

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$I_C = I_{C90}$, $V_{CE} = 10\text{V}$, Note 1	5.2	8.8	S
$I_{C(on)}$	$V_{GE} = 10\text{V}$, $V_{CE} = 10\text{V}$, Note 1		44	A
C_{ies}	$V_{CE} = 25\text{V}$, $V_{GE} = 0\text{V}$, $f = 1\text{MHz}$		550	pF
C_{oes}			30	pF
C_{res}			8	pF
Q_g	$I_C = I_{C90}$, $V_{GE} = 15\text{V}$, $V_{CE} = 600\text{V}$		20.4	nC
Q_{ge}			3.1	nC
Q_{gc}			8.5	nC
$t_{d(on)}$	Resistive Switching Times, $T_J = 25^\circ\text{C}$ $I_C = I_{C90}$, $V_{GE} = 15\text{V}$ $V_{CE} = 960\text{V}$, $R_G = 10\Omega$		35	ns
t_r			140	ns
$t_{d(off)}$			62	ns
t_f			1035	ns
$t_{d(on)}$	Resistive Switching Times, $T_J = 125^\circ\text{C}$ $I_C = I_{C90}$, $V_{GE} = 15\text{V}$ $V_{CE} = 960\text{V}$, $R_G = 10\Omega$		35	ns
t_r			167	ns
$t_{d(off)}$			70	ns
t_f			1475	ns
R_{thJC}				1.25 $^\circ\text{C/W}$
R_{thCS}	TO-247		0.21	$^\circ\text{C/W}$
	TO-220		0.50	$^\circ\text{C/W}$

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

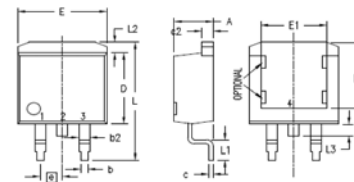
TO-247 Outline

The diagram illustrates the TO-247 package outline. The top view shows a rectangular body with a central circular feature. Dimensions include: E (body width), D (body height), R (lead height), L1 (lead length), L (total lead length), b1 (lead width at base), b2 (lead width at tip), and e (lead tip radius). The side view shows the package profile with dimensions: A (total height), A1 (lead height), A2 (body height), Q (body thickness), S (lead thickness), and C (lead tip radius). A central hole is labeled with diameter symbol and P.

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A ₁	2.2	2.54	.087	.102
A ₂	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b ₁	1.65	2.13	.065	.084
b ₂	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
L ₁		4.50		.177
ØP	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

Terminals: 1 - Gate
 2 - Collector
 3 - Emitted

TO-263 Outline



- 1 = Gate
2 = Collector
3 = Emitter
4 = Collector

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.160	.190	4.06	4.83
A1	.080	.110	2.03	2.79
b	.020	.039	0.51	0.99
b2	.045	.055	1.14	1.40
c	.016	.029	0.40	0.74
c2	.045	.055	1.14	1.40
D	.340	.380	8.64	9.65
D1	.315	.350	8.00	8.89
E	.380	.410	9.65	10.41
E1	.245	.320	6.22	8.13
e	.100	BSC	2.54	BSC
L	.575	.625	14.61	15.88
L1	.090	.110	2.29	2.79
L2	.040	.055	1.02	1.40
L3	.050	.070	1.27	1.78
L4	0	.005	0	0.13

TO-220 Outline

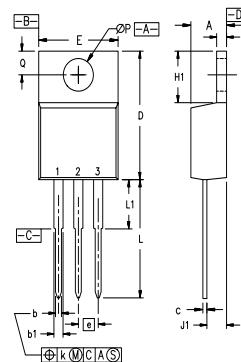


Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

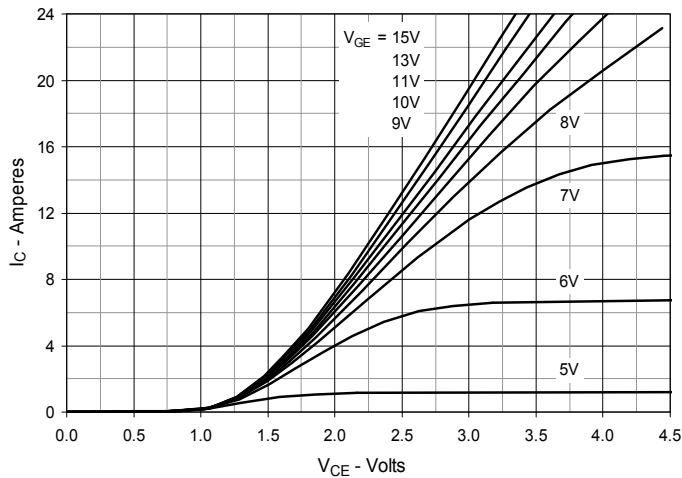


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

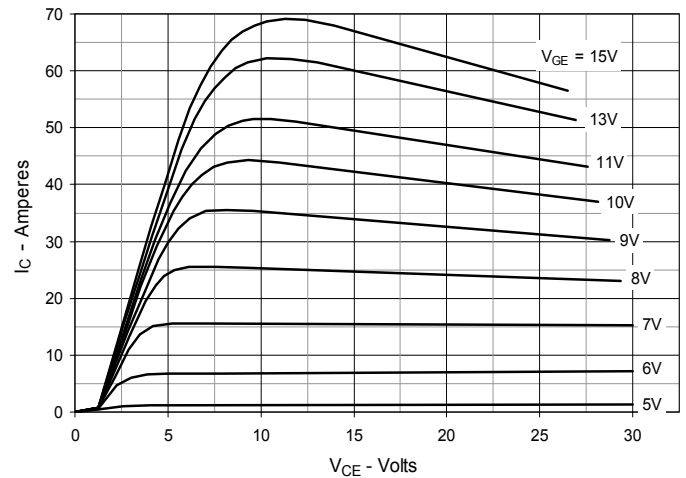


Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

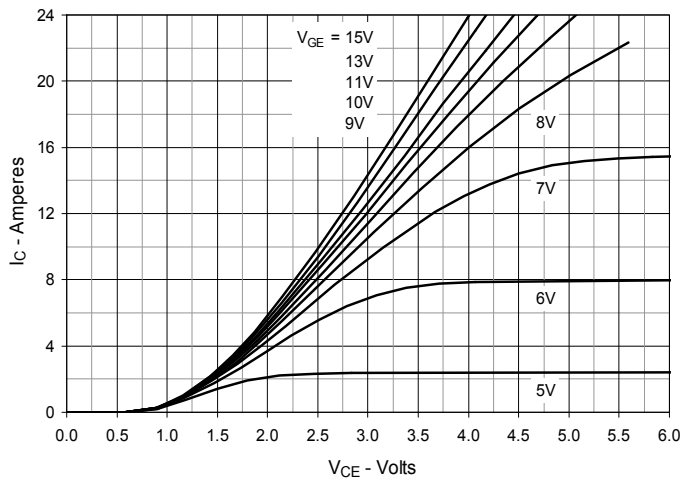


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

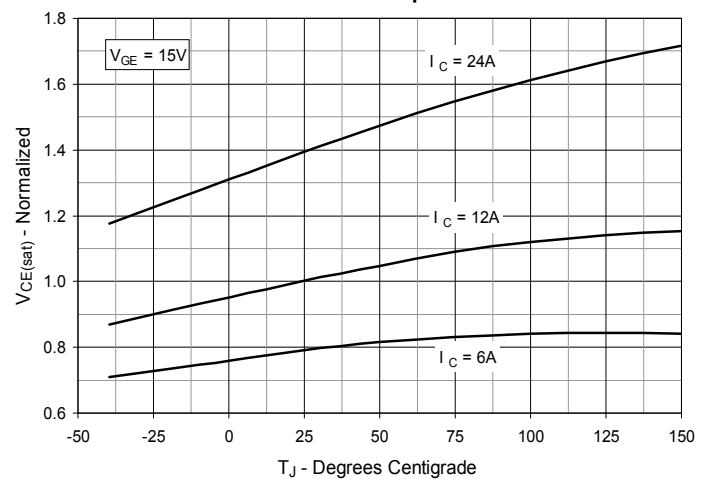


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

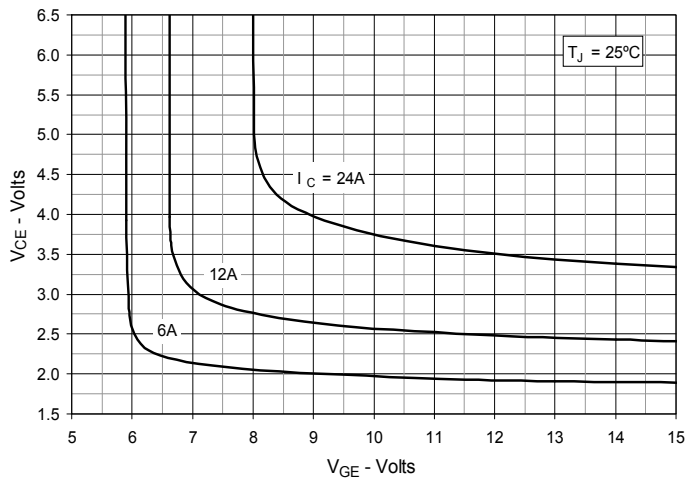


Fig. 6. Input Admittance

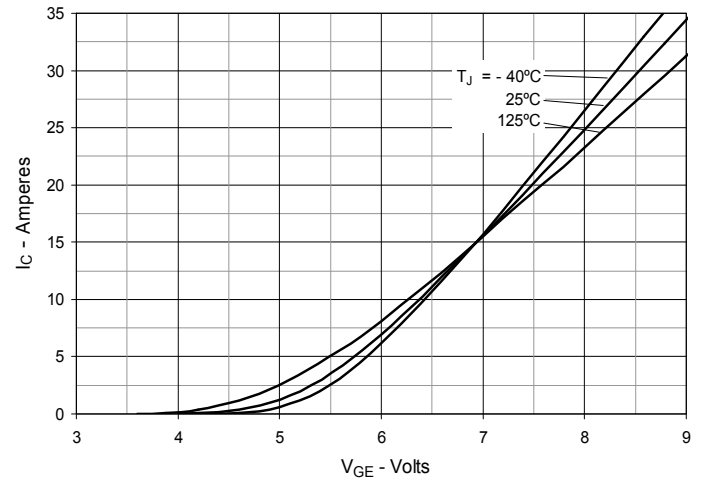


Fig. 7. Transconductance

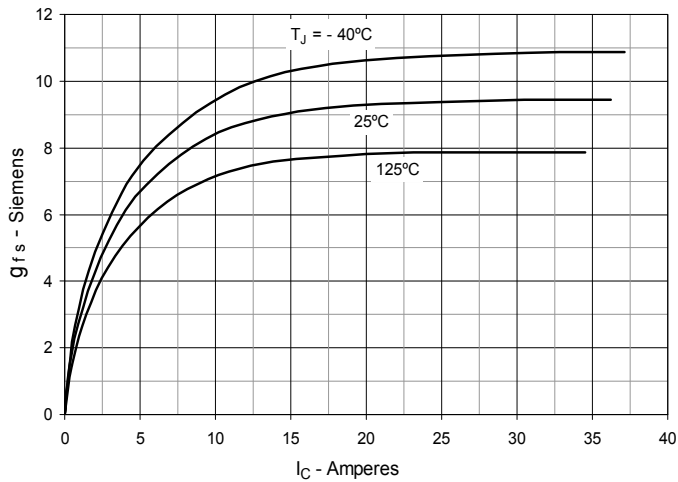


Fig. 8. Gate Charge

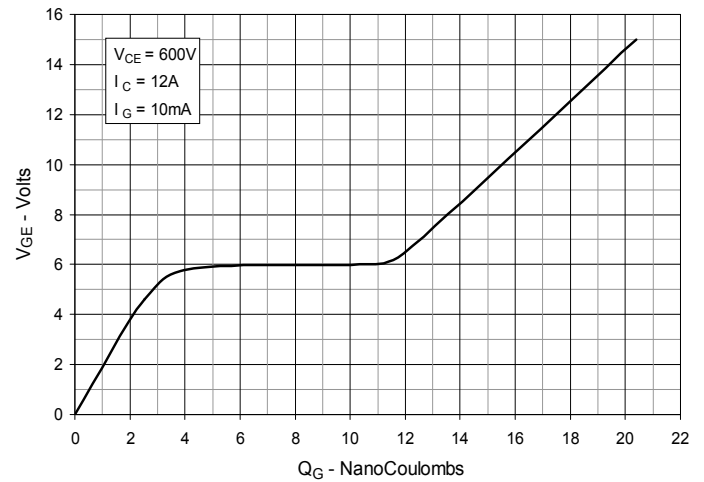


Fig. 9. Reverse-Bias Safe Operating Area

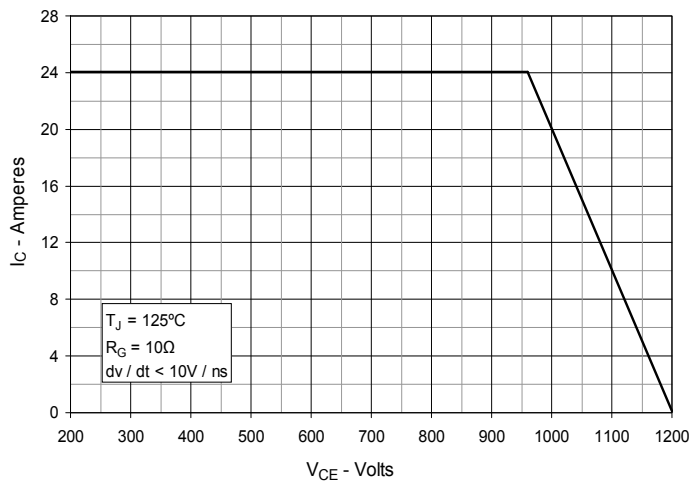


Fig. 10. Capacitance

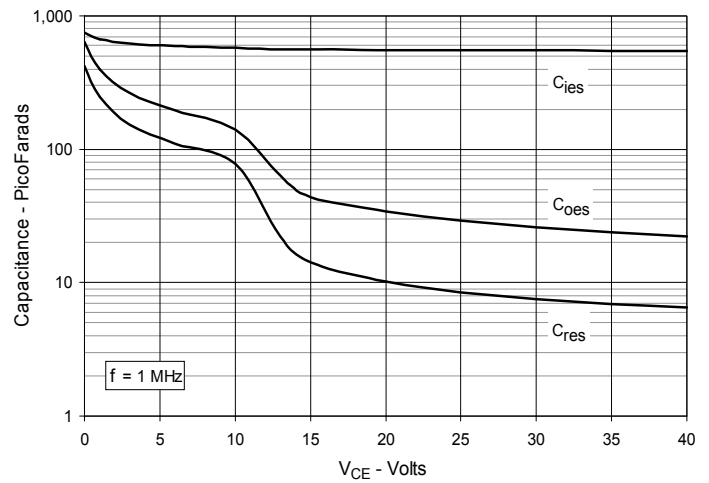


Fig. 11. Maximum Transient Thermal Impedance

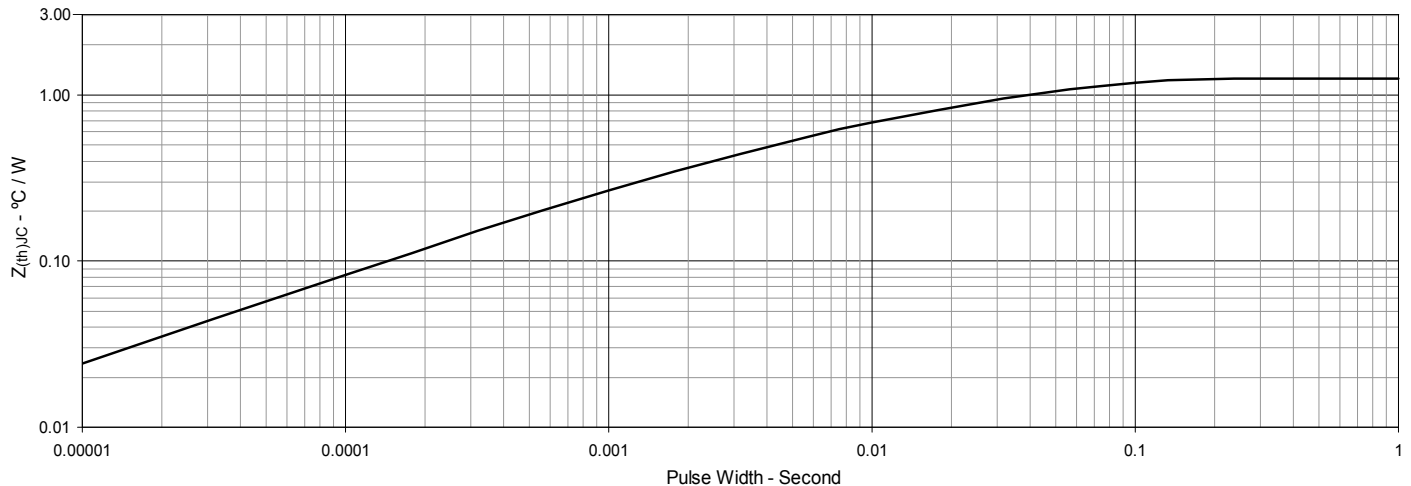


Fig. 12. Resistive Turn-on Rise Time vs. Junction Temperature

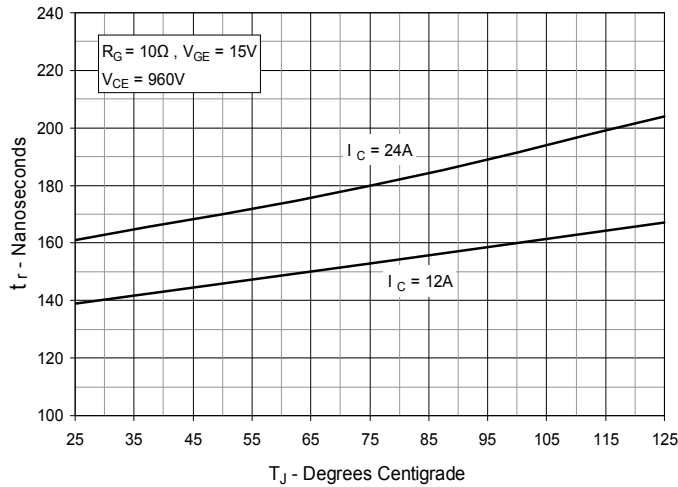


Fig. 13. Resistive Turn-on Rise Time vs. Collector Current

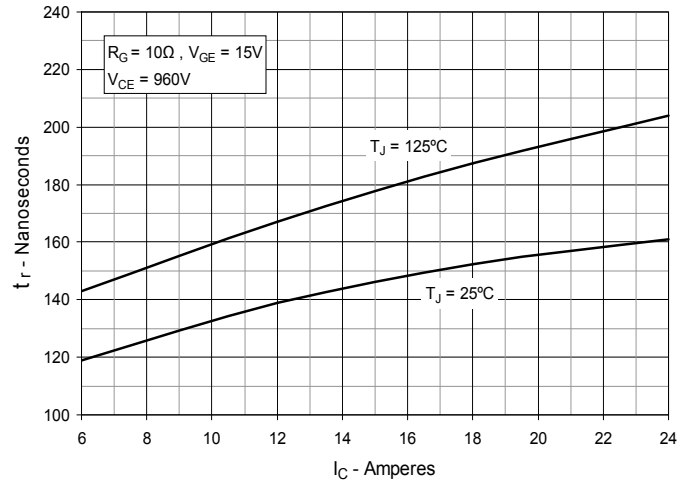


Fig. 14. Resistive Turn-on Switching Times vs. Gate Resistance

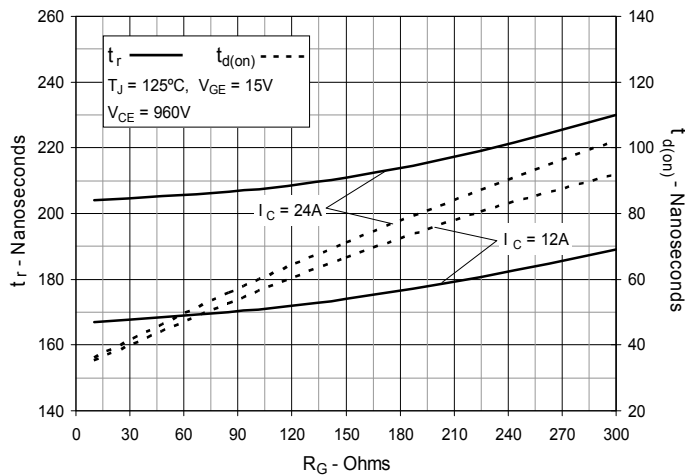


Fig. 15. Resistive Turn-off Switching Times vs. Junction Temperature

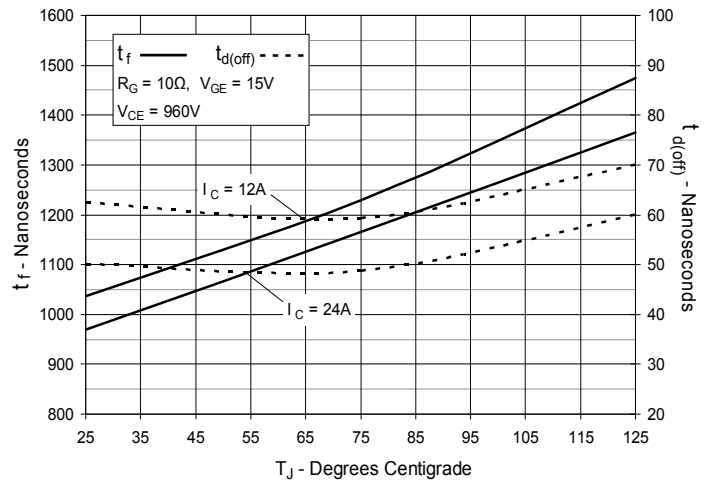


Fig. 16. Resistive Turn-off Switching Times vs. Collector Current

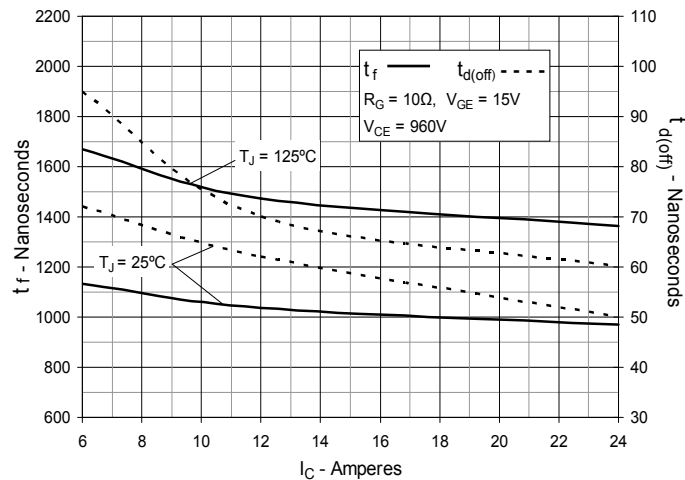
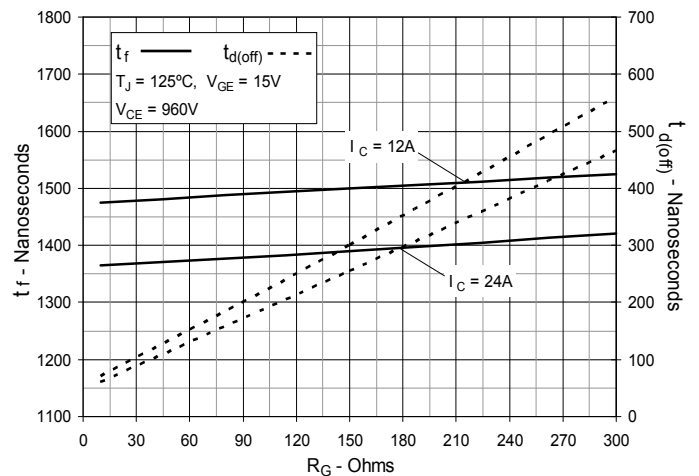


Fig. 17. Resistive Turn-off Switching Times vs. Gate Resistance





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