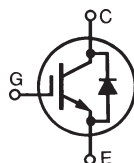


**BiMOSFET™ Monolithic  
Bipolar MOS Transistor**
**IXBN75N170**

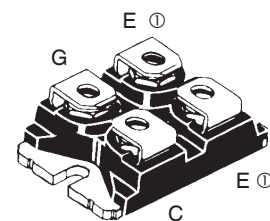
$$V_{CES} = 1700V$$

$$I_{C90} = 75A$$

$$V_{CE(sat)} \leq 3.1V$$



Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	1700	V
$V_{CGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ , $R_{GE} = 1M\Omega$	1700	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	145	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	75	A
$I_{CM}$	$T_C = 25^\circ\text{C}$ , 1ms	680	A
<b>SSOA</b> <b>(RBSOA)</b>	$V_{GE} = 15V$ , $T_{VJ} = 125^\circ\text{C}$ , $R_G = 1\Omega$ Clamped Inductive Load	$I_{CM} = 150$ $V_{CE} \leq 0.8 \cdot V_{CES}$	A
$P_C$	$T_C = 25^\circ\text{C}$	625	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
$T_L$ $T_{SOLD}$	Maximum Lead Temperature for Soldering 1.6 mm (0.062 in.) from Case for 10	300 260	$^\circ\text{C}$ $^\circ\text{C}$
$V_{ISOL}$	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**  


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

**Features**

- International Standard Package
- High Blocking Voltage
- Isolation Voltage 3000 V~
- High Current Handling Capability
- Anti-Parallel Diode

**Advantages**

- High Power Density
- Low Gate Drive Requirement
- Easy to Mount with 2 Screws
- Intergrated Diode Can Be Used for Protection

**Applications**

- Capacitor Discharge
- AC Switches
- Switch-Mode and Resonant-Mode Power Supplies
- UPS
- AC Motor Drives

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{CES}$	$I_C = 250\mu A$ , $V_{GE} = 0V$	1700		V
$V_{GE(th)}$	$I_C = 1.5mA$ , $V_{CE} = V_{GE}$	2.5		5.5 V
$I_{CES}$	$V_{CE} = 0.8 \cdot V_{CES}$ , $V_{GE} = 0V$ $T_J = 125^\circ\text{C}$			25 $\mu A$ 2 mA
$I_{GES}$	$V_{CE} = 0V$ , $V_{GE} = \pm 20V$			$\pm 100$ nA
$V_{CE(sat)}$	$I_C = I_{C90}$ , $V_{GE} = 15V$ , Note 1 $T_J = 125^\circ\text{C}$		2.6 3.1	3.1 V V

### Symbol Test Conditions

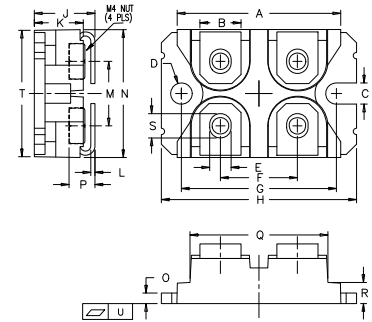
( $T_J = 25^\circ\text{C}$  Unless Otherwise Specified)

### Characteristic Values

Min. Typ. Max.

$g_{fs}$	$I_C = I_{C90}, V_{CE} = 10V, \text{Note 1}$	34	56	S
$C_{ies}$	$V_{CE} = 25V, V_{GE} = 0V, f = 1\text{MHz}$		6930	pF
$C_{oes}$			400	pF
$C_{res}$			150	pF
$Q_g$	$I_C = I_{C90}, V_{GE} = 15V, V_{CE} = 0.5 \cdot V_{CES}$		350	nC
$Q_{ge}$			50	nC
$Q_{gc}$			160	nC
$t_{d(on)}$	<b>Resistive load, <math>T_J = 25^\circ\text{C}</math></b> $I_C = I_{C90}, V_{GE} = 15V$ $R_G = 1\Omega, V_{CE} = 0.5 \cdot V_{CES}$		46	ns
$t_r$			160	ns
$t_{d(off)}$			260	ns
$t_f$			440	ns
$t_{d(on)}$	<b>Resistive load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = I_{C90}, V_{GE} = 15V$ $R_G = 1\Omega, V_{CE} = 0.5 \cdot V_{CES}$		47	ns
$t_r$			230	ns
$t_{d(off)}$			260	ns
$t_f$			580	ns
$R_{thJC}$				0.20 $^\circ\text{C/W}$
$R_{thCS}$		0.05		$^\circ\text{C/W}$

### SOT-227B miniBLOC (IXBN)



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

### Reverse Diode

### Symbol Test Conditions

( $T_J = 25^\circ\text{C}$  Unless Otherwise Specified)

### Characteristic Values

Min. Typ. Max.

$V_F$	$I_F = I_{C90}, V_{GE} = 0V, \text{Note 1}$		3.0	V
$t_{rr}$	$I_F = 37V, V_{GE} = 0V, -di_F/dt = 100A/\mu\text{s}$ $V_R = 100V, V_{GE} = 0V$		1.5	$\mu\text{s}$
$I_{RM}$			50	A
$Q_{RM}$			38.2	$\mu\text{C}$

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

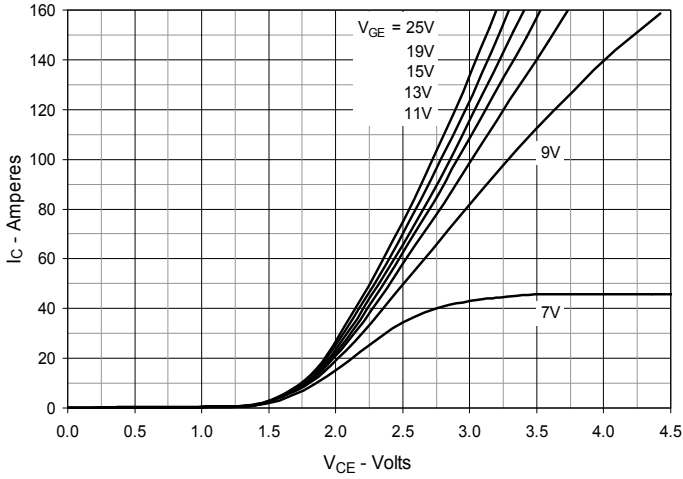
### PRELIMINARY TECHNICAL INFORMATION

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.

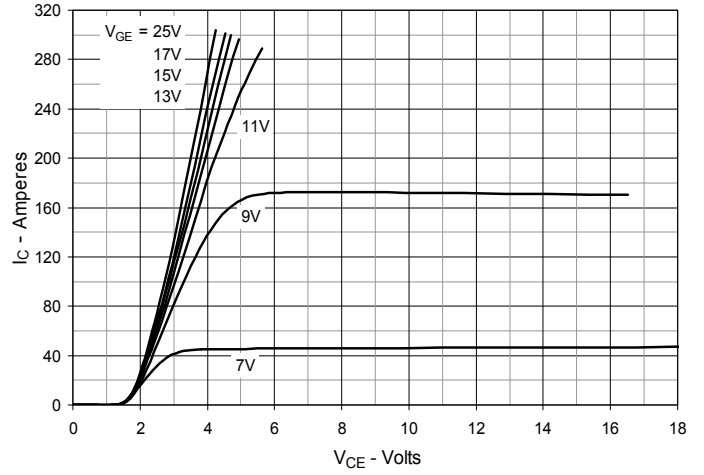
IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

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

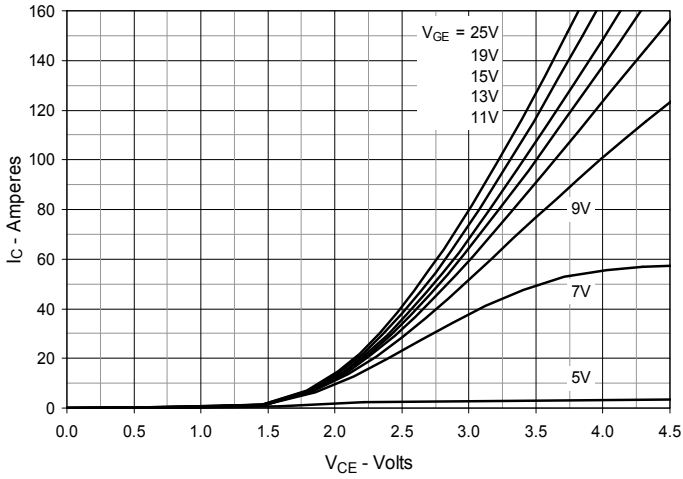
**Fig. 1. Output Characteristics @ 25°C**



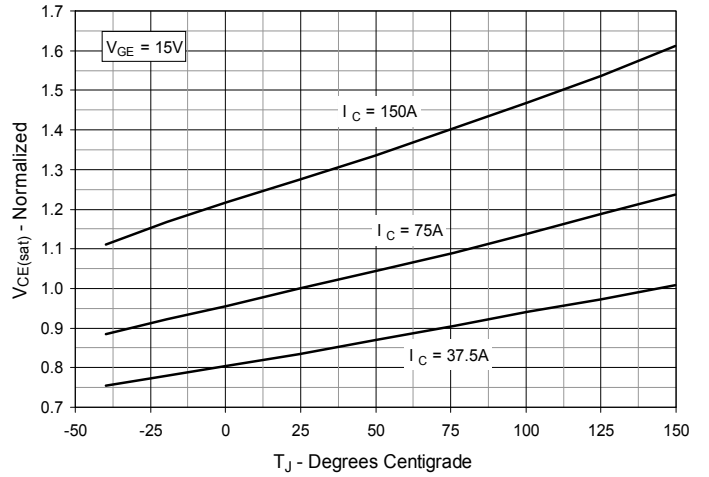
**Fig. 2. Extended Output Characteristics @ 25°C**



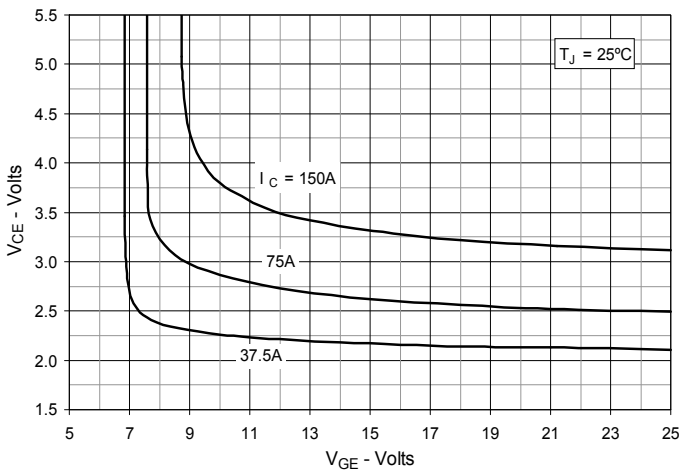
**Fig. 3. Output Characteristics @ 125°C**



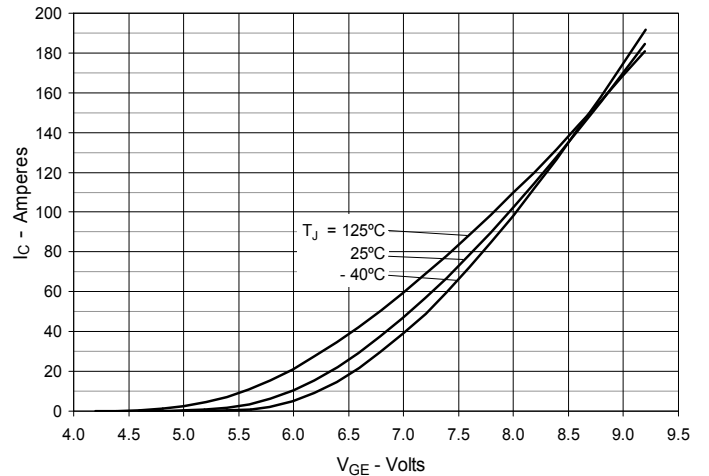
**Fig. 4. Dependence of  $V_{CE(sat)}$  on Junction Temperature**



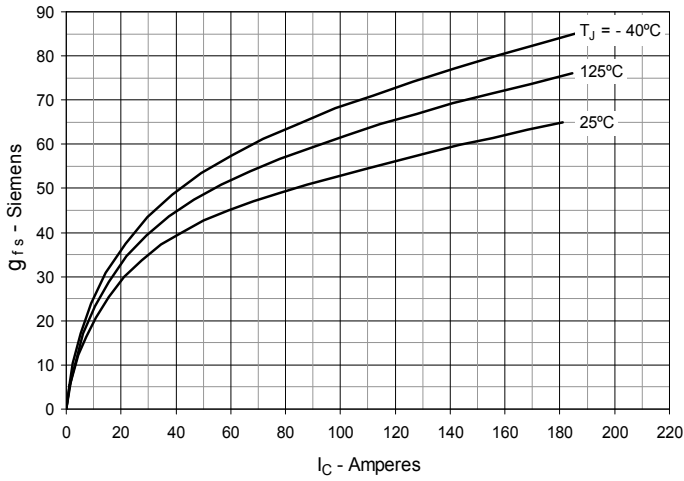
**Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage**



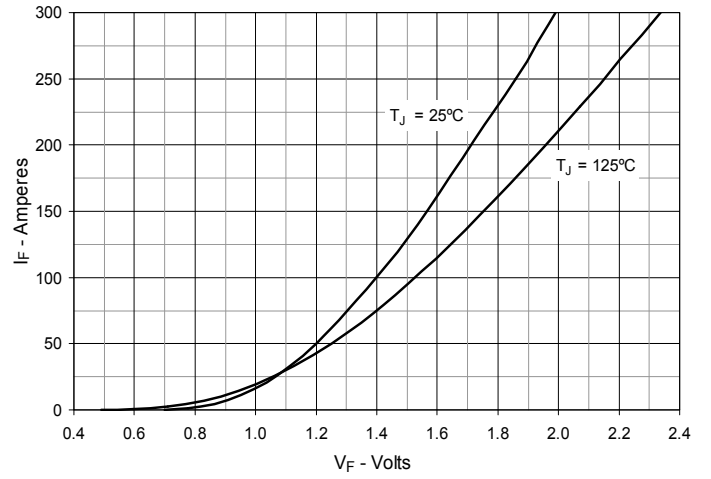
**Fig. 6. Input Admittance**



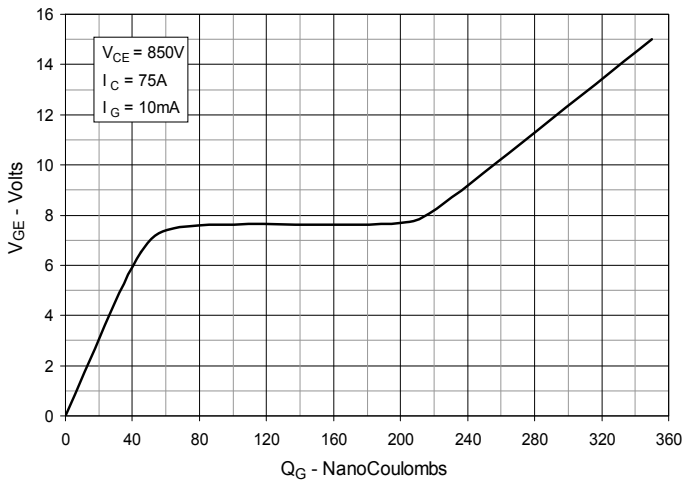
**Fig. 7. Transconductance**



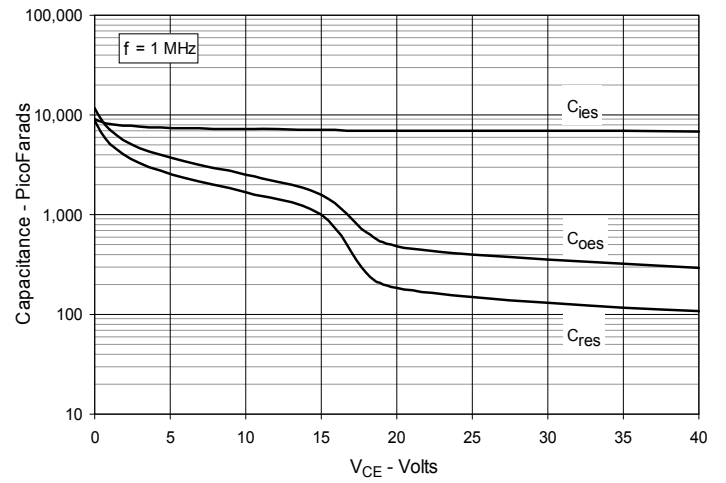
**Fig. 8. Forward Voltage Drop of Intrinsic Diode**



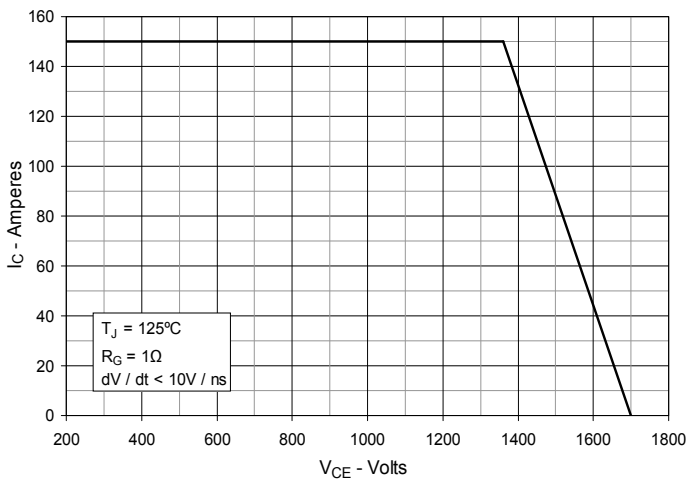
**Fig. 9. Gate Charge**



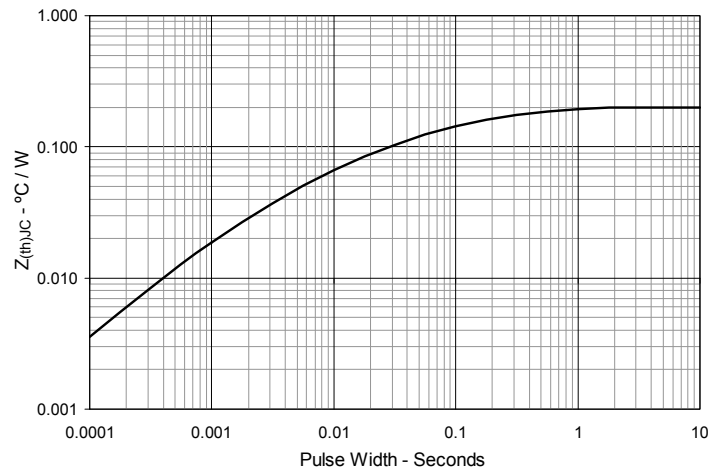
**Fig. 10. Capacitance**



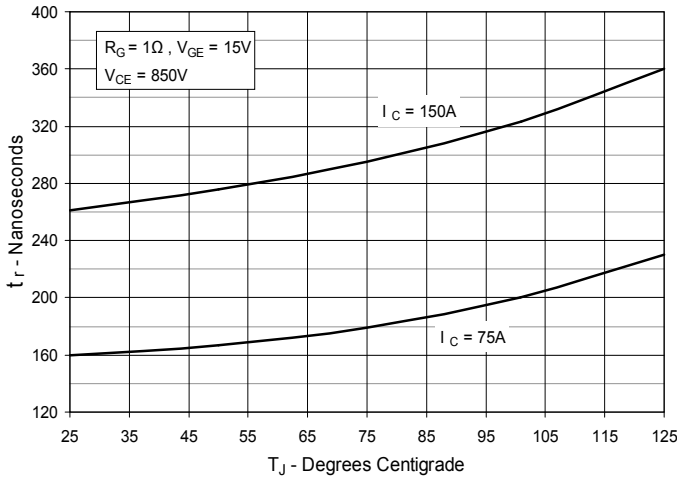
**Fig. 11. Reverse-Bias Safe Operating Area**



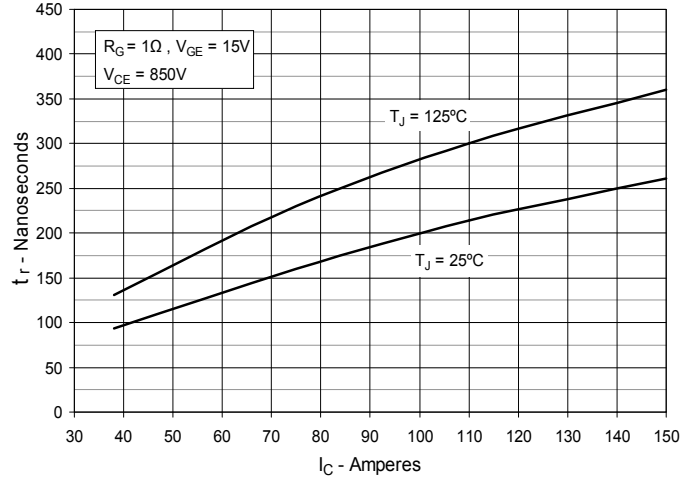
**Fig. 12. Maximum Transient Thermal Impedance**



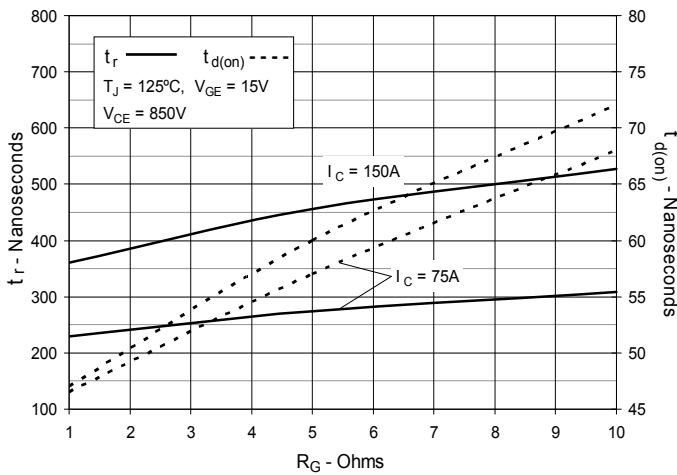
**Fig. 13. Resistive Turn-on  
Rise Time vs. Junction Temperature**



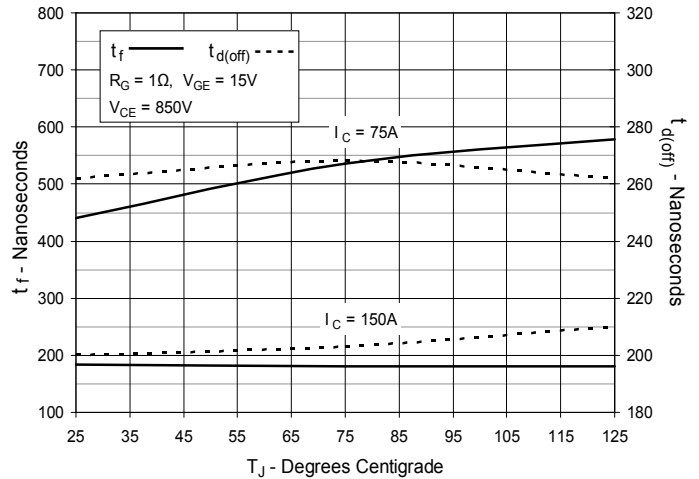
**Fig. 14. Resistive Turn-on  
Rise Time vs. Collector Current**



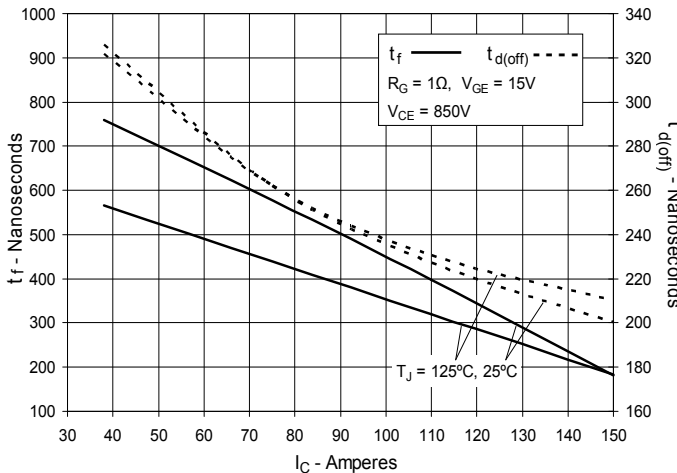
**Fig. 15. Resistive Turn-on  
Switching Times vs. Gate Resistance**



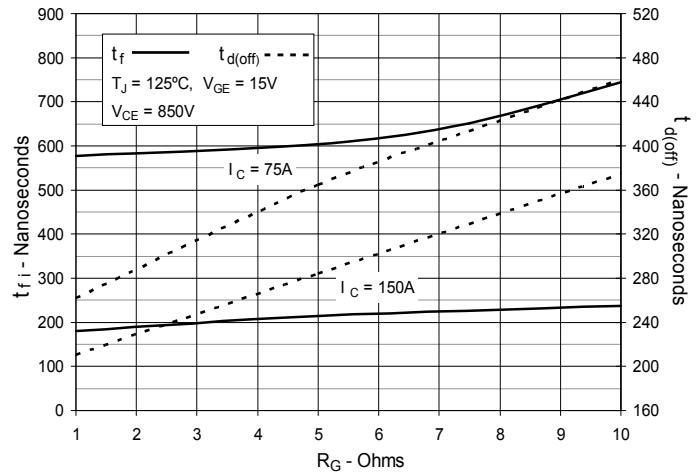
**Fig. 16. Resistive Turn-off  
Switching Times vs. Junction Temperature**



**Fig. 17. Resistive Turn-off  
Switching Times vs. Collector Current**



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





---

Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at [www.littelfuse.com/disclaimer-electronics](http://www.littelfuse.com/disclaimer-electronics).