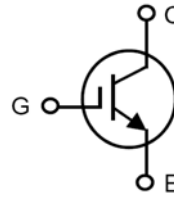


## For Capacitor Discharge Applications

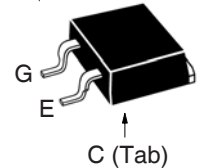


$$V_{CES} = 2500V$$

$$I_{C110} = 12A$$

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

TO-263HV



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

Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ C$ to $150^\circ C$	2500	V
$V_{GGR}$	$T_J = 25^\circ C$ to $150^\circ C$ , $R_{GE} = 1M\Omega$	2500	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ C$	30	A
$I_{C110}$	$T_C = 110^\circ C$	12	A
$I_{CM}$	$T_C = 25^\circ C$ , $V_{GE} = 19V$ , 1ms 10ms	105	A
		55	A
<b>SSOA</b>	$V_{GE} = 15V$ , $T_{VJ} = 125^\circ C$ , $R_G = 20\Omega$	$I_{CM} = 60$	A
<b>(RBSOA)</b>	Clamped Inductive Load	1500	V
$P_C$	$T_C = 25^\circ C$	150	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	$^\circ C$
$T_{SOLD}$	1.6 mm (0.062in.) from Case for 10s	260	$^\circ C$
$V_{ISOL}$	50/60Hz, 1 Minute	4000	V~
<b>Weight</b>		2.3	g

### Features

- International Standard Package
- High Voltage Package
- Electrically Isolated Tab
- High Peak Current Capability
- Low Saturation Voltage
- Molding Epoxies Meet UL 94 V-0 Flammability Classification

### Advantages

- High Power Density
- Easy to Mount

### Applications

- Capacitor Discharge
- Pulsar Circuits

Symbol	Test Conditions ( $T_J = 25^\circ C$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{CES}$	$I_C = 250\mu A$ , $V_{GE} = 0V$	2500		V
$V_{GE(th)}$	$I_C = 250\mu A$ , $V_{CE} = V_{GE}$	3.0		5.0 V
$I_{CES}$	$V_{CE} = 0.8 \cdot V_{CES}$ , $V_{GE} = 0V$ $T_J = 125^\circ C$			25 $\mu A$ 750 $\mu A$
$I_{GES}$	$V_{CE} = 0V$ , $V_{GE} = \pm 20V$			$\pm 100$ nA
$V_{CE(sat)}$	$I_C = 20A$ , $V_{GE} = 15V$ , Note 1			3.1 V

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$I_C = 20\text{A}$ , $V_{CE} = 10\text{V}$ , Note 1	8	13	S
$I_{C(ON)}$	$V_{GE} = 20\text{V}$ , $V_{CE} = 15\text{V}$ , Note 1		190	A
$C_{ies}$	$V_{CE} = 15\text{V}$ , $V_{GE} = 25\text{V}$ , $f = 1\text{MHz}$		1190	pF
$C_{oes}$			53	pF
$C_{res}$			18	pF
$Q_g$	$I_C = 20\text{A}$ , $V_{GE} = 15\text{V}$ , $V_{CE} = 1000\text{V}$		53	nC
$Q_{ge}$			8	nC
$Q_{gc}$			22	nC
$t_{d(on)}$	<b>Resistive Switching Times</b> $I_C = 40\text{A}$ , $V_{GE} = 15\text{V}$ , Note 1 $V_{CE} = 1250\text{V}$ , $R_G = 10\Omega$		57	ns
$t_r$			160	ns
$t_{d(off)}$			136	ns
$t_f$			930	ns
$R_{thJC}$				0.83 $^\circ\text{C/W}$

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

### TO-263HV Outline

CREEPAGE DISTANCE		
DESCRIPTION	SYMBOL	MIN DISTANCE
LEAD TO LEAD AIR CLEARANCE	e2	0.163 [4.15mm]
LEAD TO LEAD Pkg SURFACE CREEPAGE	e2	0.165 [4.20mm]
LEAD TO BOTTOM DRAIN CREEPAGE	A2+D2	0.177 [4.50mm]

MINIMUM PCB FOOT PRINT LAYOUT

SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.170	.185	4.30	4.70
A1	.000	.008	0.00	0.20
A2	.091	.098	2.30	2.50
b	.028	.035	0.70	0.90
b2	.046	.054	1.18	1.38
C	.018	.024	0.45	0.60
C2	.049	.055	1.25	1.40
D	.354	.370	9.00	9.40
D1	.311	.327	7.90	8.30
D2	.083	.098	2.10	2.50
E	.386	.402	9.80	10.20
E1	.307	.323	7.80	8.20
e1	.200	BSC	5.08	BSC
(e2)	.163	.174	4.13	4.43
H	.591	.614	15.00	15.60
L	.079	.102	2.00	2.60
L1	.039	.055	1.00	1.40
L3	.010	BSC	0.254	BSC
(L4)	.071	.087	1.80	2.20

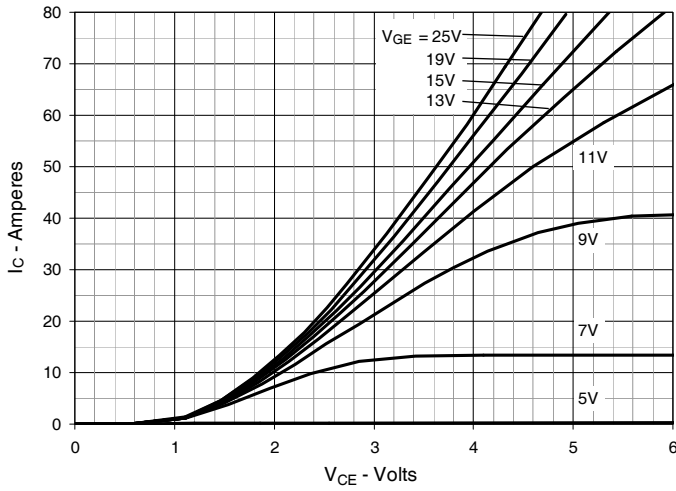
**NOTE:**

1. These dimensions do not include mold protrusion.
2. ( ) is reference dimension only.
3. Metal finish – Matte pure tin plating except trim area.
4. Pin call out: 1- Gate; 2 - Emitter; 3 - Collector

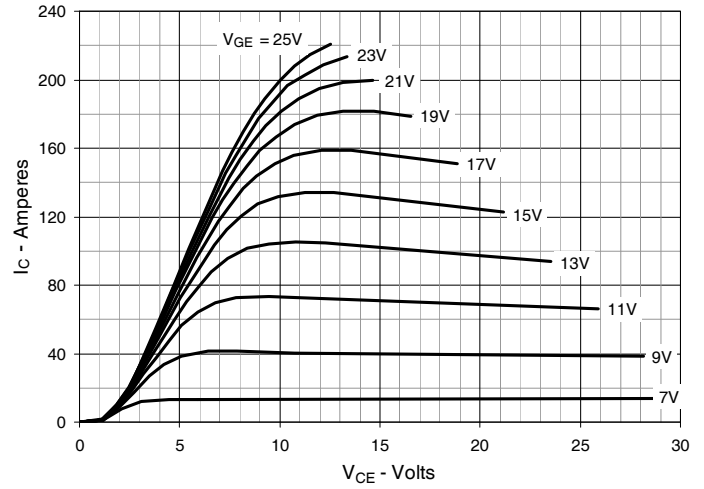
IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

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	

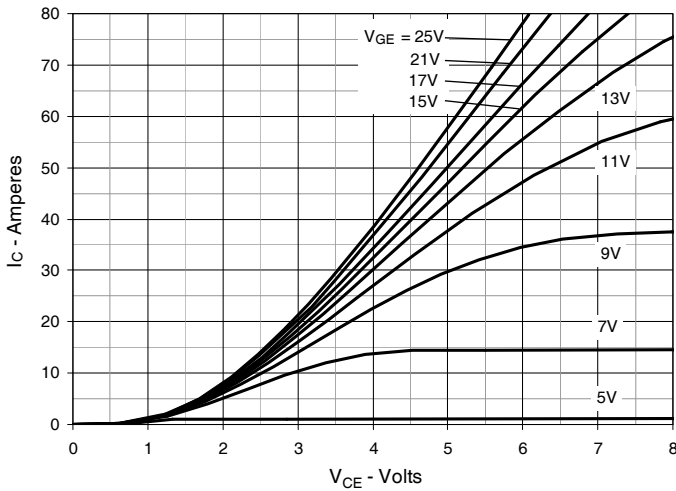
**Fig. 1. Output Characteristics @  $T_J = 25^\circ\text{C}$**



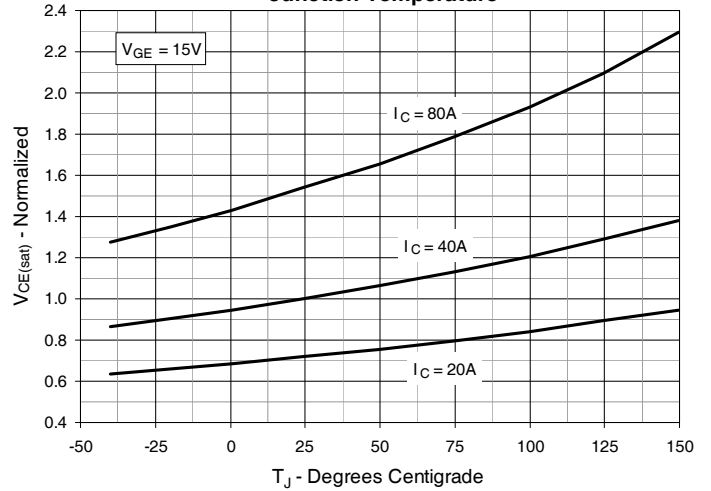
**Fig. 2. Extended Output Characteristics @  $T_J = 25^\circ\text{C}$**



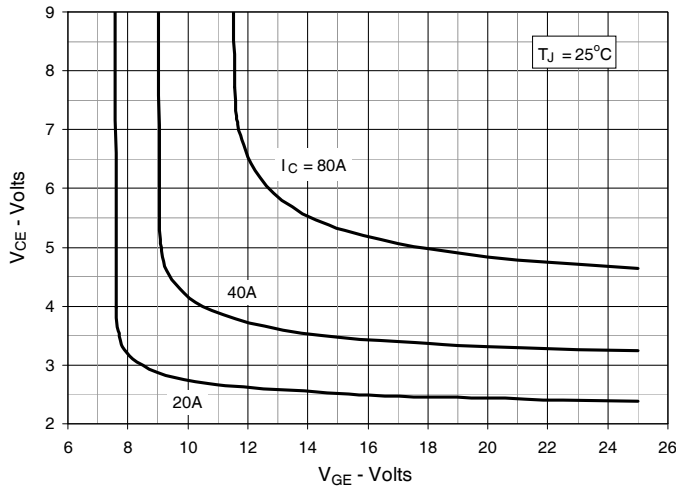
**Fig. 3. Output Characteristics @  $T_J = 125^\circ\text{C}$**



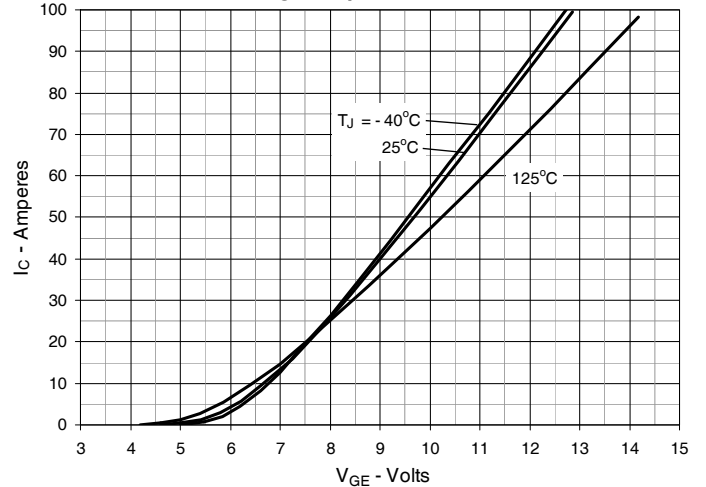
**Fig. 4. Dependence of  $V_{CE(sat)}$  on Junction Temperature**



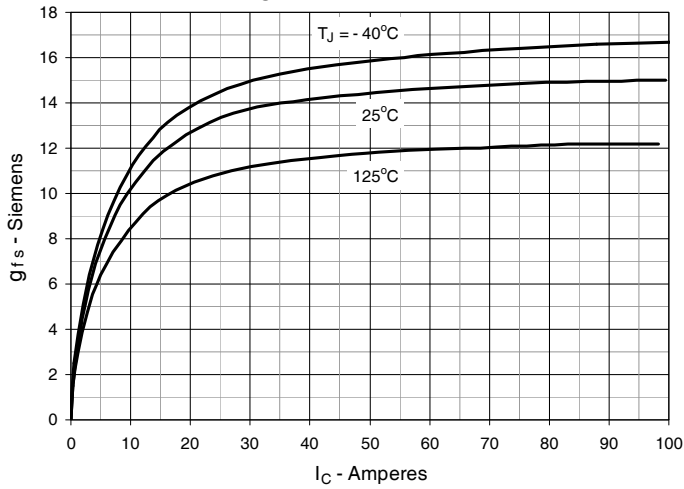
**Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage**



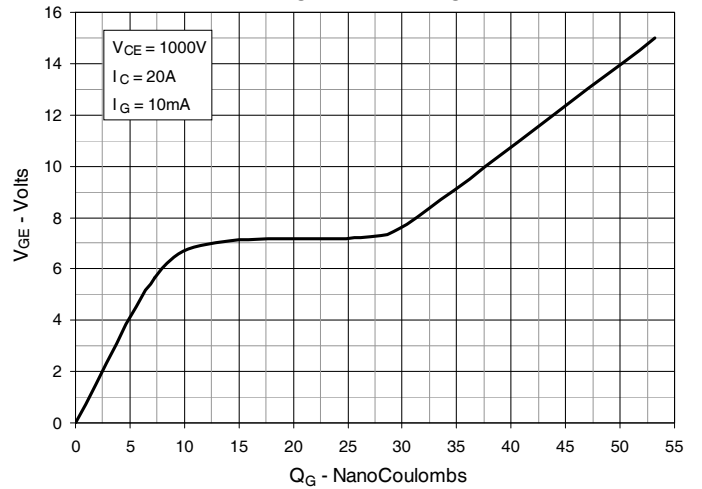
**Fig. 6. Input Admittance**



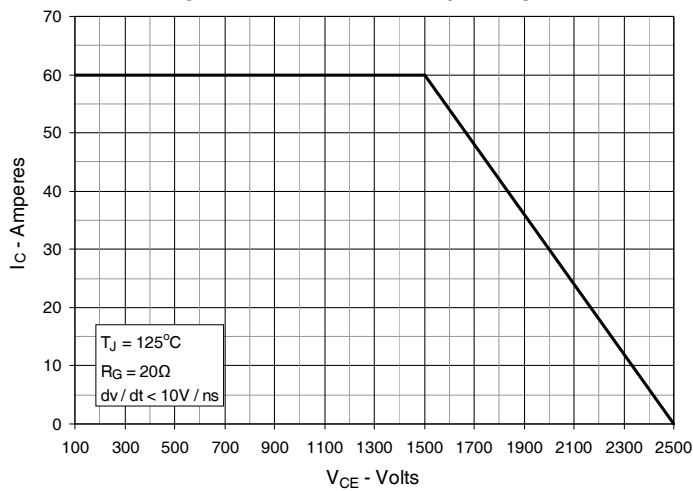
**Fig. 7. Transconductance**



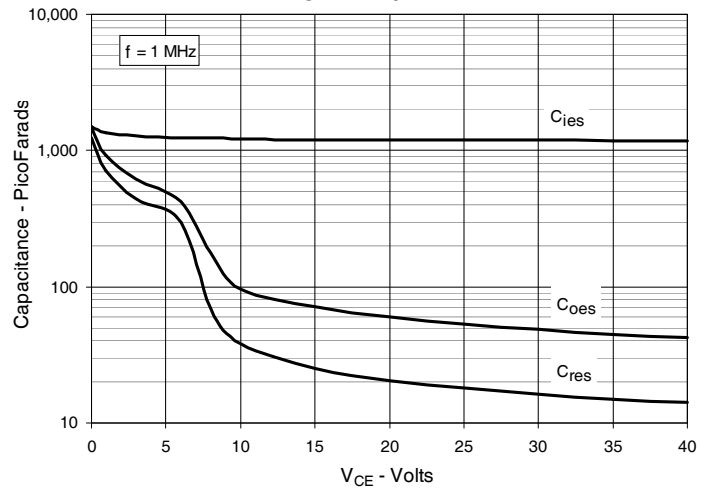
**Fig. 8. Gate Charge**



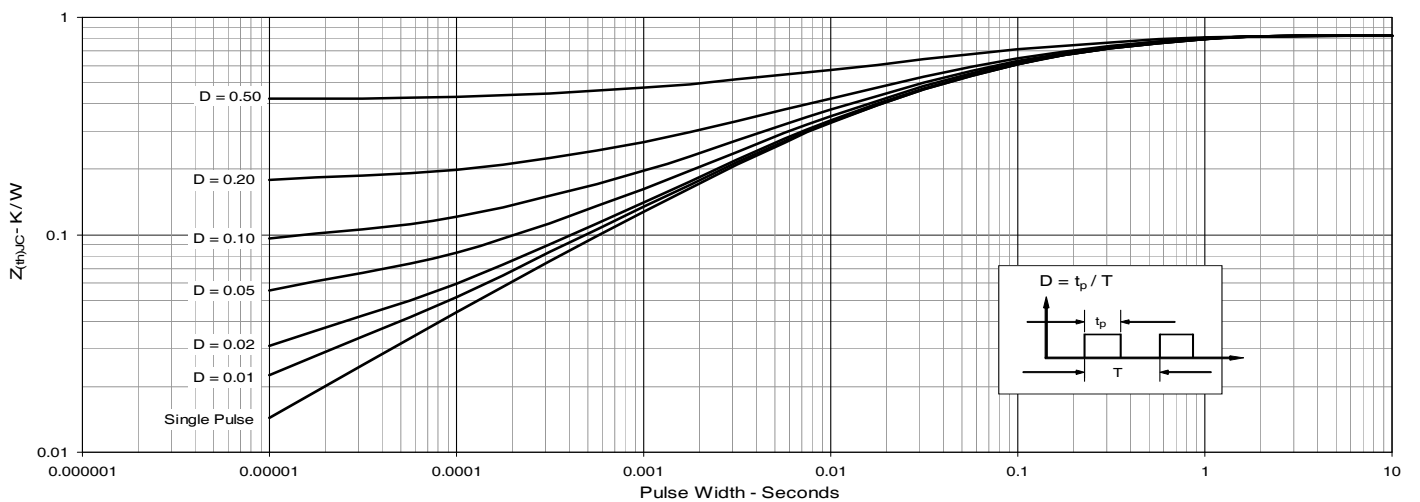
**Fig. 9. Reverse-Bias Safe Operating Area**



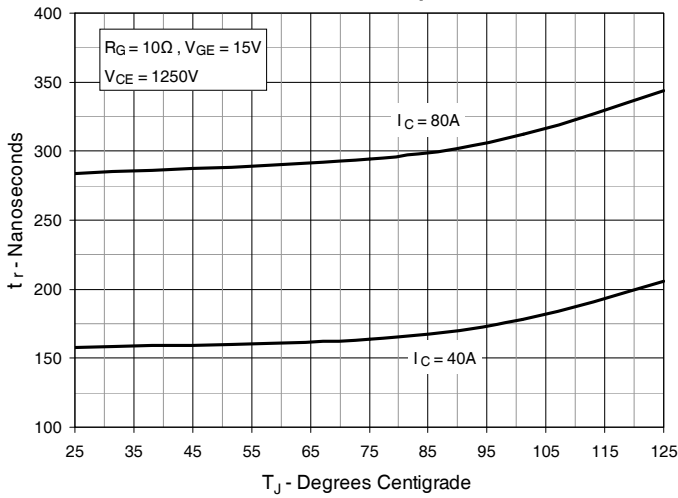
**Fig. 10. Capacitance**



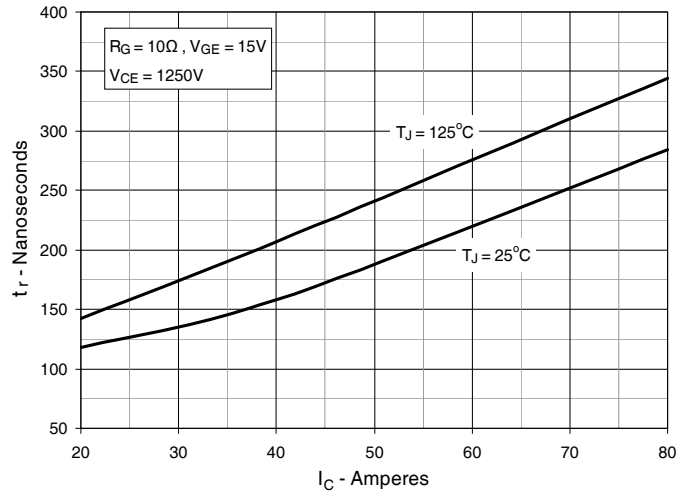
**Fig. 11. Maximum Transient Thermal Impedance**



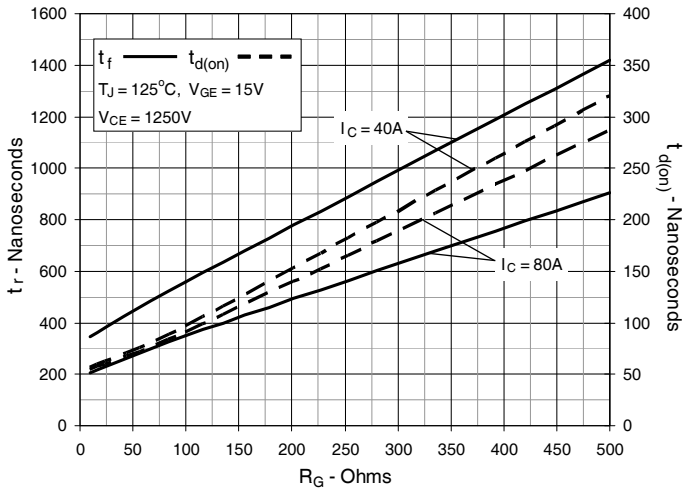
**Fig. 12. Resistive Turn-on Rise Time vs. Junction Temperature**



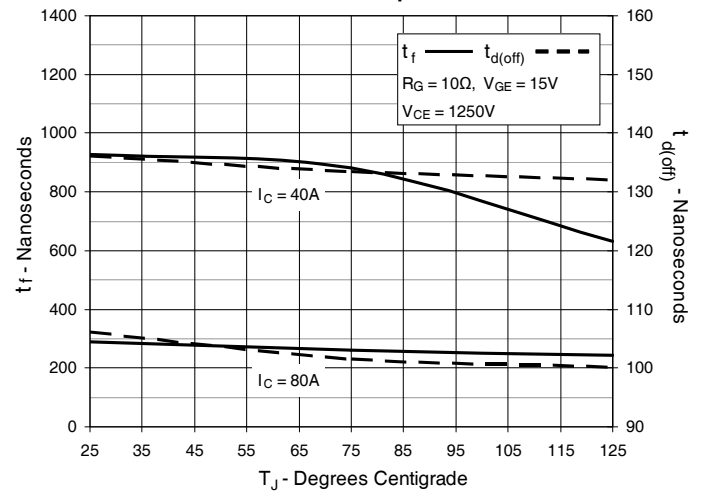
**Fig. 13. Resistive Turn-on Rise Time vs. Collector Current**



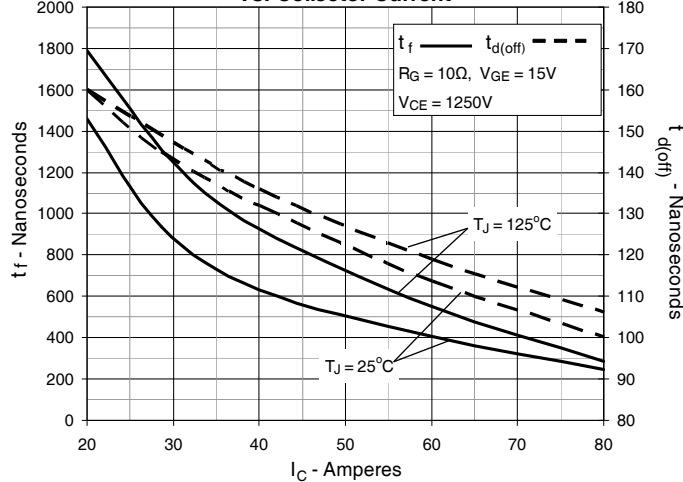
**Fig. 14. Resistive Turn-on Switching Times vs. Gate Resistance**



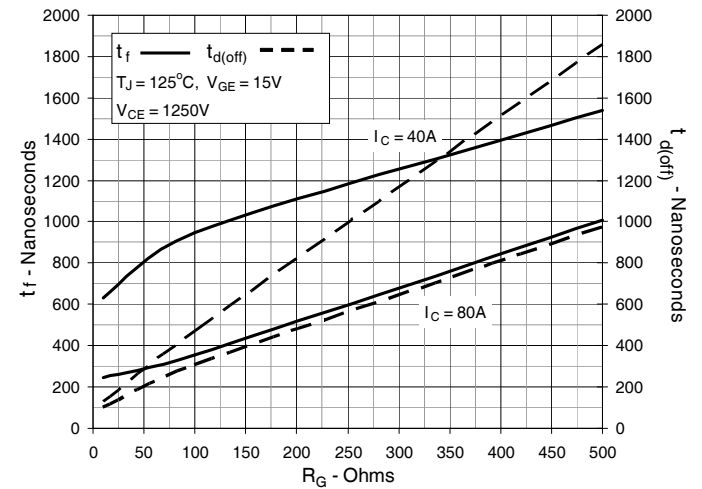
**Fig. 15. Resistive Turn-off Switching Times vs. Junction Temperature**



**Fig. 16. Resistive Turn-off Switching Times vs. Collector Current**



**Fig. 17. Resistive Turn-off Switching Times vs. Gate Resistance**





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