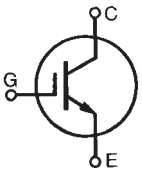
IXYS

High Voltage IGBT
For Capacitor Discharge Applications

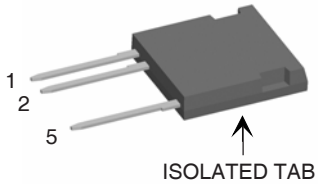
IXGF25N250

V_{CES} = 2500V
I_{C25} = 30A
$V_{CE(sat)}$ ≤ 2.9V

(Electrically Isolated Tab)



ISOPLUS i4-Pak™



1 = Gate 5 = Collector
2 = Emitter

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	2500	V
V_{CGR}	T_J = 25°C to 150°C, R_{GE} = 1MΩ	2500	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	T_C = 25°C	30	A
I_{C110}	T_C = 110°C	15	A
I_{CM}	T_C = 25°C, V_{GE} = 20V, 1ms	200	A
SSOA	V_{GE}= 20V, T_{VJ} = 125°C, R_G = 20Ω	I_{CM} = 240	A
(RBSOA)	Clamped Inductive Load	0.5 • V_{CES}	
P_C	T_C = 25°C	114	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	1.6 mm (0.062 in.) from Case for 10s	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
F_C	Mounting Force	20..120/4.5..27	Nm/lbin.
V_{ISOL}	50/60Hz, 1 minute	2500	V~
Weight		5	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{CES}	I_C = 250μA, V_{GE} = 0V	2500			V
$V_{GE(th)}$	I_C = 250μA, V_{CE} = V_{GE}	3.0		5.0	V
I_{CES}	V_{CE} = 0.8 • V_{CES}, V_{GE} = 0V, Note 2			50	μA
	T_J = 125°C			1	mA
I_{GES}	V_{CE} = 0V, V_{GE} = ±20V			±100	nA
$V_{CE(sat)}$	I_C = 25A, V_{GE} = 15V, Note 1			2.9	V
	I_C = 75A			5.2	V

Features

- UL Recognized Package
- Electrically Isolated Tab
- High Peak Current Capability
- Low Saturation Voltage
- MOS Gate Turn-On
  - Drive Simplicity
- Rugged NPT Structure
- Molding Epoxies Meet UL 94 V-0 Flammability Classification

Applications

- Capacitor Discharge
- Pulser Circuits

Advantages

- High Power Density
- Easy to Mount

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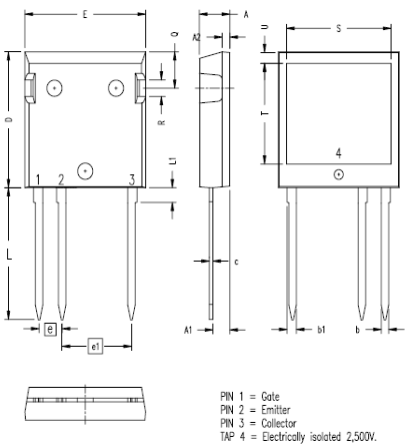
Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.
g_{fs}	I_C = 50A, V_{CE} = 10V, Note 1	16	26	S
$I_{C(ON)}$	V_{GE} = 15V, V_{CE} = 20V, Note 1		240	A
C_{ies}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz		2970	pF
C_{oes}			98	pF
C_{res}			36	pF
Q_g	I_C = 50A, V_{GE} = 15V, V_{CE} = 0.5 • V_{CES}		75	nC
Q_{ge}			15	nC
Q_{gc}			30	nC
$t_{d(on)}$	**Resistive Switching Times** I_C = 50A, V_{GE} = 15V V_{CE} = 1250V, R_G = 5Ω		68	ns
t_r			233	ns
$t_{d(off)}$			209	ns
t_f			200	ns
R_{thJC}				1.10 °C/W
R_{thCS}			0.15	°C/W
R_{thJA}			30	°C/W

Notes: 1. Pulse Test, t < 300μs; Duty Cycle, d < 2%.
2. Device must be heatsunk for high temperature leakage current measurements to avoid thermal runaway.

ISOPLUS i4-Pak™ (HV) (IXGF) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.190	.205	4.83	5.21
A1	.102	.118	2.59	3.00
A2	.046	.085	1.17	2.16
b	.045	.055	1.14	1.40
b1	.058	.068	1.47	1.73
C	.020	.029	0.51	0.74
D	.819	.840	20.80	21.34
E	.770	.799	19.56	20.29
e	.150 BSC		3.81 BSC	
e1	.450 BSC		11.43 BSC	
L	.780	.840	19.81	21.34
L1	.083	.102	2.11	2.59
Q	.210	.244	5.33	6.20
R	.100	.180	2.54	4.57
S	.660	.690	16.76	17.53
T	.590	.620	14.99	15.75
U	.065	.080	1.65	2.03

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 @ 25ºC

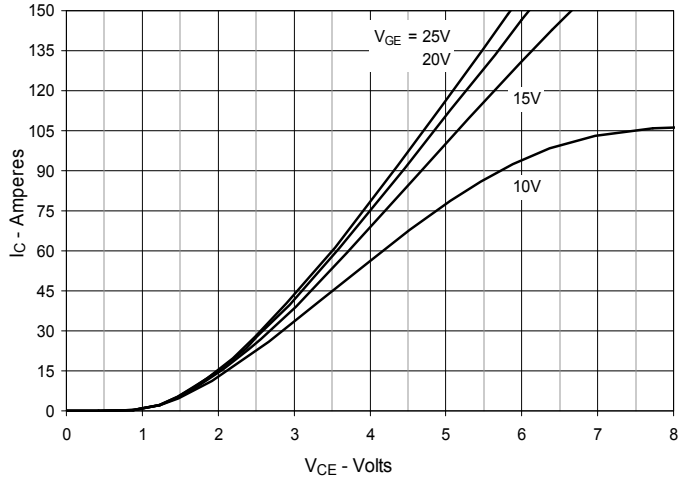


Fig. 2. Extended Output Characteristics @ 25ºC

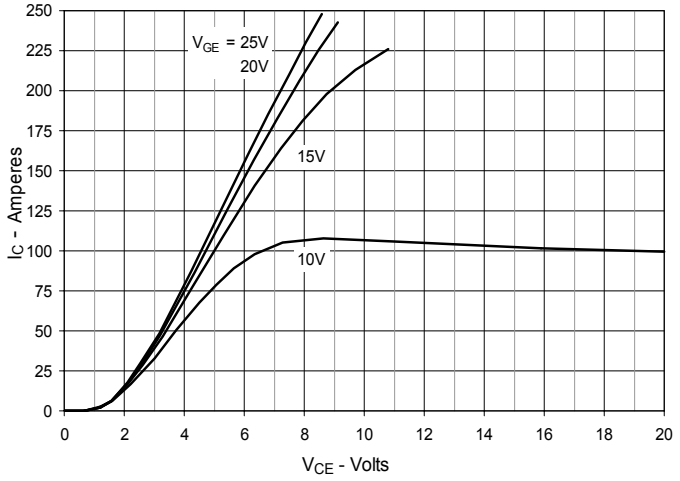


Fig. 3. Output Characteristics @ 125ºC

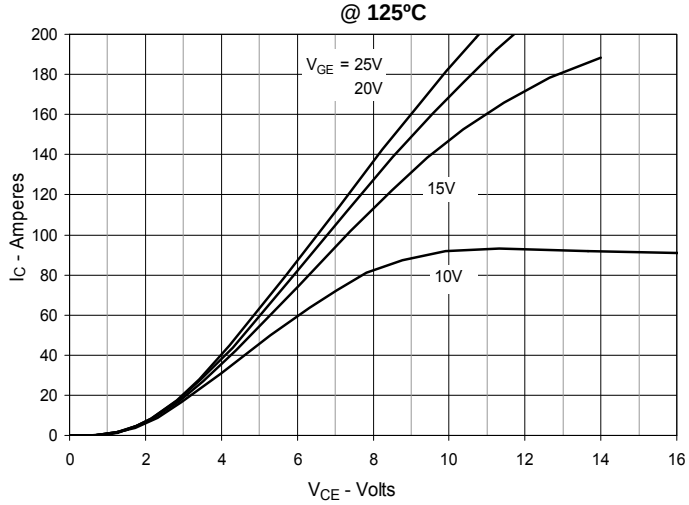


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

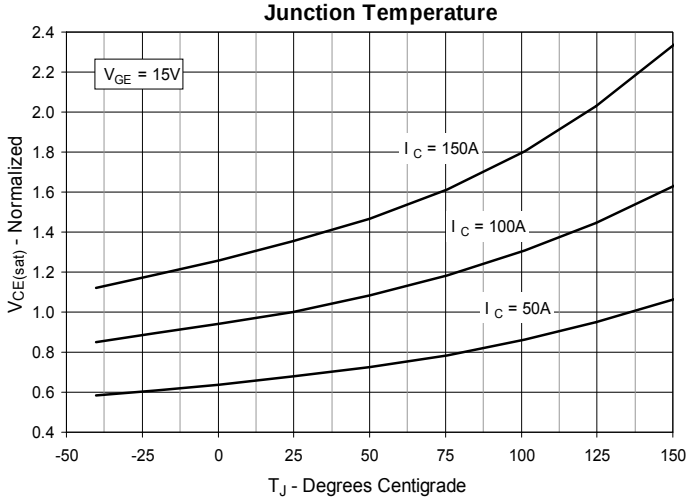


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

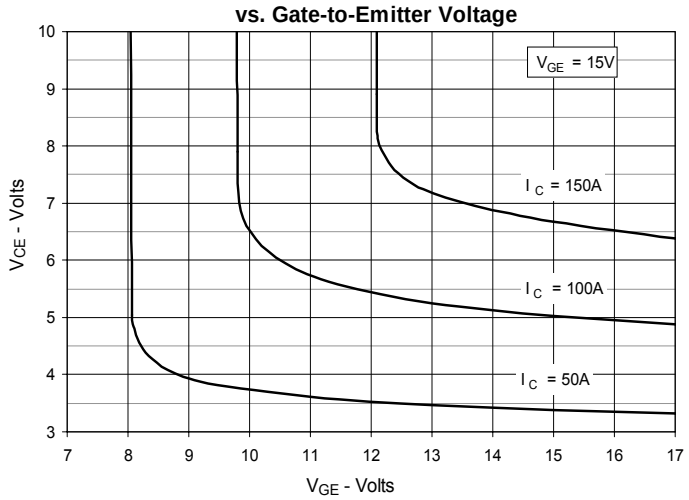


Fig. 6. Input Admittance

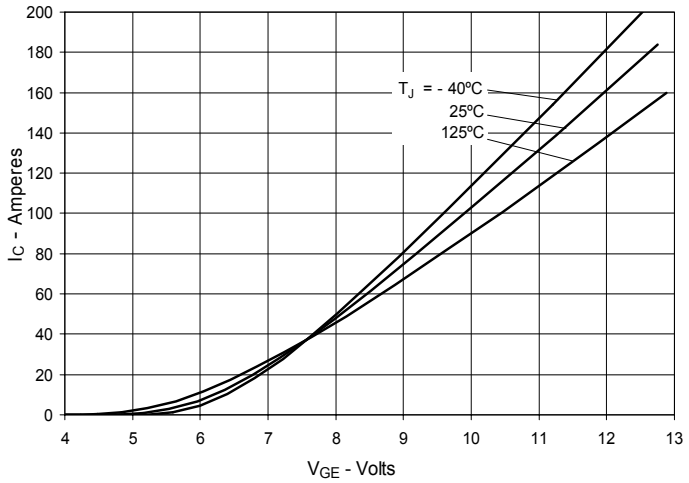


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Fig. 7. Transconductance

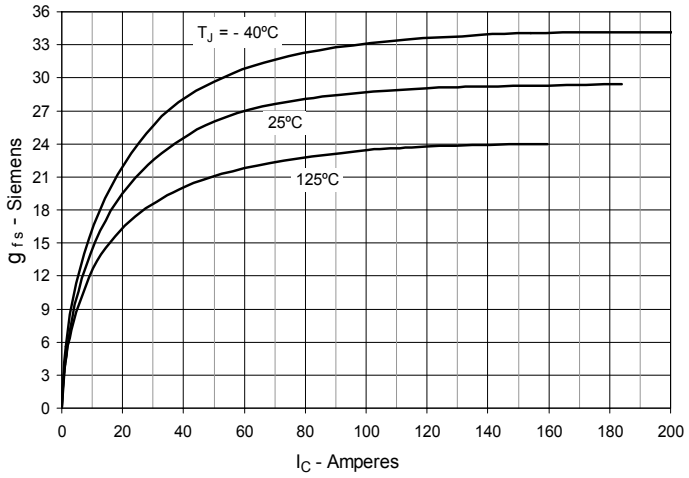

Fig. 8. Gate Charge

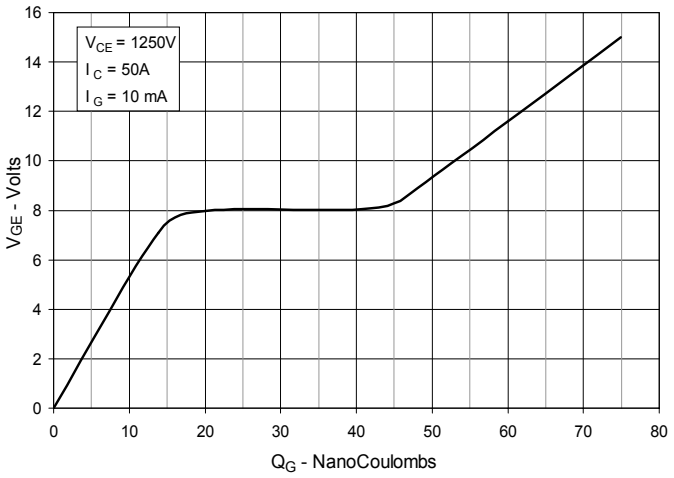

Fig. 9. Reverse-Bias Safe Operating Area

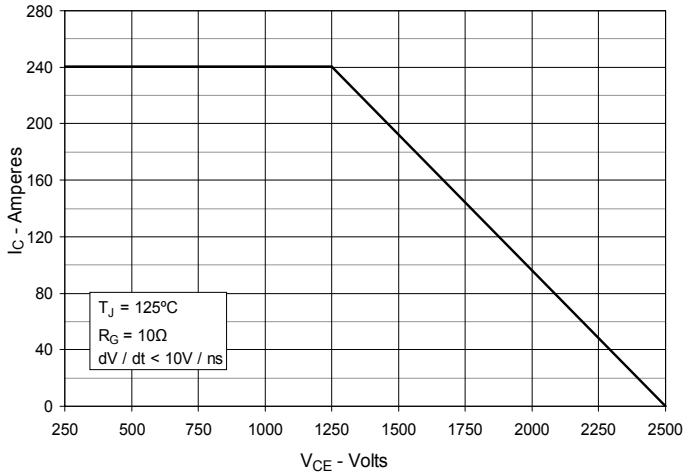

Fig. 10. Capacitance

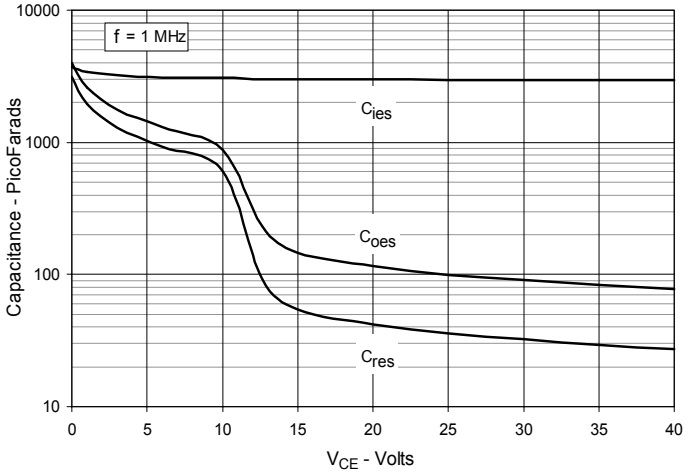

Fig. 11. Maximum Transient Thermal Impedance

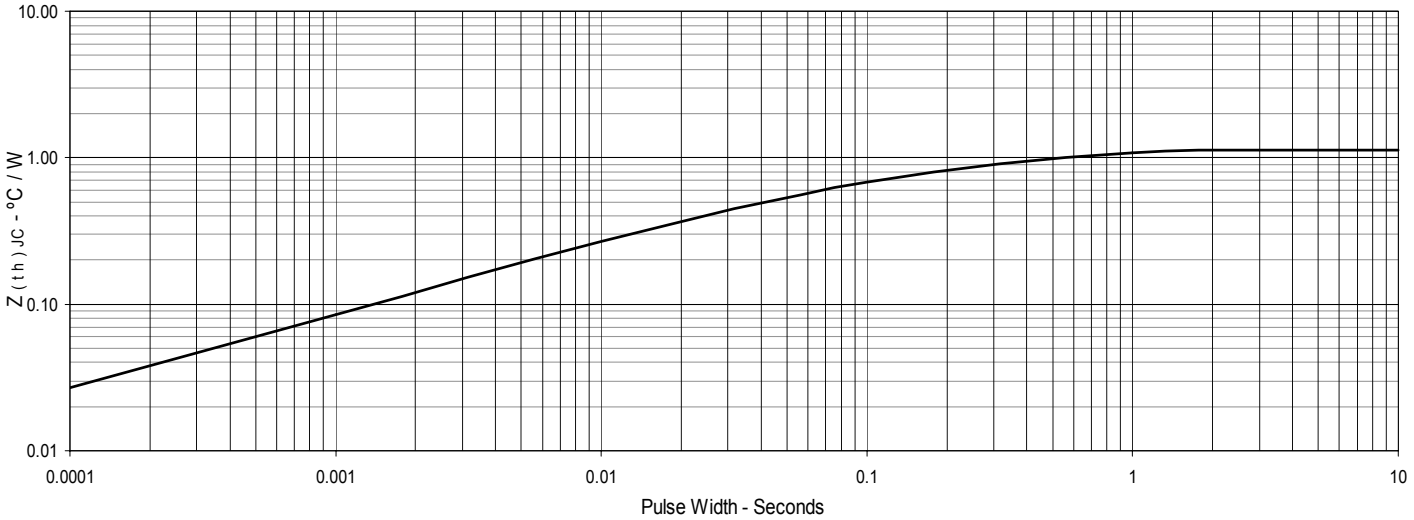

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Fig. 12. Resistive Turn-on Rise Time vs. Junction Temperature

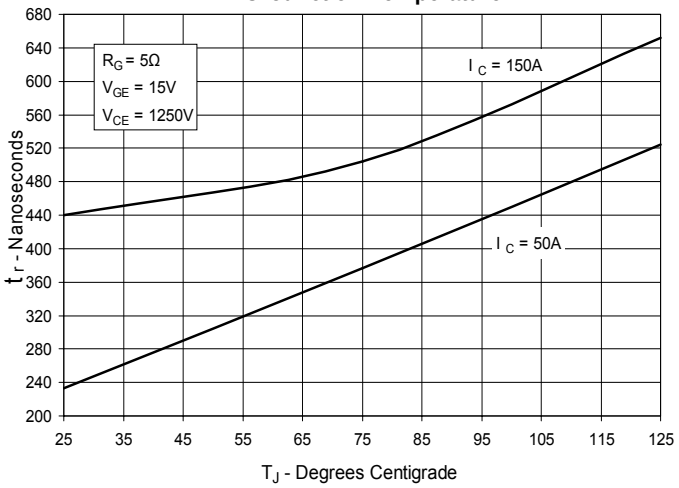


Fig. 13. Resistive Turn-on Rise Time vs. Collector Current

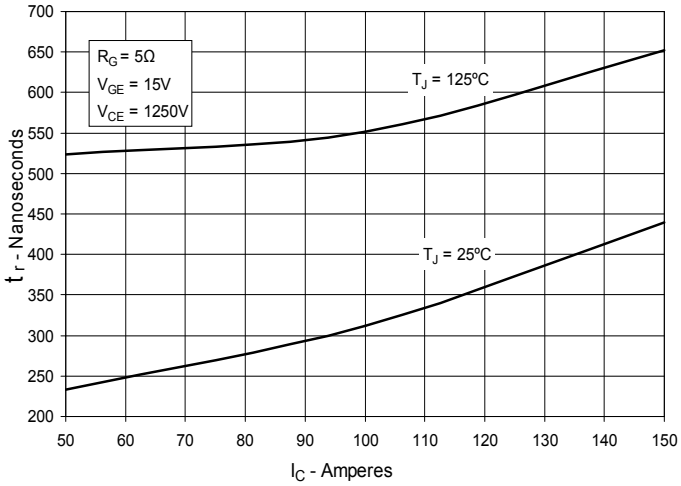


Fig. 14. Resistive Turn-on Switching Times vs. Gate Resistance

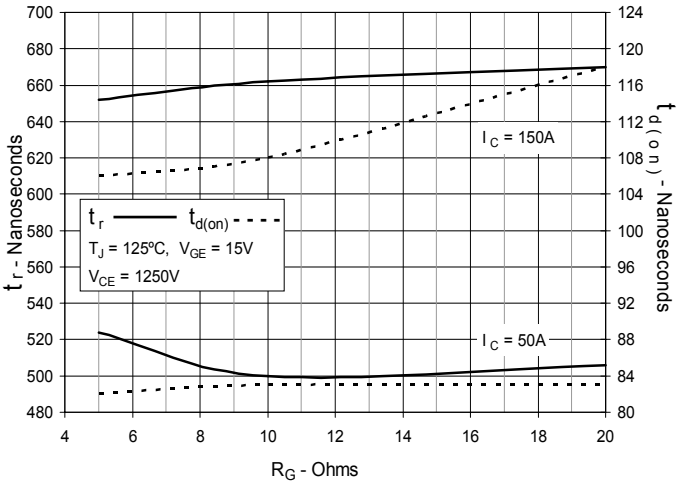


Fig. 15. Resistive Turn-off Switching Times vs. Junction Temperature

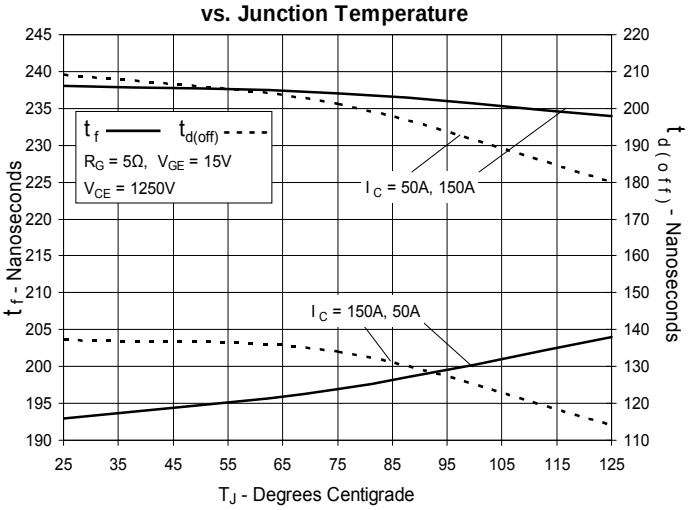


Fig. 16. Resistive Turn-off Switching Times vs. Collector Current

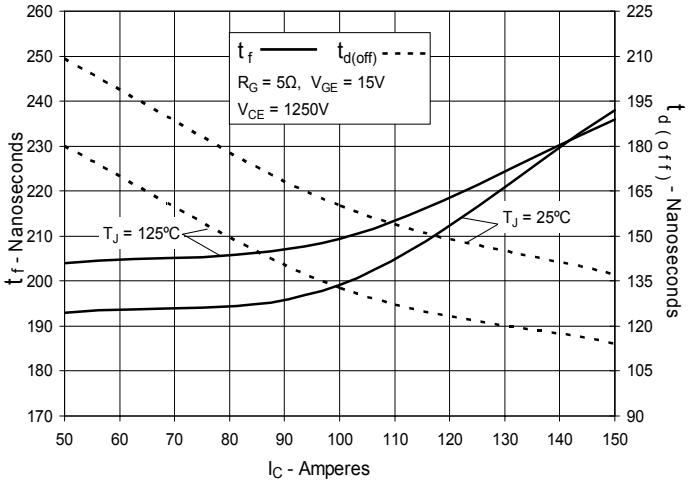
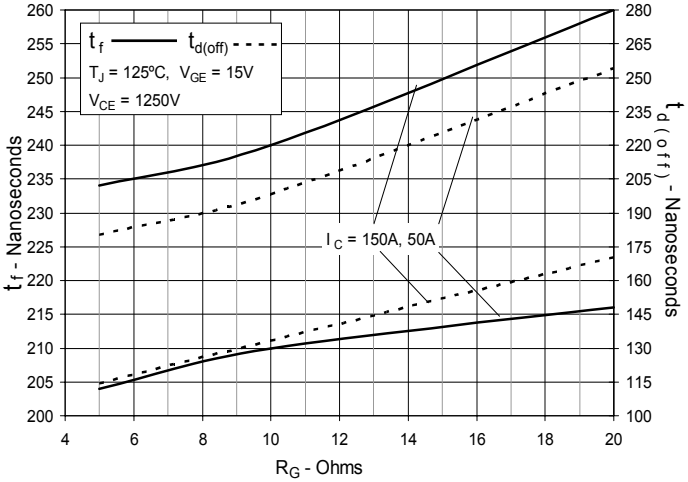


Fig. 17. Resistive Turn-off Switching Times vs. Gate Resistance



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