

High Voltage, High Gain BIMOSFET™ Monolithic Bipolar MOS Transistor

IXBT16N360HV IXBH16N360HV



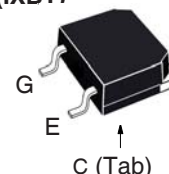
$$V_{CES} = 3600V$$

$$I_{C110} = 16A$$

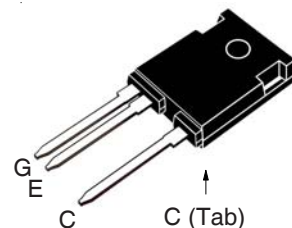
$$V_{CE(sat)} \leq 3.0V$$

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ C$ to $150^\circ C$	3600	V
V_{CGR}	$T_J = 25^\circ C$ to $150^\circ C$, $R_{GE} = 1M\Omega$	3600	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ C$	48	A
I_{C110}	$T_C = 110^\circ C$	16	A
I_{CM}	$T_C = 25^\circ C$, 1ms	72	A
SSOA (RBSOA)	$V_{GE} = 15V$, $T_{VJ} = 125^\circ C$, $R_G = 25\Omega$ Clamped Inductive Load	$I_{CM} = 60$ $V_{CES} \leq 1500$	A V
T_{SC} (SCSOA)	$V_{GE} = 15V$, $T_J = 125^\circ C$, $R_G = 82\Omega$, $V_{CE} = 1500V$, Non-Repetitive	10	μs
P_C	$T_C = 25^\circ C$	270	W
T_J		-55 ... +150	$^\circ C$
T_{JM}		150	$^\circ C$
T_{stg}		-55 ... +150	$^\circ C$
T_L	Maximum Lead Temperature for Soldering	300	$^\circ C$
T_{SOLD}	Plastic Body for 10s	260	$^\circ C$
M_d	Mounting Torque (TO-247HV)	1.13/10	Nm/lb.in
Weight	TO-268HV	4	g
	TO-247HV	6	g

TO-268HV (IXBT)



TO-247HV (IXBH)



G = Gate C = Collector
E = Emitter Tab = Collector

Features

- High Voltage Packages
- High Blocking Voltage
- High Peak Current Capability
- Low Saturation Voltage

Advantages

- Low Gate Drive Requirement
- High Power Density

Applications

- Switch-Mode and Resonant-Mode Power Supplies
- Uninterruptible Power Supplies (UPS)
- Laser Generators
- Capacitor Discharge Circuits
- AC Switches

Symbol	Test Conditions ($T_J = 25^\circ C$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{CES}	$I_C = 250\mu A$, $V_{GE} = 0V$	3600		V
$V_{GE(th)}$	$I_C = 250\mu A$, $V_{CE} = V_{GE}$	3.0		V
I_{CES}	$V_{CE} = V_{CES}$, $V_{GE} = 0V$ $T_J = 125^\circ C$			10 μA 500 μA
I_{GES}	$V_{CE} = 0V$, $V_{GE} = \pm 20V$			± 100 nA
$V_{CE(sat)}$	$I_C = 16A$, $V_{GE} = 15V$, Note 1 $T_J = 125^\circ C$		2.5 3.1	3.0 V V

Symbol Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified)		Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$I_C = 16\text{A}, V_{CE} = 10\text{V}$, Note 1	7	12	S
C_{ies}	$V_{CE} = 25\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$		1116	pF
C_{oes}			60	pF
C_{res}			25	pF
$Q_{g(on)}$	$I_C = 16\text{A}, V_{GE} = 15\text{V}, V_{CE} = 1.5\text{KV}$		65	nC
Q_{ge}			7	nC
Q_{gc}			30	nC
$t_{d(on)}$	Resistive load, $T_J = 25^\circ\text{C}$		30	ns
t_r		$I_C = 16\text{A}, V_{GE} = 15\text{V}$	260	ns
$t_{d(off)}$	$V_{CE} = 1.5\text{KV}, R_G = 25\Omega$		184	ns
t_f			110	ns
$t_{d(on)}$	Resistive load, $T_J = 125^\circ\text{C}$		36	ns
t_r		$I_C = 16\text{A}, V_{GE} = 15\text{V}$	385	ns
$t_{d(off)}$	$V_{CE} = 1.5\text{KV}, R_G = 25\Omega$		190	ns
t_f			115	ns
R_{thJC}	TO-247HV			0.46 $^\circ\text{C/W}$
R_{thCS}			0.21	$^\circ\text{C/W}$

Reverse Diode

Symbol Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified)		Characteristic Values		
		Min.	Typ.	Max
V_F	$I_F = 16\text{A}, V_{GE} = 0\text{V}$, Note 1			3.5 V
t_{rr}	$I_F = 16\text{A}, V_{GE} = 0\text{V}, -di_F/dt = 100\text{A}/\mu\text{s}$		620	ns
I_{RM}		$V_R = 100\text{V}, V_{GE} = 0\text{V}$	21.5	A
Q_{RM}			6.7	μC

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

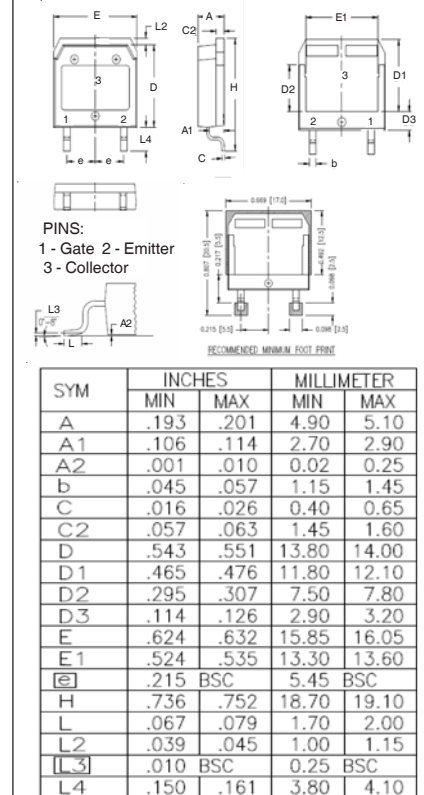
ADVANCE TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. 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 7,157,338 B2
by one or more of the following U.S. patents: 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

TO-268HV Outline



TO-247HV Outline

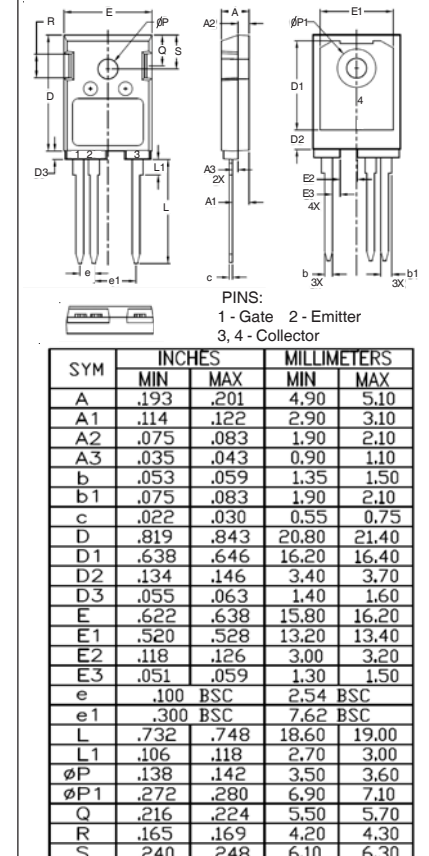


Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

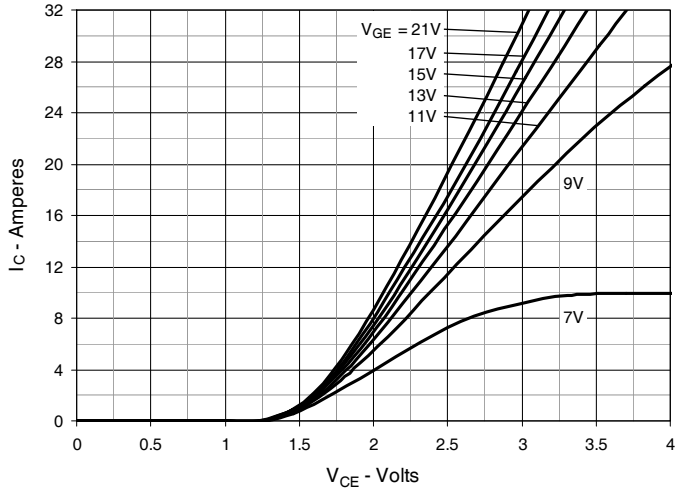


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

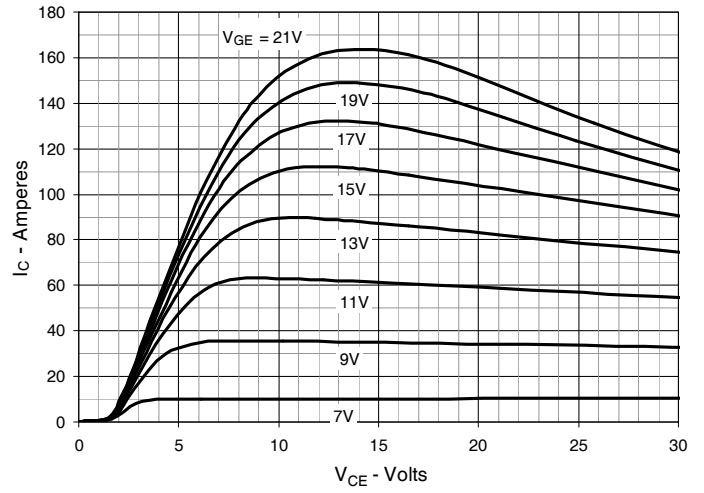


Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

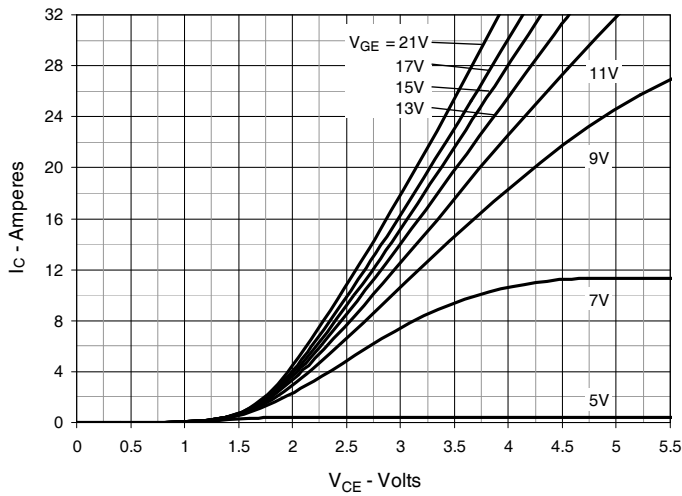


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

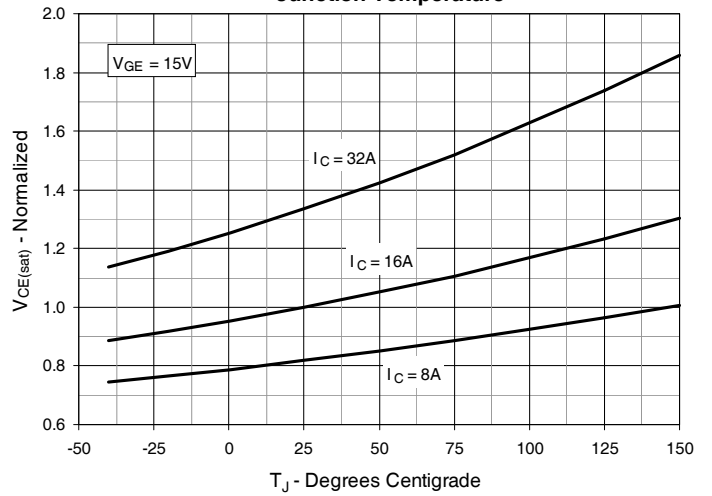


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

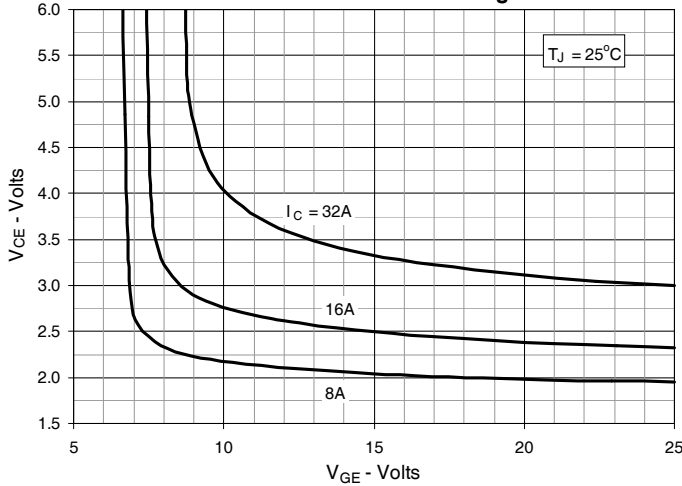


Fig. 6. Input Admittance

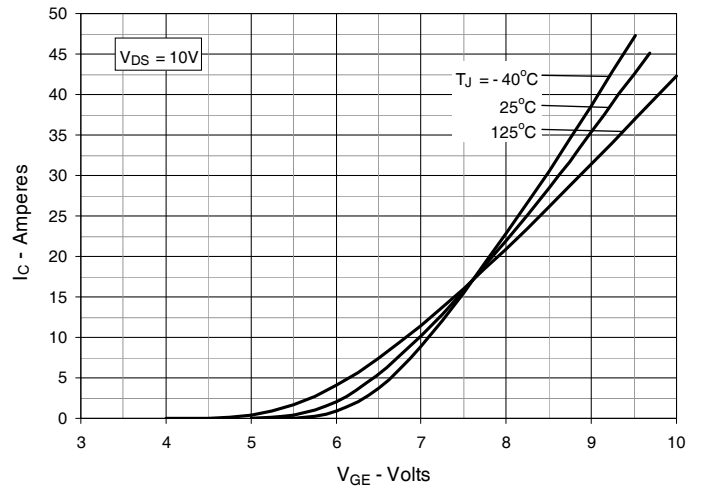


Fig. 7. Transconductance

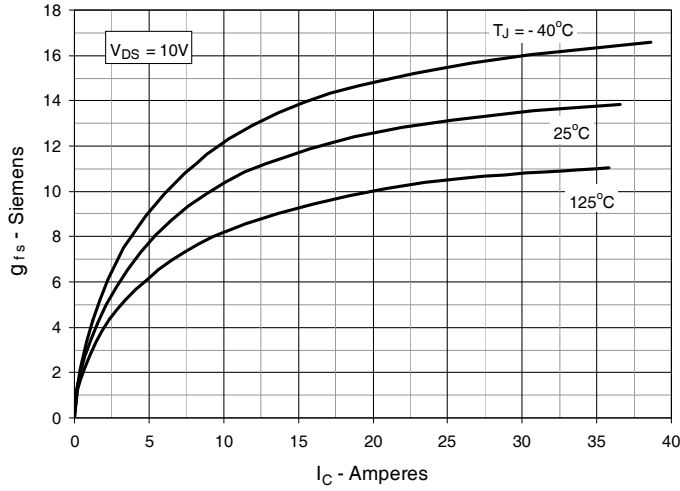


Fig. 8. Forward Voltage Drop of Intrinsic Diode

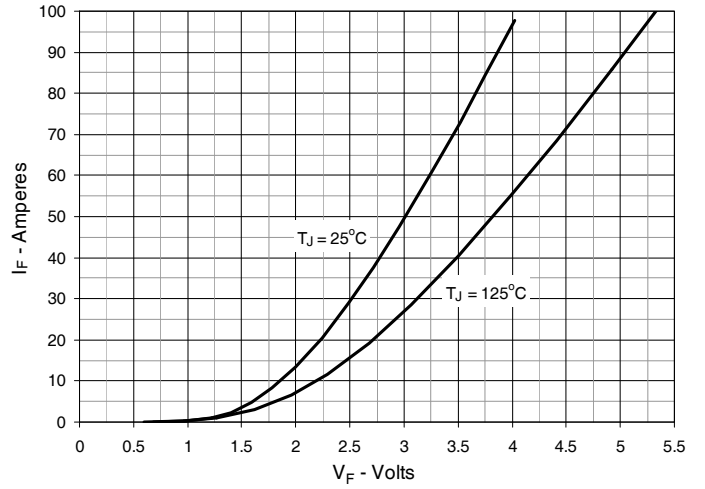


Fig. 9. Gate Charge

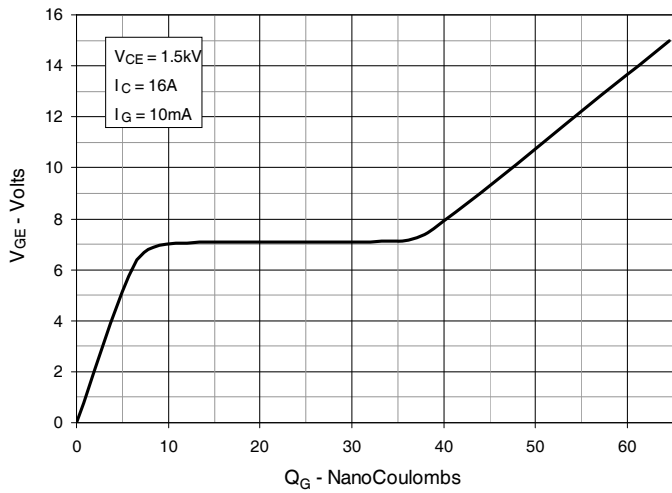


Fig. 10. Capacitance

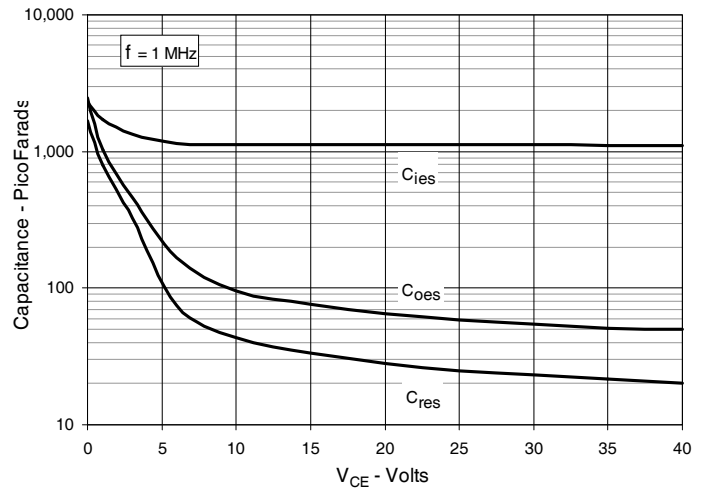


Fig. 11. Reverse-Bias Safe Operating Area

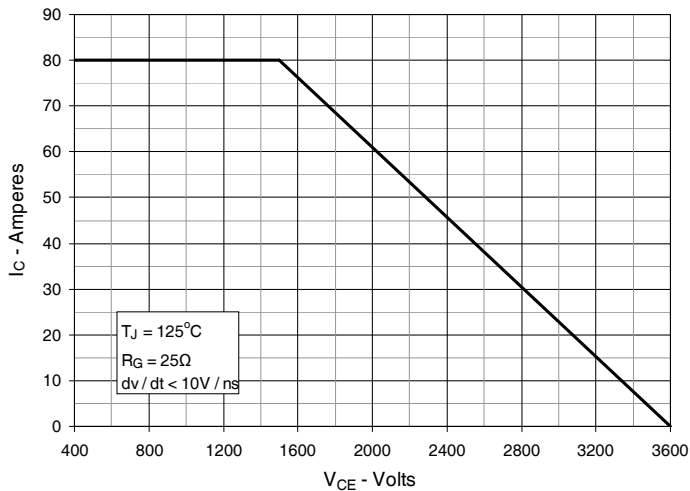


Fig. 12. Maximum Transient Thermal Impedance

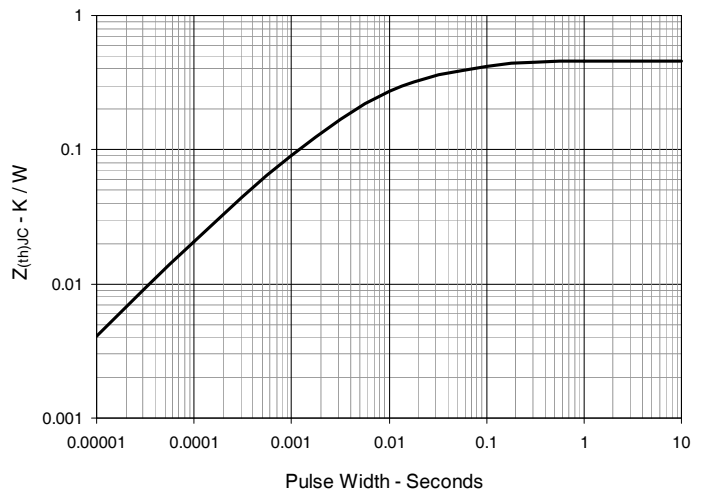


Fig. 13. Resistive Turn-on Rise Time vs. Junction Temperature

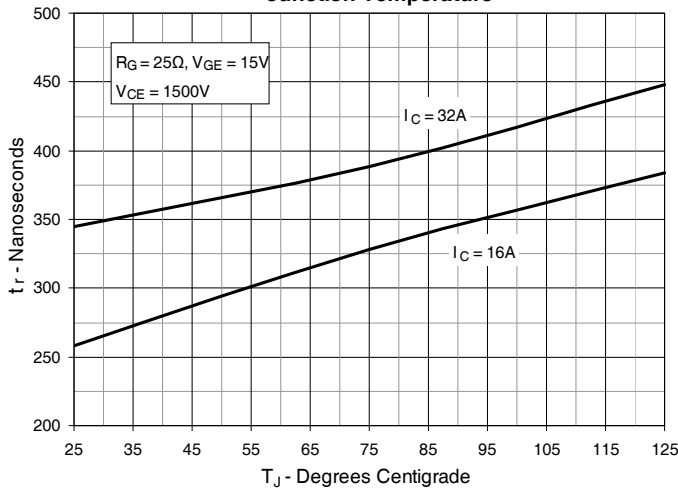


Fig. 14. Resistive Turn-on Rise Time vs. Collector Current

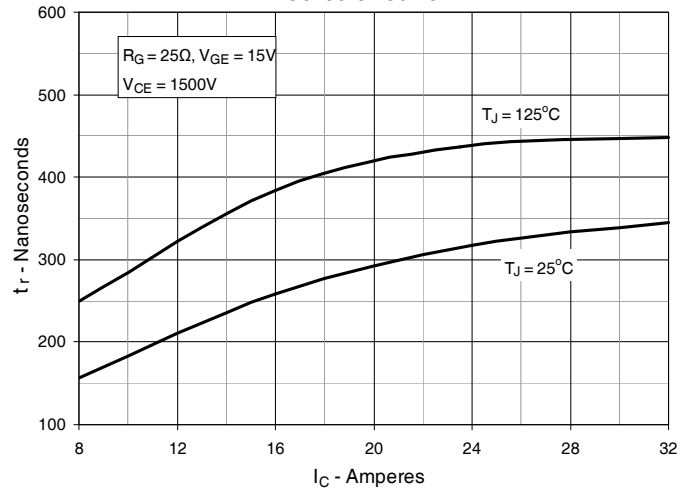


Fig. 15. Resistive Turn-on Switching Times vs. Gate Resistance

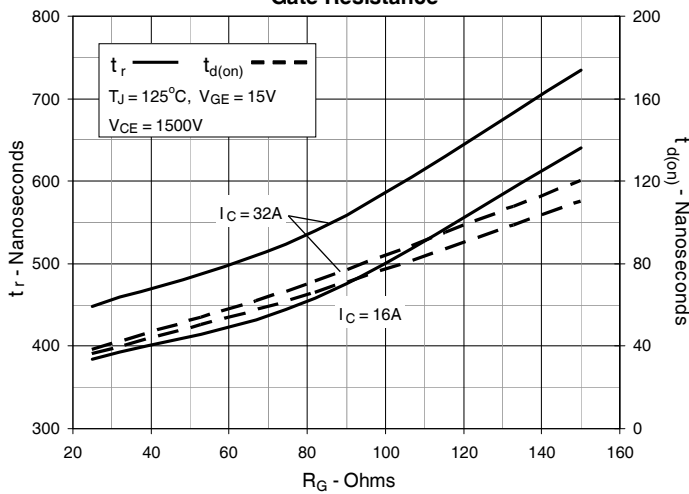


Fig. 16. Resistive Turn-off Switching Times vs. Junction Temperature

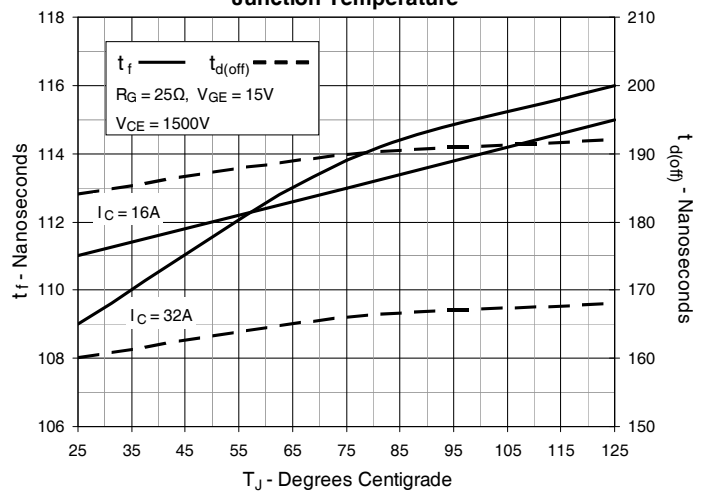


Fig. 17. Resistive Turn-off Switching Times vs. Collector Current

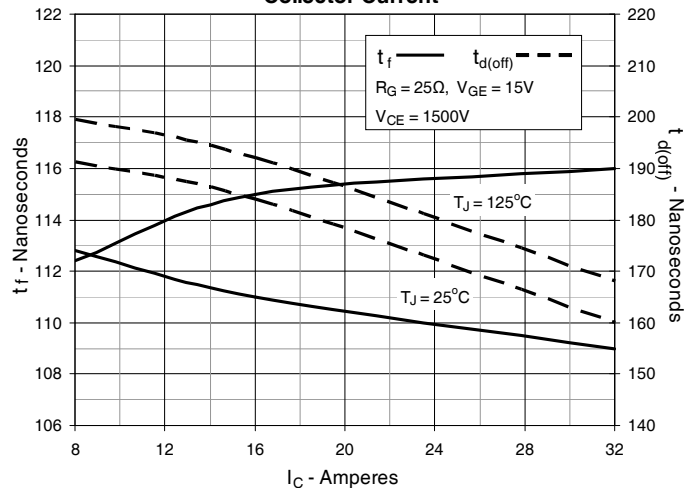


Fig. 18. Resistive Turn-off Switching Times vs. Gate Resistance

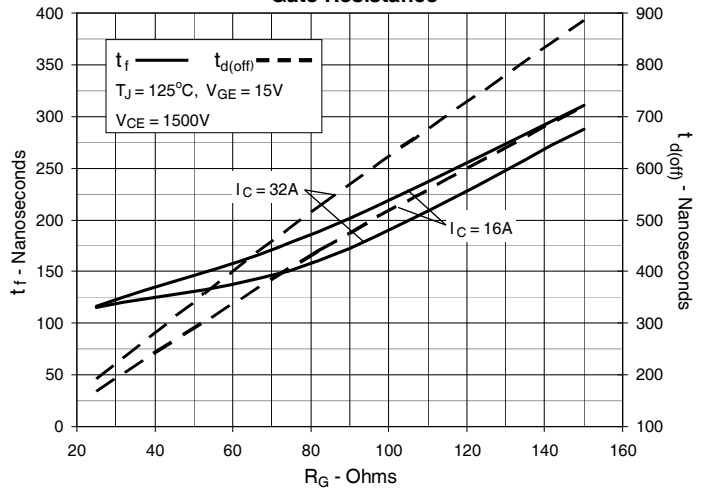


Fig. 19. Forward-Bias Safe Operating Area @ $T_C = 25^\circ\text{C}$

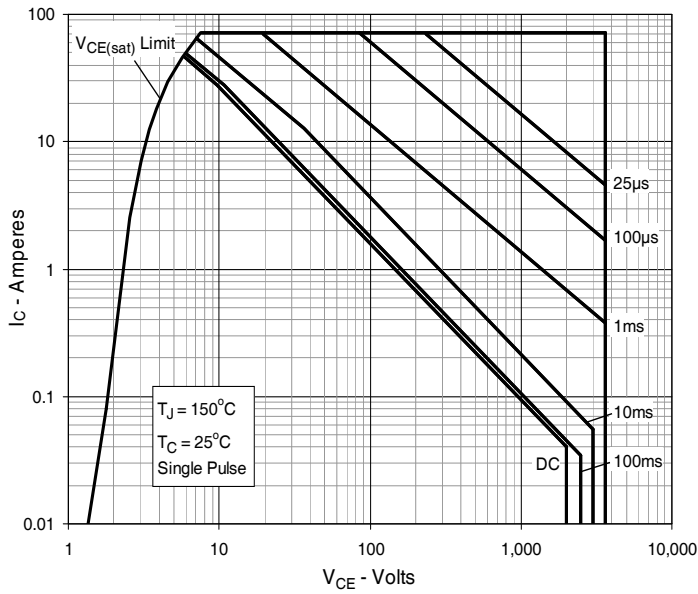
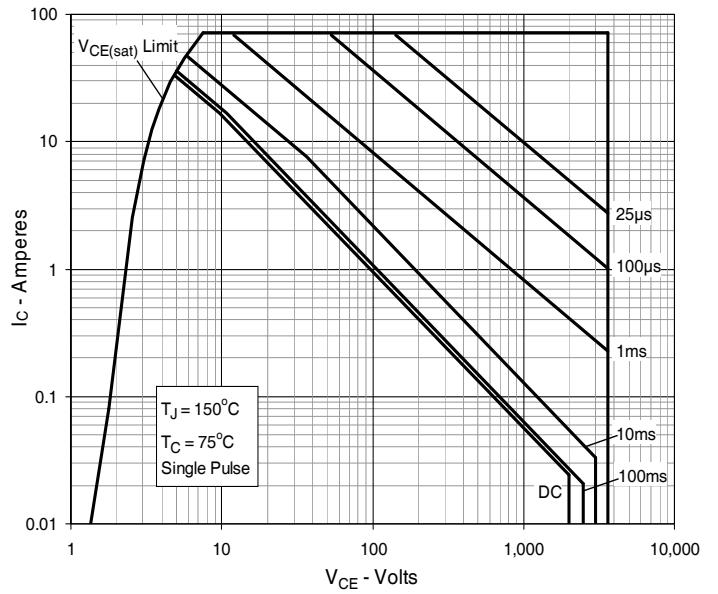


Fig. 20. Forward-Bias Safe Operating Area @ $T_C = 75^\circ\text{C}$





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