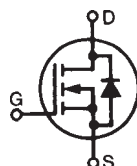


TrenchHV™ Power MOSFET HiperFET™

IXFH150N17T

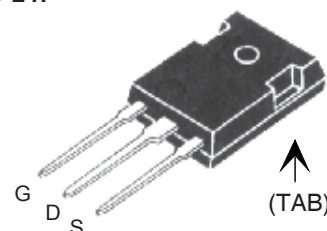
N-Channel Enhancement Mode
Avalanche Rated



$$\begin{aligned} V_{DSS} &= 175V \\ I_{D25} &= 150A \\ R_{DS(on)} &\leq 12m\Omega \end{aligned}$$

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 175°C	175	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 175°C , $R_{GS} = 1M\Omega$	175	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	150	A
I_{LRMS}	Lead Current Limit, RMS	75	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	400	A
I_A	$T_C = 25^\circ\text{C}$	75	A
E_{AS}	$T_C = 25^\circ\text{C}$	1.5	J
dV/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 175^\circ\text{C}$	15	V/ns
P_D	$T_C = 25^\circ\text{C}$	830	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	1.13 / 10	Nm/lb.in.
Weight		6	g

TO-247



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

Features

- International standard package
- Avalanche rated
- 175°C Operating Temperature
- High current handling capability

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
- Synchronous rectification

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = 250\mu A$	175		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 3mA$	2.5		5.0 V
I_{GSS}	$V_{GS} = \pm 20V$, $V_{DS} = 0V$			± 200 nA
I_{DSS}	$V_{DS} = V_{DSS}$			5 μA
	$V_{GS} = 0V$ $T_J = 150^\circ\text{C}$		250	μA
$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 0.5 \cdot I_{D25}$, Notes 1		10	12 m Ω

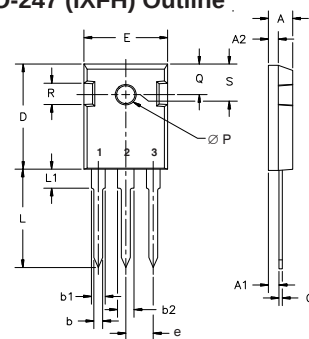
Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{V}$, $I_D = 60\text{A}$, Note 1	75	118	S
C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$		9800	pF
C_{oss}			1110	pF
C_{rss}			60	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$ $R_G = 2\Omega$ (External)		22	ns
t_r			30	ns
$t_{d(off)}$			58	ns
t_f			30	ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 25\text{A}$		155	nC
Q_{gs}			40	nC
Q_{gd}			47	nC
R_{thJC}			0.18	$^\circ\text{C/W}$
R_{thCH}		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	$V_{GS} = 0\text{V}$			150 A
I_{SM}	Repetitive, Pulse width limited by T_{JM}			400 A
V_{SD}	$I_F = 50\text{A}$, $V_{GS} = 0\text{V}$, Note 1			1.2 V
t_{rr}	$I_F = 75\text{A}$, $V_{GS} = 0\text{V}$ $-di/dt = 200\text{A}/\mu\text{s}$ $V_R = 85\text{V}$		96	ns
I_{RM}			0.65	A
Q_{RM}			13.5	nC

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

TO-247 (IXFH) Outline



Terminals: 1 - Gate 2 - Drain

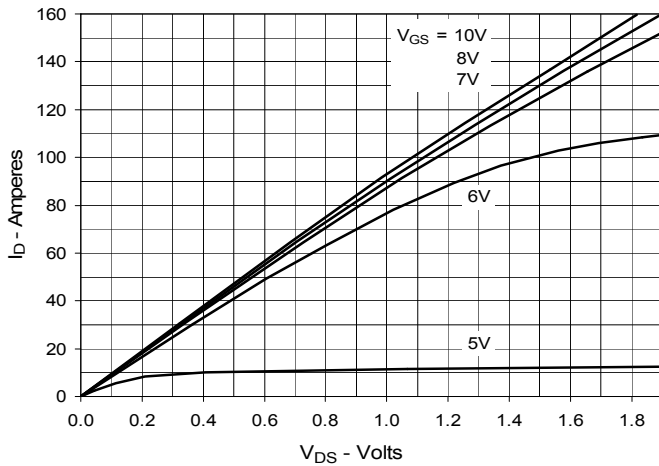
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A ₁	2.2	2.54	.087	.102
A ₂	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b ₁	1.65	2.13	.065	.084
b ₂	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L ₁		4.50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

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

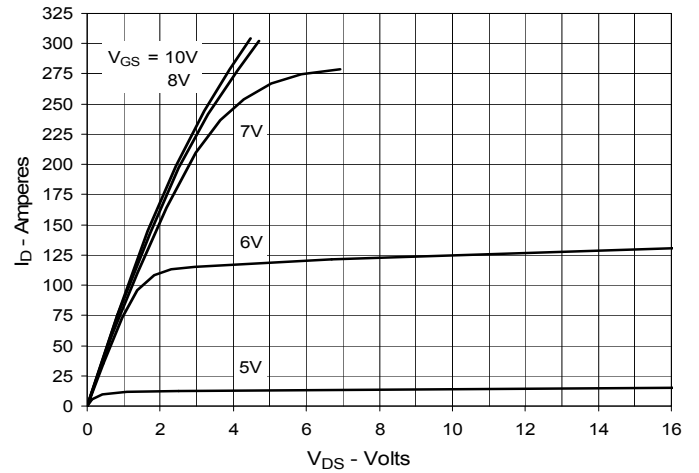
IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

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	7,157,338B2
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	

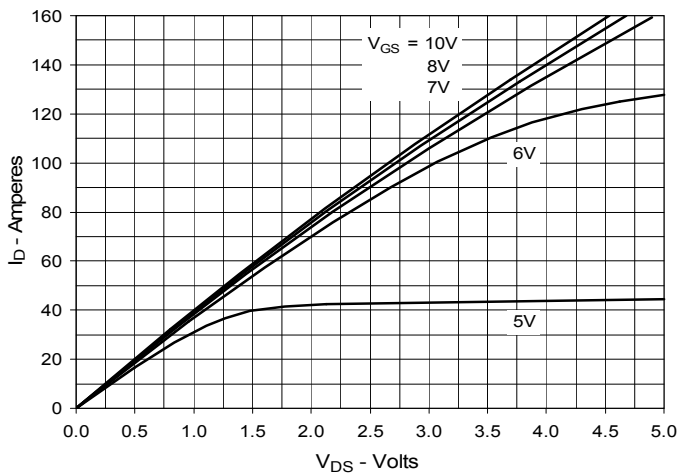
**Fig. 1. Output Characteristics
@ 25°C**



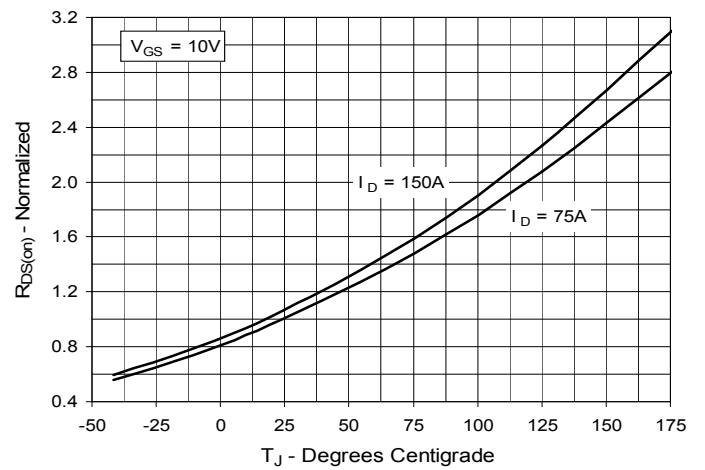
**Fig. 2. Extended Output Characteristics
@ 25°C**



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



**Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 75\text{A}$ Value
vs. Junction Temperature**



**Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 75\text{A}$ Value
vs. Drain Current**

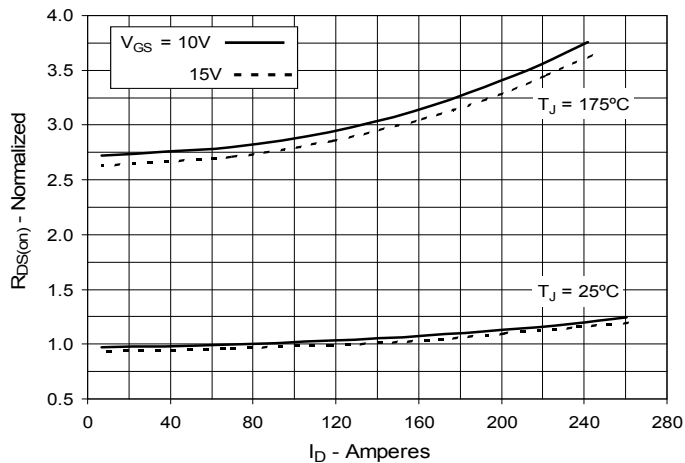


Fig. 6. Drain Current vs. Case Temperature

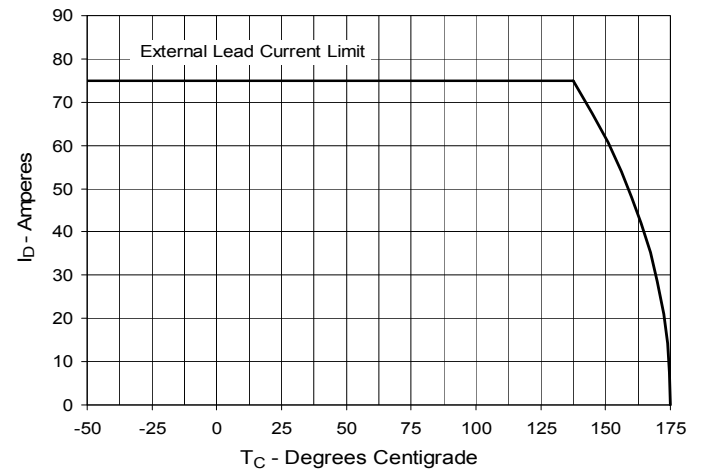


Fig. 7. Input Admittance

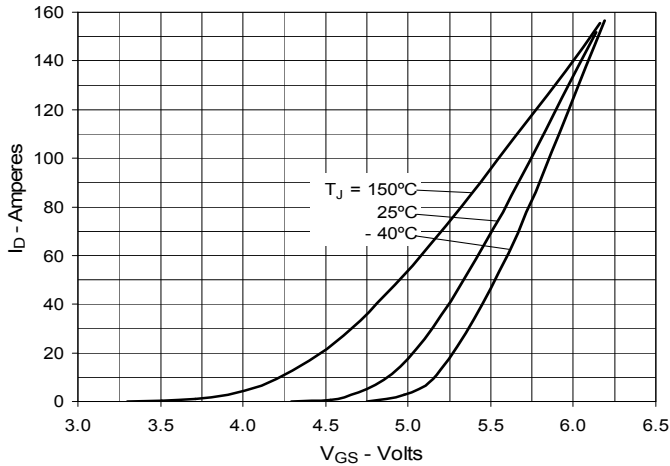


Fig. 8. Transconductance

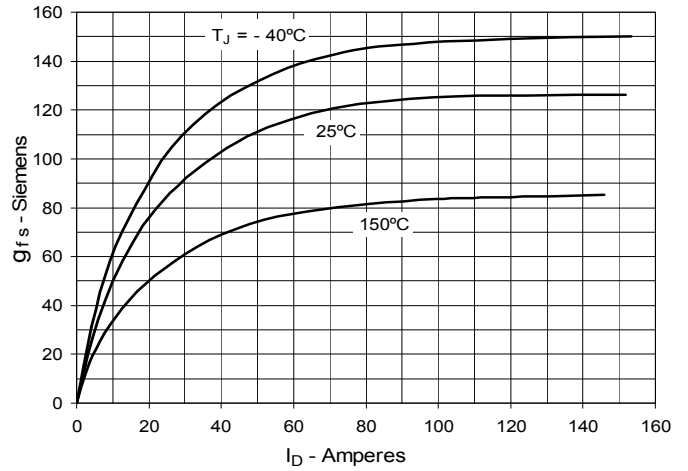


Fig. 9. Forward Voltage Drop of Intrinsic Diode

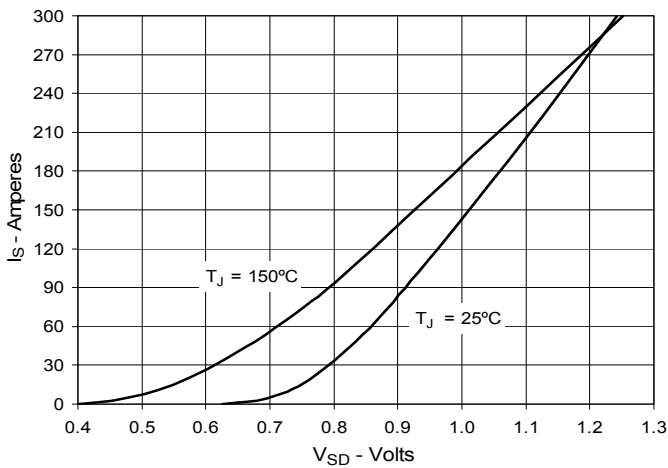


Fig. 10. Gate Charge

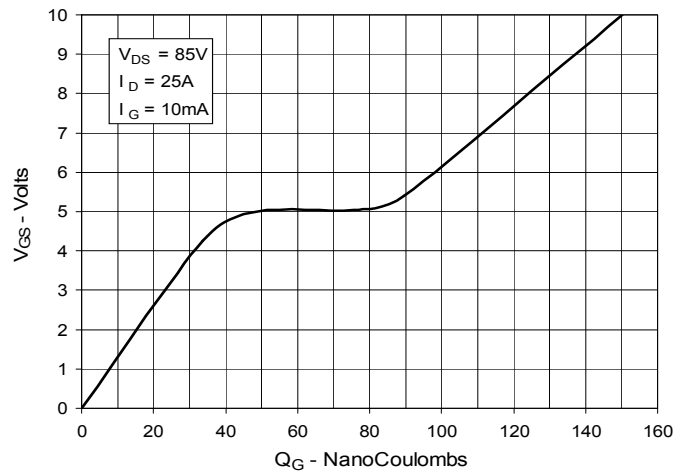


Fig. 11. Capacitance

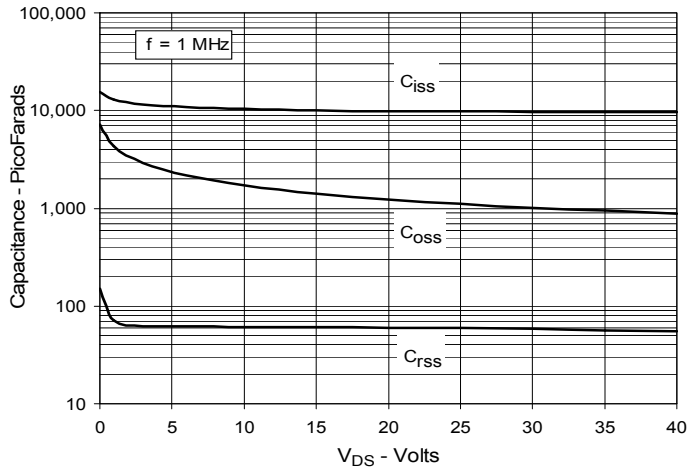
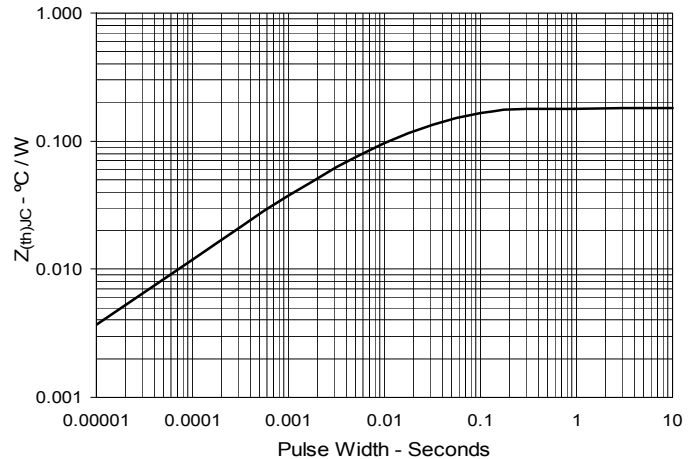
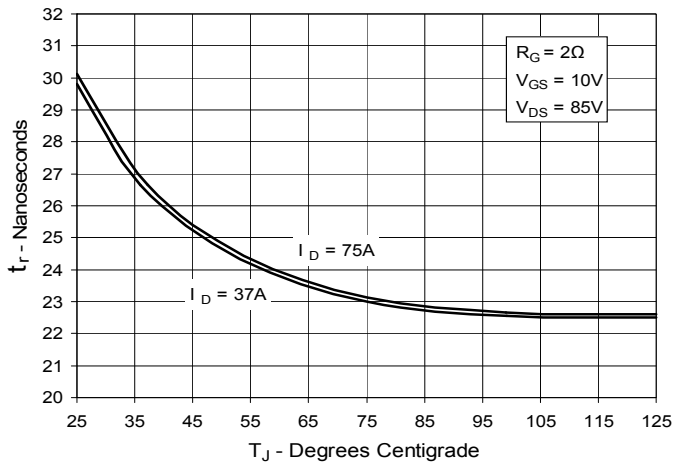


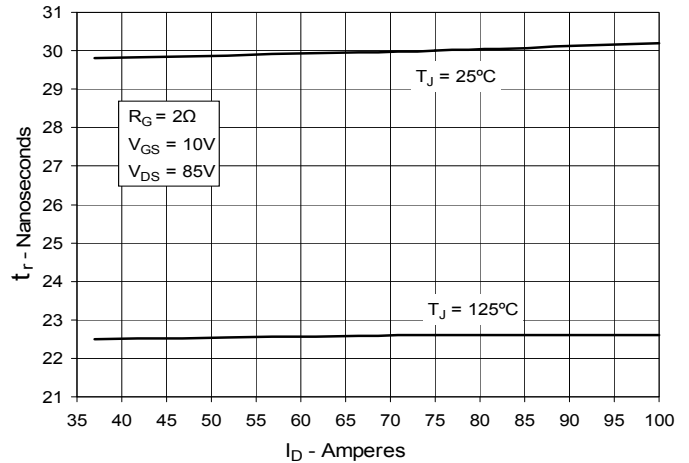
Fig. 12. Maximum Transient Thermal Impedance



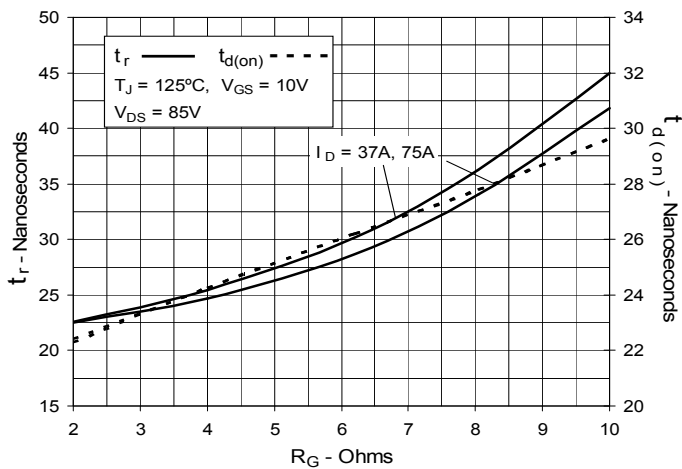
**Fig. 13. Resistive Turn-on
Rise Time vs. Junction Temperature**



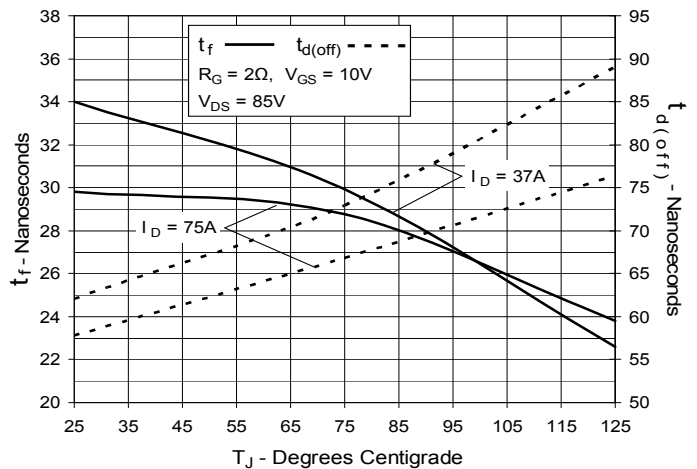
**Fig. 14. Resistive Turn-on
Rise Time vs. Drain Current**



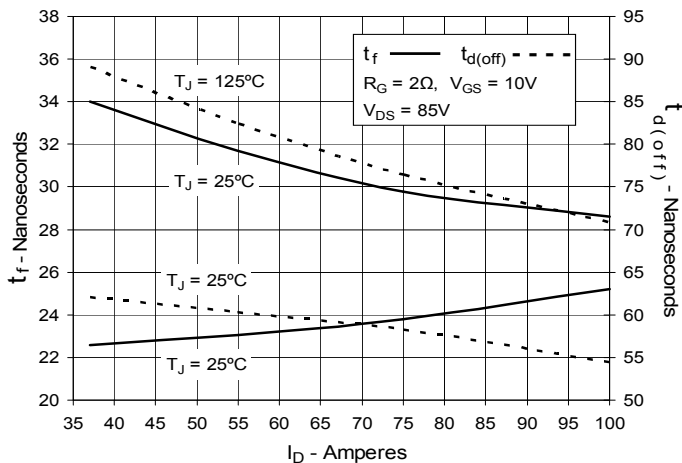
**Fig. 15. Resistive Turn-on
Switching Times vs. Gate Resistance**



**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**

