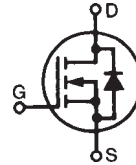


TrenchT2™ HiperFET™ Power MOSFET

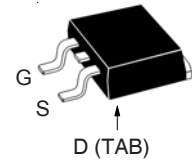
IXFA76N15T2 IXFP76N15T2

$$\begin{aligned} V_{DSS} &= 150V \\ I_{D25} &= 76A \\ R_{DS(on)} &\leq 20m\Omega \end{aligned}$$

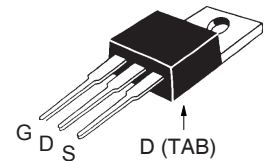
N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Rectifier



TO-263 AA (IXFA)



TO-220AB (IXFP)



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

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}	$T_C = 25^\circ\text{C}$	76	A
I_{DM}	$T_C = 25^\circ\text{C}$, Pulse Width Limited by T_{JM}	200	A
I_A	$T_C = 25^\circ\text{C}$	38	A
E_{AS}	$T_C = 25^\circ\text{C}$	500	mJ
dV/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 175^\circ\text{C}$	15	V/ns
P_D	$T_C = 25^\circ\text{C}$	350	W
T_J		-55 ... +175	$^\circ\text{C}$
T_{JM}		175	$^\circ\text{C}$
T_{stg}		-55 ... +175	$^\circ\text{C}$
T_L	1.6mm (0.062in.) from Case for 10s	300	$^\circ\text{C}$
T_{sold}	Plastic Body for 10 seconds	260	$^\circ\text{C}$
M_d	Mounting Torque (TO-220)	1.13 / 10	Nm/lb.in.
Weight	TO-263	2.5	g
	TO-220	3.0	g

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = 250\mu A$	150		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	2.5		4.5 V
I_{GSS}	$V_{GS} = \pm 20V$, $V_{DS} = 0V$			± 200 nA
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0V$ $T_J = 150^\circ\text{C}$			5 μA
				750 μA
$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 0.5 \cdot I_{D25}$, Notes 1, 2			20 m Ω

Features

- International Standard Packages
- 175°C Operating Temperature
- High Current Handling Capability
- Fast Intrinsic Rectifier
- Dynamic dV/dt Rated
- Low $R_{DS(on)}$

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- 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°C, Unless Otherwise Specified)		Min.	Typ.	Max.
g_{fs}	V _{DS} = 10V, I _D = 0.5 • I _{D25} , Note 1	50	80	S
C_{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz		5800	pF
C_{oss}			490	pF
C_{rss}			85	pF
t_{d(on)}	Resistive Switching Times V _{GS} = 10V, V _{DS} = 0.5 • V _{DSS} , I _D = 0.5 • I _{D25} R _G = 5Ω (External)		17	ns
t_r			19	ns
t_{d(off)}			25	ns
t_f			14	ns
Q_{g(on)}	V _{GS} = 10V, V _{DS} = 0.5 • V _{DSS} , I _D = 0.5 • I _{D25}		97	nC
Q_{gs}			29	nC
Q_{gd}			30	nC
R_{thJC}	TO-220		0.50	0.43 °C/W
R_{thCH}				°C/W

Source-Drain Diode

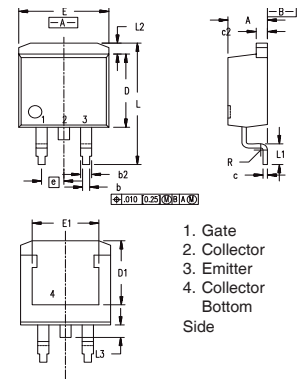
Symbol	Test Conditions	Characteristic Values		
(T _J = 25°C, Unless Otherwise Specified)		Min.	Typ.	Max.
I_S	V _{GS} = 0V			76 A
I_{SM}	Repetitive, Pulse width limited by T _{JM}			300 A
V_{SD}	I _F = 38A, V _{GS} = 0V, Note 1			1.5 V
t_{rr}	I _F = 38A, V _{GS} = 0V -di/dt = 100A/μs V _R = 75V		69	ns
I_{RM}			5.7	A
Q_{RM}			197	nC

- Notes: 1. Pulse test, t ≤ 300μs; duty cycle, d ≤ 2%.
2. On through-hole packages, R_{DS(on)} Kelvin test contact location must be 5mm or less from the package body.

ADVANCE TECHNICAL INFORMATION

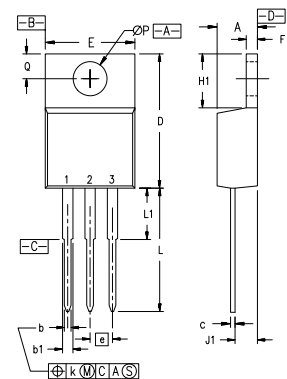
The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

TO-263 (IXFA) Outline

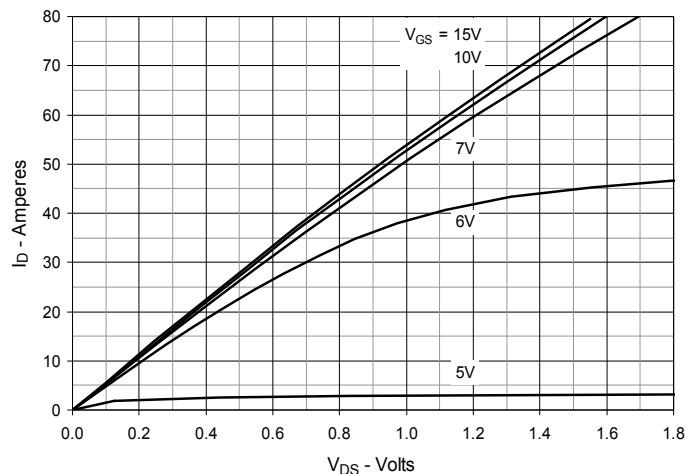


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	.160	.190
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.40	0.74	.016	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	8.00	8.89	.280	.320
E	9.65	10.41	.380	.405
E1	6.22	8.13	.270	.320
e	2.54	BSC	.100	BSC
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.40	.040	.055
L3	1.27	1.78	.050	.070
L4	0	0.13	0	.005

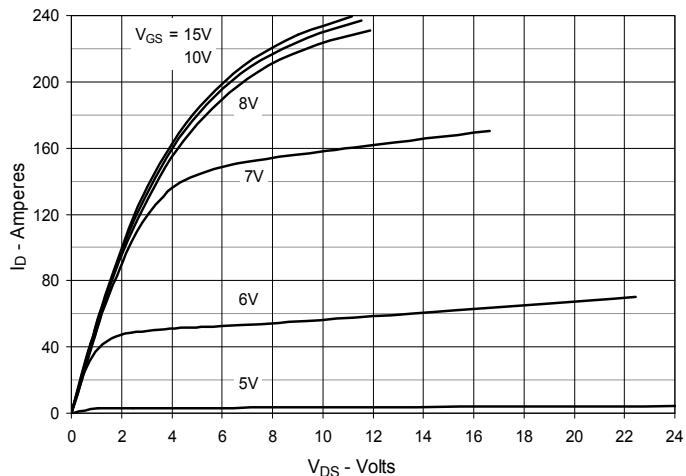
TO-220 (IXFP) Outline



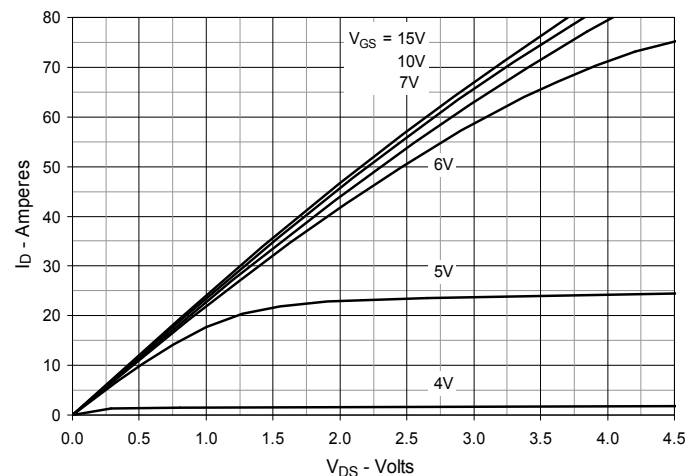
**Fig. 1. Output Characteristics
@ 25°C**



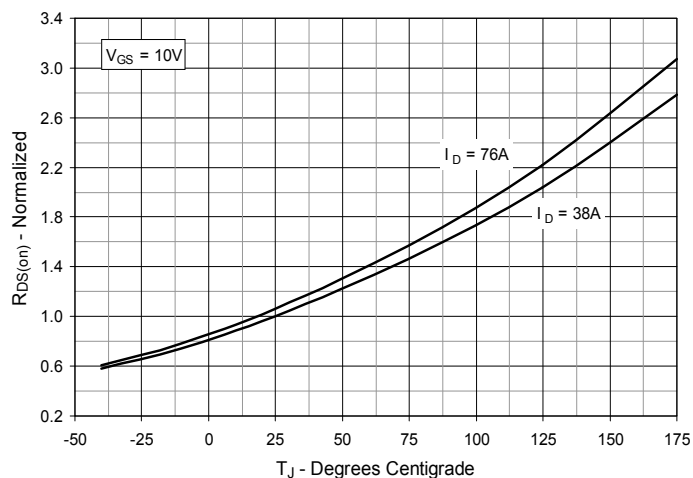
**Fig. 2. Extended Output Characteristics
@ 25°C**



**Fig. 3. Output Characteristics
@ 150°C**



**Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 38\text{A}$ Value vs.
Junction Temperature**



**Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 38\text{A}$ Value vs.
Drain Current**

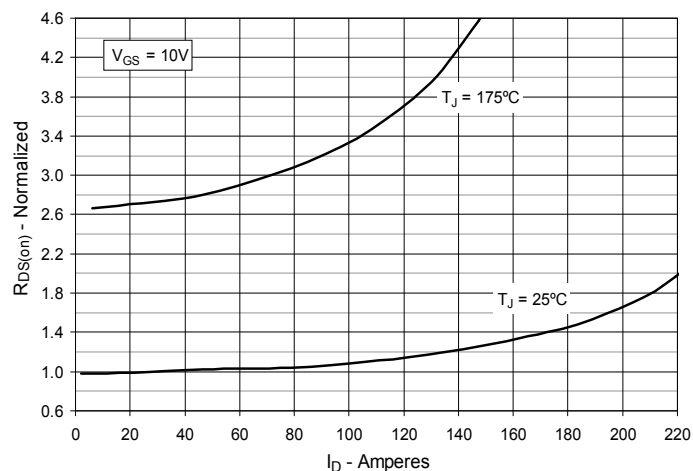


Fig. 6. Drain Current vs. Case Temperature

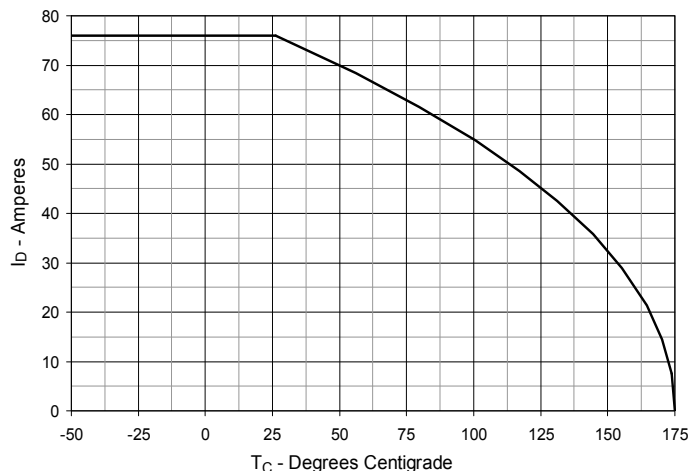


Fig. 7. Input Admittance

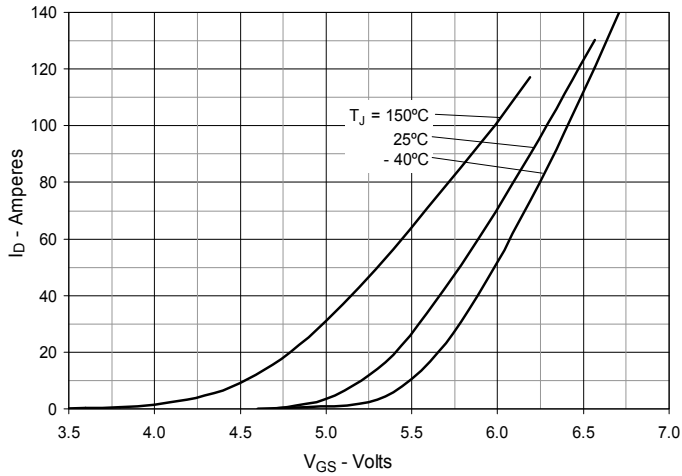


Fig. 8. Transconductance

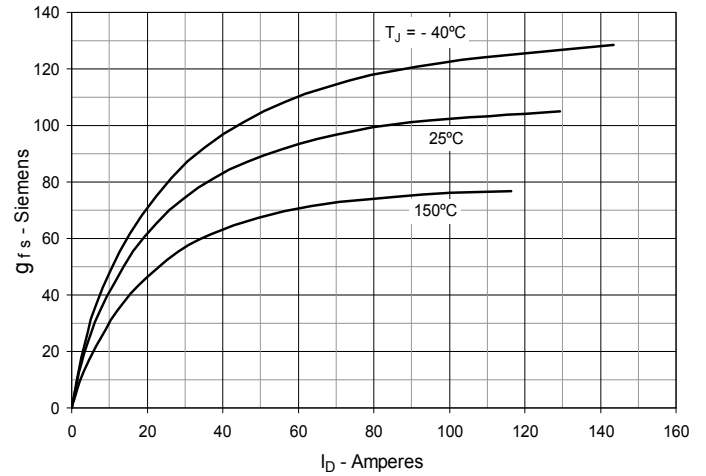


Fig. 9. Forward Voltage Drop of Intrinsic Diode

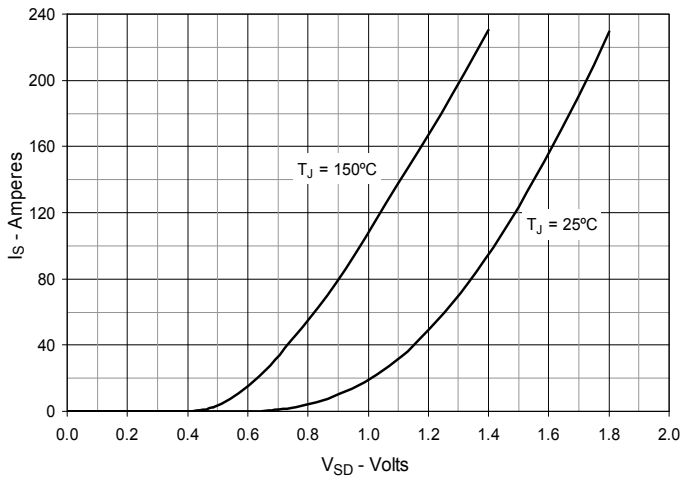


Fig. 10. Gate Charge

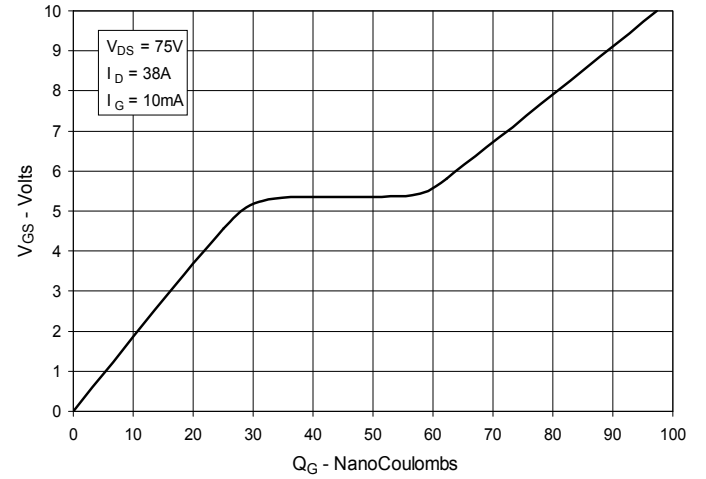


Fig. 11. Capacitance

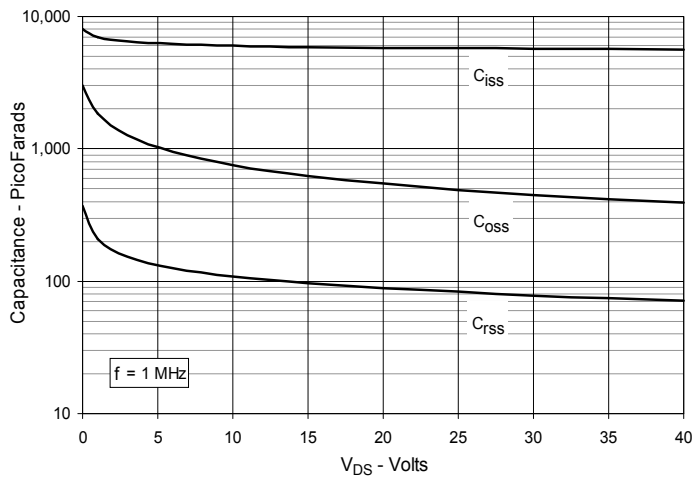


Fig. 12. Forward-Bias Safe Operating Area

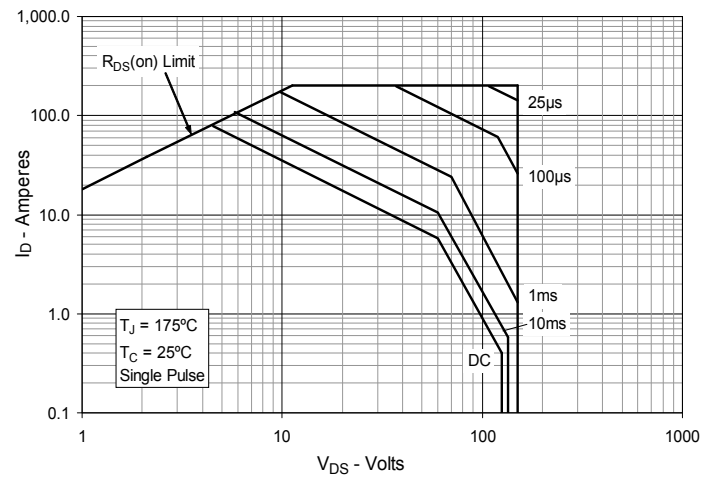


Fig. 13. Resistive Turn-on
Rise Time vs. Junction Temperature

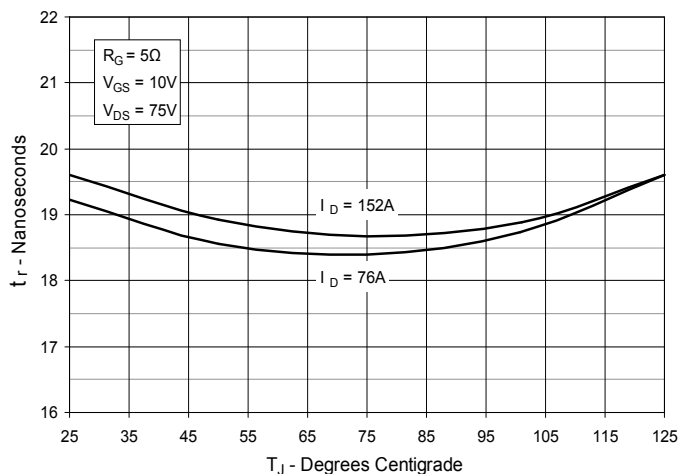


Fig. 14. Resistive Turn-on
Rise Time vs. Drain Current

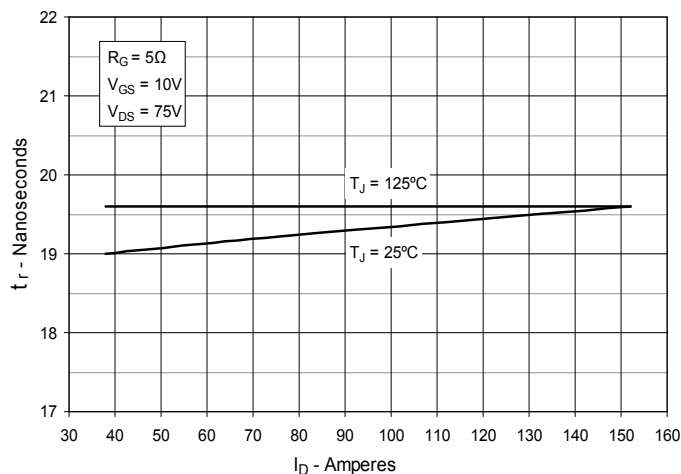


Fig. 15. Resistive Turn-on
Switching Times vs. Gate Resistance

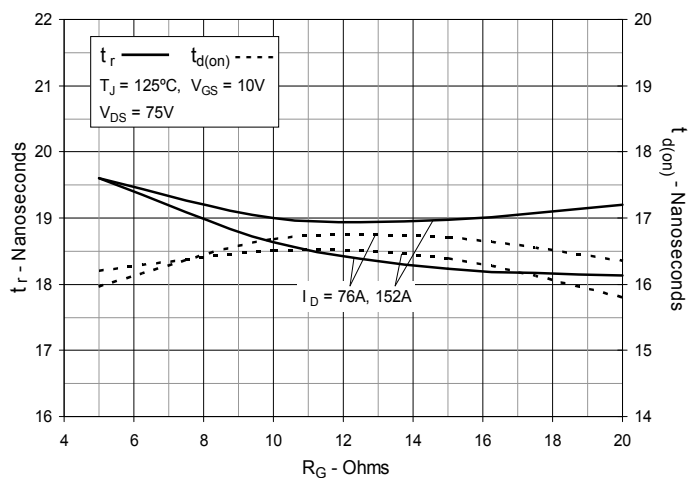


Fig. 16. Resistive Turn-off
Switching Times vs. Junction Temperature

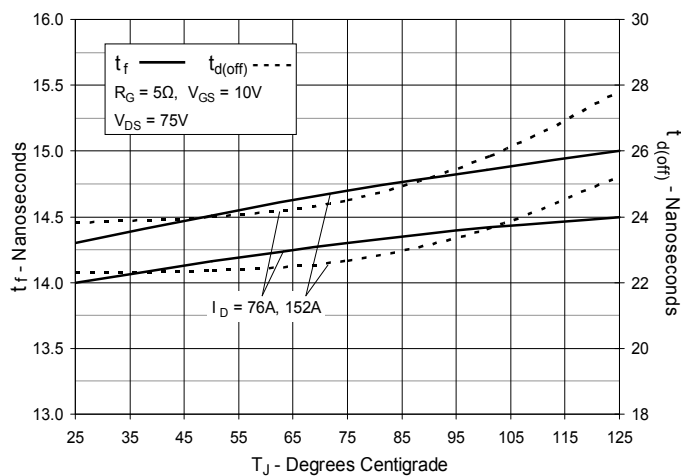


Fig. 17. Resistive Turn-off
Switching Times vs. Drain Current

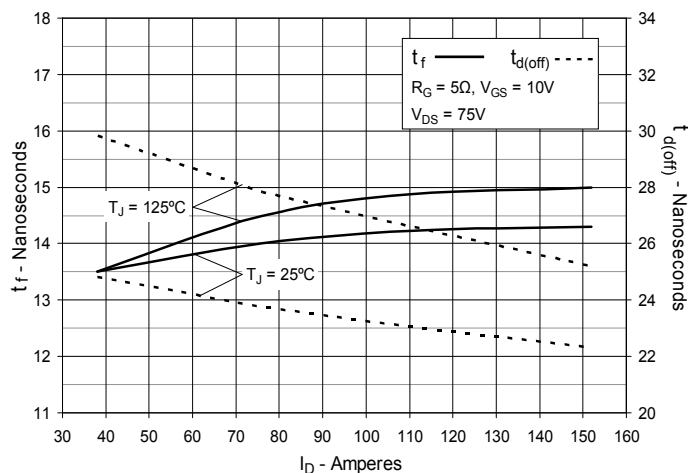


Fig. 18. Resistive Turn-off
Switching Times vs. Gate Resistance

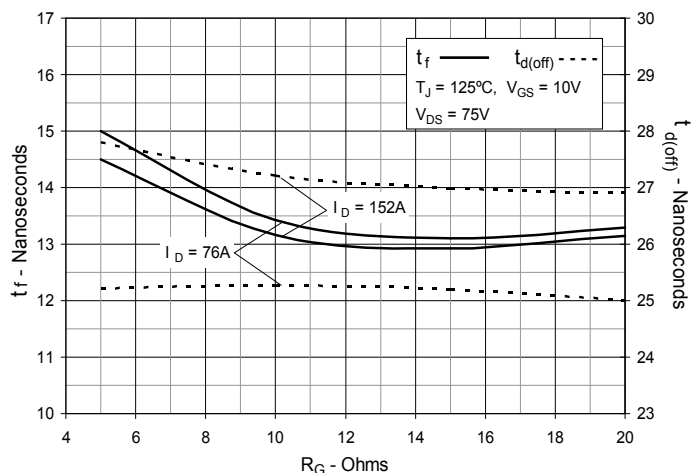


Fig. 19. Maximum Transient Thermal Impedance

