

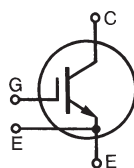
## High Voltage IGBT

## IXGN100N170

$$V_{CES} = 1700V$$

$$I_{C90} = 95A$$

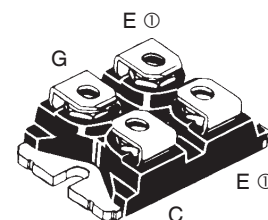
$$V_{CE(sat)} \leq 3.0V$$



Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ C$ to $150^\circ C$	1700	V
$V_{CGR}$	$T_J = 25^\circ C$ to $150^\circ C$ , $R_{GE} = 1M\Omega$	1700	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ C$	160	A
$I_{C90}$	$T_C = 90^\circ C$	95	A
$I_{CM}$	$T_C = 25^\circ C$ , 1ms	600	A
<b>SSOA</b>	$V_{GE} = 15V$ , $T_{VJ} = 125^\circ C$ , $R_G = 1\Omega$	$I_{CM} = 200$	A
<b>(RBSOA)</b>	Clamped inductive load @ $0.8 \cdot V_{CES}$		
$t_{sc}$	$V_{GE} = 15V$ , $V_{CE} = 1250V$ , $T_J = 125^\circ C$	10	$\mu s$
<b>(SCSOA)</b>	$R_G = 10\Omega$ , non repetitive		
$P_C$	$T_C = 25^\circ C$	735	W
$T_J$		-55 ... +150	$^\circ C$
$T_{JM}$		150	$^\circ C$
$T_{stg}$		-55 ... +150	$^\circ C$
$V_{ISOL}$	50/60Hz $I_{ISOL} \leq 1mA$	$t = 1min$ $t = 1s$	2500 3000 V~ V~
$M_d$	Mounting torque Terminal connection torque (M4)	1.5/13 1.3/11.5	Nm/lb.in. Nm/lb.in.
<b>Weight</b>		30	g

SOT-227B, miniBLOC

E153432



G = Gate, C = Collector, E = Emitter  
 ① either emitter terminal can be used as Main or Kelvin Emitter

**Features**

- Optimized for low conduction and switching losses
- Square RBSOA
- Isolation voltage 3000 V~
- High current handling capability
- International standard package

**Advantages**

- High power density
- Low gate drive requirement

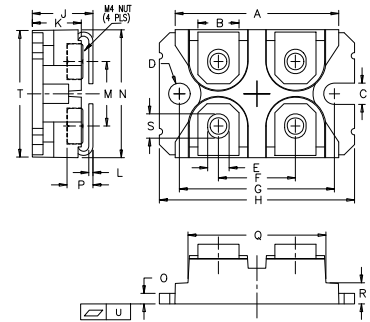
**Applications**

- Power Inverters
- UPS
- Motor Drives
- SMPS
- PFC Circuits
- Welding Machines

Symbol	Test Conditions ( $T_J = 25^\circ C$ , unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{CES}$	$I_C = 3mA$ , $V_{GE} = 0V$	1700		V
$V_{GE(th)}$	$I_C = 8mA$ , $V_{CE} = V_{GE}$	3.0		5.0 V
$I_{CES}$	$V_{CE} = V_{CES}$ $V_{GE} = 0V$ $T_J = 125^\circ C$			50 $\mu A$ 5 mA
$I_{GES}$	$V_{CE} = 0V$ , $V_{GE} = \pm 20V$			$\pm 200$ nA
$V_{CE(sat)}$	$I_C = 100A$ , $V_{GE} = 15V$ , Note 1		2.5	3.0 V

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$I_C = 60\text{A}$ , $V_{CE} = 10\text{V}$ , Note 1	36	64	S
$C_{ies}$	$V_{CE} = 25\text{V}$ , $V_{GE} = 0\text{V}$ , $f = 1\text{MHz}$		9220	pF
$C_{oes}$			455	pF
$C_{res}$			150	pF
$Q_{g(on)}$	$I_C = 100\text{A}$ , $V_{GE} = 15\text{V}$ , $V_{CE} = 0.5 \cdot V_{CES}$		425	nC
$Q_{ge}$			65	nC
$Q_{gc}$			186	nC
$t_{d(on)}$	<b>Resistive load, <math>T_J = 25^\circ\text{C}</math></b>		35	ns
$t_{ri}$	$I_C = 100\text{A}$ , $V_{GE} = 15\text{V}$		192	ns
$t_{d(off)}$	$V_{CE} = 0.5 \cdot V_{CES}$ , $R_G = 1\Omega$		285	ns
$t_{fi}$			395	ns
$t_{d(on)}$	<b>Resistive load, <math>T_J = 125^\circ\text{C}</math></b>		35	ns
$t_{ri}$	$I_C = 100\text{A}$ , $V_{GE} = 15\text{V}$		250	ns
$t_{d(off)}$	$V_{CE} = 0.5 \cdot V_{CES}$ , $R_G = 1\Omega$		285	ns
$t_{fi}$			435	ns
$R_{thJC}$			0.17	$^\circ\text{C/W}$
$R_{thCK}$		0.05		$^\circ\text{C/W}$

### SOT-227B miniBLOC (IXGN)



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.505	38.00	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.078	.084	1.98	2.13
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.155	.174	3.94	4.42
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.002	.004	-0.05	0.1

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

### PRELIMINARY TECHNICAL INFORMATION

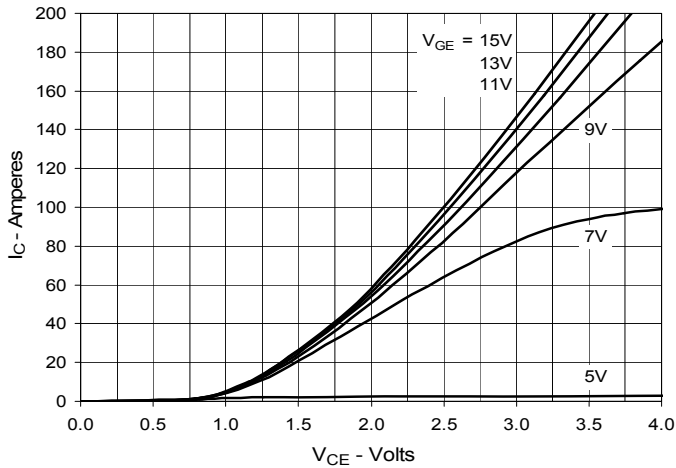
The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right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

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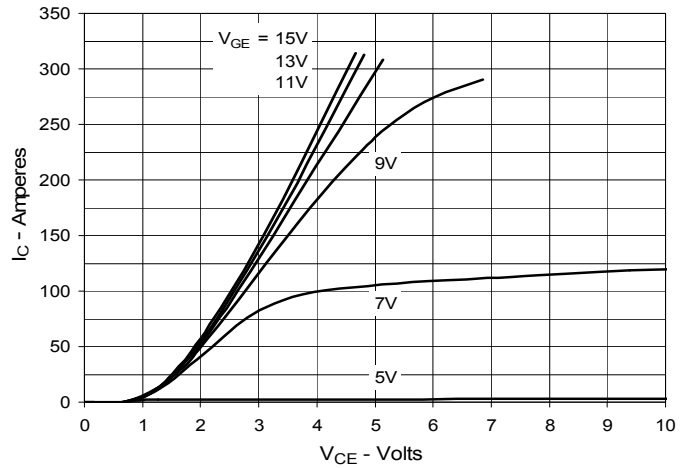
IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

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	

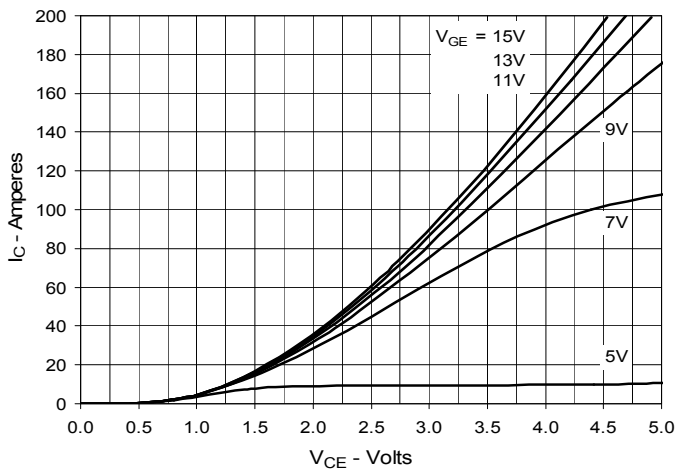
**Fig. 1. Output Characteristics @ 25°C**



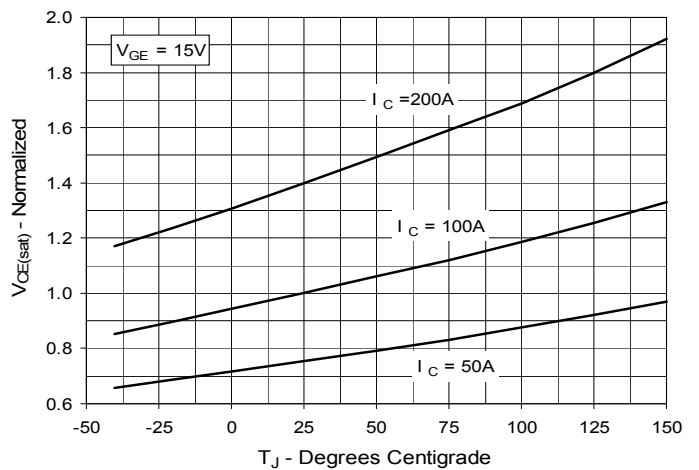
**Fig. 2. Extended Output Characteristics @ 25°C**



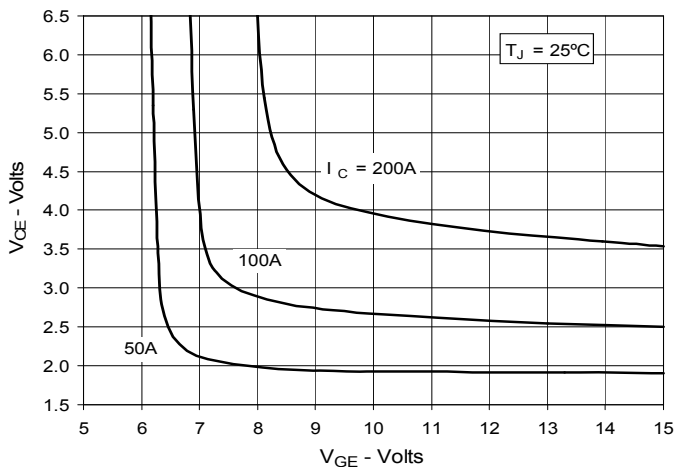
**Fig. 3. Output Characteristics @ 125°C**



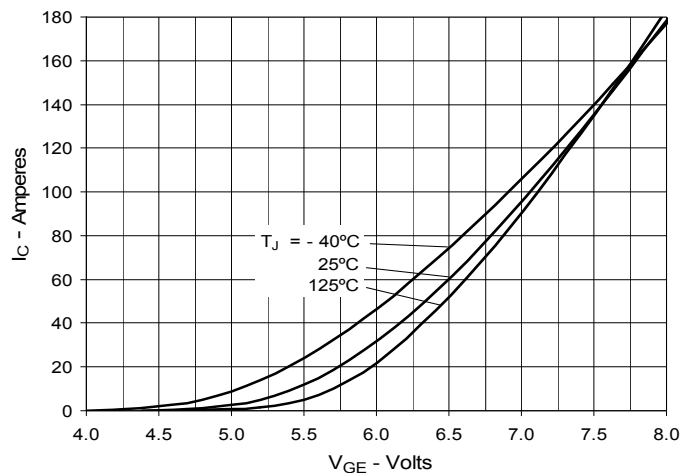
**Fig. 4. Dependence of  $V_{CE(sat)}$  on Junction Temperature**



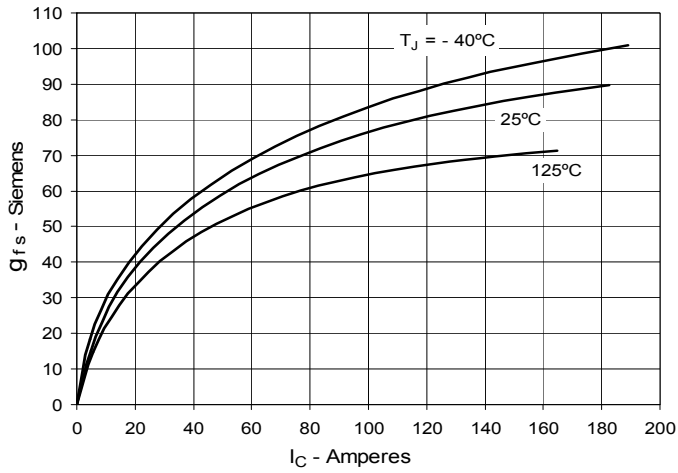
**Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage**



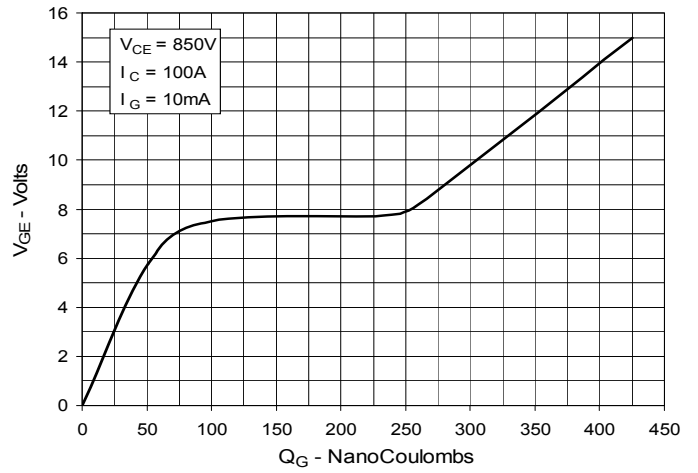
**Fig. 6. Input Admittance**



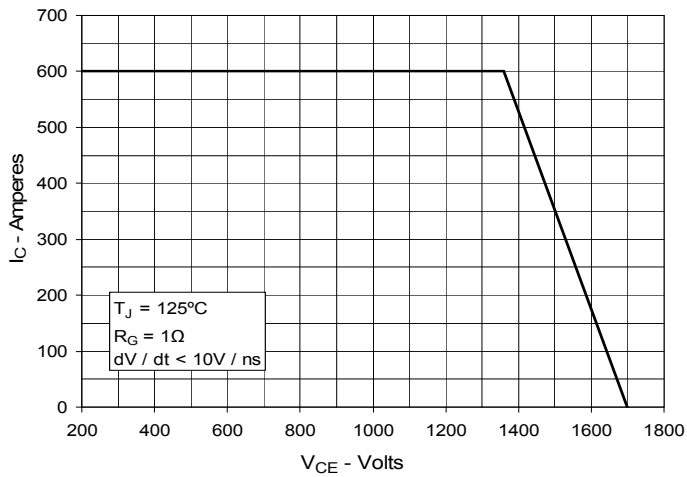
**Fig. 7. Transconductance**



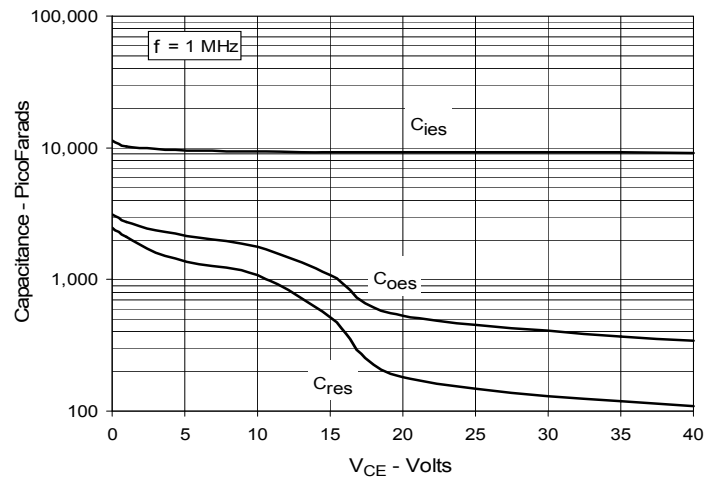
**Fig. 8. Gate Charge**



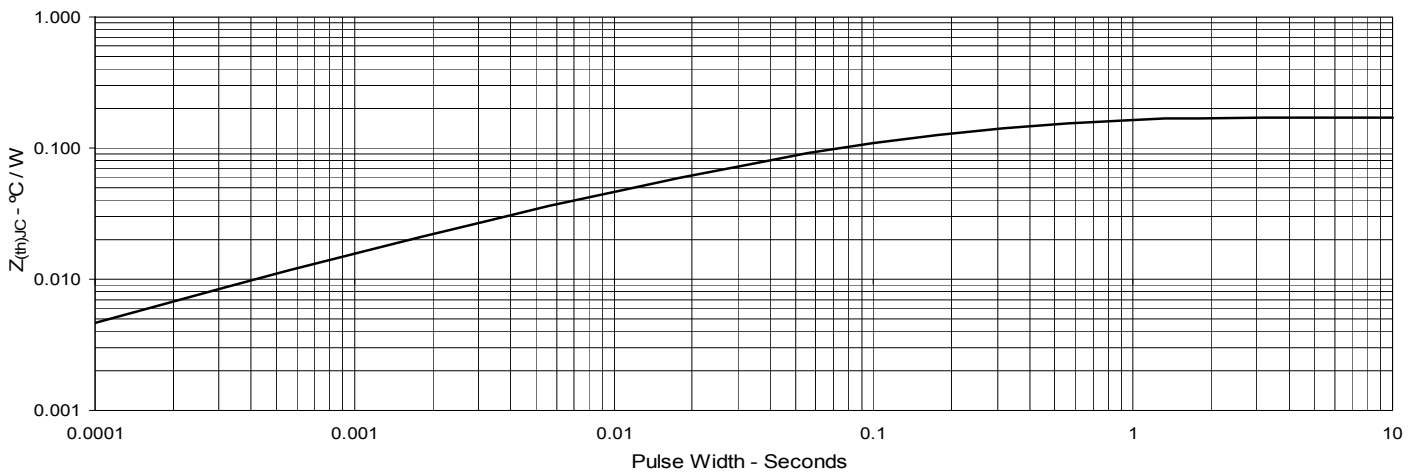
**Fig. 9. Reverse-Bias Safe Operating Area**



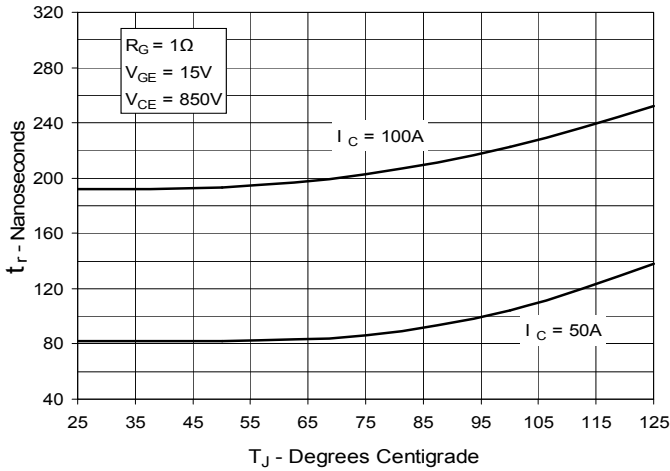
**Fig. 10. Capacitance**



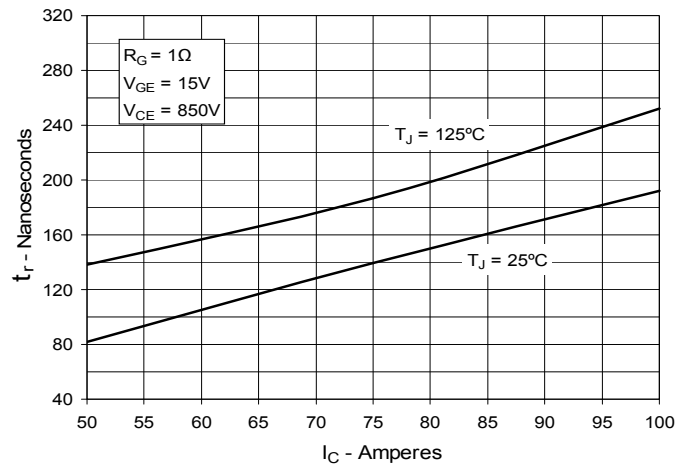
**Fig. 11. Maximum Transient Thermal Impedance**



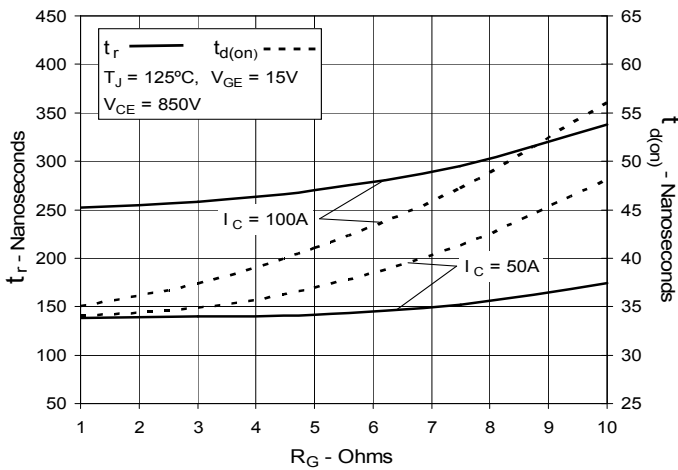
**Fig. 12. Resistive Turn-on Rise Time vs. Junction Temperature**



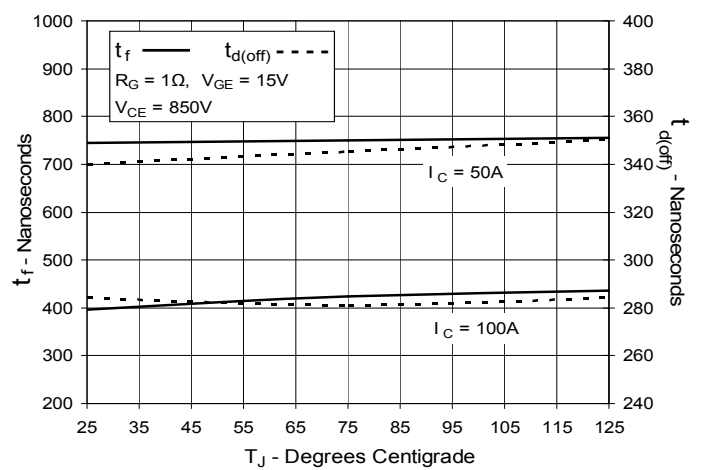
**Fig. 13. Resistive Turn-on Rise Time vs. Collector Current**



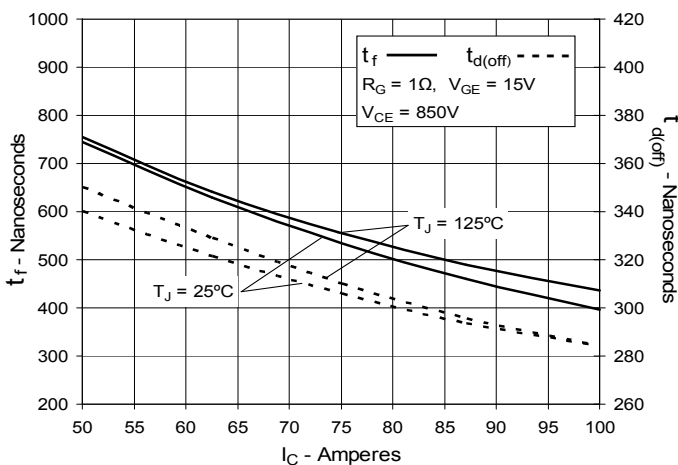
**Fig. 14. Resistive Turn-on Switching Times vs. Gate Resistance**



**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**

