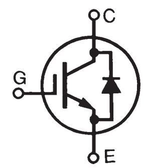
Preliminary Technical Information

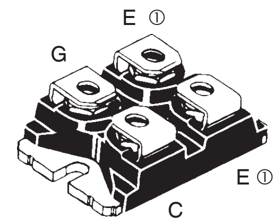
BiMOSFET™ Monolithic Bipolar MOS Transistor

IXBN75N170

V_{CES} = 1700V
I_{C90} = 75A
$V_{CE(sat)}$ ≤ 3.1V



SOT-227B, miniBLOC
E153432



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

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1700	V
V_{CGR}	T_J = 25°C to 150°C, R_{GE} = 1MΩ	1700	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	145	A
I_{C90}	T_C = 90°C	75	A
I_{CM}	T_C = 25°C, 1ms	680	A
SSOA	V_{GE}= 15V, T_{VJ} = 125°C, R_G = 1Ω	I_{CM} = 150	A
(RBSOA)	Clamped Inductive Load	$V_{CE} \le 0.8 \bullet V_{CES}$	
P_C	T_C = 25°C	625	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	1.6 mm (0.062 in.) from Case for 10	260	°C
V_{ISOL}	50/60Hz t = 1min	2500	V~
	I_{ISOL} ≤ 1mA t = 1s	3000	V~
M_d	Mounting Torque	1.5/13	Nm/lb.in.
	Terminal Connection Torque (M4)	1.3/11.5	Nm/lb.in.
Weight		30	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{CES}	I_C = 250µA, 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 • V_{CES}, V_{GE} = 0V			25	µA
	T_J = 125°C			2	mA
I_{GES}	V_{CE} = 0V, V_{GE} = ± 20V			±100	nA
$V_{CE(sat)}$	I_C = I_{C90}, V_{GE} = 15V, Note 1		2.6	3.1	V
	T_J = 125°C		3.1		V

Features

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

Advantages

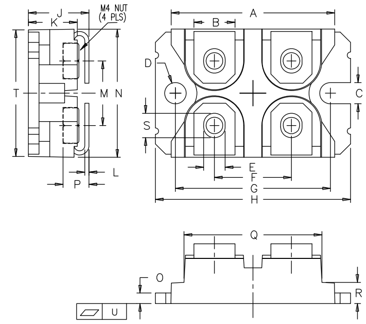
- High Power Density
- Low Gate Drive Requirement
- Easy to Mount with 2 Screws
- Intergrated Diode Can Be Used for Protection

Applications

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

Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fS}	$I_C = I_{C90}$, V_{CE} = 10V, Note 1	34	56		S
C_{ies}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz		6930		pF
C_{oes}			400		pF
C_{res}			150		pF
Q_g	$I_C = I_{C90}$, V_{GE} = 15V, $V_{CE} = 0.5 \bullet V_{CES}$		350		nC
Q_{ge}			50		nC
Q_{gc}			160		nC
$t_{d(on)}$	**Resistive load, T_J = 25°C**		46		ns
t_r	$I_C = I_{C90}$, V_{GE} = 15V		160		ns
$t_{d(off)}$	$R_G = 1\Omega$, $V_{CE} = 0.5 \bullet V_{CES}$		260		ns
t_f			440		ns
$t_{d(on)}$	**Resistive load, T_J = 125°C**		47		ns
t_r	$I_C = I_{C90}$, V_{GE} = 15V		230		ns
$t_{d(off)}$	$R_G = 1\Omega$, $V_{CE} = 0.5 \bullet V_{CES}$		260		ns
t_f			580		ns
R_{thJC}				0.20	°C/W
R_{thCS}			0.05		°C/W

SOT-227B miniBLOC (IXBN)



SYM	INCHES MIN	MAX	MILLIMETERS 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°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max	
V_F	$I_F = I_{C90}$, V_{GE} = 0V, Note 1			3.0	V
t_{rr}	I_F = 37V, V_{GE} = 0V, $-di_F/dt$ = 100A/μs		1.5		μs
I_{RM}	V_R = 100V, V_{GE} = 0V		50		A
Q_{RM}			38.2		μC

Note 1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 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.

Fig. 1. Output Characteristics @ 25ºC

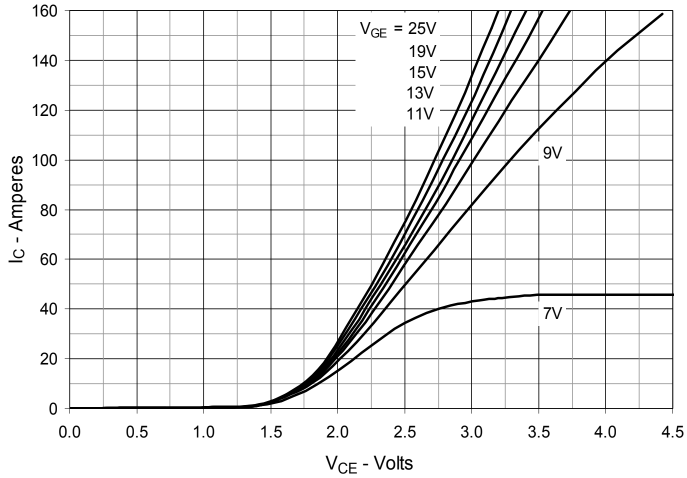


Fig. 2. Extended Output Characteristics @ 25ºC

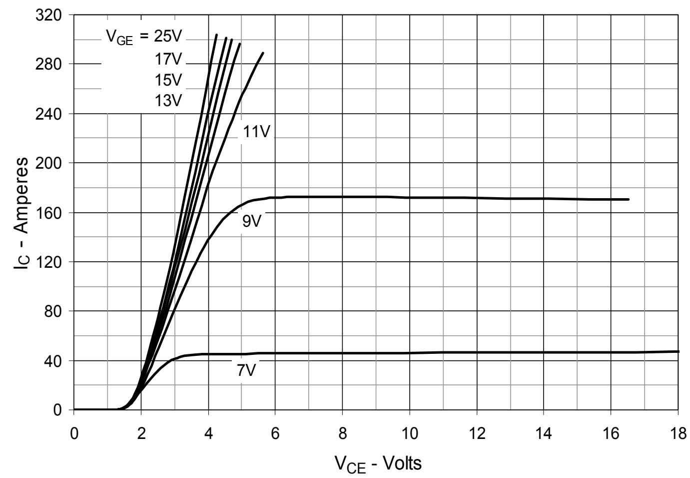


Fig. 3. Output Characteristics @ 125ºC

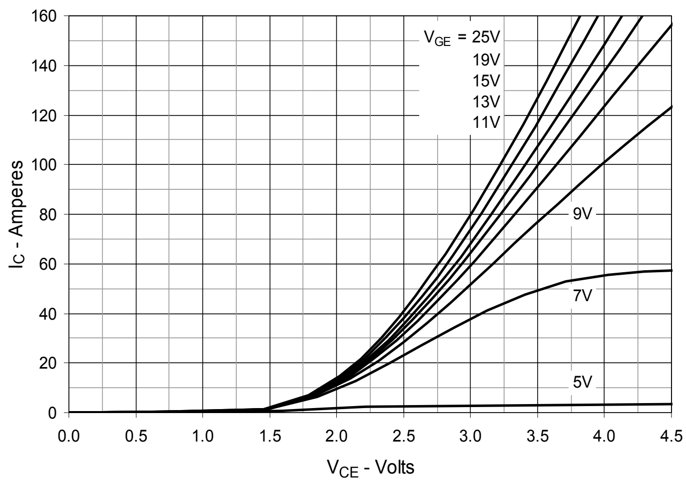


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

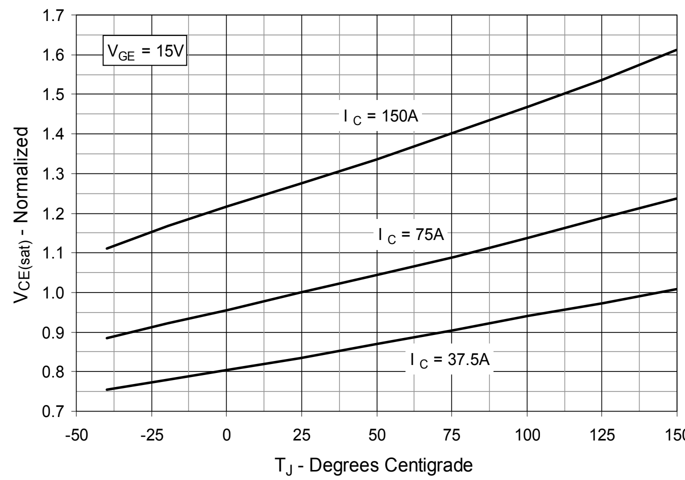


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

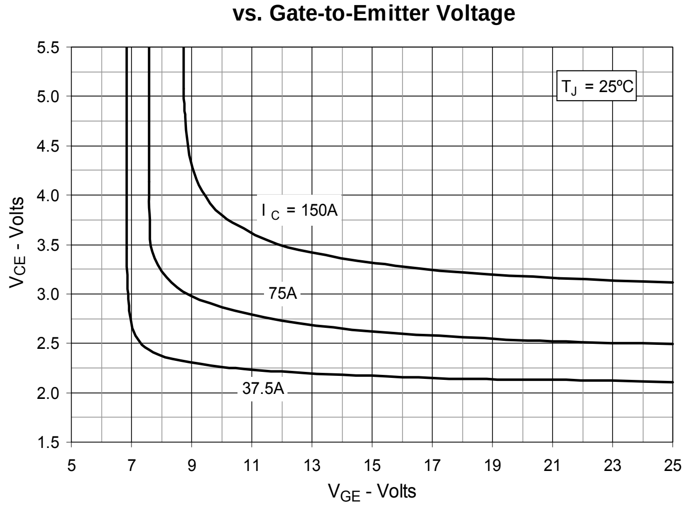


Fig. 6. Input Admittance

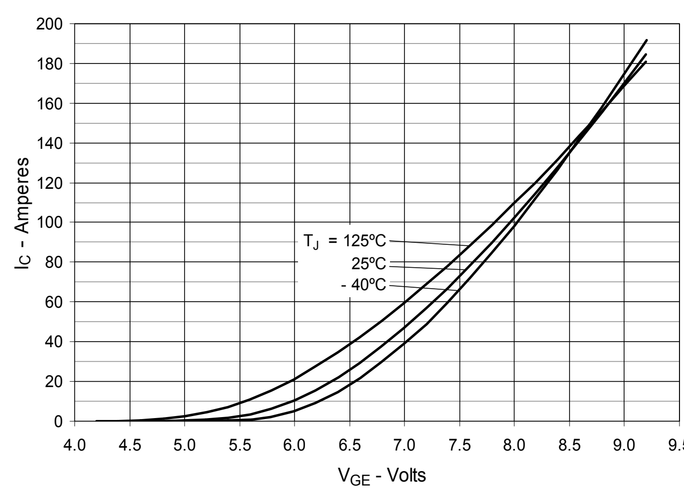


Fig. 7. Transconductance

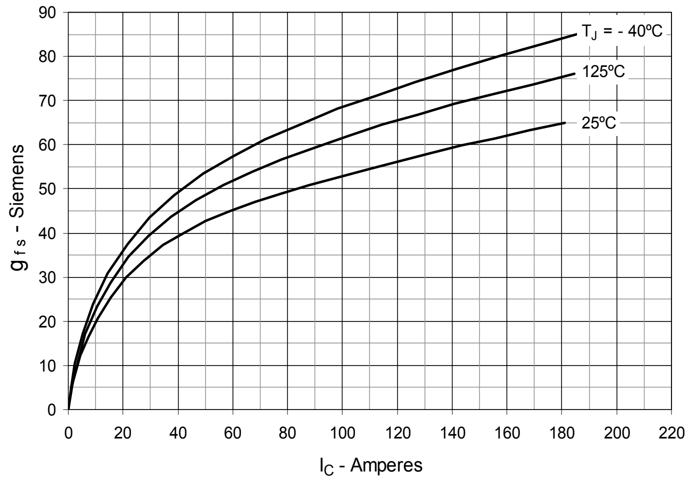


Fig. 8. Forward Voltage Drop of Intrinsic Diode

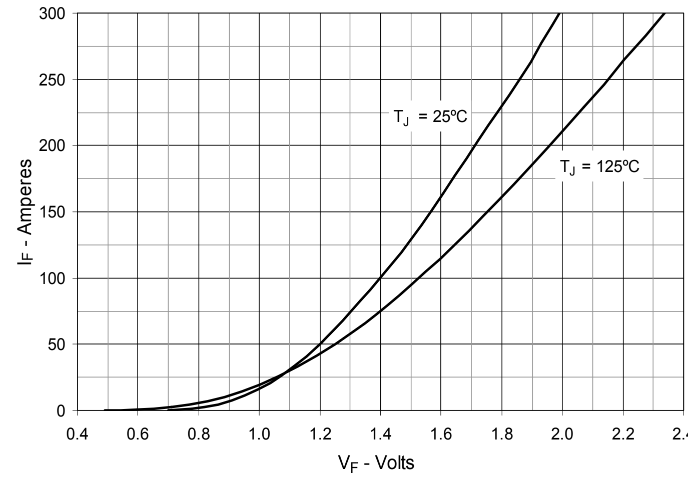


Fig. 9. Gate Charge

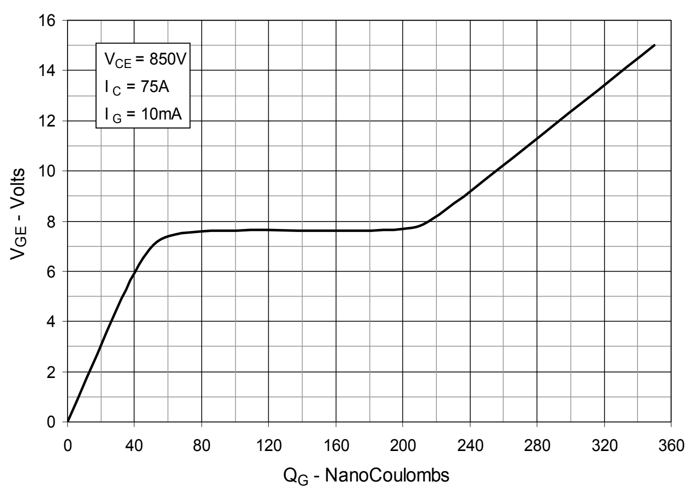


Fig. 10. Capacitance

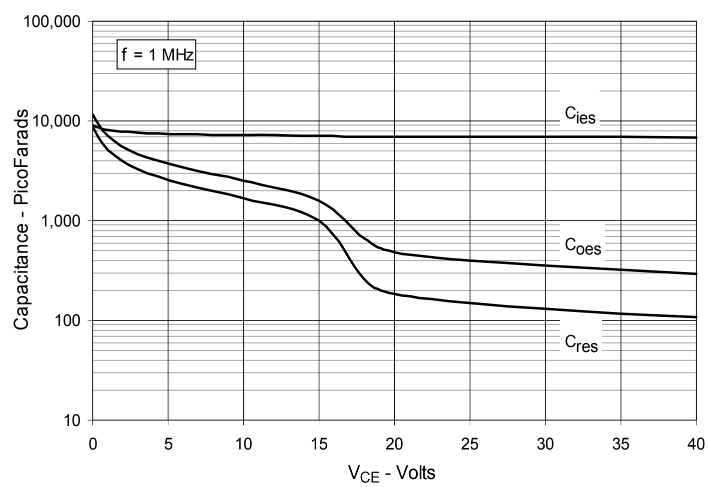


Fig. 11. Reverse-Bias Safe Operating Area

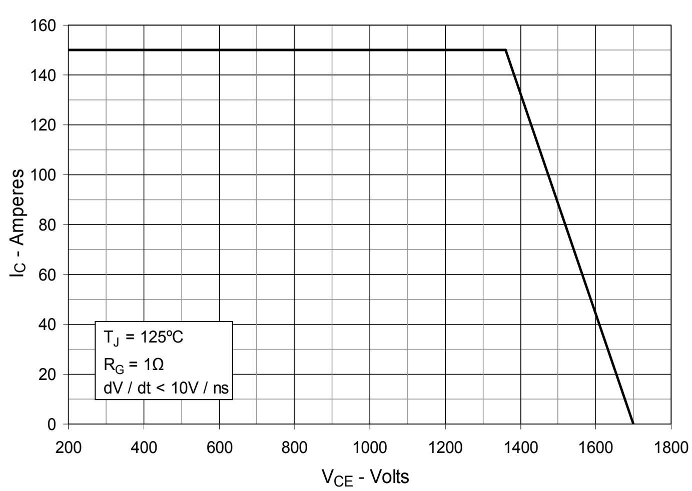


Fig. 12. Maximum Transient Thermal Impedance

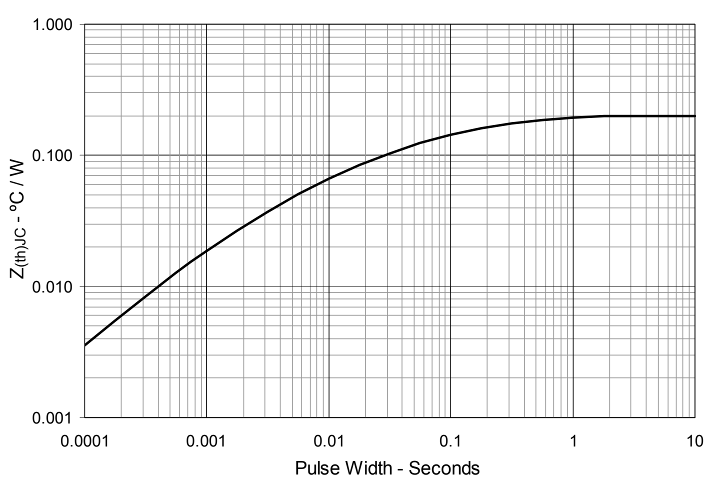


Fig. 13. Resistive Turn-on Rise Time vs. Junction Temperature

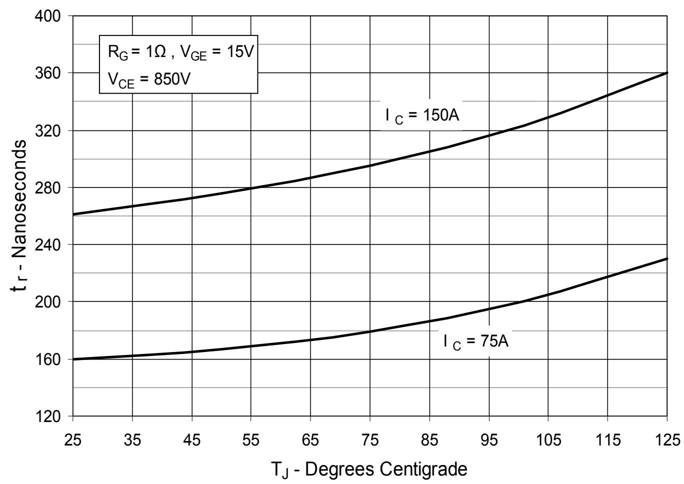


Fig. 14. Resistive Turn-on Rise Time vs. Collector Current

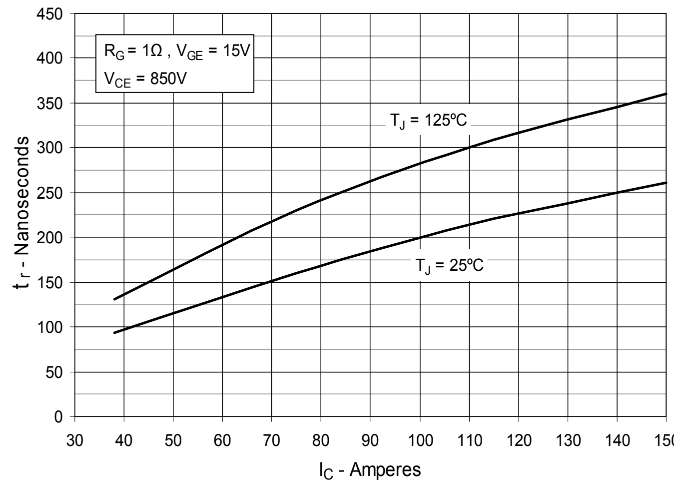


Fig. 15. Resistive Turn-on Switching Times vs. Gate Resistance

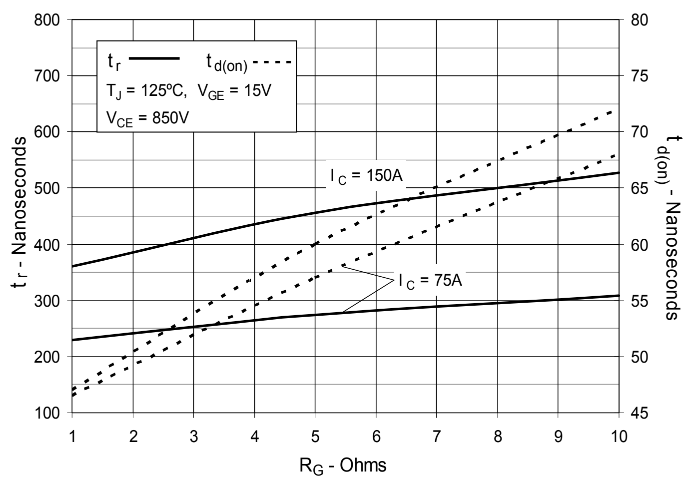


Fig. 16. Resistive Turn-off Switching Times vs. Junction Temperature

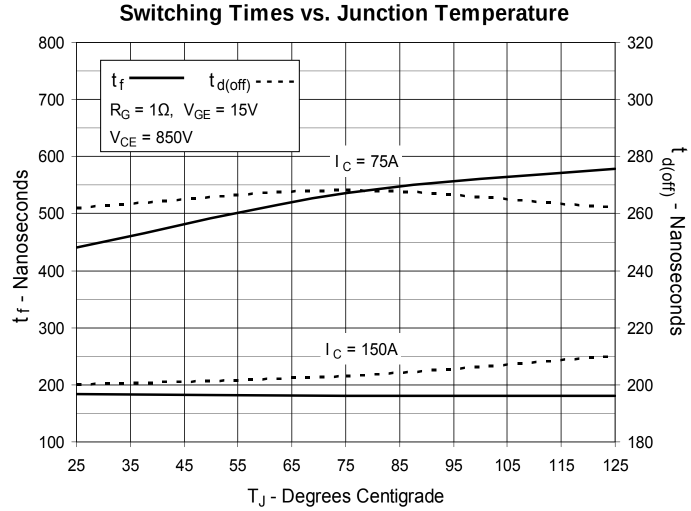


Fig. 17. Resistive Turn-off Switching Times vs. Collector Current

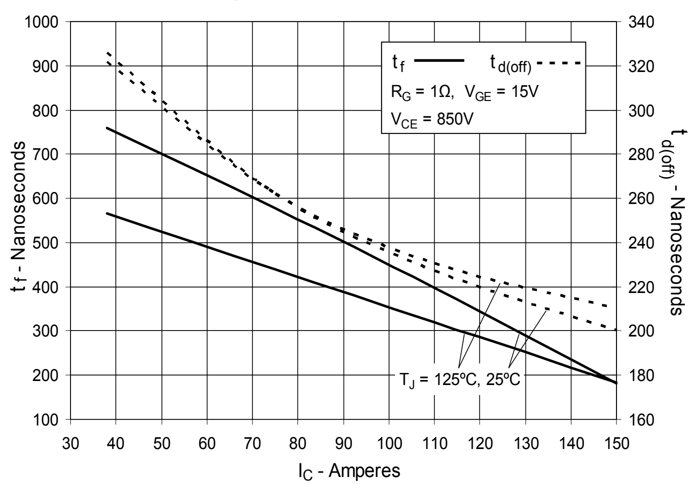


Fig. 18. Resistive Turn-off Switching Times vs. Gate Resistance