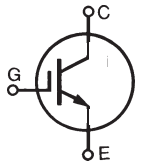
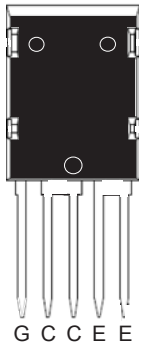
IXYS

GenX3™ 600V IGBT IXGL200N60B3

V_{CES} = 600V
I_{C110} = 90A
$V_{CE(sat)}$ ≤ 1.50V
$t_{fi(typ)}$ = 183ns

Medium speed low Vsat PT
IGBTs 5-40 kHz switching





G = Gate C = Collector
E = Emitter

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	600	V
V_{CGR}	T_J = 25°C to 150°C, R_{GE} = 1MΩ	600	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C (limited by leads)	150	A
I_{C110}	T_C = 110°C (chip capability)	90	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 @ V_{CE} ≤ 600V	I_{CM} = 300	A
P_C	T_C = 25°C	400	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	Maximum lead temperature for soldering	300	°C
T_{SOLD}	Plastic body for 10s	260	°C
V_{ISOL}	50/60Hz, RMS, 1 minute	2500	V~
	I_{ISOL} ≤ 1mA t = 1s	3000	V~
F_C	Mounting force	20..120/4.5..27	N/lb.
Weight		8	g

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
BV_{CES}	I_C = 250μA, V_{GE} = 0V	600			V
$V_{GE(th)}$	I_C = 250μA, V_{CE} = V_{GE}	3.0		5.0	V
I_{CES}	V_{CE} = V_{CES}			200	μA
	V_{GE} = 0V T_J = 125°C			2	mA
I_{GES}	V_{CE} = 0V, V_{GE} = ±20V			±100	nA
$V_{CE(sat)}$	I_C = 100A, V_{GE} = 15V, Note 1		1.35	1.50	V
	I_C = 200A		1.65		V
	T_J = 125°C		1.75		V

Features

- Silocon chip on Direct-Copper Bond (DCB) substrate
- Isolated mounting surface
- Square RBSOA
- High current handling capability
- 2500V electrical isolation

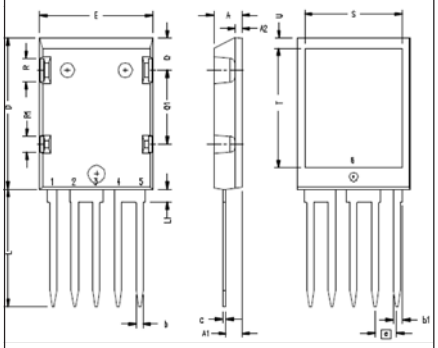
Advantages

- High power density
- Low gate drive requirement

Applications

- Power Inverters
- UPS
- Motor Drives
- SMPS
- PFC Circuits
- Battery Chargers
- Welding Machines
- Lamp Ballasts

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	95	160		S
C_{ies}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz		26		nF
C_{oes}			1260		pF
C_{res}			97		pF
Q_g	I_C = 100A, V_{GE} = 15V, V_{CE} = 0.5 • V_{CES}		750		nC
Q_{ge}			115		nC
Q_{gc}			245		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**		44		ns
t_{ri}	I_C = 100A, V_{GE} = 15V		83		ns
E_{on}	V_{CE} = 300V, R_G = 1Ω		1.6		mJ
$t_{d(off)}$			310	450	ns
t_{fi}			183	300	ns
E_{off}			2.9	4.5	mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C**		42		ns
t_{ri}	I_C = 100A, V_{GE} = 15V		80		ns
E_{on}	V_{CE} = 300V, R_G = 1Ω		2.4		mJ
$t_{d(off)}$			430		ns
t_{fi}			300		ns
E_{off}			4.2		mJ
R_{thJC}				0.31	°C/W
R_{thCS}			0.11		°C/W



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.190	.205	4.83	5.21
A1	.102	.118	2.59	3.00
A2	.046	.055	1.17	1.40
b	.045	.055	1.14	1.40
b1	.063	.072	1.60	1.83
c	.020	.029	0.51	0.74
D	1.020	1.040	25.91	26.42
E	.770	.799	19.56	20.29
e	.150 BSC		3.81 BSC	
L	.780	.820	19.81	20.83
L1	.080	.102	2.03	2.59
Q	.210	.235	5.33	5.97
Q1	.490	.513	12.45	13.03
R	.150	.180	3.81	4.57
R1	.100	.130	2.54	3.30
S	.668	.690	16.97	17.53
T	.801	.821	20.34	20.85
U	.065	.080	1.65	2.03

NOTE: BOTTOM HEATSINK MEETS 2,500Vrms ISOLATION TO THE OTHER PINS.

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

Fig. 1. Output Characteristics @ 25ºC

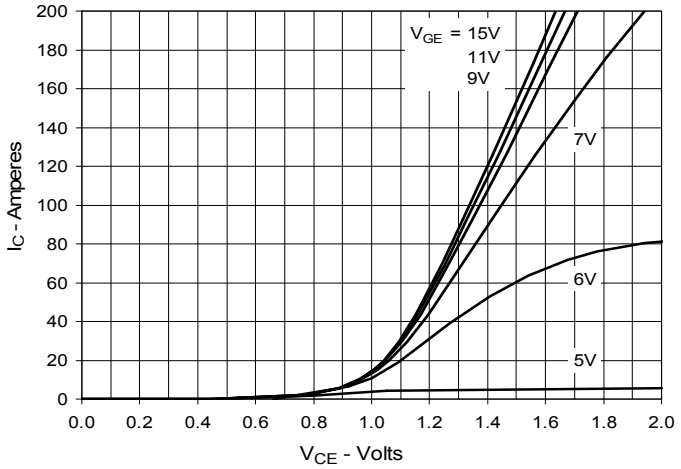


Fig. 2. Extended Output Characteristics @ 25ºC

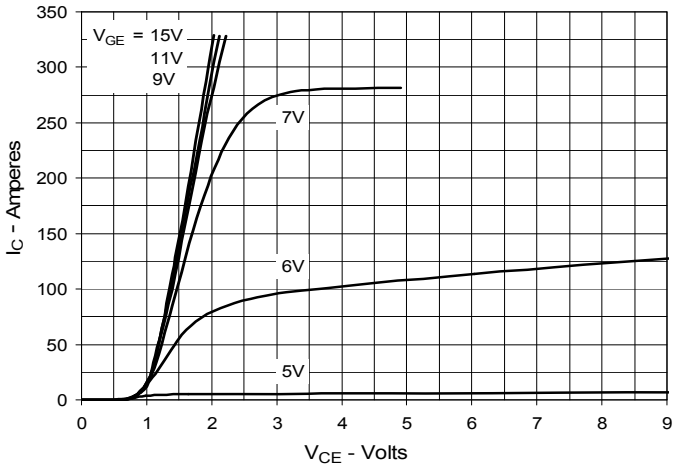


Fig. 3. Output Characteristics @ 125ºC

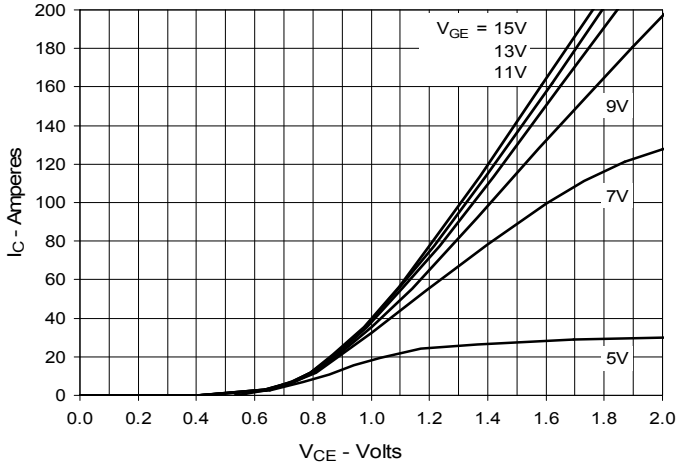


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

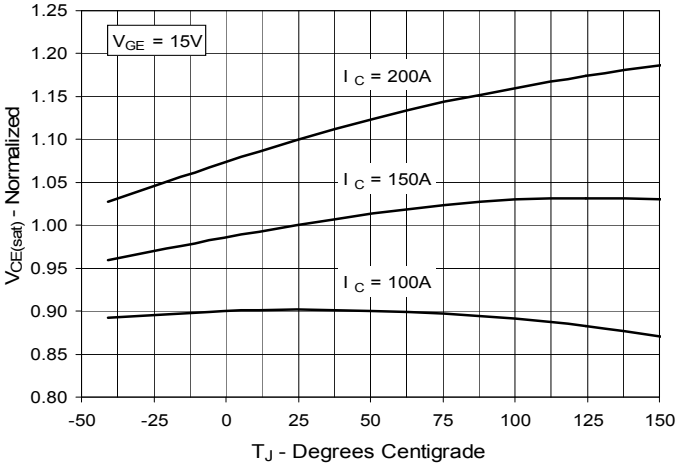


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

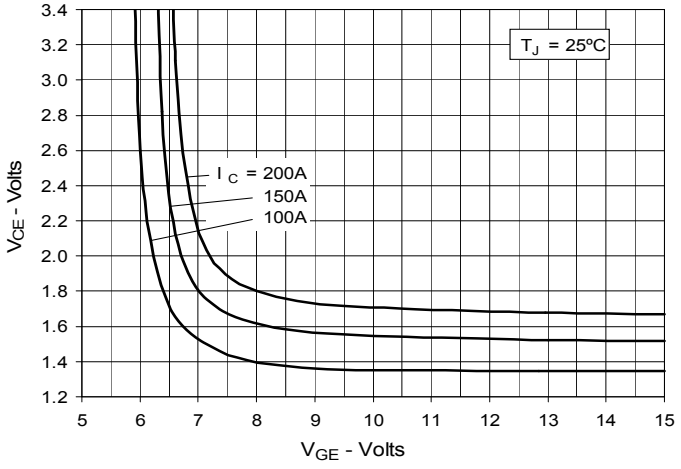


Fig. 6. Input Admittance

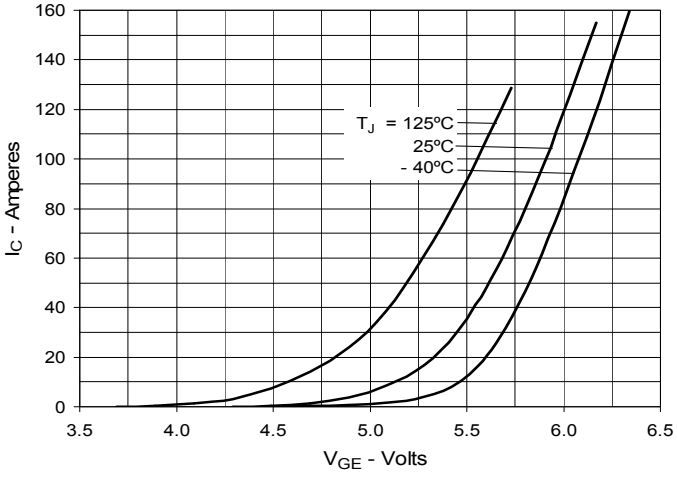


Fig. 7. Transconductance

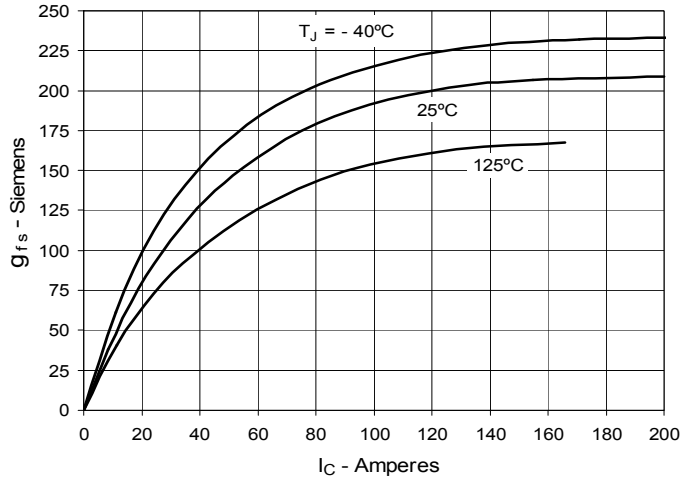


Fig. 8. Gate Charge

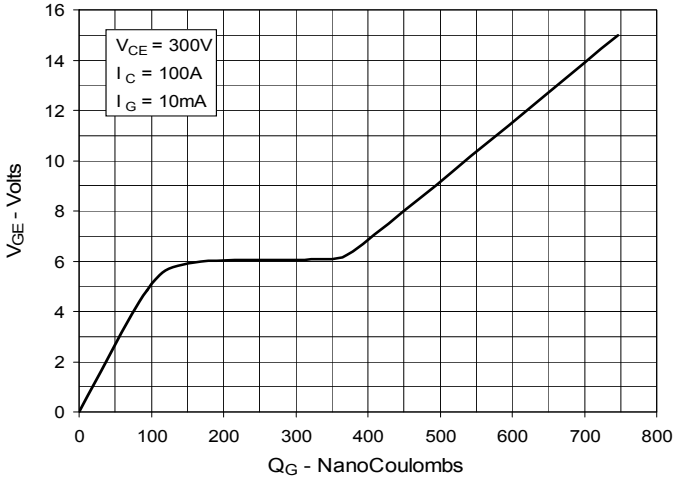


Fig. 9. Capacitance

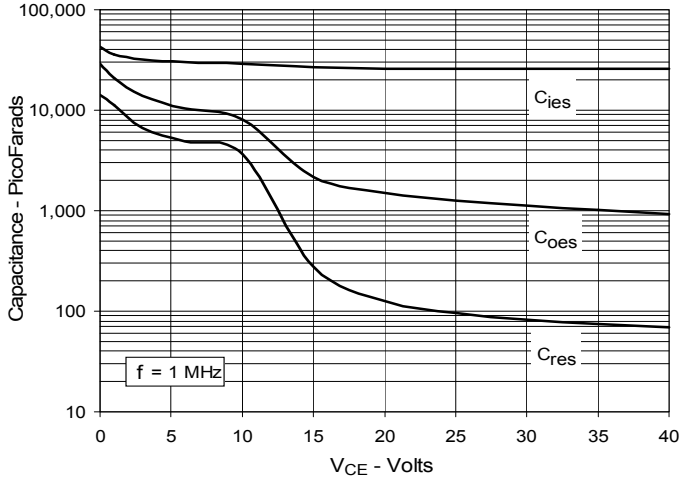


Fig. 10. Reverse-Bias Safe Operating Area

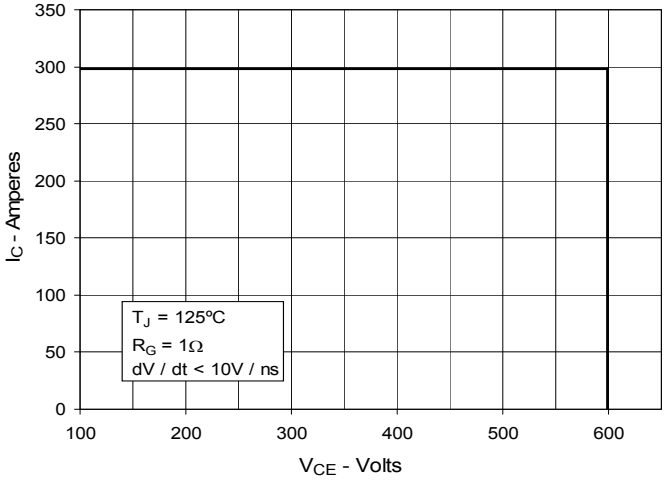


Fig. 11. Maximum Transient Thermal Impedance

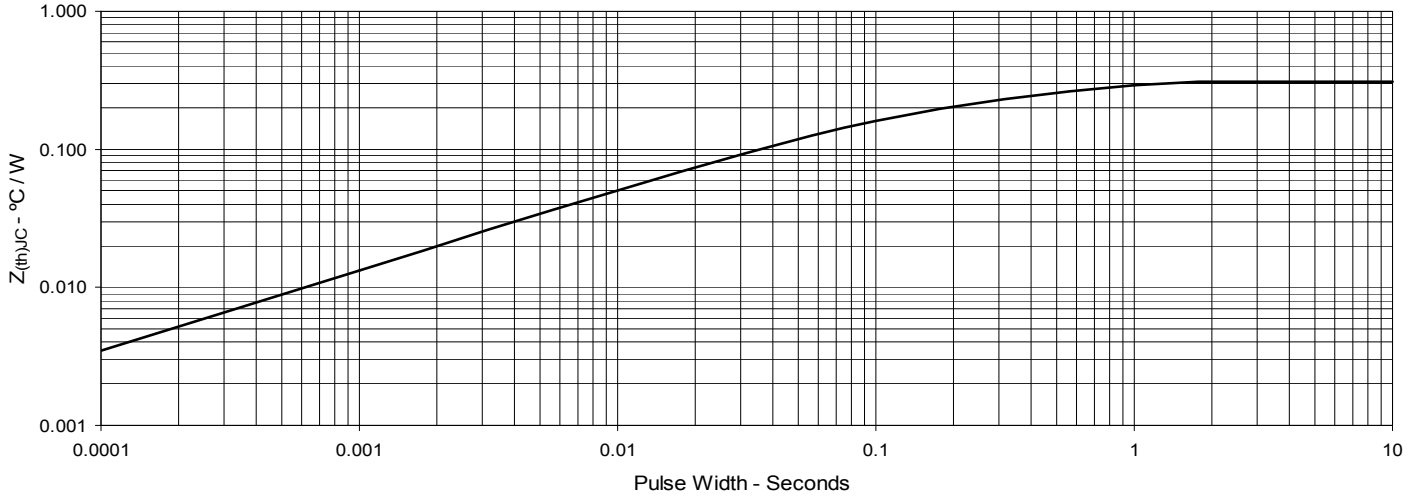


Fig. 12. Inductive Switching Energy Loss vs. Gate Resistance

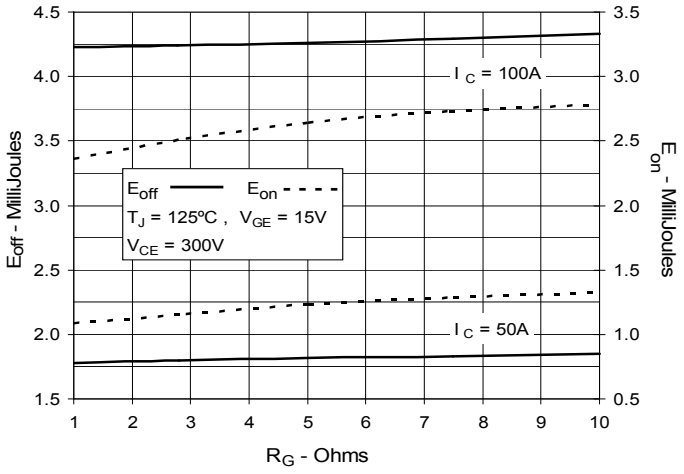


Fig. 13. Inductive Switching Energy Loss vs. Collector Current

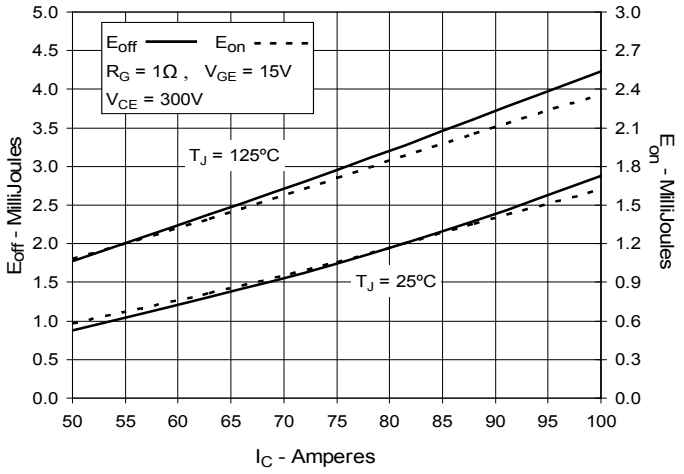


Fig. 14. Inductive Switching Energy Loss vs. Junction Temperature

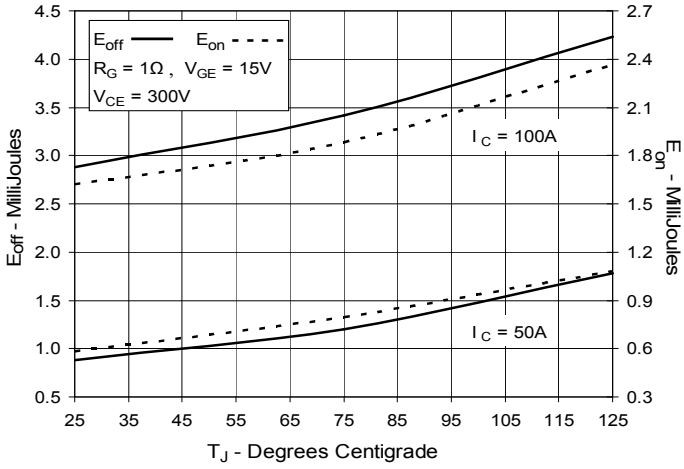


Fig. 15. Inductive Turn-off Switching Times vs. Gate Resistance

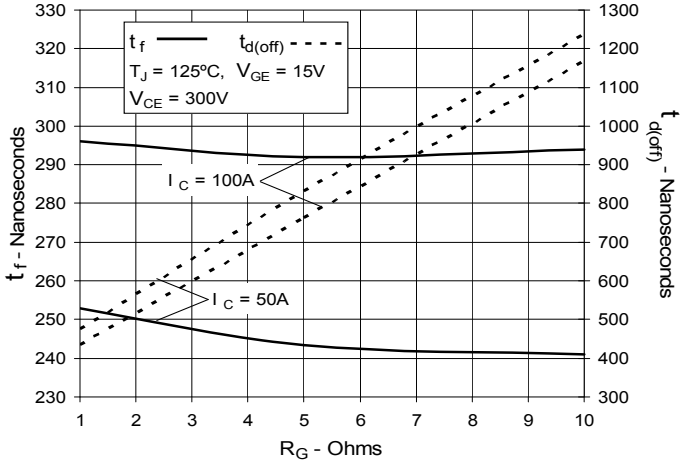


Fig. 16. Inductive Turn-off Switching Times vs. Collector Current

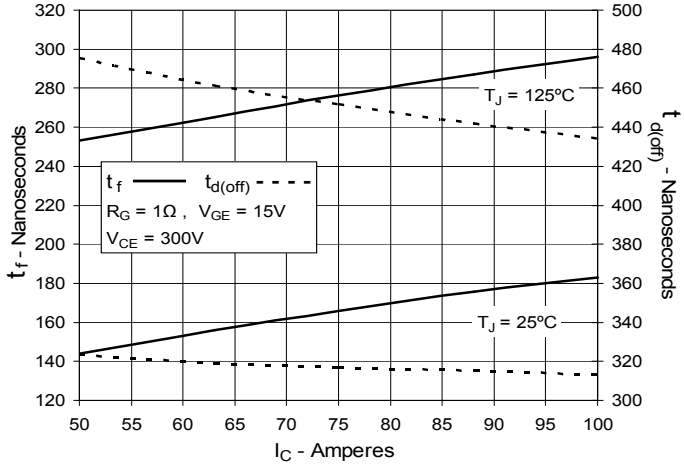


Fig. 17. Inductive Turn-off Switching Times vs. Junction Temperature

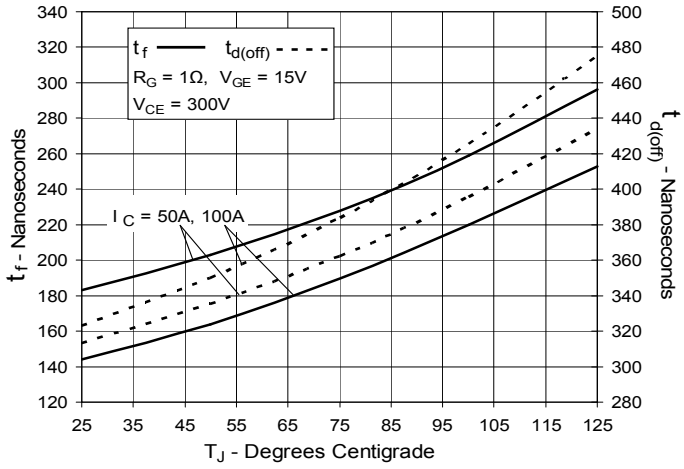


Fig. 18. Inductive Turn-on Switching Times vs. Gate Resistance

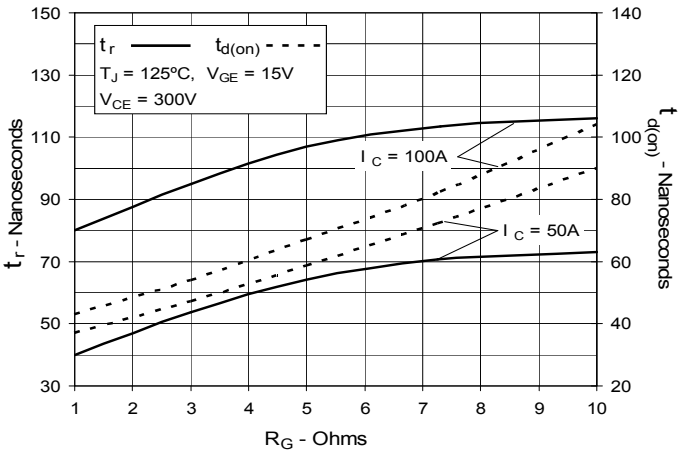


Fig. 19. Inductive Turn-on Switching Times vs. Collector Current

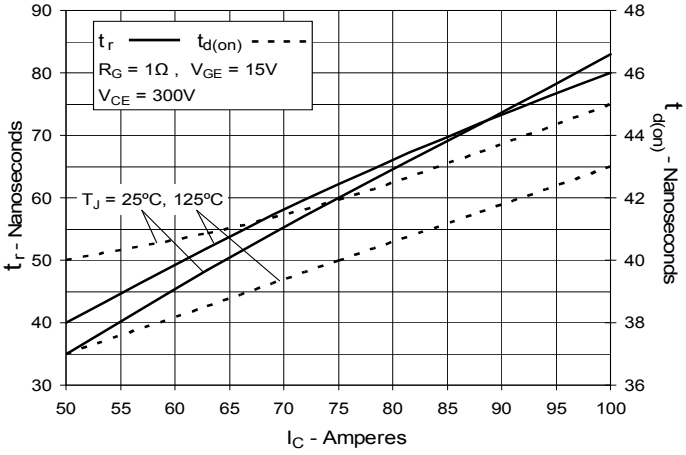


Fig. 20. Inductive Turn-on Switching Times vs. Junction Temperature