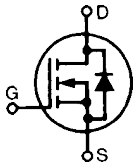
IXYS

TrenchT2™ Power MOSFET

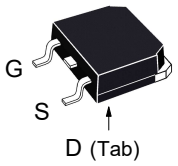
IXTH360N055T2
IXTT360N055T2

V_{DSS} = 55V
I_{D25} = 360A
$R_{DS(on)}$ ≤ 2.4mΩ

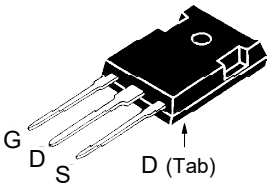
N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



TO-268 (IXTT)



TO-247 (IXTH)



G = Gate D = Drain
S = Source Tab = Drain

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 175°C	55	V
V_{DGR}	T_J = 25°C to 175°C, R_{GS} = 1MΩ	55	V
V_{GSM}	Transient	± 20	V
I_{D25}	T_C = 25°C (Chip Capability)	360	A
I_{LRMS}	Lead Current Limit, RMS	160	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	900	A
I_A	T_C = 25°C	180	A
E_{AS}	T_C = 25°C	960	mJ
P_D	T_C = 25°C	935	W
T_J		-55 ... +175	°C
T_{JM}		175	°C
T_{stg}		-55 ... +175	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
M_d	Mounting Torque (TO-247)	1.13 / 10	Nm/lb.in.
Weight	TO-247	6	g
	TO-268	4	g

Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250μA	55			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.0		4.0	V
I_{GSS}	V_{GS} = ± 20V, V_{DS} = 0V			±200	nA
I_{DSS}	V_{DS} = V_{DSS}, V_{GS} = 0V			10	μA
	T_J = 150°C			300	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 100A, Note 1			2.4	mΩ

Features

- International Standard Package
- 175°C Operating Temperature
- High Current Handling Capability
- Avalanche Rated
- Fast Intrinsic Diode
- Low $R_{DS(on)}$

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- DC/DC Converters and Off-line UPS
- Primary- Side Switch
- High Current Switching Applications

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10V, I_D = 60A, Note 1	65	110		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		20		nF
C_{oss}			2650		pF
C_{rss}			480		pF
R_{Gi}	Gate Input Resistance		1.6		Ω
$t_{d(on)}$	**Resistive Switching Times**		30		ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 100A		23		ns
$t_{d(off)}$	R_G = 2Ω (External)		62		ns
t_f			56		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		330		nC
Q_{gs}			76		nC
Q_{gd}			87		nC
R_{thJC}				0.16	°C/W
R_{thCH}	TO-247		0.21		°C/W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0V			360	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			1440	A
V_{SD}	I_F = 100A, V_{GS} = 0V, Note 1			1.3	V
t_{rr}	I_F = 150A, V_{GS} = 0V		78		ns
I_{RM}	-di/dt = 100A/μs		4.2		A
Q_{RM}	V_R = 27V		164		nC

Note 1. Pulse test, t ≤ 300μs; duty cycle, d ≤ 2%.

Fig. 1. Output Characteristics @ T_J = 25ºC

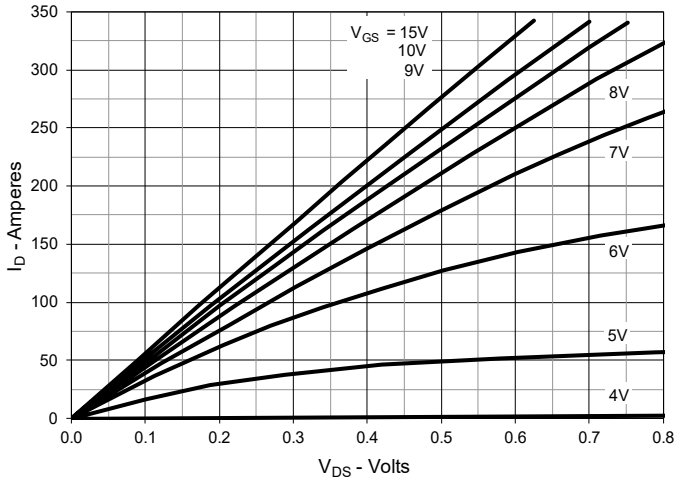


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

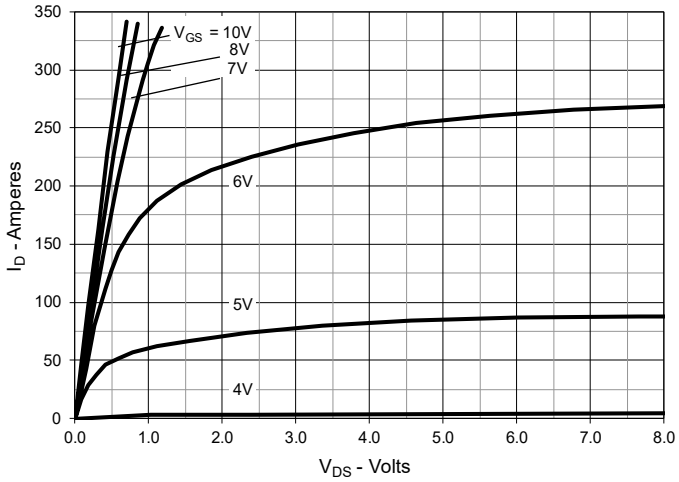


Fig. 3. Output Characteristics @ T_J = 150ºC

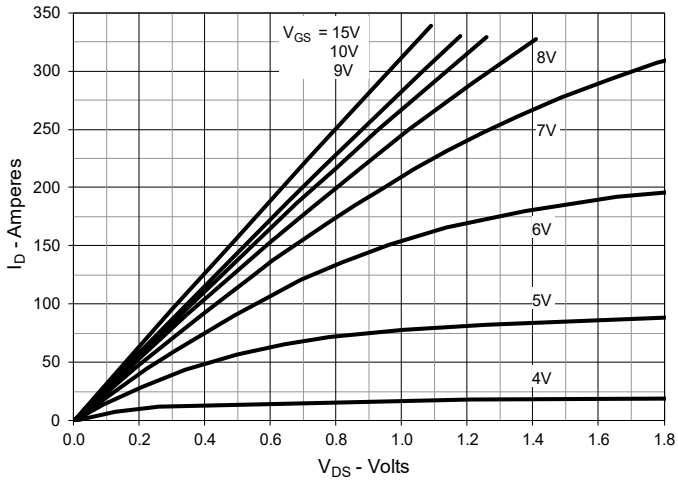


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 180A Value vs. Junction Temperature

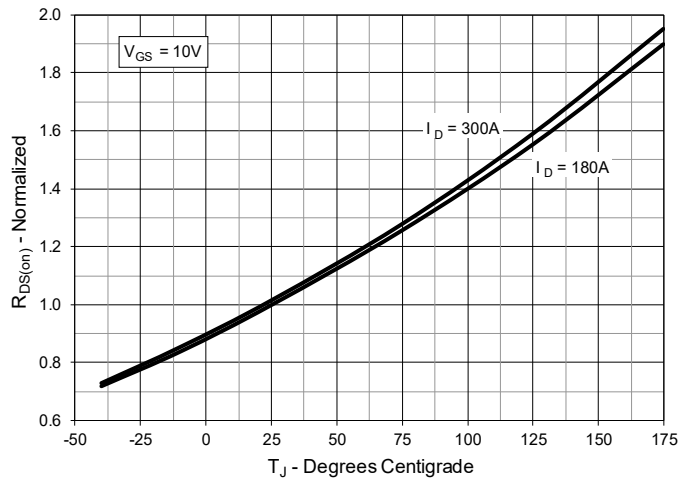


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 180A Value vs. Drain Current

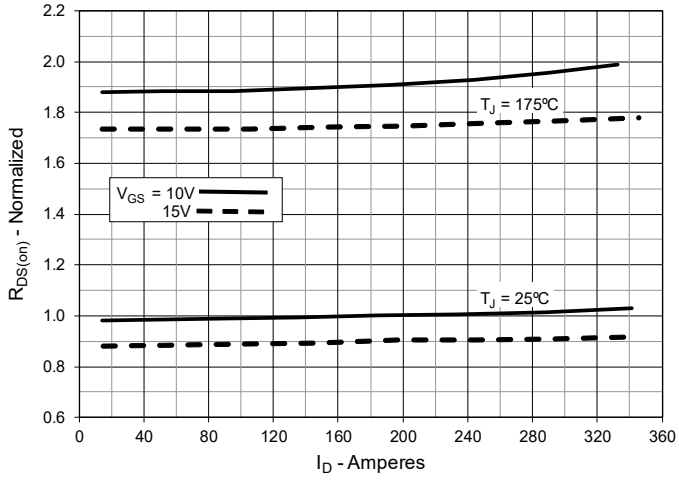


Fig. 6. Drain Current vs. Case Temperature

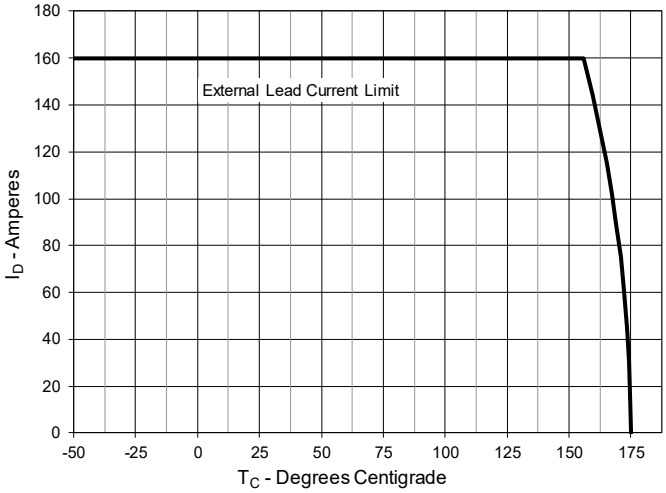


Fig. 7. Input Admittance

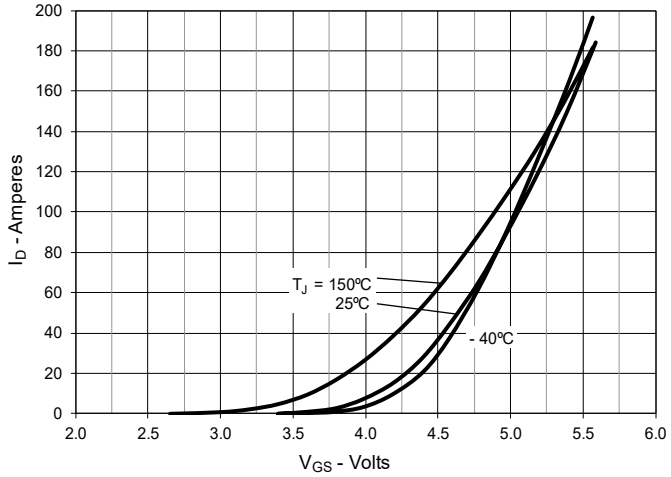


Fig. 8. Transconductance

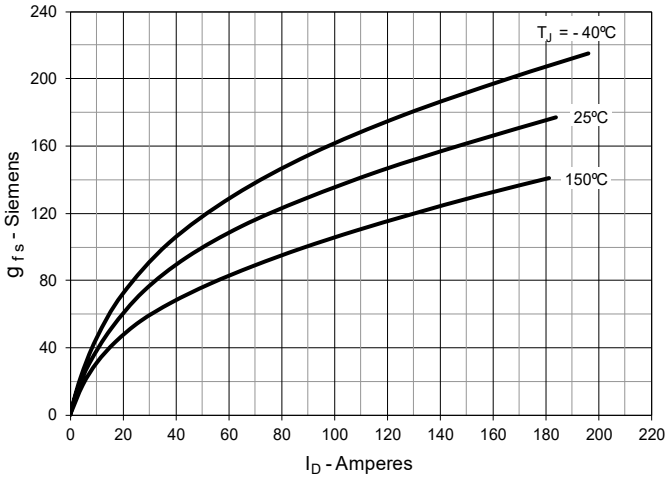


Fig. 9. Forward Voltage Drop of Intrinsic Diode

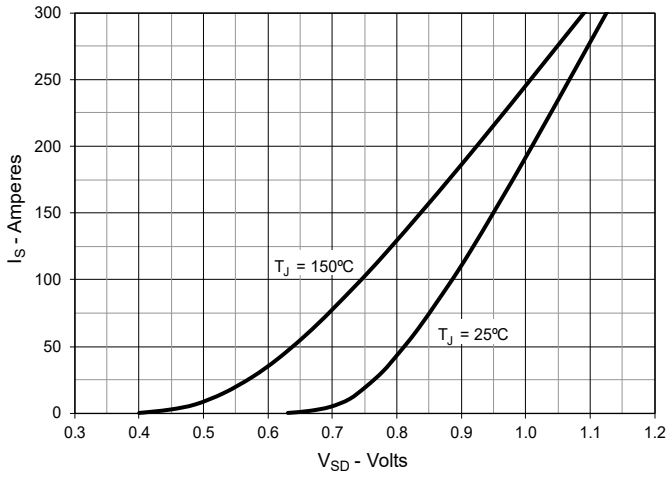


Fig. 10. Gate Charge

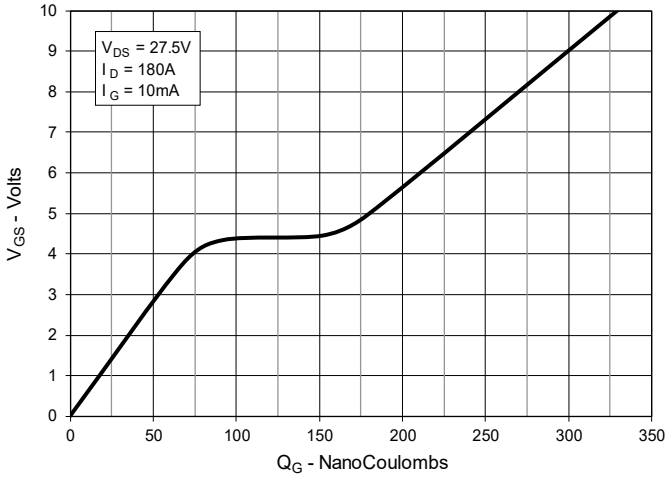


Fig. 11. Capacitance

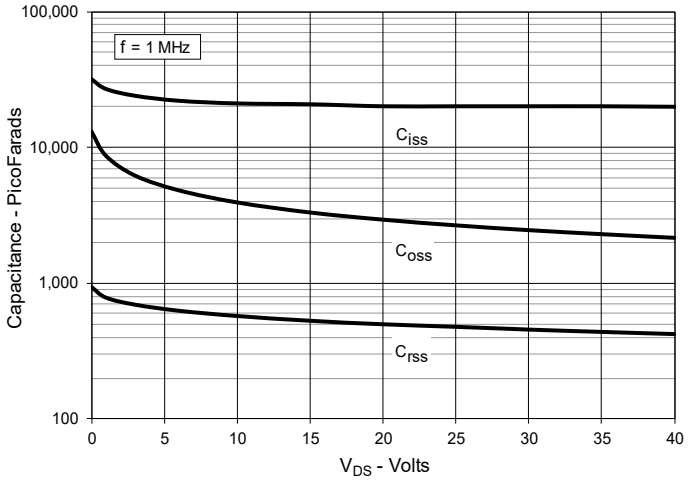


Fig. 12. Forward-Bias Safe Operating Area

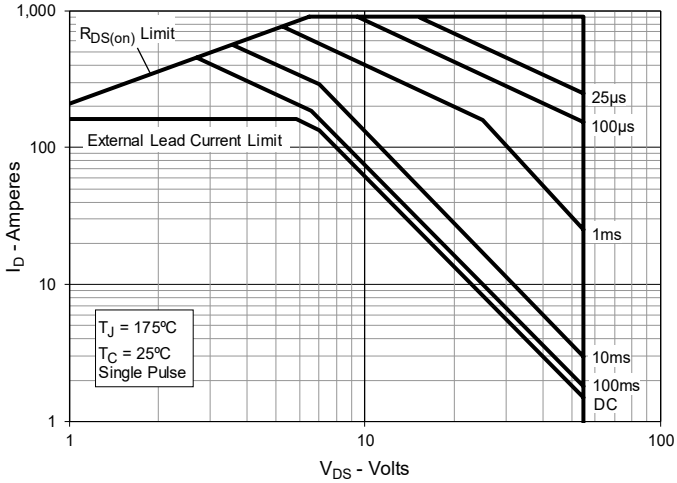


Fig. 13. Resistive Turn-on Rise Time vs. Junction Temperature

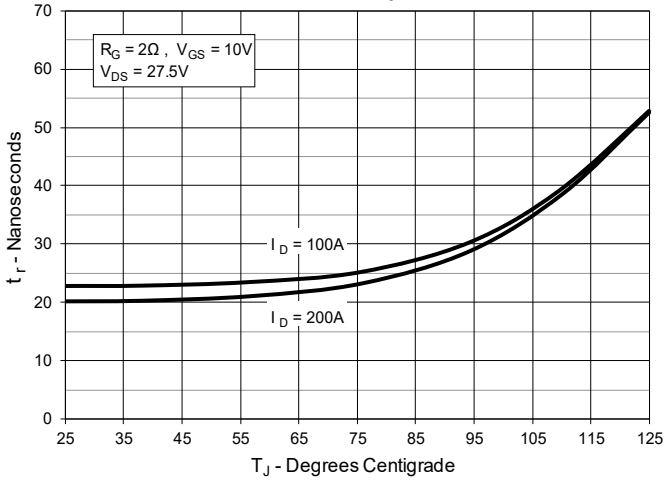


Fig. 14. Resistive Turn-on Rise Time vs. Drain Current

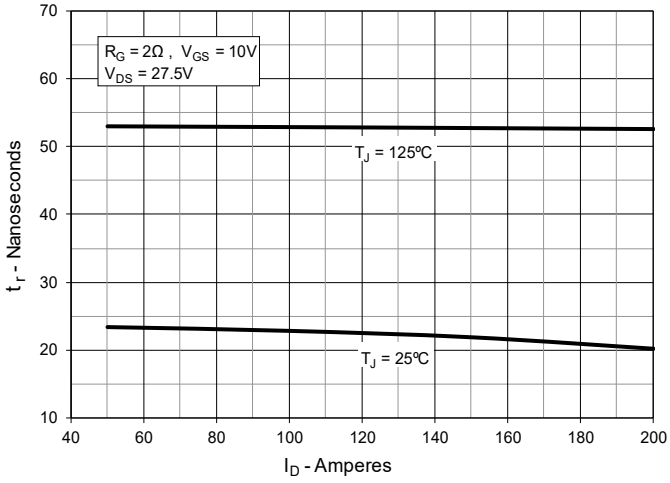


Fig. 15. Resistive Turn-on Switching Times vs. Gate Resistance

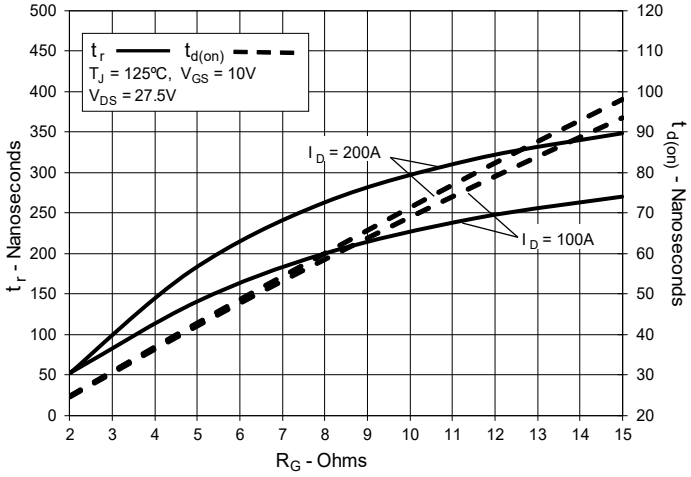


Fig. 16. Resistive Turn-off Switching Times vs. Junction Temperature

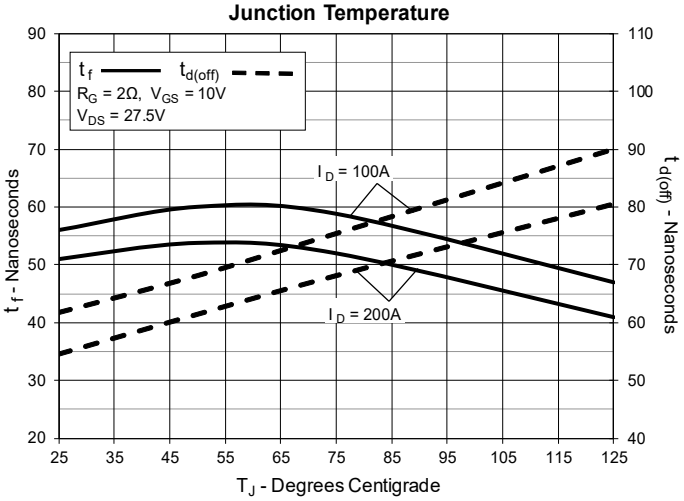


Fig. 17. Resistive Turn-off Switching Times vs. Drain Current

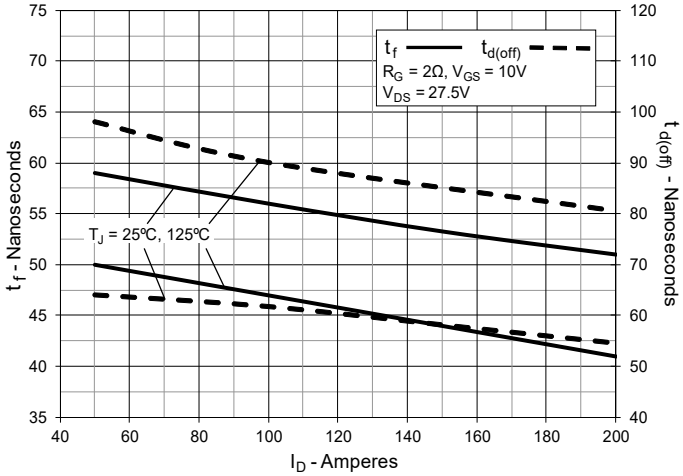


Fig. 18. Resistive Turn-off Switching Times vs. Gate Resistance

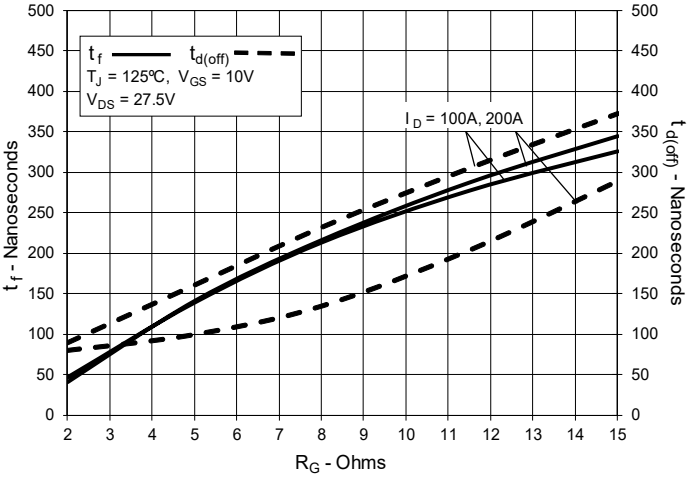
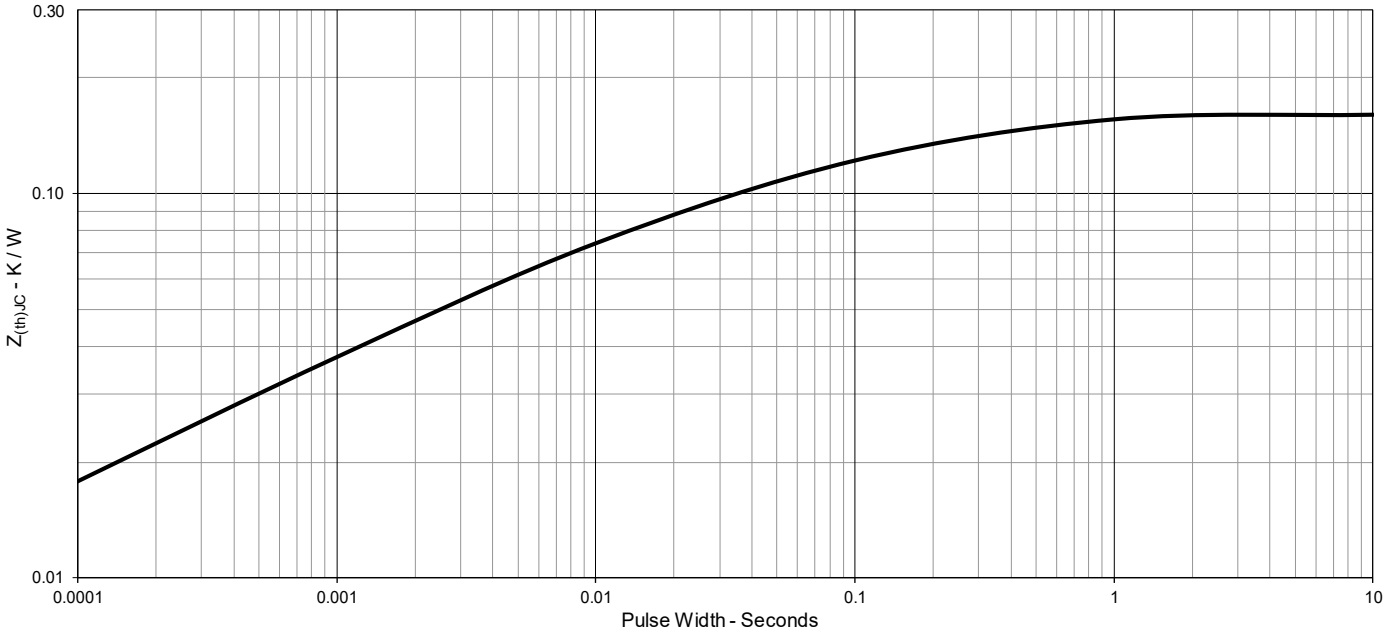
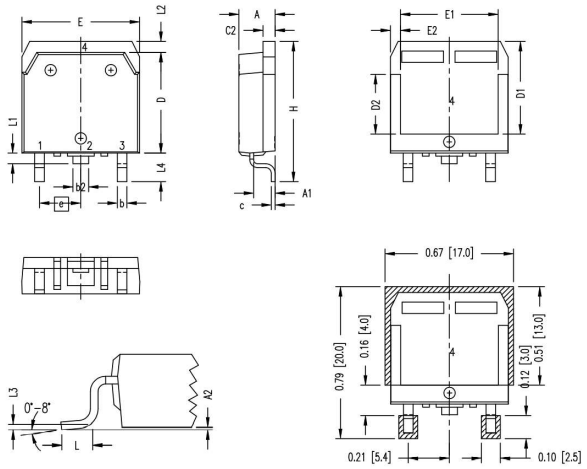


Fig. 19. Maximum Transient Thermal Impedance



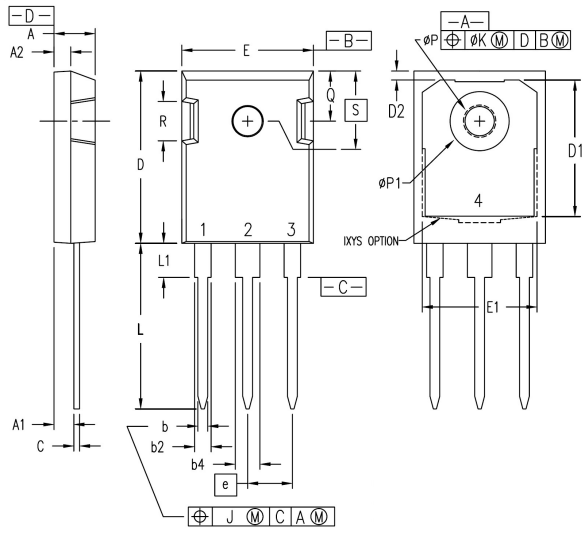
TO-268 Outline



1 - Gate
2,4 - Drain
3 - Source

SYM	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.193	0.201	4.90	5.10
A1	0.106	0.114	2.70	2.90
A2	0.001	0.010	0.02	0.25
b	0.045	0.057	1.15	1.45
b2	0.075	0.083	1.90	2.10
c	0.016	0.026	0.40	0.65
C2	0.057	0.063	1.45	1.60
D	0.543	0.551	13.80	14.00
D1	0.488	0.500	12.40	12.70
D2	0.320	0.335	8.13	8.50
E	0.624	0.632	15.85	16.05
E1	0.524	0.535	13.30	13.60
E2	0.045	0.055	1.14	1.39
e	0.215	BSC	5.45	BSC
H	0.736	0.752	18.70	19.10
L	0.094	0.106	2.40	2.70
L1	0.047	0.055	1.20	1.40
L2	0.039	0.045	1.000	1.15
L3	0.010	BSC	0.25	BSC
L4	0.150	0.161	3.80	4.10

TO-247 Outline



1 - Gate
2,4 - Drain
3 - Source

SYM	INCHES		INCHES	
	MIN	MAX	MIN	MAX
A	0.190	0.205	4.83	5.21
A1	0.090	0.100	2.29	2.54
A2	0.075	0.085	1.91	2.16
b	0.045	0.055	1.14	1.40
b2	0.075	0.087	1.91	2.20
b4	0.115	0.126	2.92	3.20
C	0.024	0.031	0.61	0.80
D	0.819	0.840	20.80	21.34
D1	0.650	0.690	16.51	17.53
D2	0.035	0.050	0.89	1.27
E	0.620	0.635	15.57	16.13
E1	0.545	0.565	13.84	14.35
e	0.215 BSC		5.45 BSC	
J	- -	0.010	- -	0.250
K	- -	0.025	- -	0.640
L	0.780	0.810	19.81	20.57
L1	0.150	0.170	3.81	4.32
ØP	0.140	0.144	3.55	3.65
ØP1	0.275	0.290	6.99	7.37
Q	0.220	0.244	5.59	6.20
R	0.170	0.190	4.32	4.83
S	0.242 BSC		6.15 BSC	