

**TrenchT2™ Power
MOSFET**
**IXTH360N055T2
IXTT360N055T2**

$$V_{DSS} = 55V$$

$$I_{D25} = 360A$$

$$R_{DS(on)} \leq 2.4m\Omega$$

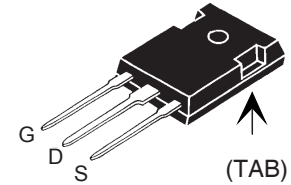
N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



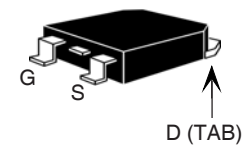
Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ C$ to $175^\circ C$	55	V
V_{DGR}	$T_J = 25^\circ C$ to $175^\circ C$, $R_{GS} = 1M\Omega$	55	V
V_{GSM}	Transient	± 20	V
I_{D25}	$T_C = 25^\circ C$ (Chip Capability)	360	A
I_{LRMS}	Lead Current Limit, RMS	160	A
I_{DM}	$T_C = 25^\circ C$, Pulse Width Limited by T_{JM}	900	A
I_A	$T_C = 25^\circ C$	180	A
E_{AS}	$T_C = 25^\circ C$	960	mJ
P_D	$T_C = 25^\circ C$	935	W
T_J		-55 ... +175	$^\circ C$
T_{JM}		175	$^\circ C$
T_{stg}		-55 ... +175	$^\circ C$
T_L	1.6mm (0.062in.) from Case for 10s	300	$^\circ C$
T_{sold}	Plastic Body for 10 seconds	260	$^\circ C$
M_d	Mounting Torque (TO-247)	1.13 / 10	Nm/lb.in.
Weight	TO-247	6	g
	TO-268	4	g

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = 250\mu A$	55		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	2.0		V
I_{GSS}	$V_{GS} = \pm 20V$, $V_{DS} = 0V$			± 200 nA
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0V$ $T_J = 150^\circ C$			10 μA
				300 μA
$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 100A$, Note 1			2.4 $m\Omega$

TO-247 (IXTH)



TO-268 (IXTT)



G = Gate D = Drain
S = Source TAB = Drain

Features

- International Standard Package
- $175^\circ C$ 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 ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{V}$, $I_D = 60\text{A}$, Note 1	65	110	S
C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$		20	nF
C_{oss}			2650	pF
C_{rss}			480	pF
R_{Gi}	Gate Input Resistance		1.6	Ω
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 100\text{A}$ $R_G = 2\Omega$ (External)		30	ns
t_r			23	ns
$t_{d(off)}$			62	ns
t_f			56	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$		330	nC
Q_{gs}			76	nC
Q_{gd}			87	nC
R_{thJC}				0.16°C/W
R_{thCH}	TO-247	0.21		$^\circ\text{C/W}$

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}	$I_F = 100\text{A}$, $V_{GS} = 0\text{V}$, Note 1			1.3 V
t_{rr}	$I_F = 150\text{A}$, $V_{GS} = 0\text{V}$ $-di/dt = 100\text{A}/\mu\text{s}$ $V_R = 27\text{V}$		78	ns
I_{RM}			4.2	A
Q_{RM}			164	nC

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

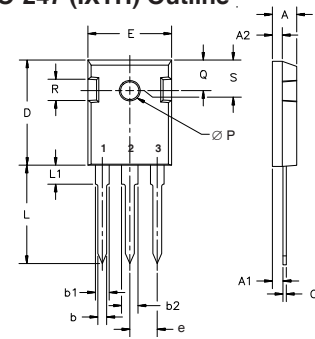
PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

IXYS MOSFETs and IGBTs are covered 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 7,157,338B2
by one or more of the following U.S. patents: 4,850,072 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

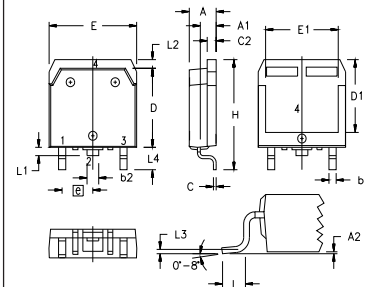
TO-247 (IXTH) Outline



Terminals: 1 - Gate 2 - Drain
3 - Source Tab - Drain

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A ₁	2.2	2.54	.087	.102
A ₂	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b ₁	1.65	2.13	.065	.084
b ₂	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
∅P	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15	BSC	242	BSC

TO-268 Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
e	.215	BSC	5.45	BSC
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3	.010	BSC	0.25	BSC
L4	.150	.161	3.80	4.10

Fig. 1. Output Characteristics @ 25°C

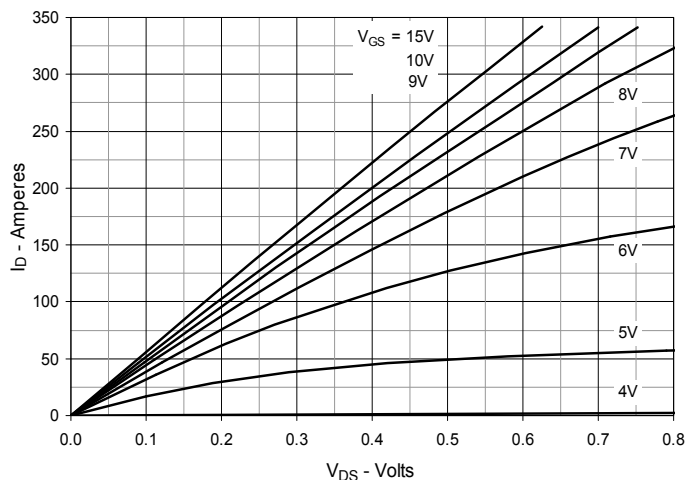


Fig. 2. Extended Output Characteristics @ 25°C

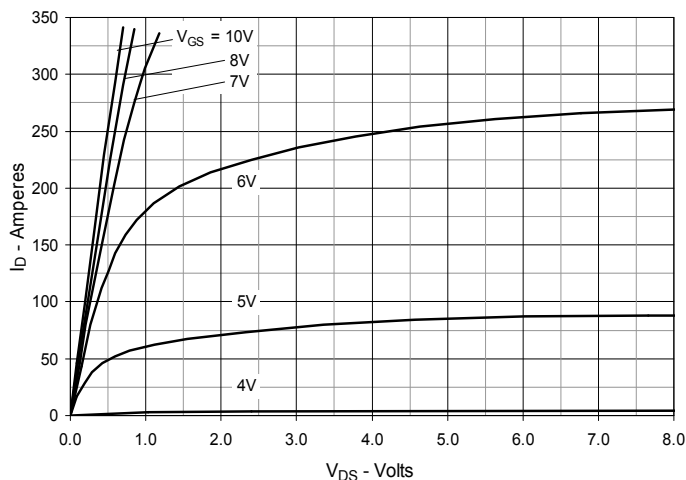


Fig. 3. Output Characteristics @ 150°C

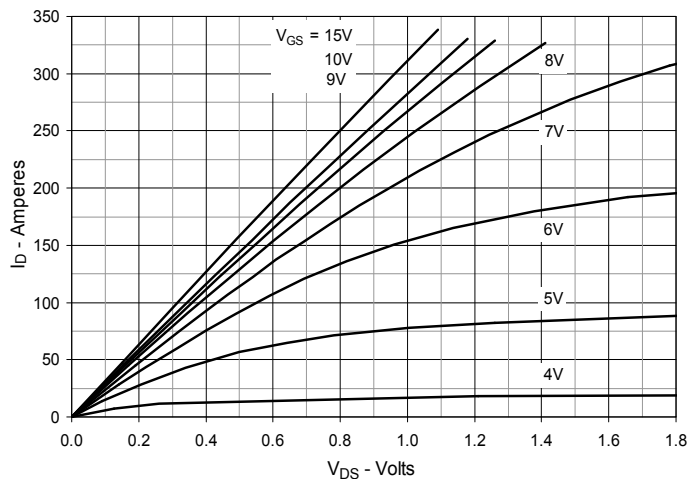


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 180A$ Value vs. Junction Temperature

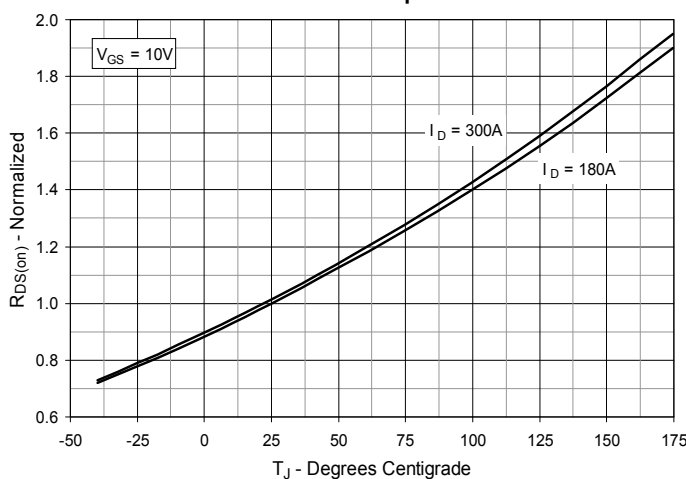


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 180A$ Value vs. Drain Current

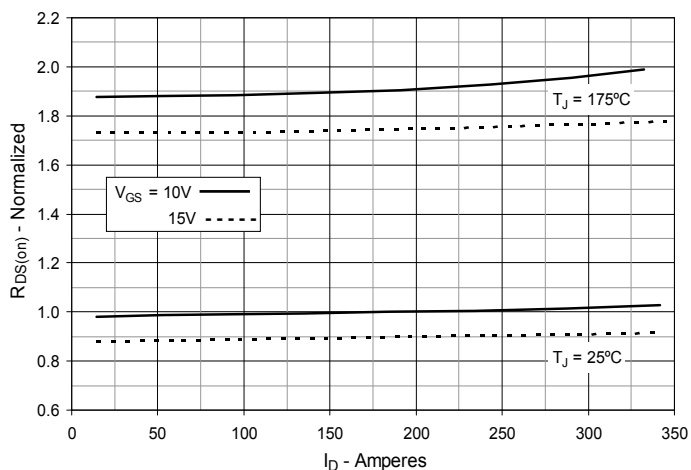


Fig. 6. Drain Current vs. Case Temperature

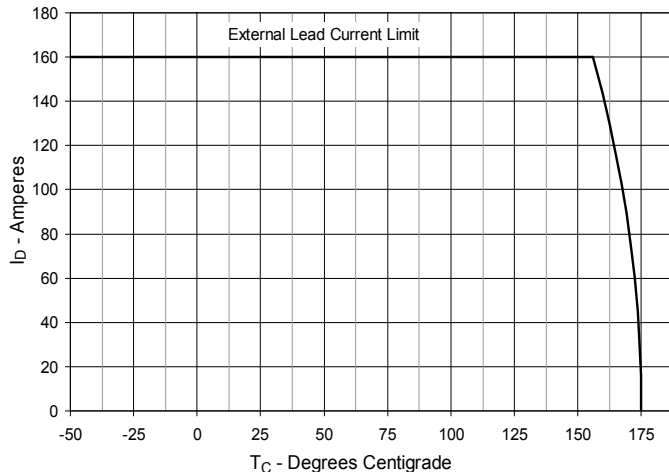


Fig. 7. Input Admittance

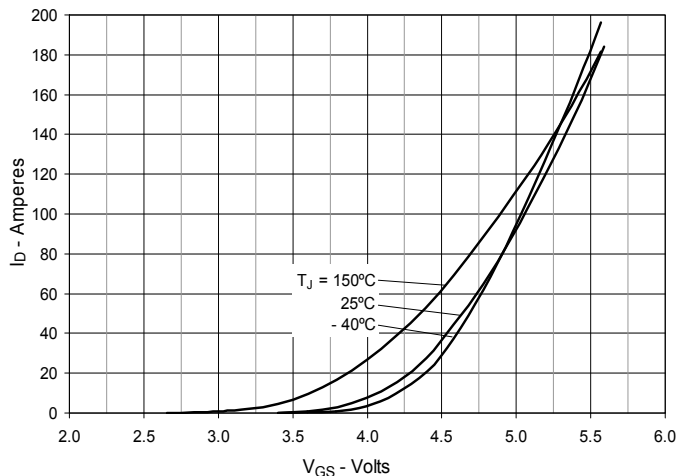


Fig. 8. Transconductance

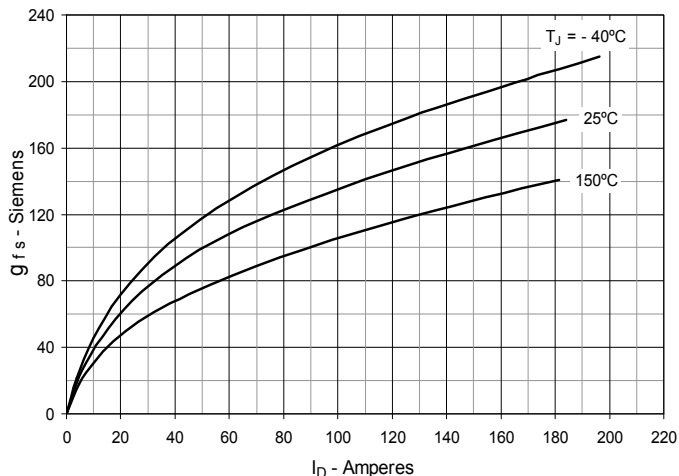


Fig. 9. Forward Voltage Drop of Intrinsic Diode

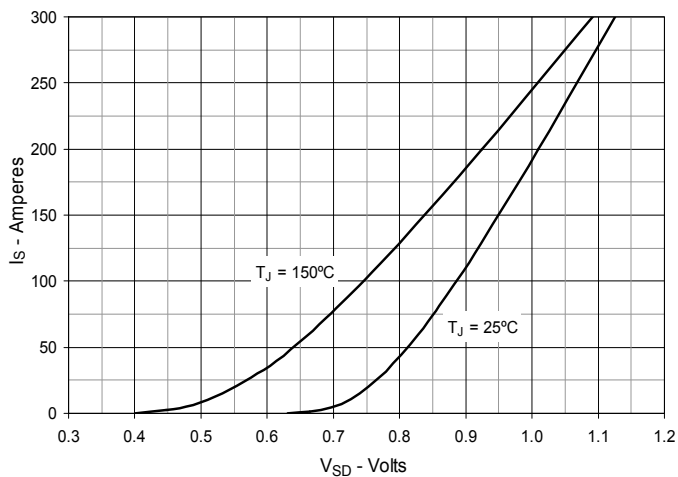


Fig. 10. Gate Charge

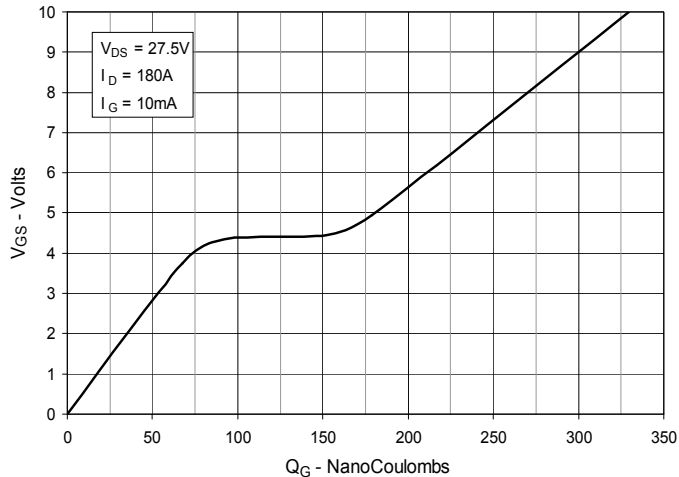


Fig. 11. Capacitance

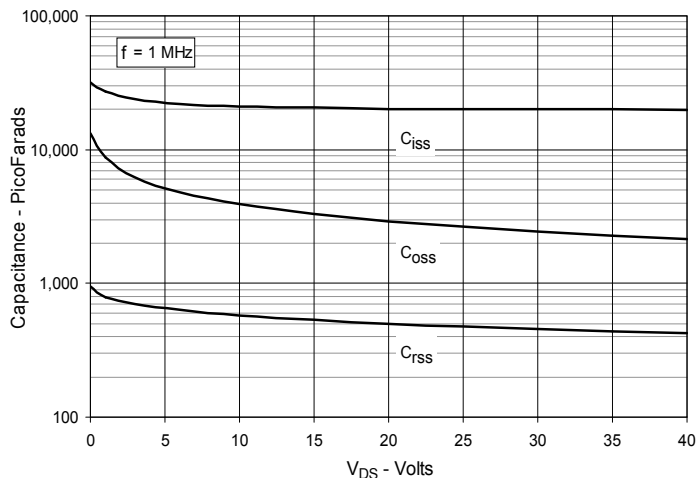


Fig. 12. Forward-Bias Safe Operating Area

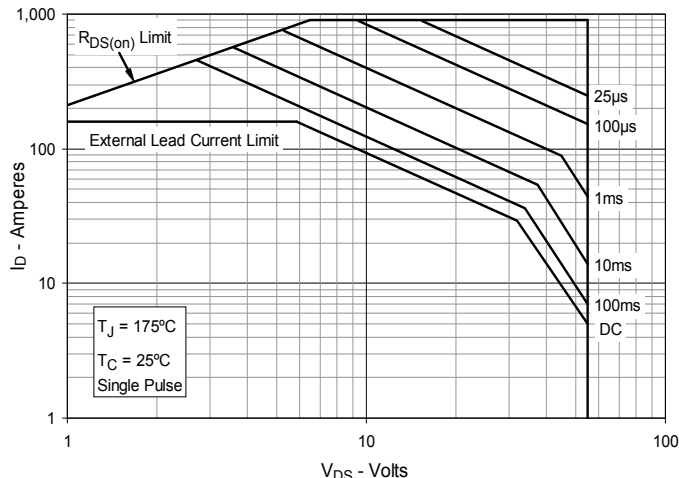


Fig. 13. Resistive Turn-on
Rise Time vs. Junction Temperature

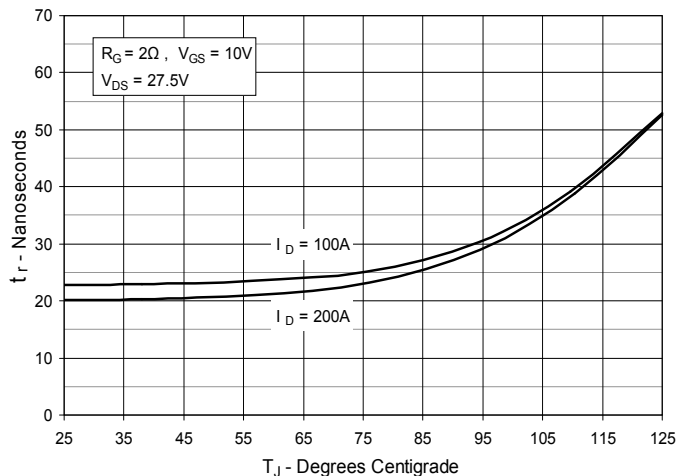


Fig. 14. Resistive Turn-on
Rise Time vs. Drain Current

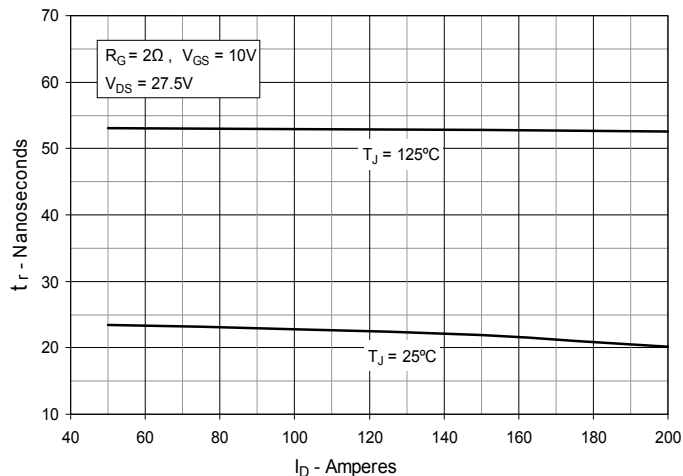


Fig. 15. Resistive Turn-on
Switching Times vs. Gate Resistance

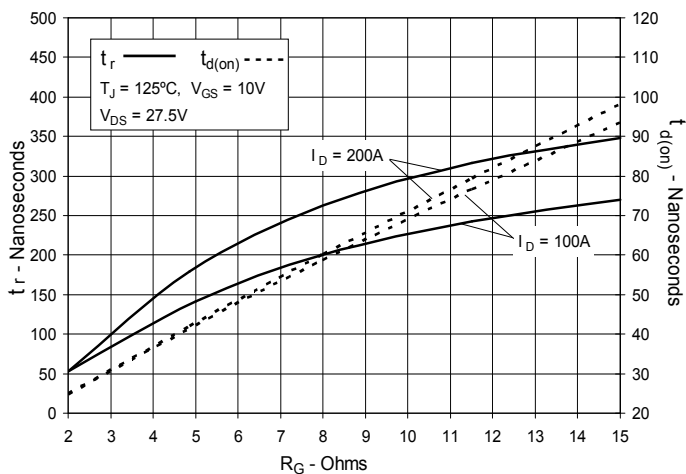


Fig. 16. Resistive Turn-off
Switching Times vs. Junction Temperature

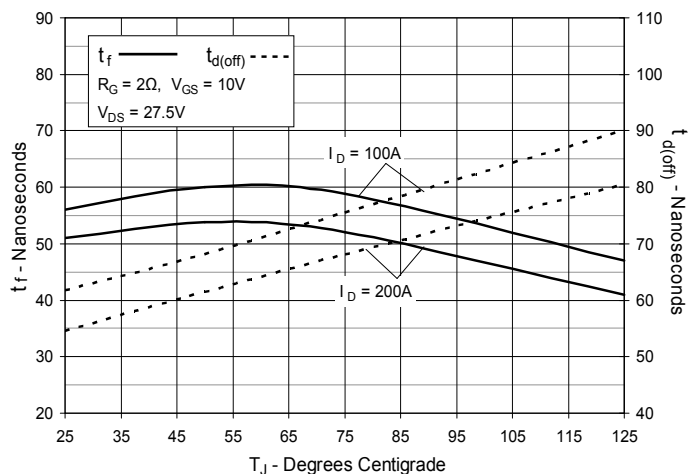


Fig. 17. Resistive Turn-off
Switching Times vs. Drain Current

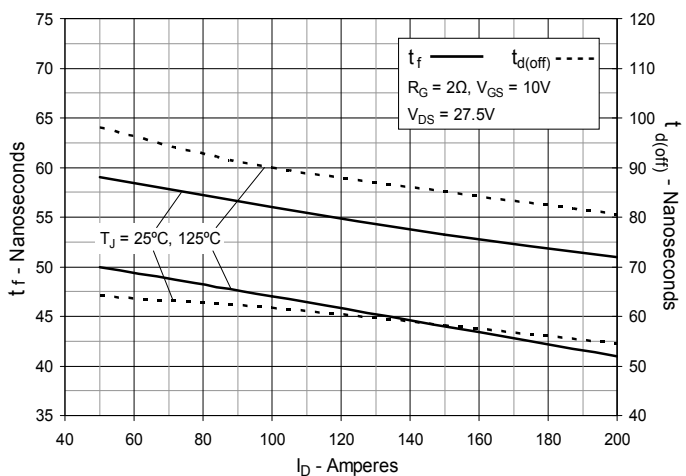


Fig. 18. Resistive Turn-off
Switching Times vs. Gate Resistance

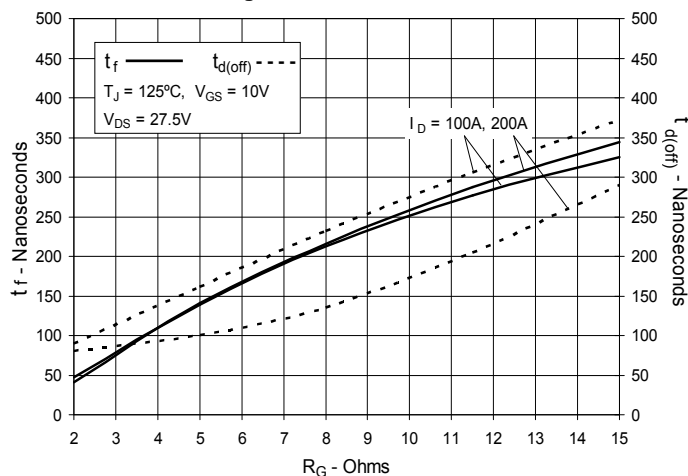
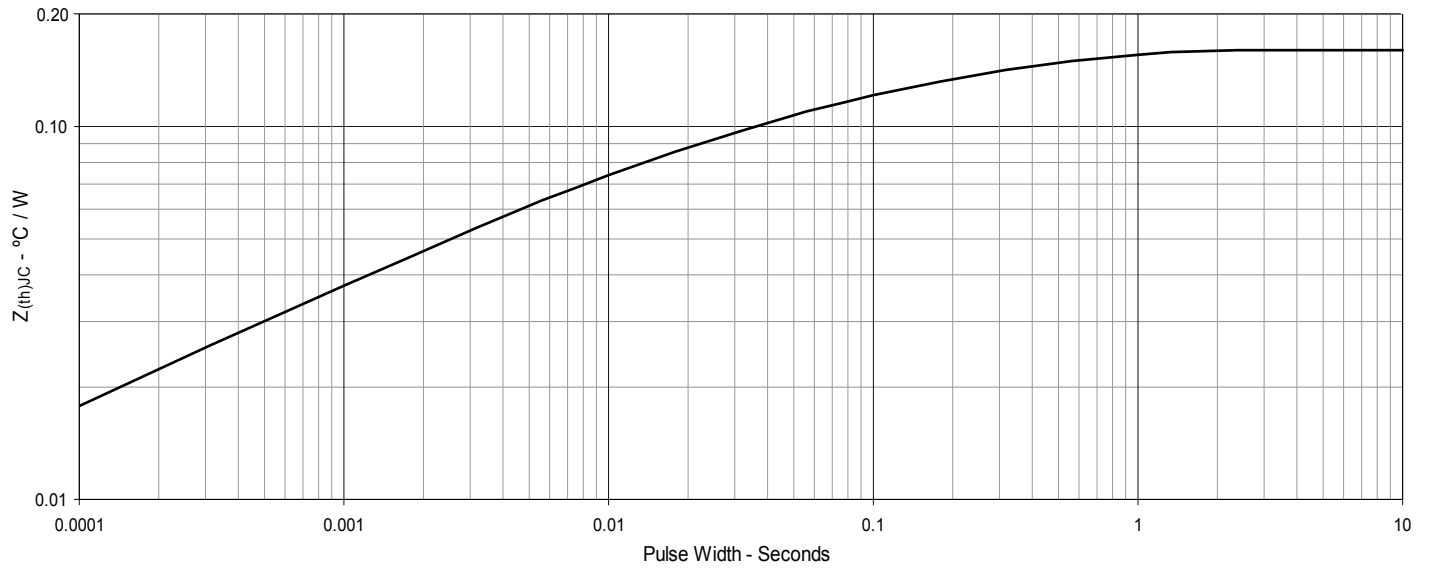


Fig. 19. Maximum Transient Thermal Impedance





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