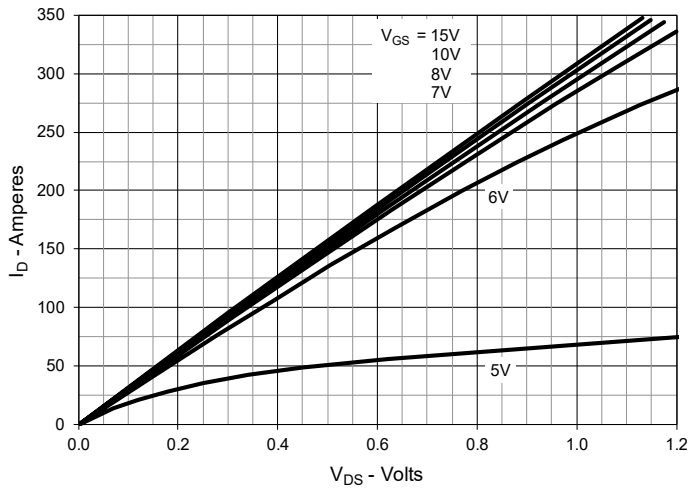


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

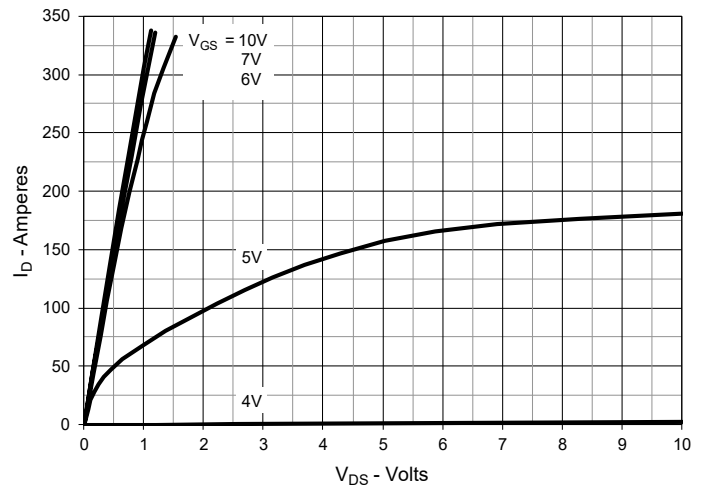


Fig. 3. Output Characteristics @ $T_J = 150^\circ\text{C}$

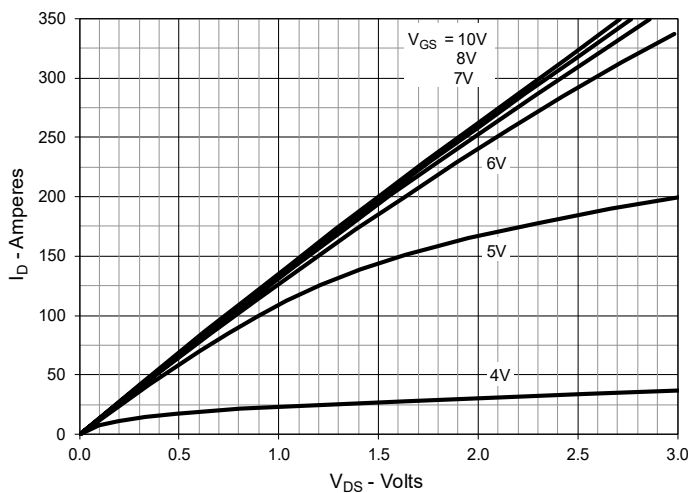


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 180\text{A}$ Value vs. Junction Temperature

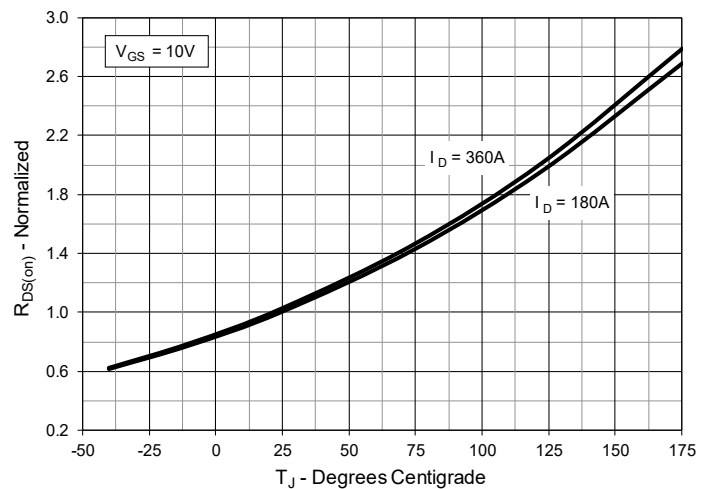


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 180\text{A}$ Value vs. Drain Current

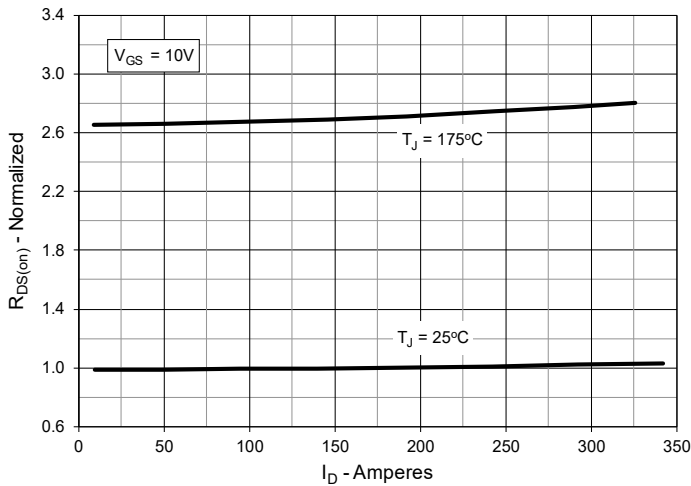


Fig. 6. Drain Current vs. Case Temperature

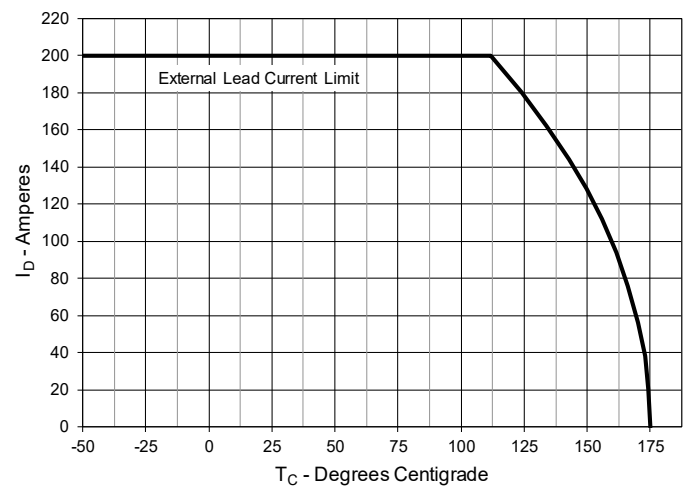
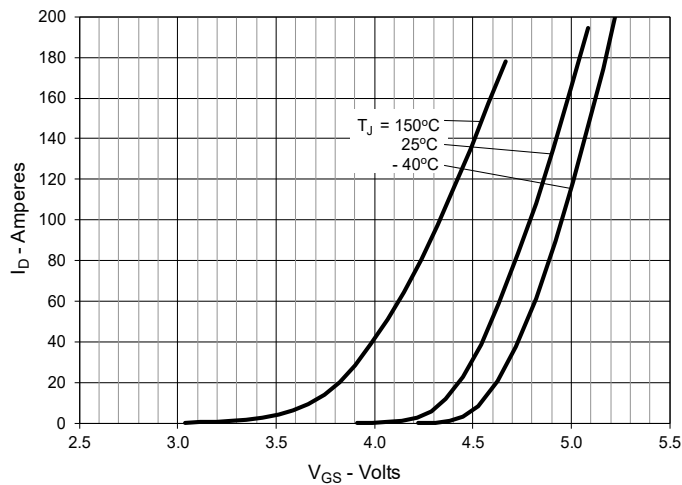
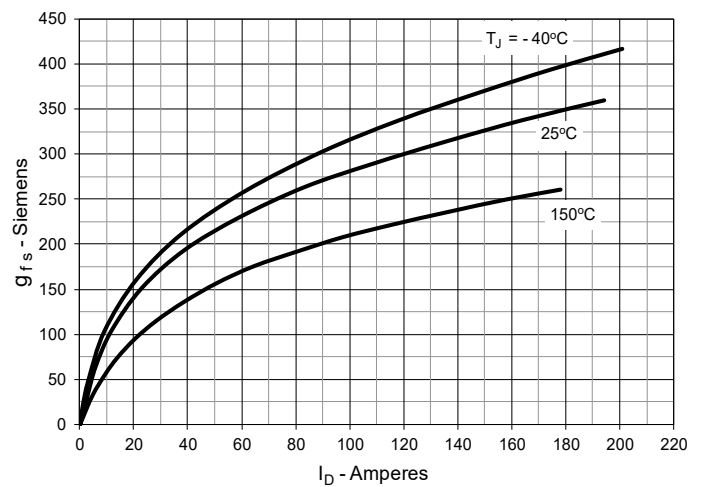
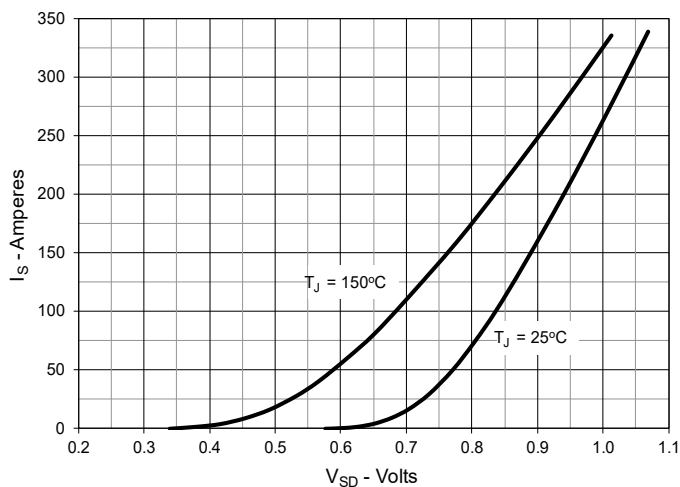
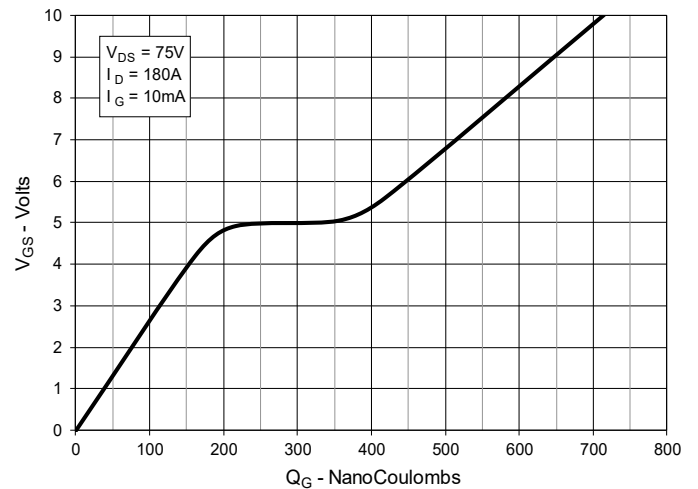
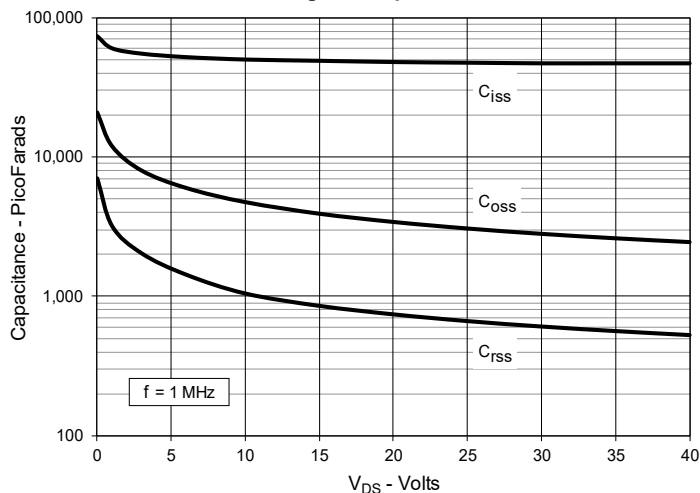
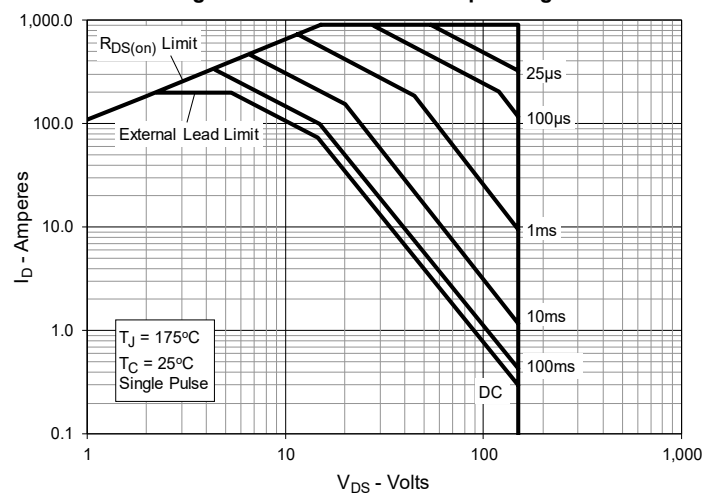
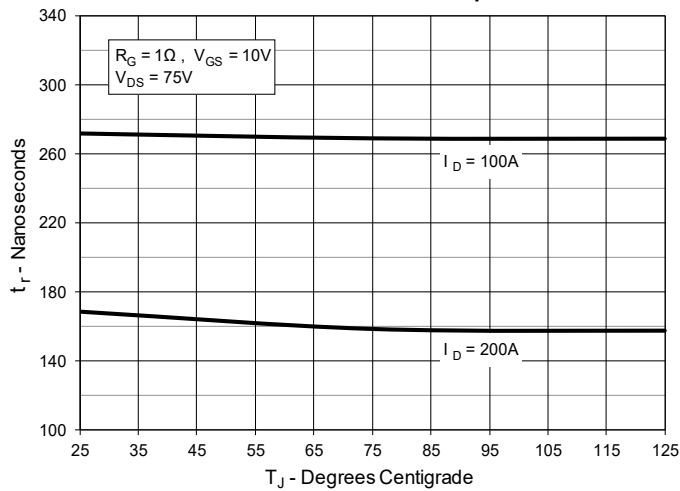
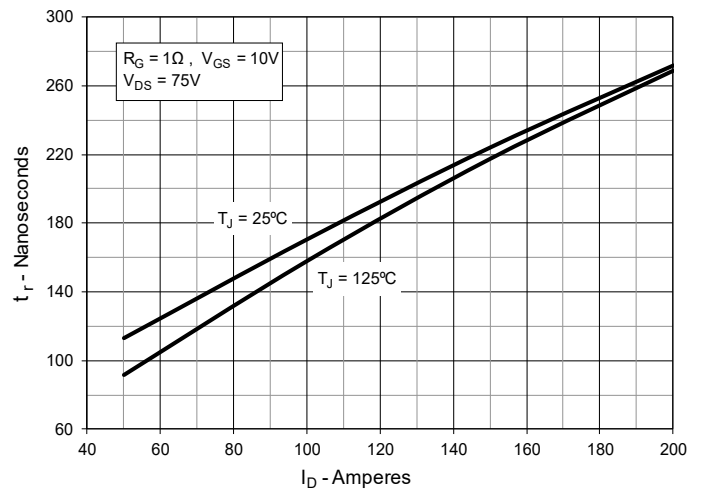


Fig. 7. Input Admittance

Fig. 8. Transconductance

Fig. 9. Forward Voltage Drop of Intrinsic Diode

Fig. 10. Gate Charge

Fig. 11. Capacitance

Fig. 12. Forward-Bias Safe Operating Area


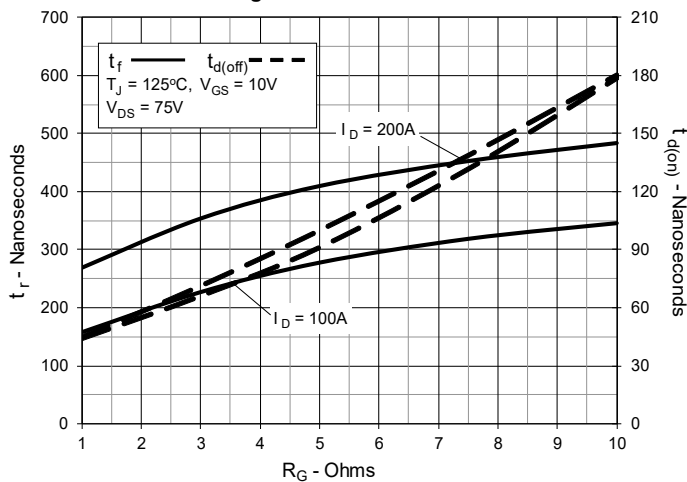
**Fig. 13. Resistive Turn-on
Rise Time vs. Junction Temperature**



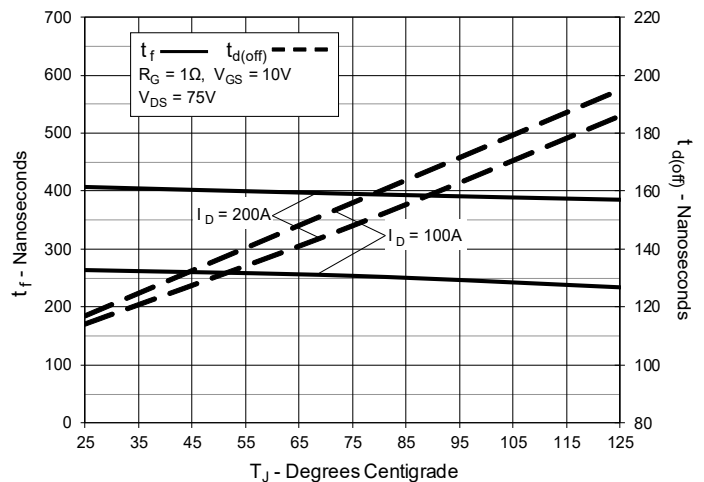
**Fig. 14. Resistive Turn-on
Rise Time vs. Drain Current**



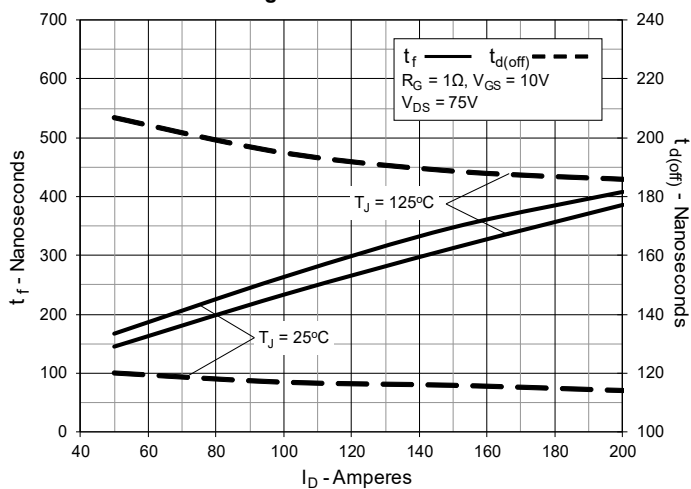
**Fig. 15. Resistive Turn-on
Switching Times vs. Gate Resistance**



**Fig. 16. Resistive Turn-off
Switching Times vs. Junction Temperature**



**Fig. 17. Resistive Turn-off
Switching Times vs. Drain Current**



**Fig. 18. Resistive Turn-off
Switching Times vs. Gate Resistance**

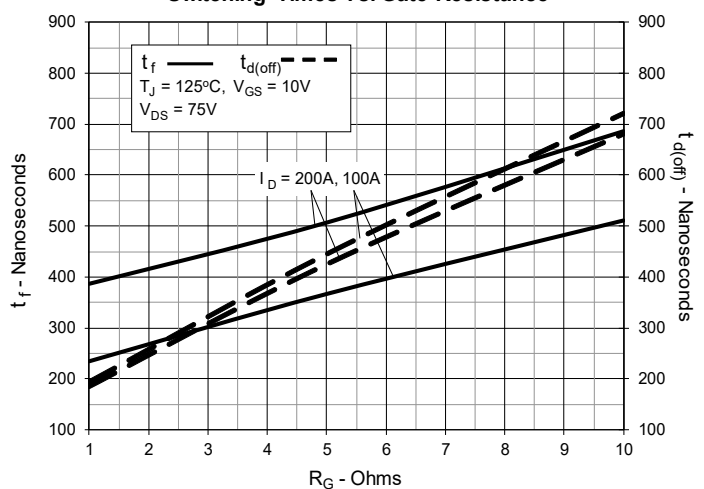
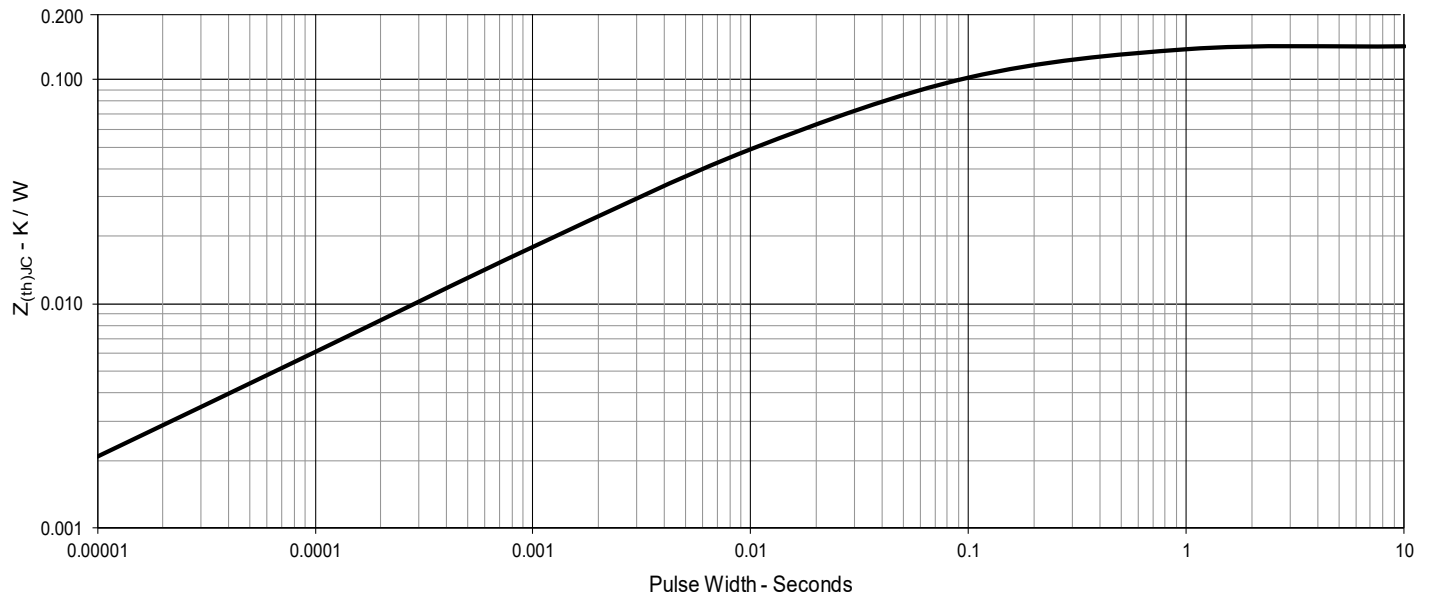
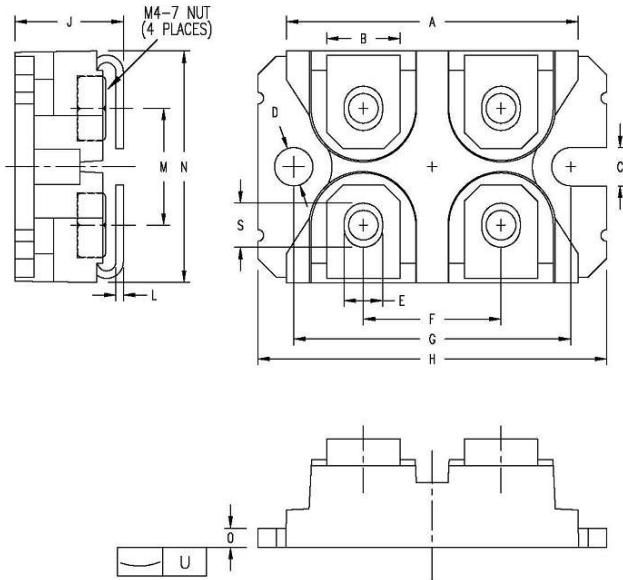


Fig. 19. Maximum Transient Thermal Impedance



SOT-227 miniBLOC


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.224	1.260	31.10	32.00
B	.303	.327	7.70	8.30
C	.161	.173	4.10	4.40
D	.161	.173	4.10	4.40
E	.161	.173	4.10	4.40
F	.587	.598	14.90	15.20
G	1.181	1.201	30.00	30.50
H	1.488	1.508	37.80	38.30
J	.461	.484	11.70	12.30
L	.030	.033	0.75	0.85
M	.492	.512	12.50	13.00
N	.984	1.004	25.00	25.50
O	.075	.087	1.90	2.20
S	.181	.193	4.60	4.90
U	.000	.005	0.00	0.13