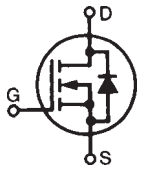
IXYS

TrenchMV™ Power MOSFET

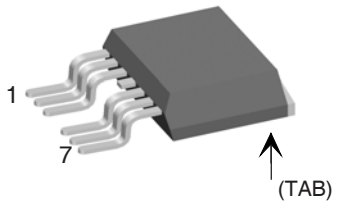
IXTA130N10T7

V_{DSS} = 100V
I_{D25} = 130A
$R_{DS(on)}$ ≤ 9.1mΩ

N-Channel Enhancement Mode
Avalanche Rated



TO-263 (7-lead) (IXTA..7)



Pins: 1 - Gate
2, 3 - Source
4 - NC (cut)
5,6,7 - Source
TAB (8) - Drain

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 175°C	100	V
V_{DGR}	T_J = 25°C to 175°C, R_{GS} = 1MΩ	100	V
V_{GSM}	Transient	± 20	V
I_{D25}	T_C = 25°C	130	A
I_{LRMS}	Lead Current Limit, RMS	120	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	350	A
I_A	T_C = 25°C	65	A
E_{AS}	T_C = 25°C	400	mJ
P_D	T_C = 25°C	360	W
T_J		-55 ... +175	°C
T_{JM}		175	°C
T_{stg}		-55 ... +175	°C
T_L	1.6mm (0.062in.) from case for 10s	300	°C
T_{SOLD}	Plastic body for 10 seconds	260	°C
Weight		3	g

Symbol	Test Conditions (T_J = 25°C unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250μA	100			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250μA	2.5		4.5	V
I_{GSS}	V_{GS} = ± 20V, V_{DS} = 0V			±200	nA
I_{DSS}	$V_{DS} = V_{DSS}$			5	μA
	V_{GS} = 0V T_J = 150°C			250	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 25A, Notes 1, 2			9.1	mΩ

Features

- Ultra-low On Resistance
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
  - easy to drive and to protect
- 175°C Operating Temperature

Advantages

- Easy to mount
- Space savings
- High power density

Applications

- Automotive
  - Motor Drives
  - 42V Power Bus
  - ABS Systems
- DC/DC Converters and Off-line UPS
- Primary Switch for 24V and 48V Systems
- Distributed Power Architechtures and VRMs
- Electronic Valve Train Systems
- High Current Switching Applications
- High Voltage Synchronous Recifier

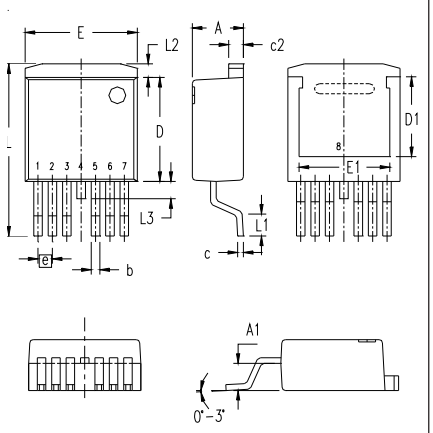
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Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10V, I_D = 60A, Note 1	55	93		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		5080		pF
C_{oss}			635		pF
C_{rss}			95		pF
$t_{d(on)}$	**Resistive Switching Times**		30		ns
t_r	V_{GS} = 10V, V_{DS} = 20V, I_D = 25A		47		ns
$t_{d(off)}$	R_G = 5Ω (External)		44		ns
t_f			28		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 25		104		nC
Q_{gs}			30		nC
Q_{gd}			29		nC
R_{thJC}				0.42	°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			130	A
I_{SM}	Repetitive, Pulse width limited by T_{JM}			350	A
V_{SD}	I_F = 25A, V_{GS} = 0V, Note 1			1.0	V
t_{rr}	I_F = 25A, V_{GS} = 0V		67		ns
I_{RM}	-di/dt = 100A/μs		4.7		A
Q_{RM}	V_R = 50V		160		nC

TO-263 (7-lead) (IXTA..7) Outline



Pins: 1 - Gate
2, 3 - Source
4 - Drain
5,6,7 - Source
Tab (8) - Drain

SYM	INCHES MIN	INCHES MAX	MILLIMETER MIN	MILLIMETER MAX
A	.170	.185	4.30	4.70
A1	.085	.104	2.15	2.65
b	.026	.035	0.65	0.90
c	.016	.024	0.40	0.60
c2	.049	.055	1.25	1.40
D	.355	.370	9.00	9.40
D1	.272	.280	6.90	7.10
E	.386	.402	9.80	10.20
E1	.311	.319	7.90	8.10
e	.050 BSC		1.27 BSC	
L	.591	.614	15.00	15.60
L1	.091	.110	2.30	2.80
L2	.039	.059	1.00	1.50
L3	.000	.059	0.00	1.50

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

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 4,850,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405 B2 6,710,463 6,727,585 6,759,692 6,771,478 B2 7,005,734 B2 7,063,975 B2 7,071,537 7,157,338B2

Fig. 1. Output Characteristics @ 25ºC

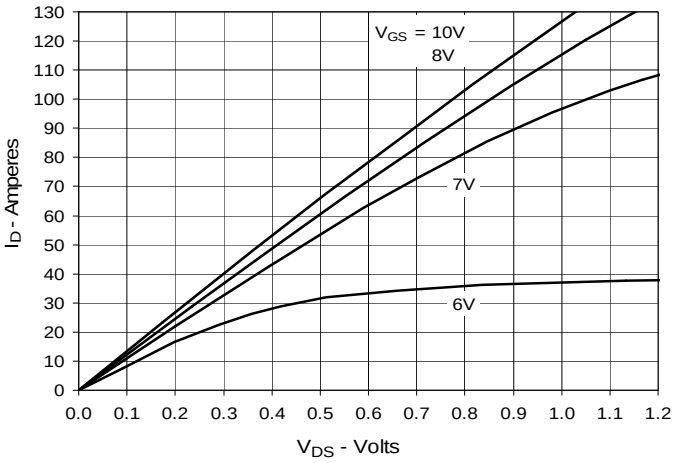


Fig. 2. Extended Output Characteristics @ 25ºC

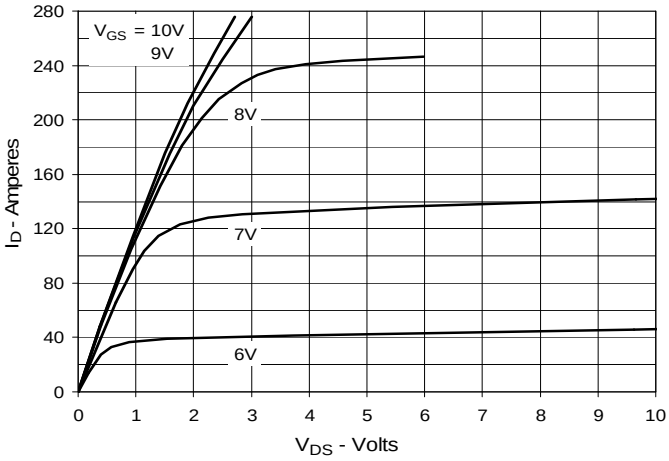


Fig. 3. Output Characteristics @ 150ºC

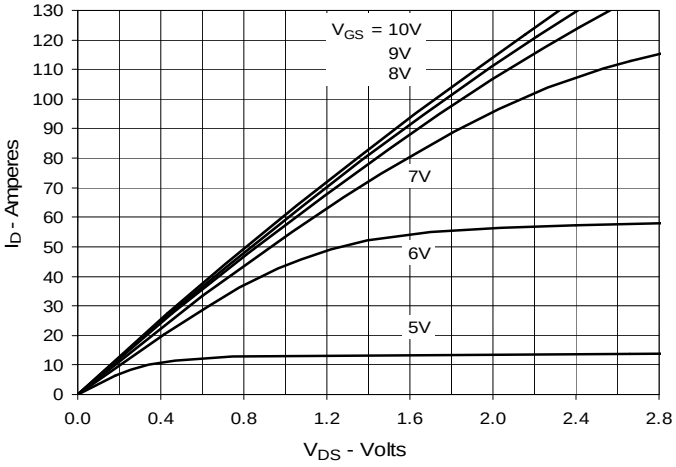


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 65A Value vs. Junction Temperature

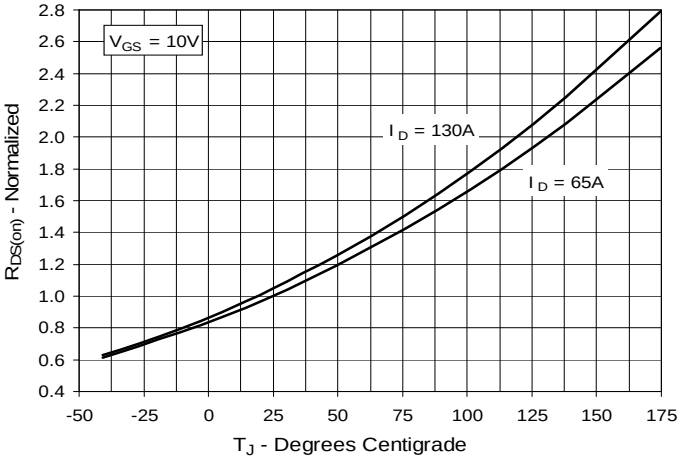


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 65A Value vs. Drain Current

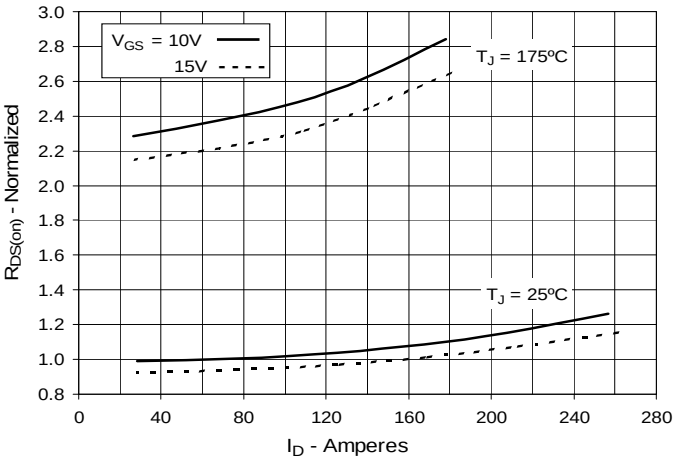
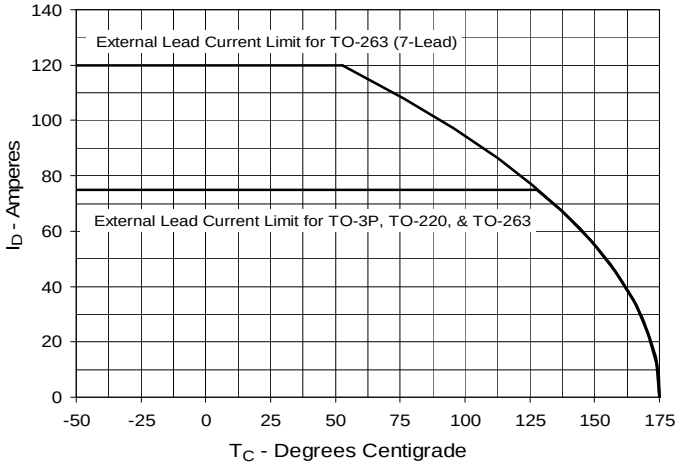


Fig. 6. Drain Current vs. Case Temperature



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Fig. 7. Input Admittance

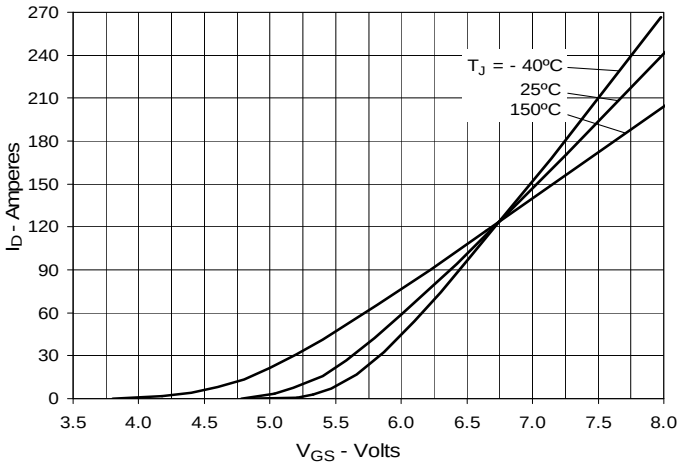


Fig. 8. Transconductance

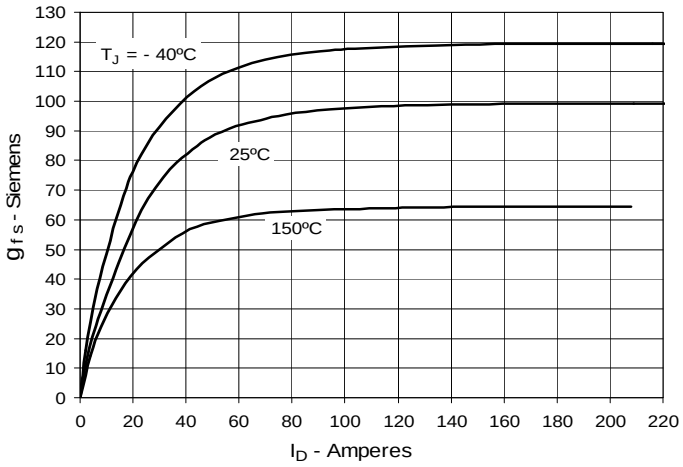


Fig. 9. Forward Voltage Drop of Intrinsic Diode

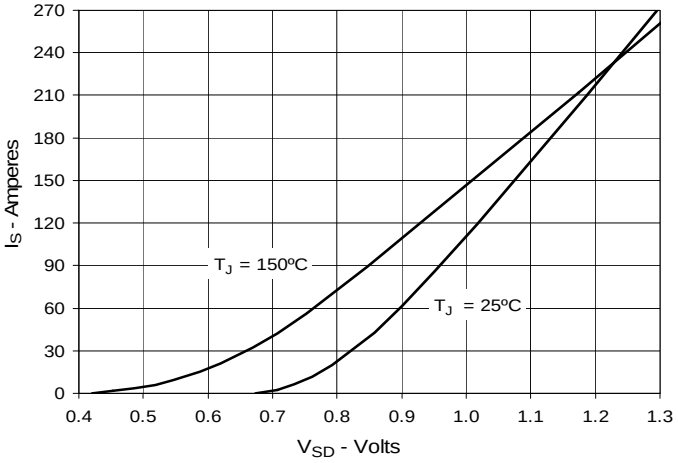


Fig. 10. Gate Charge

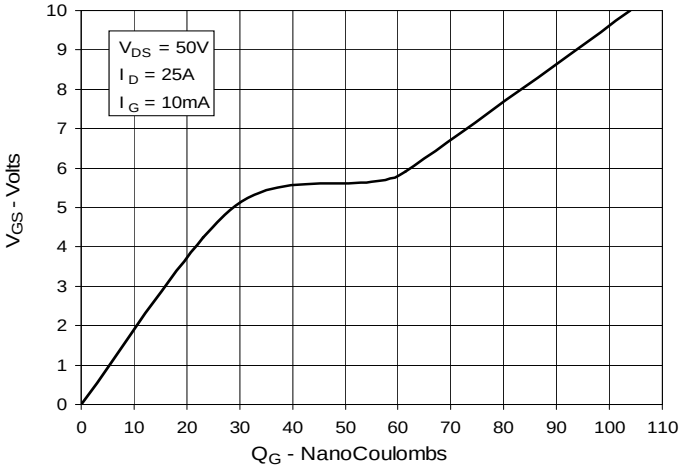


Fig. 11. Capacitance

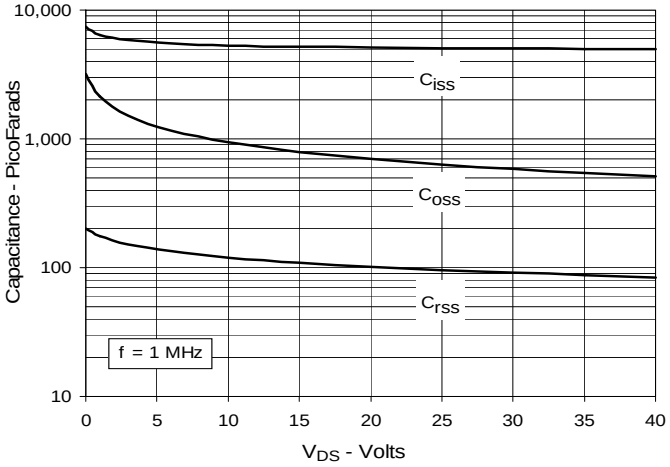
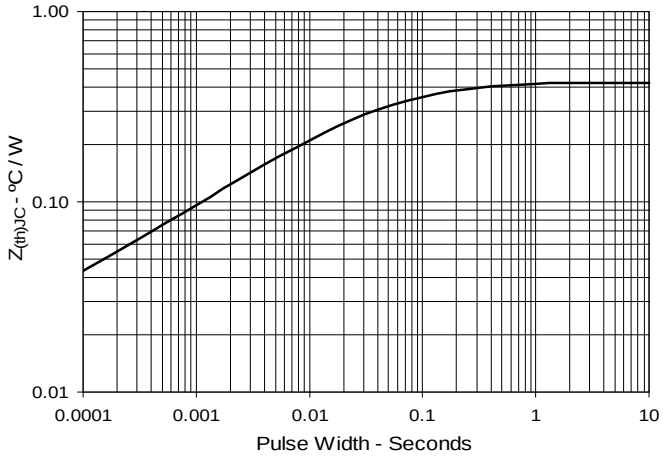


Fig. 12. Maximum Transient Thermal Impedance



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

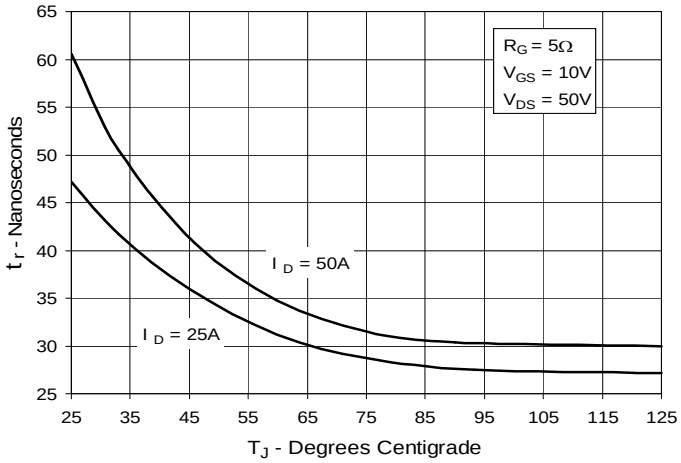


Fig. 14. Resistive Turn-on Rise Time vs. Drain Current

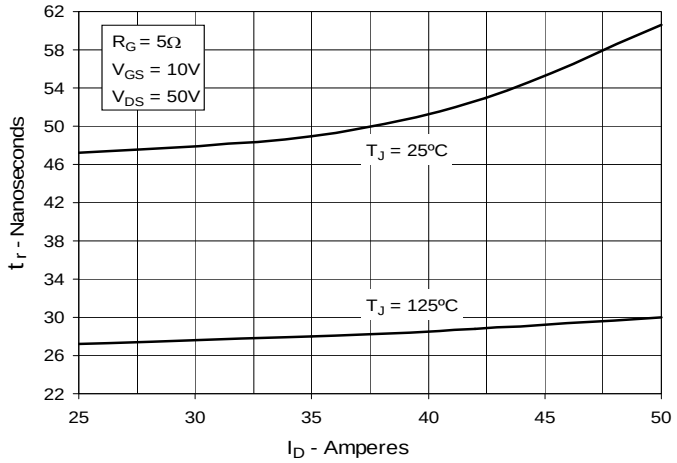


Fig. 15. Resistive Turn-on Switching Times vs. Gate Resistance

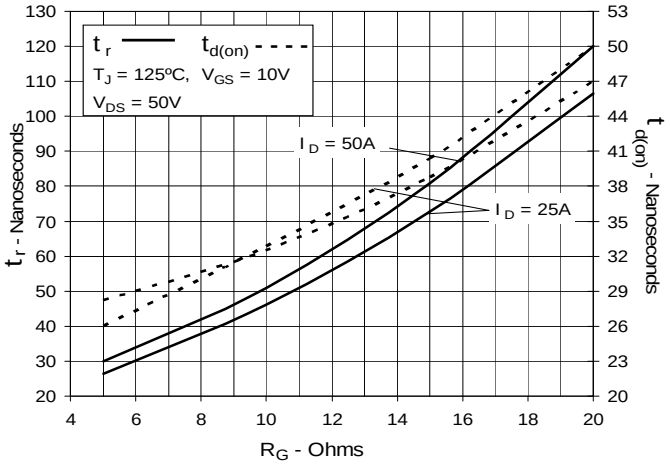


Fig. 16. Resistive Turn-off Switching Times vs. Junction Temperature

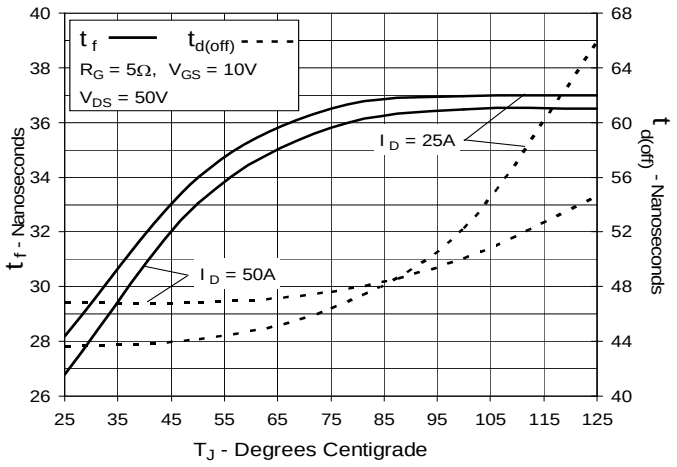


Fig. 17. Resistive Turn-off Switching Times vs. Drain Current

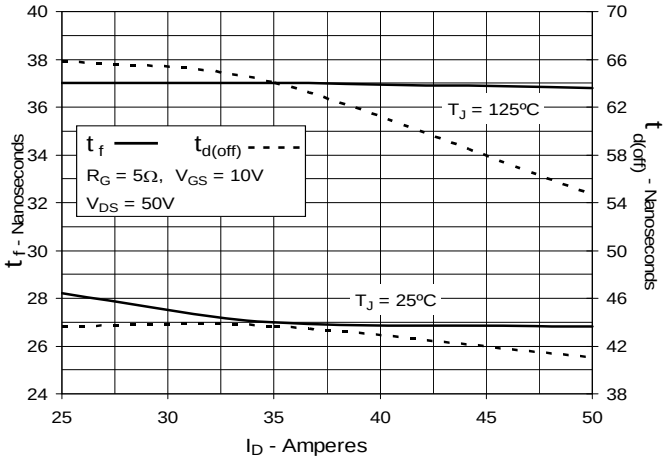
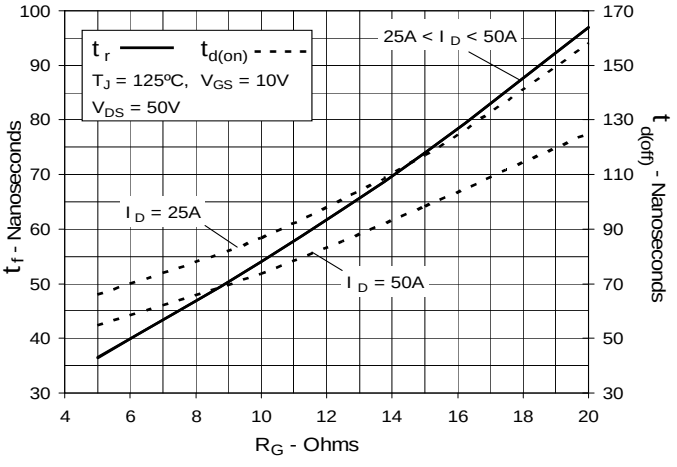


Fig. 18. Resistive Turn-off Switching Times vs. Gate Resistance



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