



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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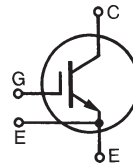


$$V_{CES} = 600V$$

$$I_{C25} = 400A$$

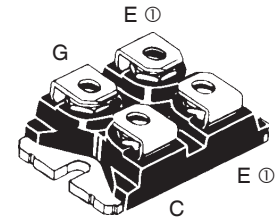
$$V_{CE(sat)} \leq 1.25V$$

Ultra-Low-V<sub>sat</sub> PT IGBT for  
up to 5kHz Switching



Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ C$ to $150^\circ C$	600	V
$V_{CGR}$	$T_J = 25^\circ C$ to $150^\circ C$ , $R_{GE} = 1M\Omega$	600	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ C$ (Chip Capability)	400	A
$I_{C110}$	$T_C = 110^\circ C$	190	A
$I_{LRMS}$	Terminal Current Limit	200	A
$I_{CM}$	$T_C = 25^\circ C$ , 1ms	800	A
<b>SSOA</b> <b>(RBSOA)</b>	$V_{GE} = 15V$ , $T_{VJ} = 125^\circ C$ , $R_G = 0.5\Omega$ Clamped Inductive Load	$I_{CM} = 400$ @ $0.8 \cdot V_{CES}$	A
$P_C$	$T_C = 25^\circ C$	830	W
$T_J$		-55 ... +150	$^\circ C$
$T_{JM}$		150	$^\circ C$
$T_{stg}$		-55 ... +150	$^\circ C$
$V_{ISOL}$	50/60Hz	t = 1min	2500 V~
	$I_{ISOL} \leq 1mA$	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.
<b>Weight</b>		30	g

SOT-227B, miniBLOC  
E153432



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

### Features

- Optimized for Low Conduction losses
- Square RBSOA
- High Current Capability
- Isolation Voltage 3000 V~
- International Standard Package

### Advantages

- High Power Density
- Low Gate Drive Requirement

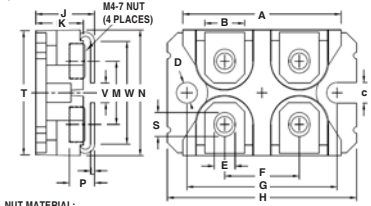
### Applications

- Power Inverters
- UPS
- Motor Drives
- SMPS
- PFC Circuits
- Battery Chargers
- Welding Machines
- Lamp Ballasts
- Inrush Current Protection Circuits

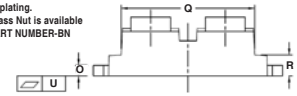
Symbol	Test Conditions ( $T_J = 25^\circ C$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{CES}$	$I_C = 1mA$ , $V_{GE} = 0V$	600		V
$V_{GE(th)}$	$I_C = 250\mu A$ , $V_{CE} = V_{GE}$	3.0		5.5 V
$I_{CES}$	$V_{CE} = V_{CES}$ , $V_{GE} = 0V$ $T_J = 125^\circ C$			250 $\mu A$
				2.5 mA
$I_{GES}$	$V_{CE} = 0V$ , $V_{GE} = \pm 20V$			$\pm 400$ nA
$V_{CE(sat)}$	$I_C = 100A$ , $V_{GE} = 15V$ , Note 1 $I_C = 400A$	1.05	1.25	V
		1.55		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	85	140	S
$C_{ies}$	$V_{CE} = 25\text{V}$ , $V_{GE} = 0\text{V}$ , $f = 1\text{MHz}$		32	nF
$C_{oes}$			1450	pF
$C_{res}$			66	pF
$Q_{g(on)}$	$I_C = 100\text{V}$ , $V_{GE} = 15\text{V}$ , $V_{CE} = 0.5 \cdot V_{CES}$		870	nC
$Q_{ge}$			120	nC
$Q_{gc}$			300	nC
$t_{d(on)}$	<b>Resistive load, <math>T_J = 25^\circ\text{C}</math></b> $I_C = 100\text{A}$ , $V_{GE} = 15\text{V}$ $V_{CE} = 400\text{V}$ , $R_G = 0.5\Omega$		25	ns
$t_r$			95	ns
$t_{d(off)}$			170	ns
$t_f$			270	ns
$t_{d(on)}$	<b>Resistive load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = 100\text{A}$ , $V_{GE} = 15\text{V}$ $V_{CE} = 400\text{V}$ , $R_G = 0.5\Omega$		27	ns
$t_r$			97	ns
$t_{d(off)}$			190	ns
$t_f$			650	ns
$R_{thJC}$			0.15	$^\circ\text{C/W}$
$R_{thCK}$		0.05		$^\circ\text{C/W}$

### TO-227 Outline



NUT MATERIAL:  
STANDARD - Low carbon steel with Ni plating.  
OPTIONAL - Brass Nut is available  
PART NUMBER-BN

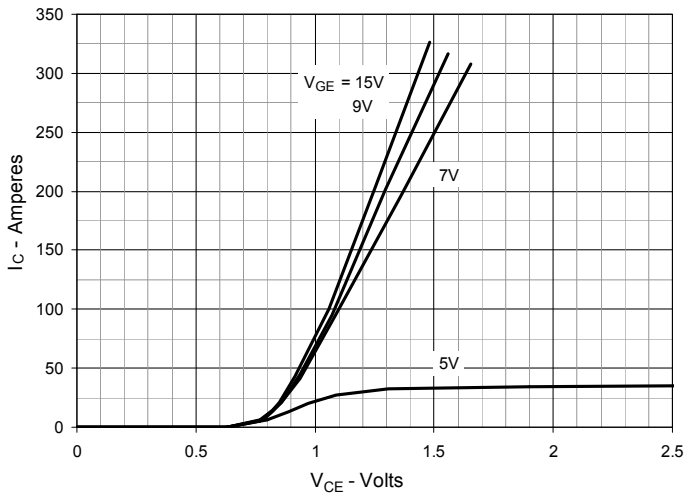
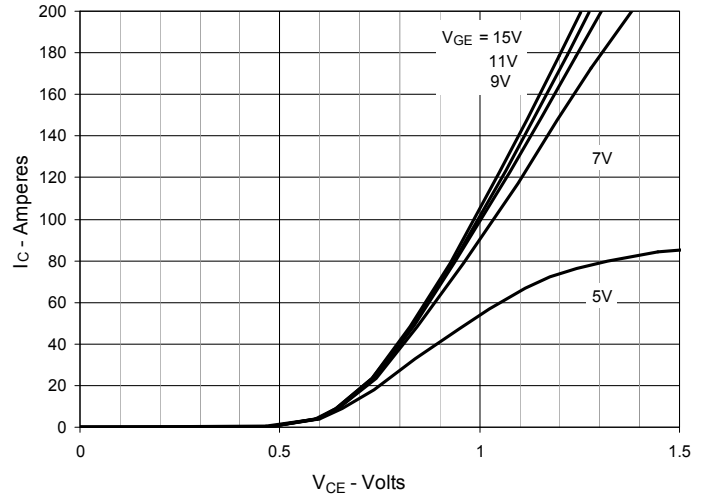
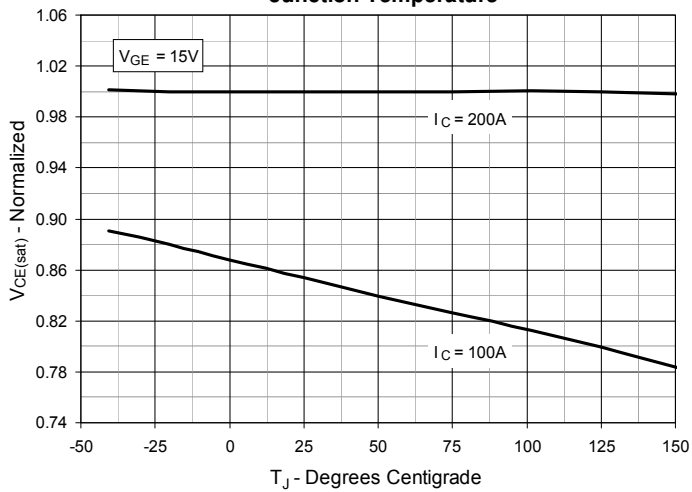
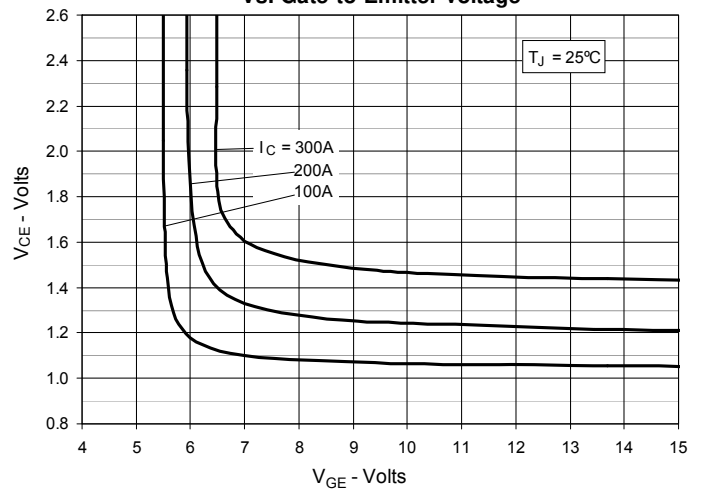
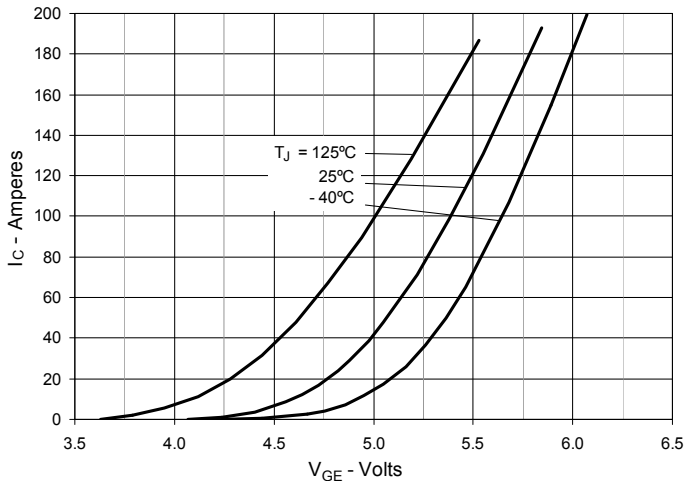
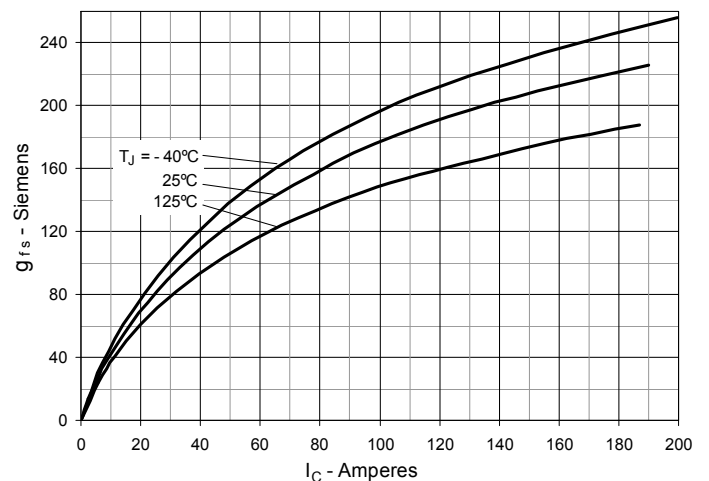


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.489	1.505	37.80	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.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
V	.130	.180	3.30	4.57
W	.780	.830	19.81	21.08

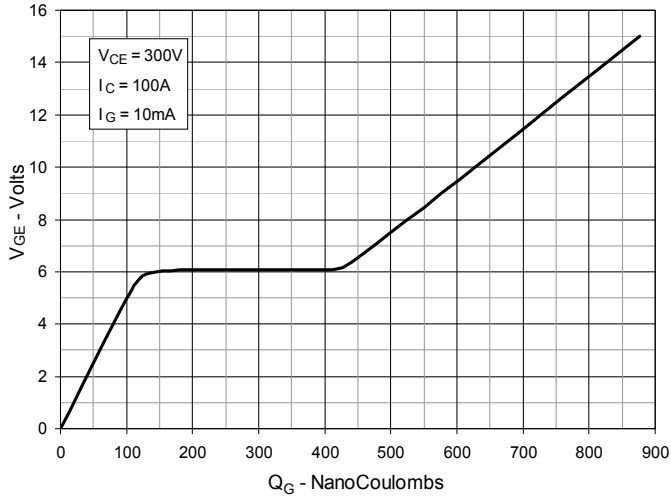
Note 1. Pulse test,  $t \leq 300\mu\text{s}$ ; duty cycle,  $d \leq 2\%$ .

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

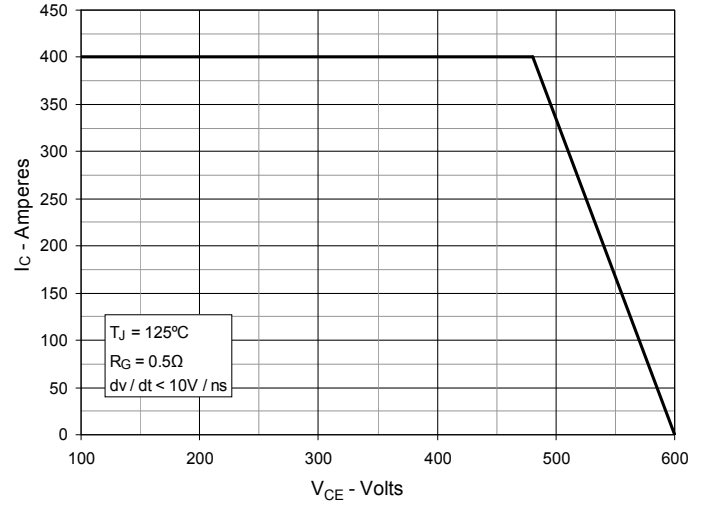
IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:	4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
	4,860,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
	4,881,106	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. Extended Output Characteristics @  $T_J = 25^\circ\text{C}$** 

**Fig. 2. Output Characteristics @  $T_J = 125^\circ\text{C}$** 

**Fig. 3. Dependence of  $V_{CE(sat)}$  on Junction Temperature**

**Fig. 4. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage**

**Fig. 5. Input Admittance**

**Fig. 6. Transconductance**


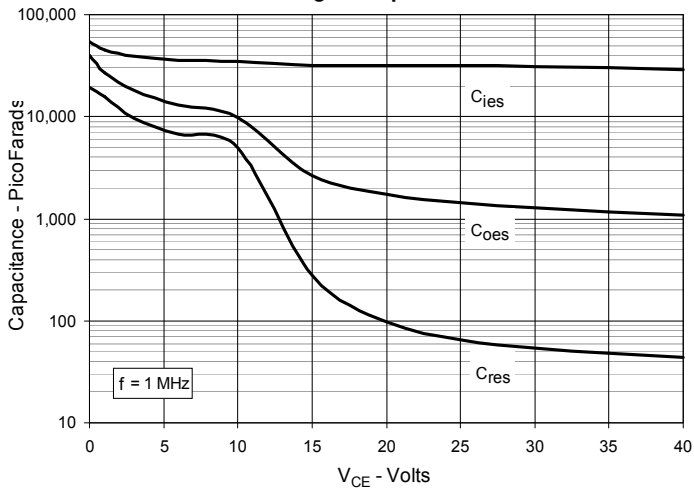
**Fig. 7. Gate Charge**



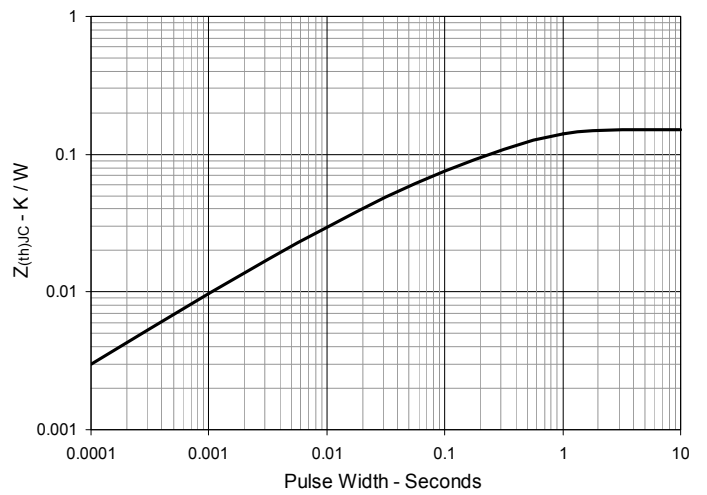
**Fig. 8. Reverse-Bias Safe Operating Area**



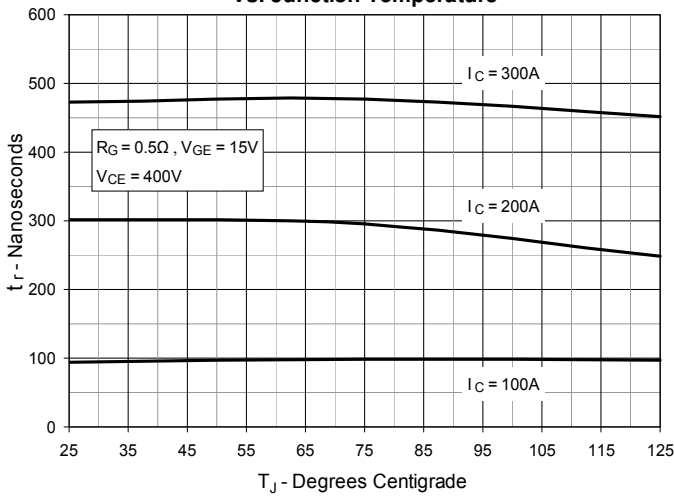
**Fig. 9. Capacitance**



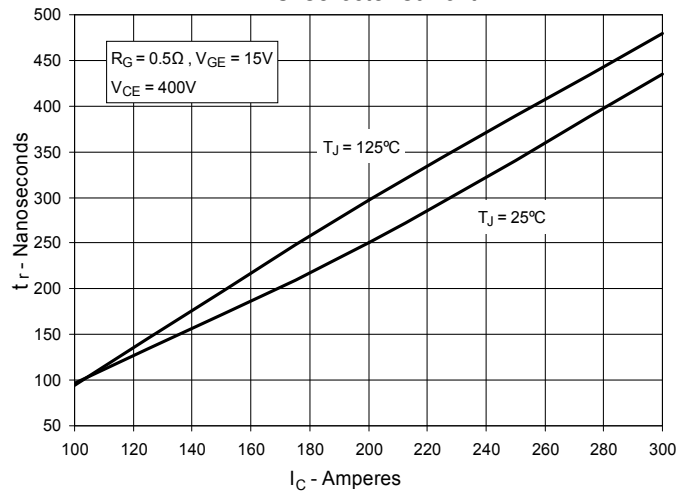
**Fig. 10. Maximum Transient Thermal Impedance**



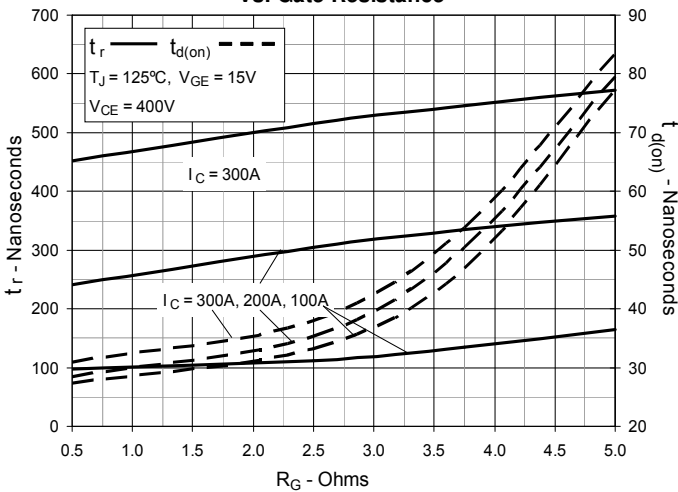
**Fig. 11. Resistive Turn-on Rise Time vs. Junction Temperature**



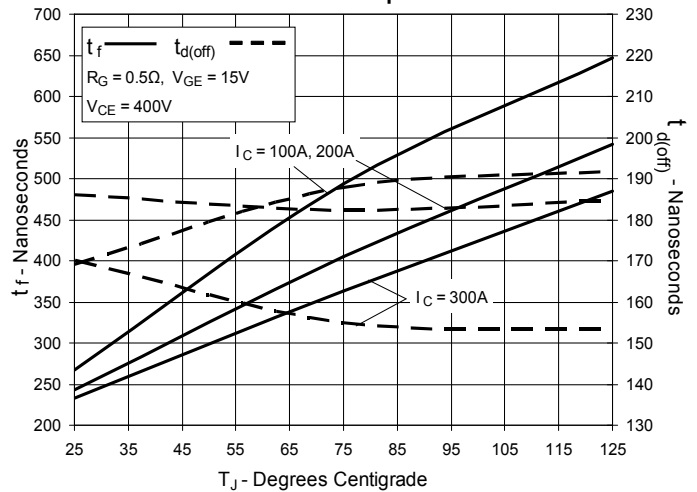
**Fig. 12. Resistive Turn-on Rise Time vs. Collector Current**



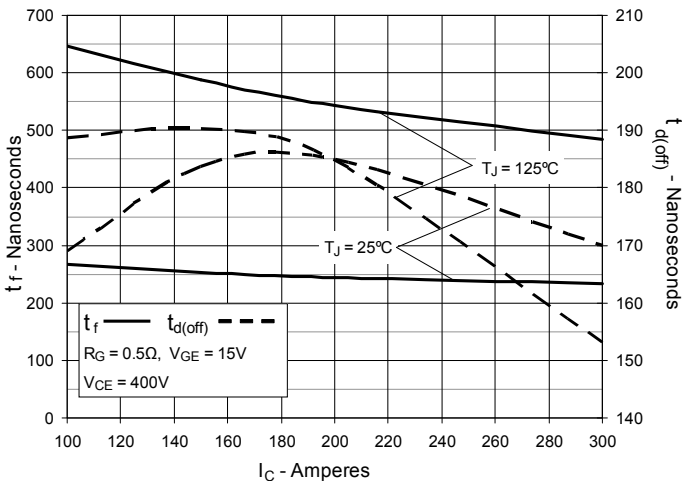
**Fig. 13. Resistive Turn-on Switching Times vs. Gate Resistance**



**Fig. 14. Resistive Turn-off Switching Times vs. Junction Temperature**



**Fig. 15. Resistive Turn-off Switching Times vs. Collector Current**



**Fig. 16. Resistive Turn-off Switching Times vs. Gate Resistance**

