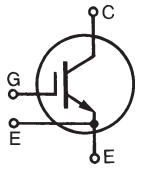
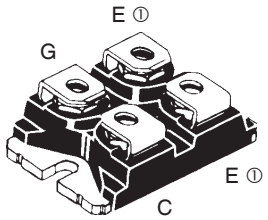
High Voltage IGBT

IXGN100N170

V_{CES} = 1700V
I_{C90} = 95A
$V_{CE(sat)}$ ≤ 3.0V



SOT-227B, miniBLOC
E153432



G = Gate, C = Collector, E = Emitter
① either emitter terminal can be used as Main or Kelvin Emitter

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1700	V
V_{CGR}	T_J = 25°C to 150°C, R_{GE} = 1MΩ	1700	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	160	A
I_{C90}	T_C = 90°C	95	A
I_{CM}	T_C = 25°C, 1ms	600	A
SSOA (RBSOA)	V_{GE} = 15V, T_{VJ} = 125°C, R_G = 1Ω Clamped Inductive Load	I_{CM} = 200 @0.8 • V_{CES}	A
t_{sc} **(SCSOA)**	V_{GE} = 15V, V_{CE} = 1250V, T_J = 125°C R_G = 10Ω, Non Repetitive	10	μs
P_C	T_C = 25°C	735	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
V_{ISOL}	50/60Hz t = 1min I_{ISOL} ≤ 1mA t = 1s	2500 3000	V~ V~
M_d	Mounting Torque Terminal Connection Torque	1.5/13 1.3/11.5	Nm/lb.in. Nm/lb.in.
Weight		30	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{CES}	I_C = 3mA, V_{GE} = 0V	1700			V
$V_{GE(th)}$	I_C = 8mA, V_{CE} = V_{GE}	3.0		5.0	V
I_{CES}	V_{CE} = V_{CES}, V_{GE} = 0V			50	μA
	T_J = 125°C			3	mA
I_{GES}	V_{CE} = 0V, V_{GE} = ±20V			±200	nA
$V_{CE(sat)}$	I_C = 100A, V_{GE} = 15V, Note 1		2.5	3.0	V

Features

- Optimized for Low Conduction and Switching Losses
- Isolation Voltage 2500V~
- Short Circuit Capability
- International Standard Package
- High Current Handling Capability

Advantages

- High Power Density
- Low Gate Drive Requirement

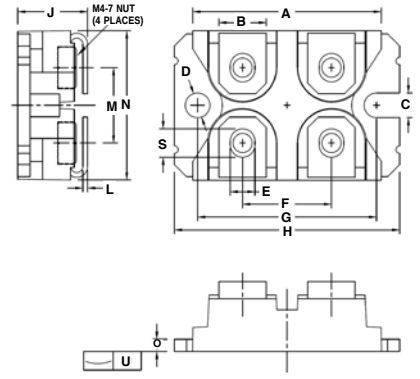
Applications

- Power Inverters
- UPS
- Motor Drives
- SMPS
- PFC Circuits
- Welding Machines

Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.
g_{fs}	I_C = 60A, V_{CE} = 10V, Note 1	36	64	S
C_{ies}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz		9200	pF
C_{oes}			455	pF
C_{res}			150	pF
Q_g	I_C = 100A, V_{GE} = 15V, V_{CE} = 0.5 • V_{CES}		425	nC
Q_{ge}			65	nC
Q_{gc}			186	nC
$t_{d(on)}$	**Resistive load, T_J = 25°C**		35	ns
t_r	I_C = 100A, V_{GE} = 15V		192	ns
$t_{d(off)}$	V_{CE} = 0.5 • V_{CES}, R_G = 1Ω		285	ns
t_f			395	ns
$t_{d(on)}$	**Resistive load, T_J = 125°C**		35	ns
t_r	I_C = 100A, V_{GE} = 15V		250	ns
$t_{d(off)}$	V_{CE} = 0.5 • V_{CES}, R_G = 1Ω		285	ns
t_f			435	ns
R_{thJC}				0.17 °C/W
R_{thCS}			0.05	°C/W

Note: 1. Pulse test, t ≤ 300µs, duty cycle, d ≤ 2%.

SOT-227B (IXGN) OUTLINE



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	1.224	1.260	31.10	32.00
B	.303	.327	7.70	8.30
C	.161	.173	4.10	4.40
D	.161	.173	4.10	4.40
E	.161	.173	4.10	4.40
F	.587	.598	14.90	15.20
G	1.181	1.201	30.00	30.50
H	1.488	1.508	37.80	38.30
J	.461	.484	11.70	12.30
L	.030	.033	0.75	0.85
M	.492	.512	12.50	13.00
N	.984	1.004	25.00	25.50
O	.075	.087	1.90	2.20
S	.181	.193	4.60	4.90
U	.000	.005	0.00	0.13

Fig. 1. Output Characteristics @ T_J = 25ºC

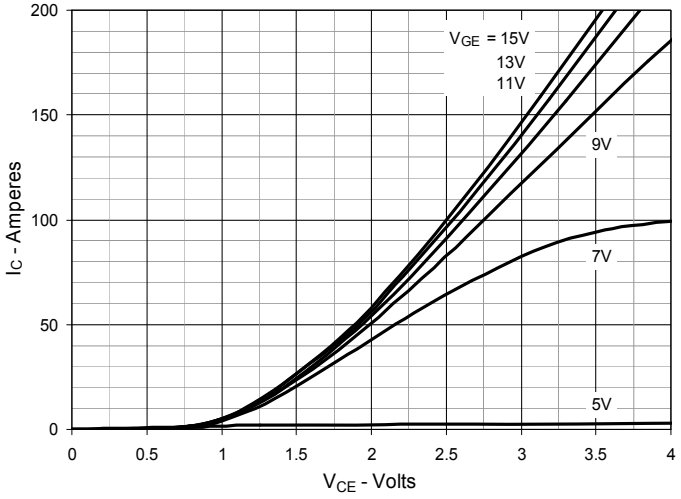


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

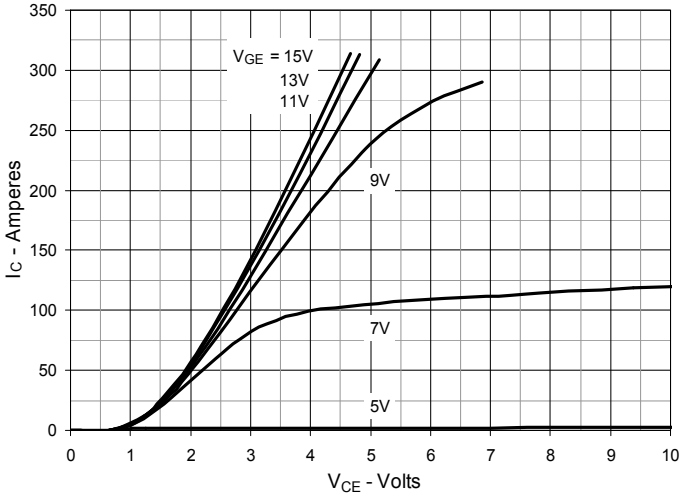


Fig. 3. Output Characteristics @ T_J = 125ºC

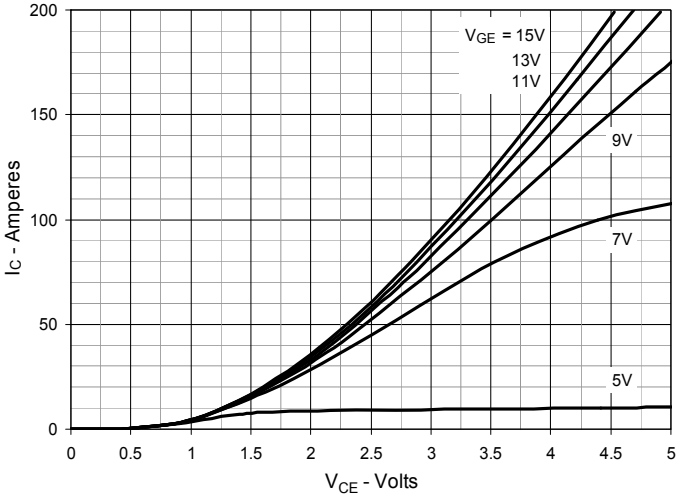


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

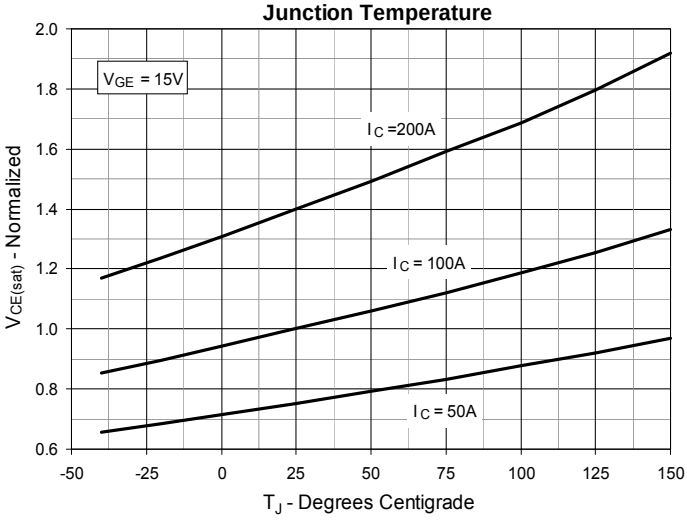


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

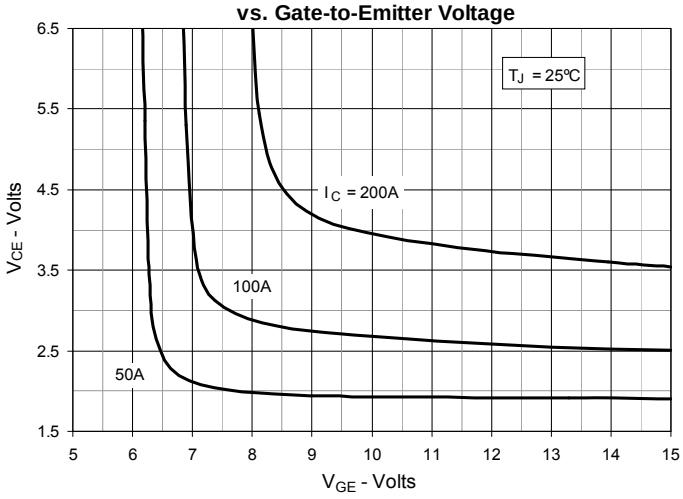


Fig. 6. Input Admittance

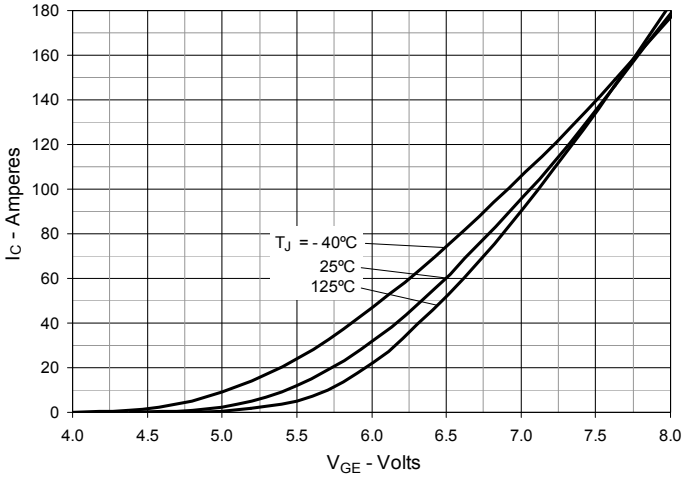


Fig. 7. Transconductance

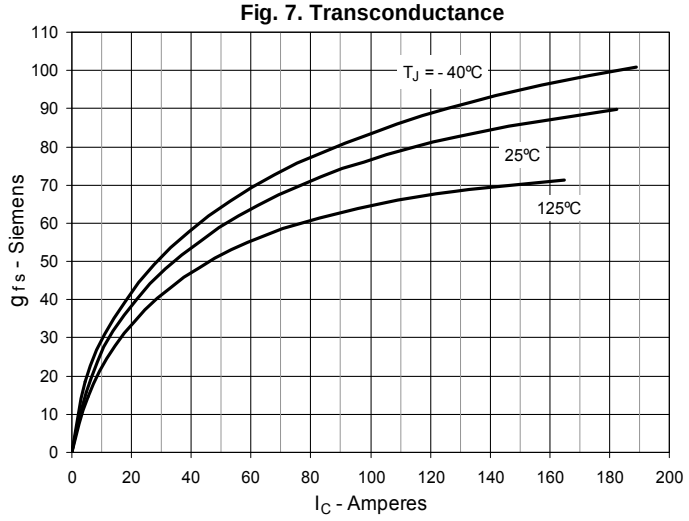


Fig. 8. Gate Charge

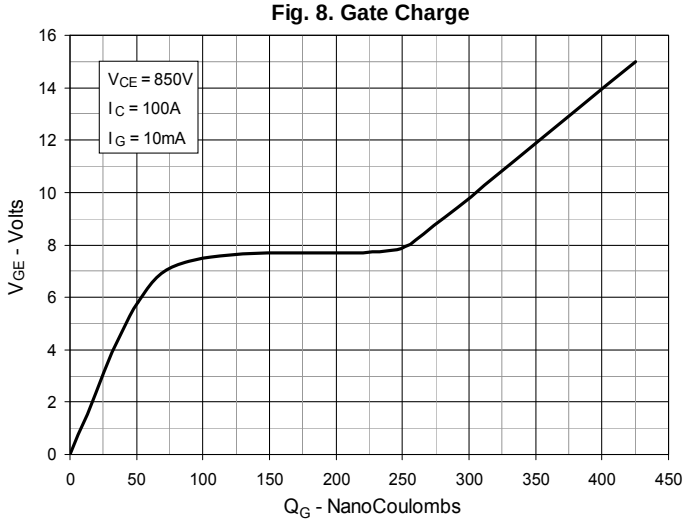


Fig. 9. Reverse-Bias Safe Operating Area

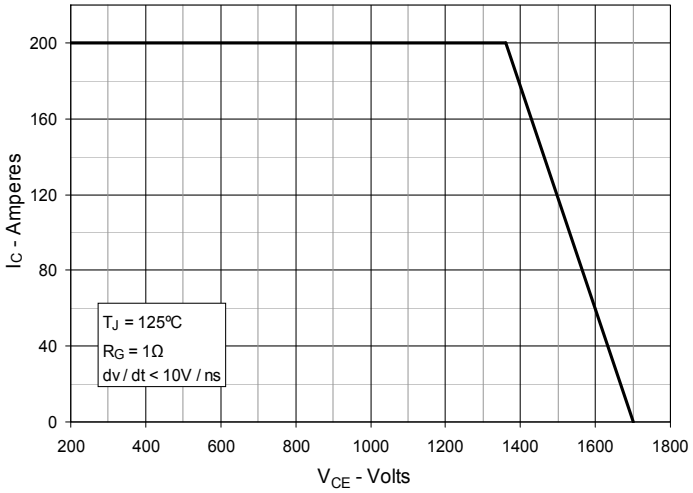


Fig. 10. Capacitance

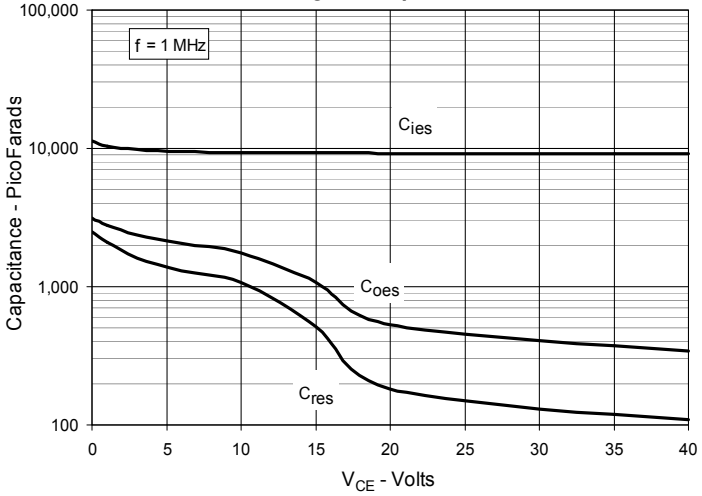


Fig. 11. Maximum Transient Thermal Impedance

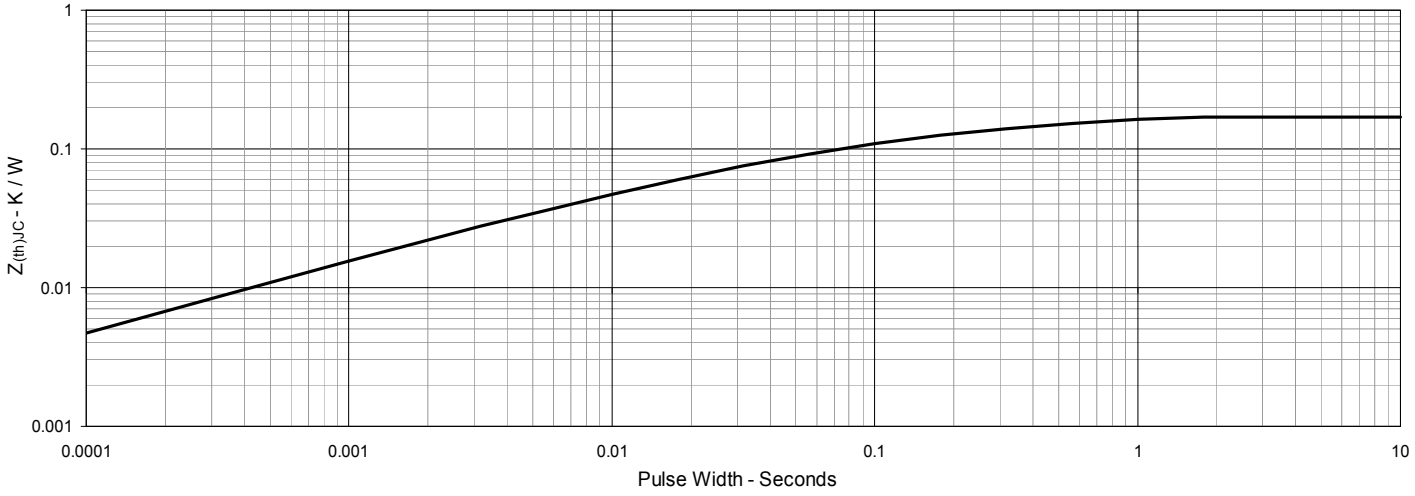


Fig. 12. Resistive Turn-on Rise Time vs. Junction Temperature

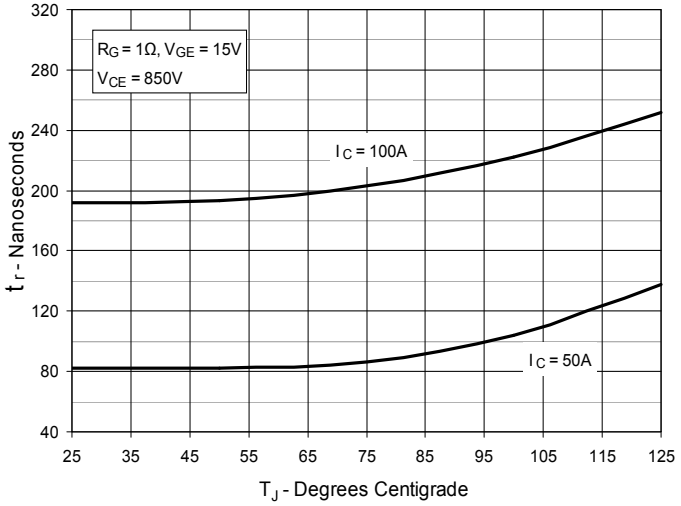


Fig. 13. Resistive Turn-on Rise Time vs. Collector Current

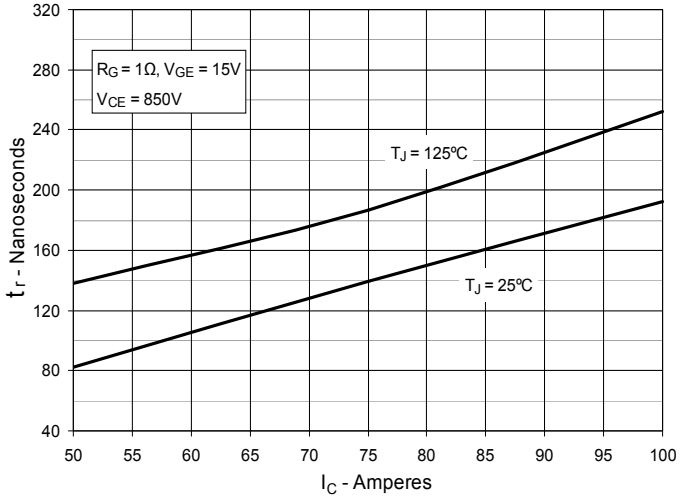


Fig. 14. Resistive Turn-on Switching Times vs. Gate Resistance

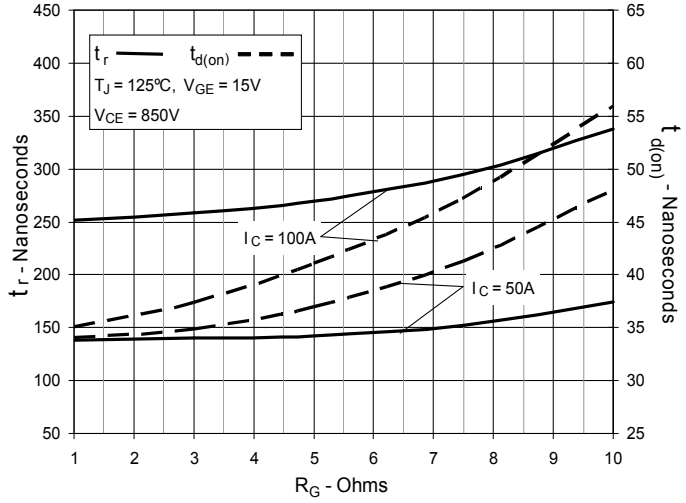


Fig. 15. Resistive Turn-off Switching Times vs. Junction Temperature

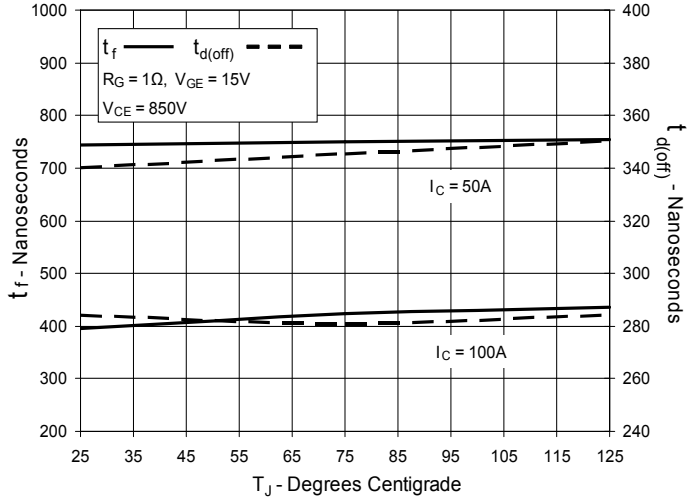


Fig. 16. Resistive Turn-off Switching Times vs. Collector Current

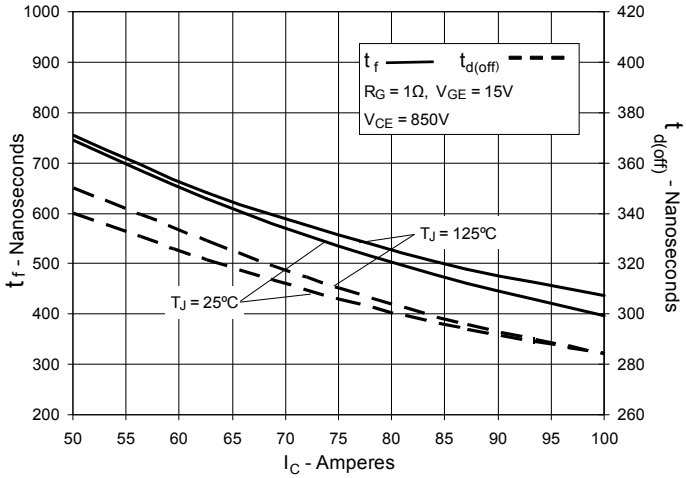


Fig. 17. Resistive Turn-off Switching Times vs. Gate Resistance