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[IXGV25N250S](#)

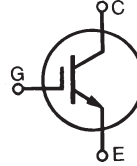
For any questions, you can email us directly:

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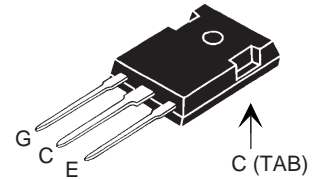
# High Voltage IGBT For Capacitor Discharge Applications

**IXGH25N250**  
**IXGT25N250**  
**IXGV25N250S**

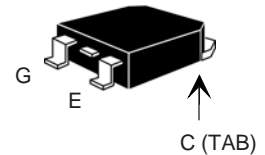
$V_{CES} = 2500 \text{ V}$   
 $I_{C25} = 60 \text{ A}$   
 $V_{CE(sat)} \leq 2.9 \text{ V}$



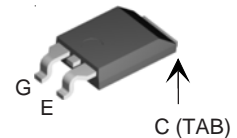
TO-247 (IXGH)



TO-268 (IXGT)



PLUS220SMD (IXGV...S)



G = Gate, C = Collector,  
 E = Emitter, TAB = Collector

Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	2500	V
$V_{CGR}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	2500	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	60	A
$I_{C110}$	$T_C = 110^\circ\text{C}$	25	A
$I_{CM}$	$T_C = 25^\circ\text{C}, V_{GE} = 20 \text{ V}, 1 \text{ ms}$	200	A
<b>SSOA (RBSOA)</b>	$V_{GE} = 20 \text{ V}, T_J = 125^\circ\text{C}, R_G = 20 \Omega$ Clamped inductive load @ 1250V	$I_{CM} = 240$	A
$P_C$	$T_C = 25^\circ\text{C}$	250	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
$T_L$	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
$T_{SOLD}$	Plastic body for 10 s	260	$^\circ\text{C}$
$M_d$	Mounting torque (TO-247)	1.13/10	Nm/lb-in
<b>Weight</b>		TO-247	6 g
		TO-268	4 g

### Features

- High peak current capability
- Low saturation voltage
- MOS Gate turn-on -drive simplicity
- Rugged NPT structure
- Molding epoxies meet UL 94 V-0 flammability classification

### Applications

- Capacitor discharge
- Pulser circuits

### Advantages

- High power density
- Suitable for surface mounting
- Easy to mount with 1 screw, (isolated mounting screw hole)

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
$BV_{CES}$	$I_C = 250 \mu\text{A}, V_{GE} = 0 \text{ V}$	2500		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$	3.0		5.0 V
$I_{CES}$	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$			50 $\mu\text{A}$ 1 mA
$I_{GES}$	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = 25 \text{ A}, V_{GE} = 15 \text{ V}$ $I_C = 75 \text{ A}$			2.9 V 5.2 V

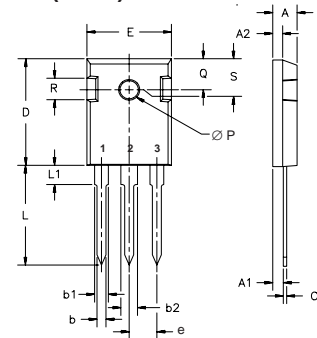


IXGH25N250 IXGT25N250 IXGV25N250S

Symbol	Test Conditions	Characteristic Values (T <sub>J</sub> = 25°C unless otherwise specified)		
		Min.	Typ.	Max.
<b>g<sub>fs</sub></b>	I <sub>C</sub> = 50 A; V <sub>CE</sub> = 10 V, Note 1	16	26	S
<b>I<sub>C(ON)</sub></b>	V <sub>GE</sub> = 15V, V <sub>CE</sub> = 20V, Note 1		240	A
<b>C<sub>ies</sub></b>	V <sub>CE</sub> = 25 V, V <sub>GE</sub> = 0 V, f = 1 MHz		2310	pF
<b>C<sub>oes</sub></b>			75	pF
<b>C<sub>res</sub></b>			23	pF
<b>Q<sub>g</sub></b>	I <sub>C</sub> = 50 A, V <sub>GE</sub> = 15 V, V <sub>CE</sub> = 0.5 V <sub>CES</sub>		75	nC
<b>Q<sub>ge</sub></b>			15	nC
<b>Q<sub>gc</sub></b>			30	nC
<b>t<sub>d(on)</sub></b>	<b>Resistive load</b>		68	ns
<b>t<sub>ri</sub></b>	I <sub>C</sub> = 50 A, V <sub>GE</sub> = 15 V, Note 1		233	ns
<b>t<sub>d(off)</sub></b>	V <sub>CE</sub> = 1250 V, R <sub>G</sub> = 5 Ω		209	ns
<b>t<sub>fi</sub></b>			200	ns
<b>R<sub>thJC</sub></b>			0.5	°C/W
<b>R<sub>thCS</sub></b>	(TO-247)	0.25		°C/W

Notes: 1. Pulse test, t ≤ 300 μs, duty cycle, d ≤ 2 %  
 2. Additional provisions for lead-to-lead voltage isolation are required at V<sub>CE</sub> > 1200 V

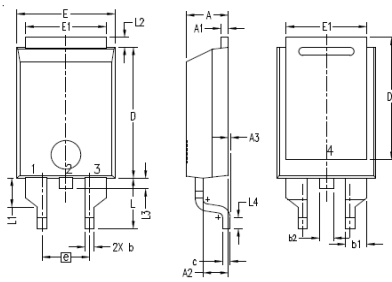
TO-247 (IXGH) Outline



Terminals: 1 - Gate 2 - Drain (Collector)  
 3 - Source (Emitter) Tab - Drain (Collector)

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A <sub>1</sub>	2.2	2.54	.087	.102
A <sub>2</sub>	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b <sub>1</sub>	1.65	2.13	.065	.084
b <sub>2</sub>	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
∅P	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15	BSC	242	BSC

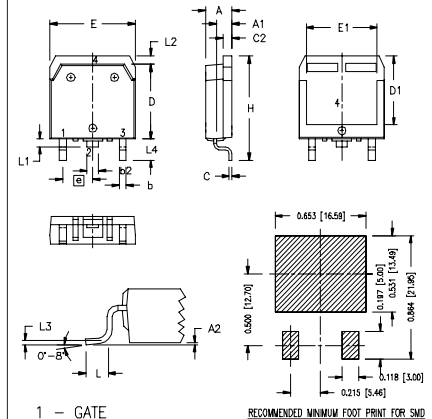
PLUS220SMD (IXGV\_S) Outline



1. GATE  
 2. DRAIN (COLLECTOR)  
 3. SOURCE (EMITTER)  
 4. DRAIN (COLLECTOR)

SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.169	.185	4.30	4.70
A1	.028	.035	0.70	0.90
A2	.098	.118	2.50	3.00
A3	.000	.010	0.00	0.25
b	.035	.047	0.90	1.20
b1	.080	.095	2.03	2.41
b2	.054	.064	1.37	1.63
c	.028	.035	0.70	0.90
D	.551	.591	14.00	15.00
D1	.512	.539	13.00	13.70
E	.394	.433	10.00	11.00
E1	.331	.346	8.40	8.80
e		.200BSC	5.08	BSC
L	.209	.228	5.30	5.80
L1	.118	.138	3.00	3.50
L2	.035	.051	0.90	1.30
L3	.047	.059	1.20	1.50
L4	.039	.059	1.00	1.50

TO-268 (IXGT) Outline (D3-Pak)



1 - GATE  
 2 - DRAIN (COLLECTOR)  
 3 - SOURCE (EMITTER)  
 4 - DRAIN (COLLECTOR)

RECOMMENDED MINIMUM FOOT PRINT FOR SMD

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b1	.075	.083	1.90	2.10
b2	.016	.026	0.40	0.65
C	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
e		.215 BSC	5.45	BSC
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3		.010 BSC	0.25	BSC
L4	.150	.161	3.80	4.10

Ref: IXYS CO 0052 RA

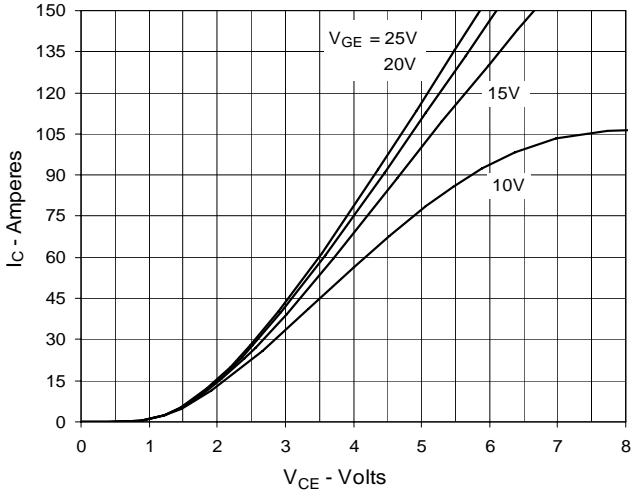
PRELIMINARY TECHNICAL INFORMATION

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.

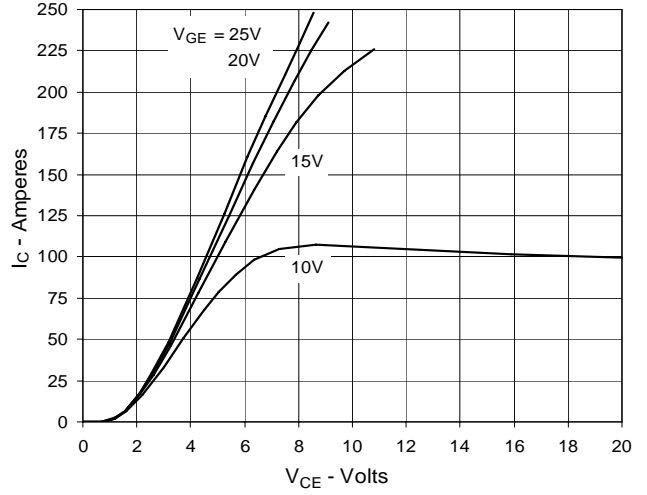
IXYS reserves the right to change limits, test conditions, and dimensions.

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 7,157,338 B2  
 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  
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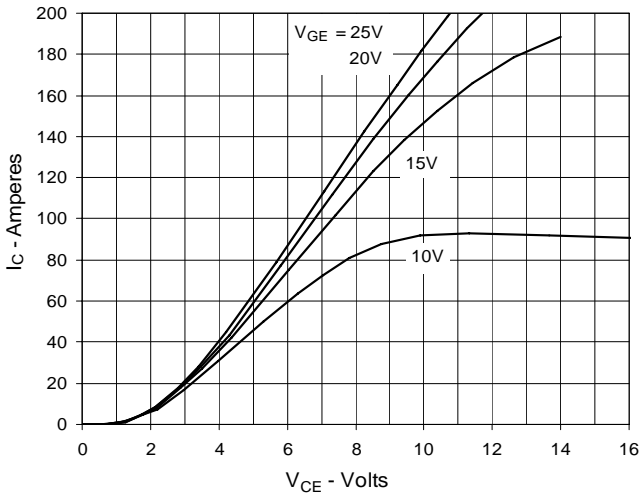
**Fig. 1. Output Characteristics @ 25°C**



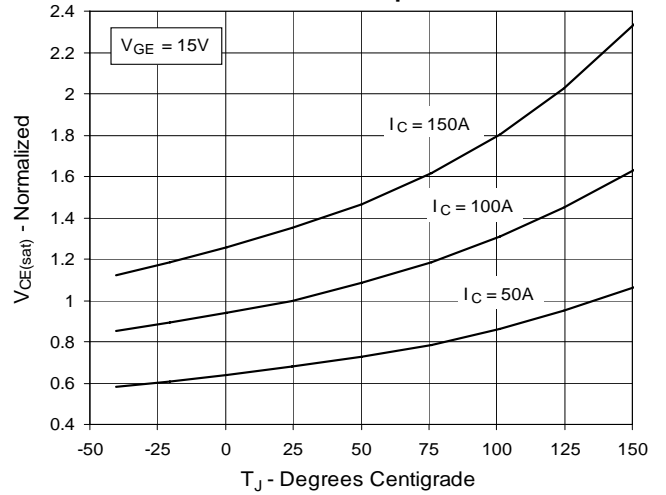
**Fig. 2. Extended Output Characteristics @ 25°C**



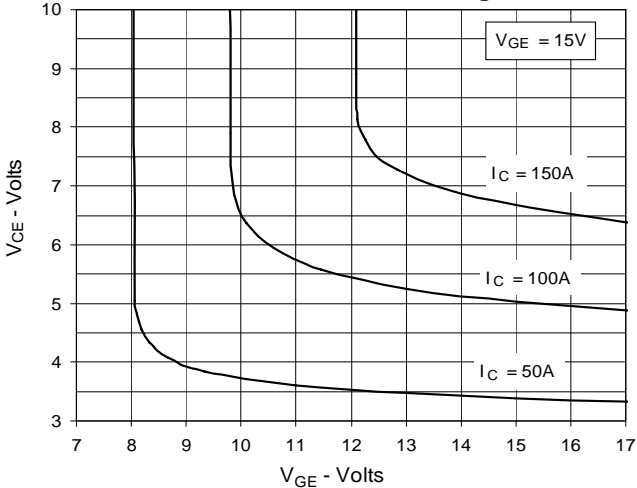
**Fig. 3. Output Characteristics @ 125°C**



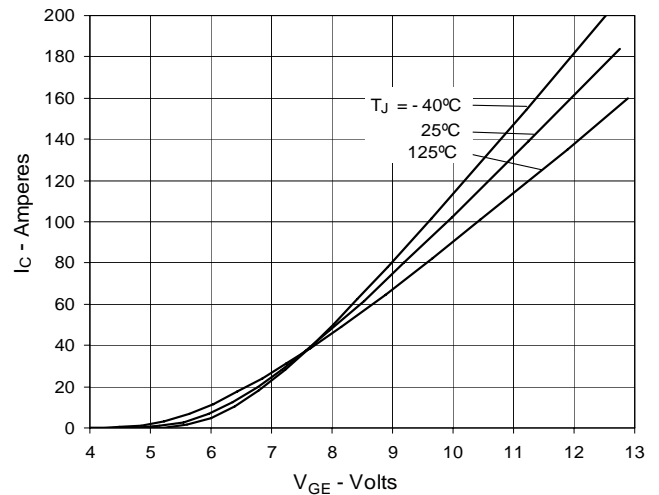
**Fig. 4. Dependence of VCE(sat) on Junction Temperature**



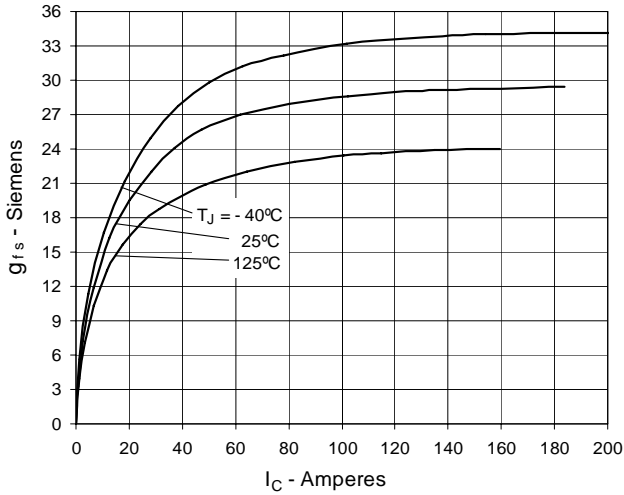
**Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage**



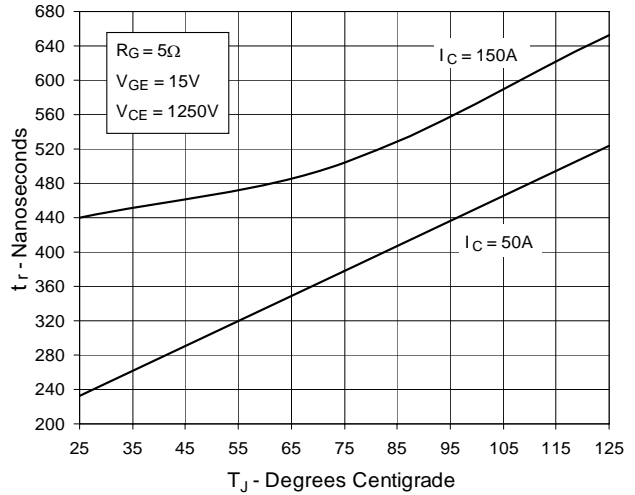
**Fig. 6. Input Admittance**



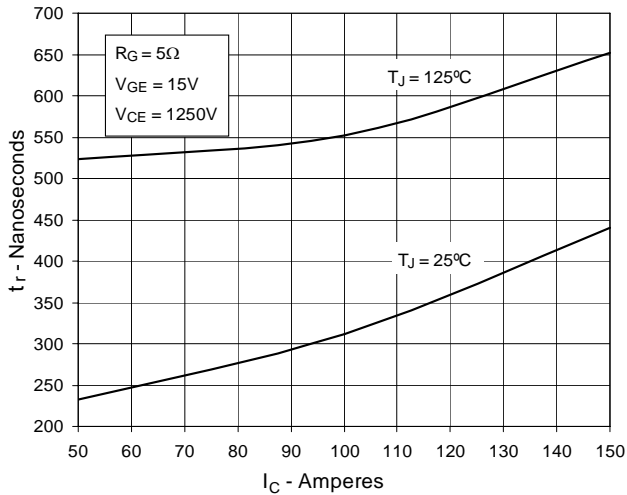
**Fig. 7. Transconductance**



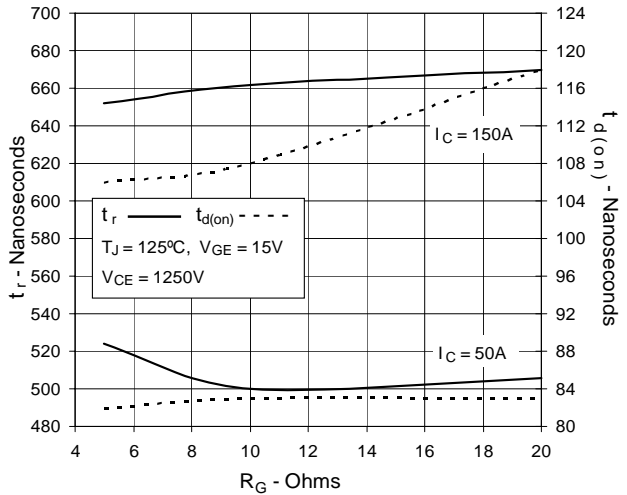
**Fig. 8. Resistive Turn-on Rise Time vs. Junction Temperature**



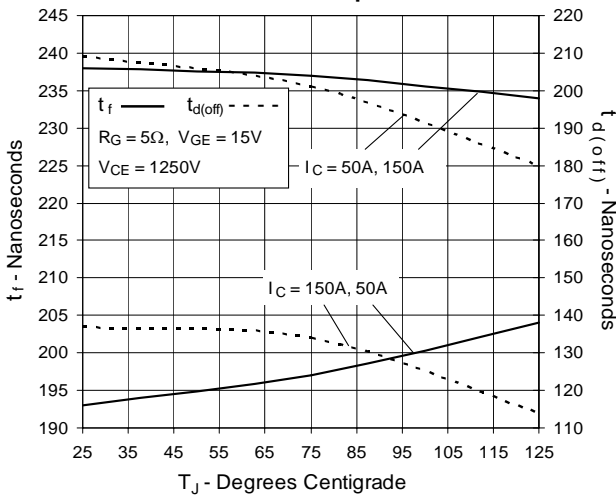
**Fig. 9. Resistive Turn-on Rise Time vs. Collector Current**



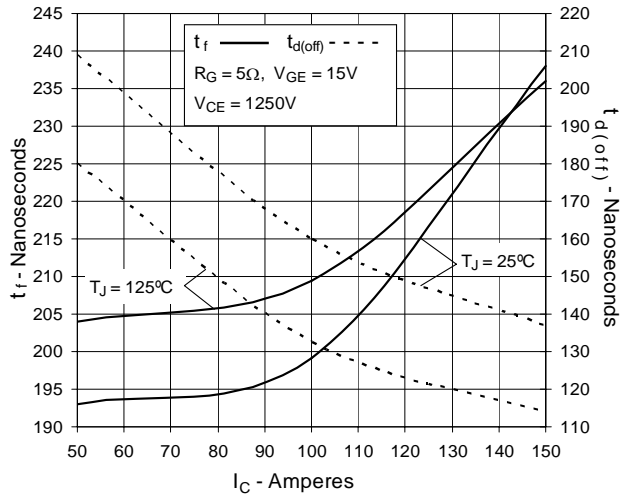
**Fig. 10. Resistive Turn-on Switching Times vs. Gate Resistance**



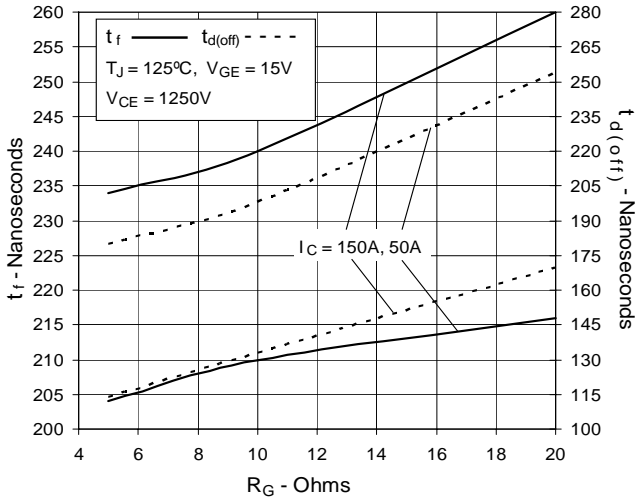
**Fig. 11. Resistive Turn-off Switching Times vs. Junction Temperature**



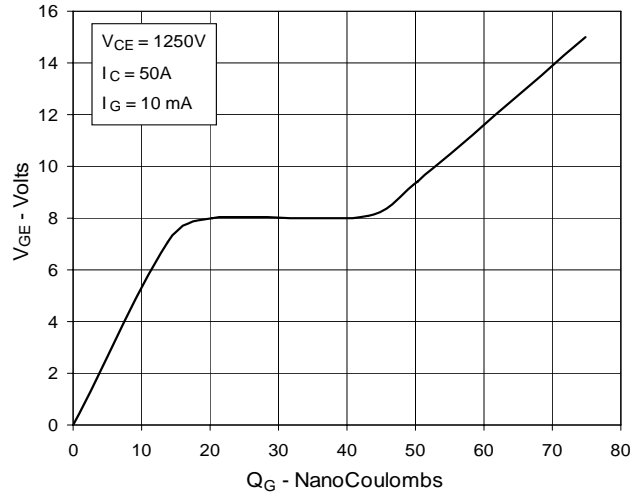
**Fig. 12. Resistive Turn-off Switching Times vs. Collector Current**



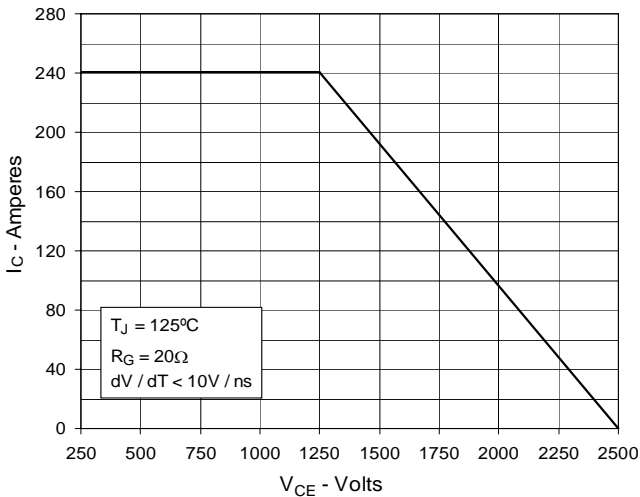
**Fig. 13. Resistive Turn-off Switching Times vs. Gate Resistance**



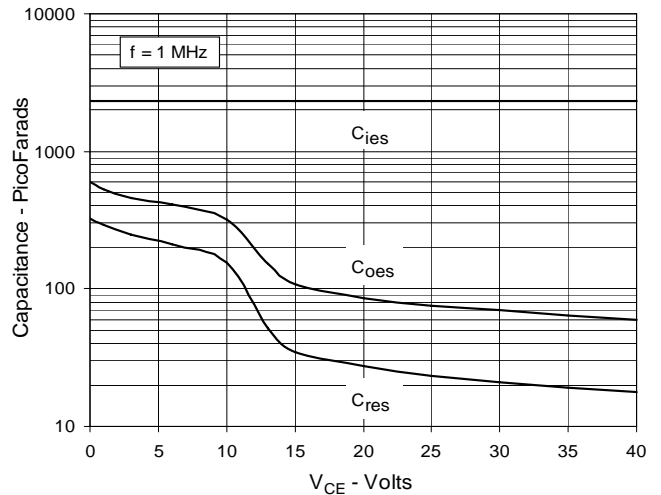
**Fig. 14. Gate Charge**



**Fig. 15. Reverse-Bias Safe Operating Area**



**Fig. 16. Capacitance**



**Fig. 17. Maximum Transient Thermal Impedance**

