Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

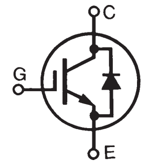
IXYS

Advance Technical Information

GenX3™ 1200V IGBT w/ Diode

IXGN82N120B3H1

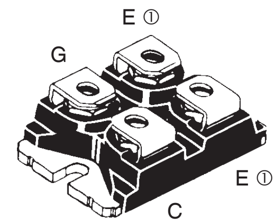
High-Speed Low-Vsat PT IGBT for 3-20 kHz Switching



V_{CES}	=	1200V	
I_{C110}	=	64A	
$V_{CE(sat)}$	≤	3.2V	

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		1200	V
V_{CGR}	T_J = 25°C to 150°C, R_{GE} = 1MΩ		1200	V
V_{GES}	Continuous		±20	V
V_{GEM}	Transient		±30	V
I_{C25}	T_C = 25°C (Chip Capability)		145	A
I_{C110}	T_C = 110°C		64	A
I_{F110}	T_C = 110°C		42	A
I_{CM}	T_C = 25°C, 1ms		550	A
I_A	T_C = 25°C		41	A
E_{AS}	T_C = 25°C		750	mJ
SSOA	V_{GE}= 15V, T_{VJ} = 125°C, R_G = 2Ω		I_{CM} = 164	A
(RBSOA)	Clamped Inductive Load		@$V_{CE} \le V_{CES}$	
P_C	T_C = 25°C		595	W
T_J			-55 ... +150	°C
T_{JM}			150	°C
T_{stg}			-55 ... +150	°C
V_{ISOL}	50/60Hz	t = 1min	2500	V~
	$I_{ISOL} \le$ 1mA	t = 1s	3000	V~
M_d	Mounting Torque		1.5/13	Nm/lb.in.
	Terminal Connection Torque		1.3/11.5	Nm/lb.in.
Weight			30	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
$V_{GE(th)}$	I_C = 1mA, V_{CE} = V_{GE}	3.0		5.0	V
I_{CES}	V_{CE} = V_{CES}, V_{GE} = 0V			50	μA
	Note 1, T_J = 125°C			6	mA
I_{GES}	V_{CE} = 0V, V_{GE} = ± 20V			±200	nA
$V_{CE(sat)}$	I_C = 82A, V_{GE} = 15V, Note 2		2.7	3.2	V

Features

- Optimized for Low Conduction and Switching Losses
- Square RBSOA
- High Current Capability
- Isolation Voltage 2500V~
- Anti-Parallel Ultra Fast Diode
- International Standard Package

Advantages

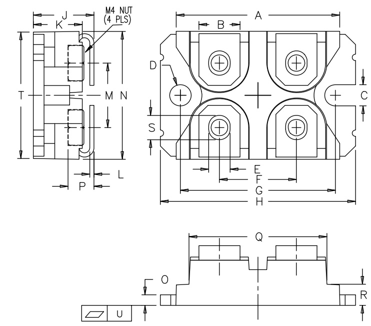
- High Power Density
- Low Gate Drive Requirement

Applications

- Power Inverters
- UPS
- SMPS
- PFC Circuits
- Welding Machines
- Lamp Ballasts

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Min.	Typ.	Max.	
g_{fs}	I_C = 60A, V_{CE} = 10V, Note 2	35	60		S
C_{ies}	V_{CE} = 25V, V_{GE} = 0V, f = 1 MHz		7900		pF
C_{oes}			640		pF
C_{res}			170		pF
$Q_{g(on)}$	I_C = 82A, V_{GE} = 15V, V_{CE} = 0.5 • V_{CES}		350		nC
Q_{ge}			50		nC
Q_{gc}			150		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**		30		ns
t_{ri}	I_C = 80A, V_{GE} = 15V		77		ns
E_{on}	V_{CE} = 600V, R_G = 2Ω		5.0		mJ
$t_{d(off)}$	Note 3		210		ns
t_{fi}			100		ns
E_{off}			3.3	6.2	mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C**		32		ns
t_{ri}	I_C = 80A, V_{GE} = 15V		80		ns
E_{on}	V_{CE} = 600V, R_G = 2Ω		6.8		mJ
$t_{d(off)}$	Note 3		240		ns
t_{fi}			520		ns
E_{off}			7.1		mJ
R_{thJC}				0.21	°C/W
R_{thCK}			0.05		°C/W

SOT-227B miniBLOC (IXGN)



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.505	38.00	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.078	.084	1.98	2.13
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.155	.174	3.94	4.42
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.002	.004	-0.05	0.1

Reverse Diode (FRED)

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Min.	Typ.	Max.	
V_F	I_F = 60A, V_{GE} = 0V, Note 2		1.85	2.5	V
	T_J = 150°C		1.90		V
t_{rr}	I_F = 60A, V_{GE} = 0V,		200		ns
I_{RM}	-di_F/dt = 350A/μs, V_R = 600V, T_J = 100°C		24.6		A
R_{thJC}				0.42	°C/W

Notes:

1. Part must be heatsunk for high-temp Ices measurement.
2. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.
3. Switching times & energy losses may increase for higher V_{CE}(Clamp), T_J or R_G.

ADVANCE TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

Fig. 1. Output Characteristics @ T_J = 25ºC

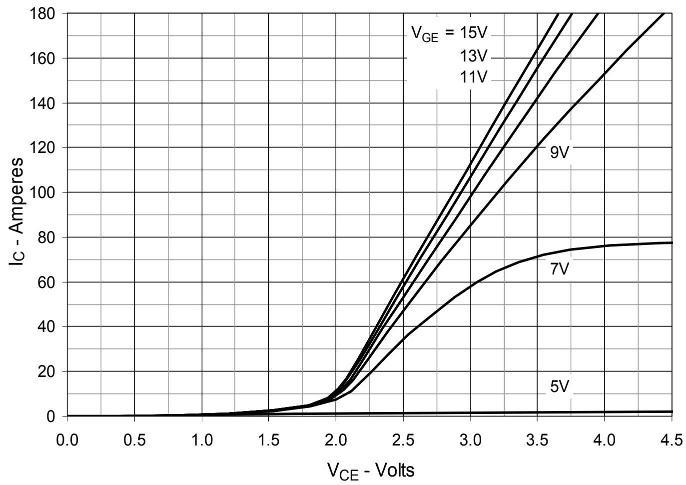


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

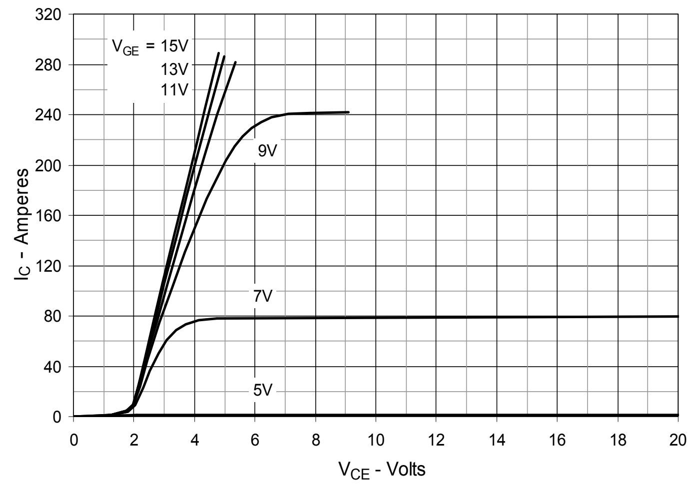


Fig. 3. Output Characteristics @ T_J = 125ºC

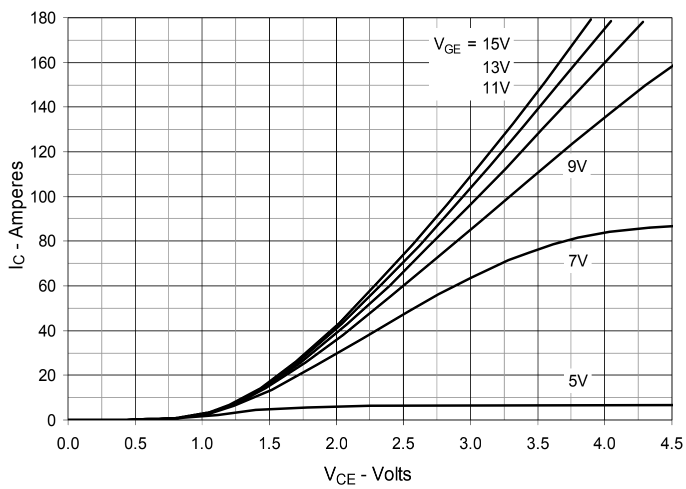


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

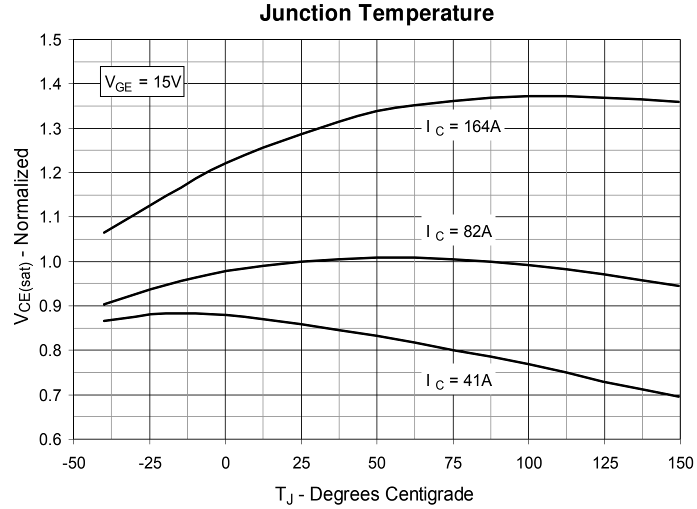


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

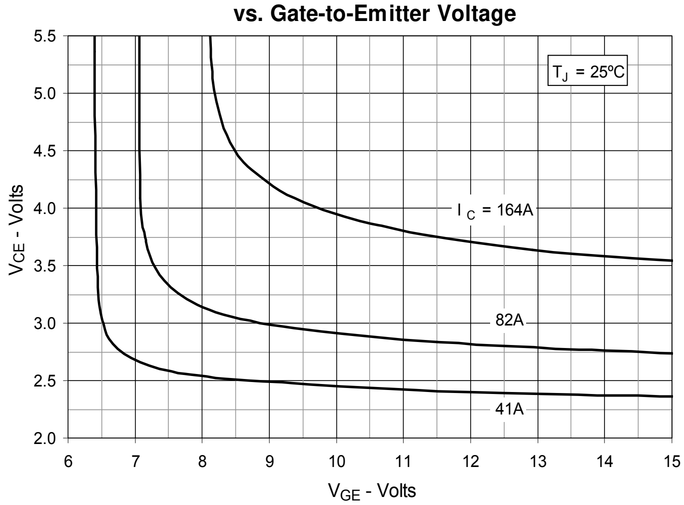


Fig. 6. Input Admittance

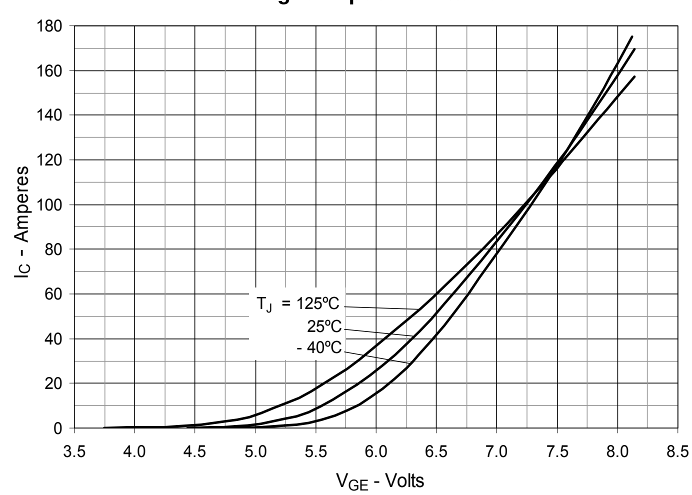


Fig. 7. Transconductance

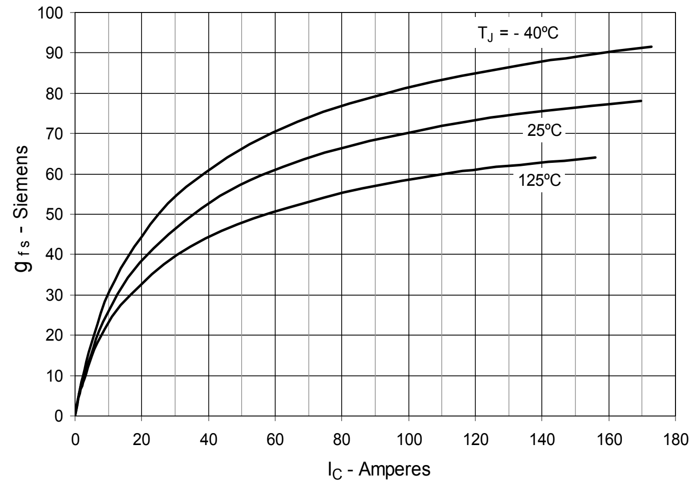


Fig. 8. Gate Charge

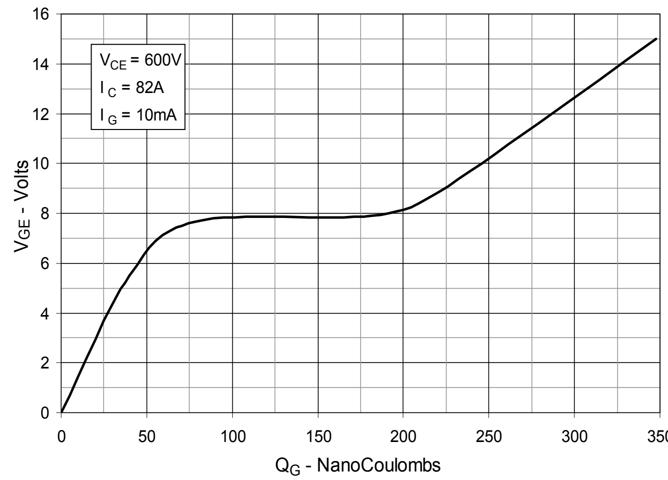


Fig. 9. Capacitance

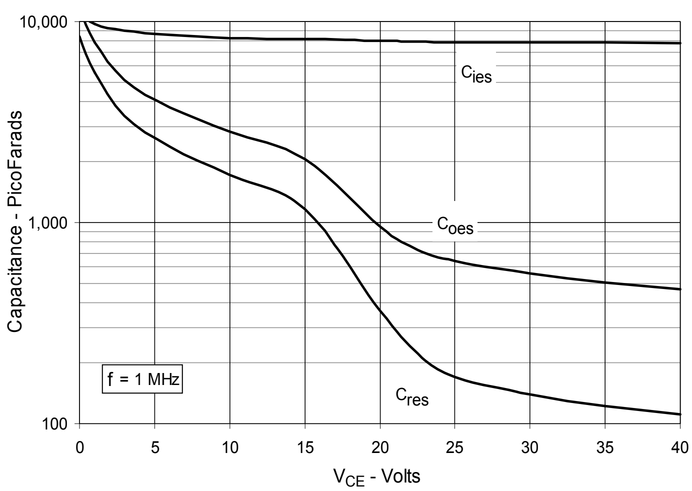


Fig. 10. Reverse-Bias Safe Operating Area

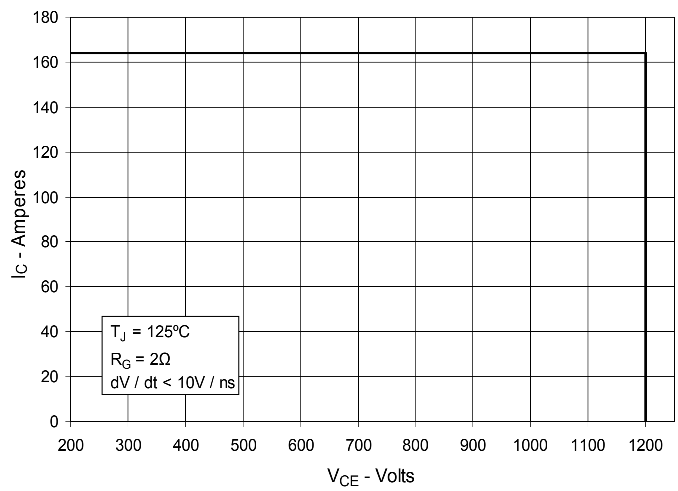


Fig. 11. Maximum Transient Thermal Impedance

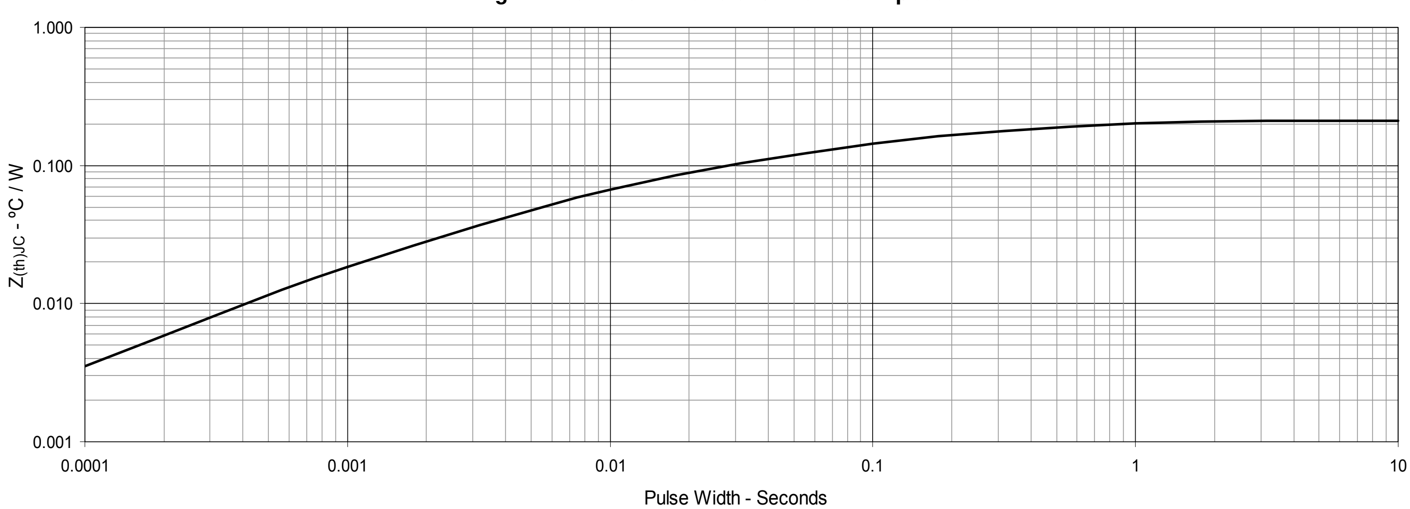


Fig. 12. Inductive Switching Energy Loss vs. Gate Resistance

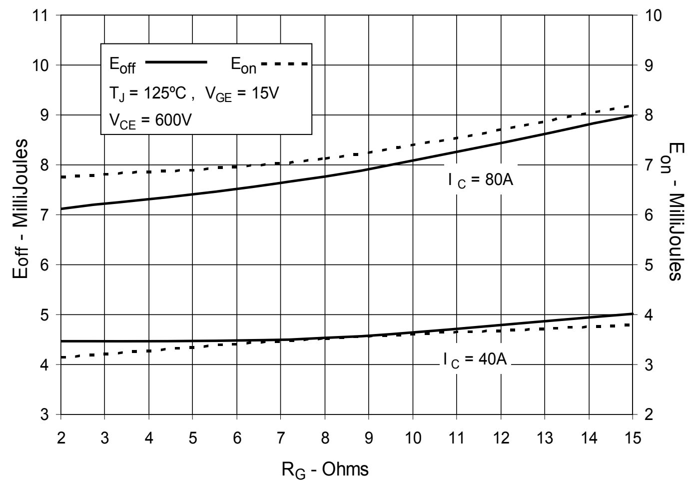


Fig. 13. Inductive Switching Energy Loss vs. Collector Current

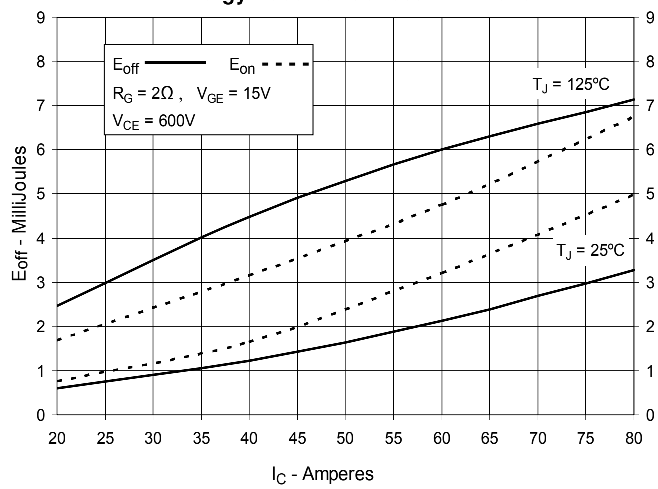


Fig. 14. Inductive Switching Energy Loss vs. Junction Temperature

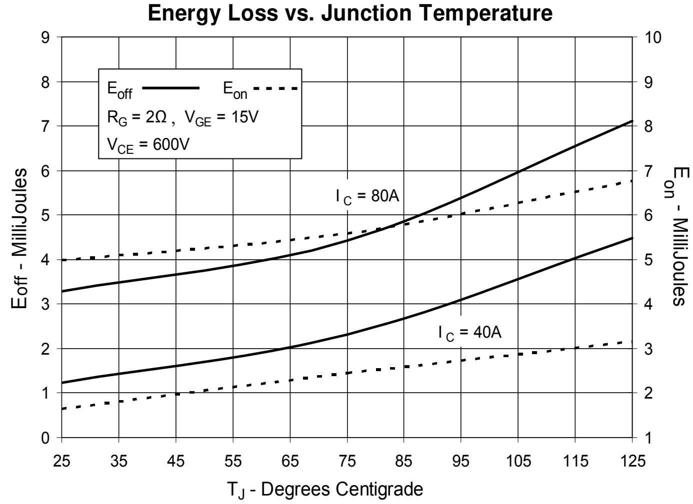


Fig. 15. Inductive Turn-off Switching Times vs. Gate Resistance

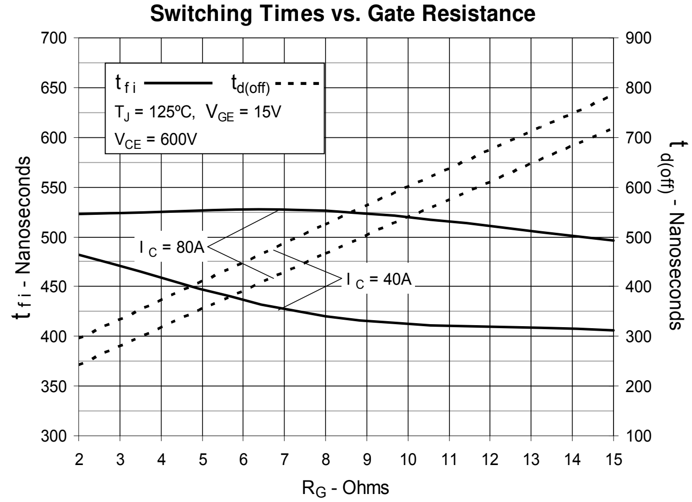


Fig. 16. Inductive Turn-off Switching Times vs. Collector Current

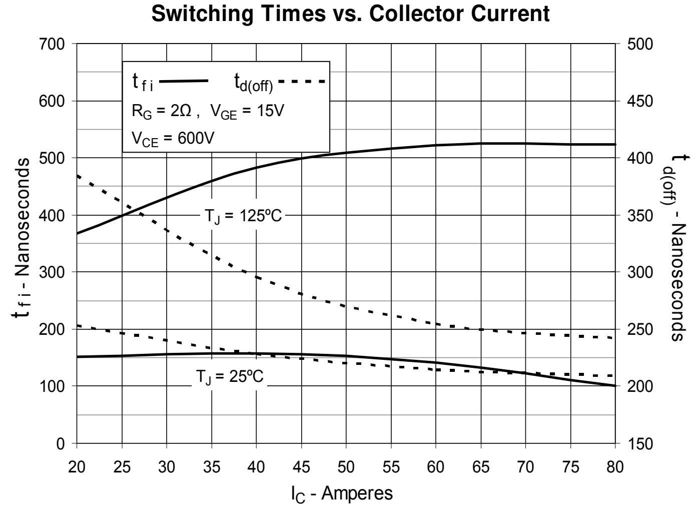


Fig. 17. Inductive Turn-off Switching Times vs. Junction Temperature

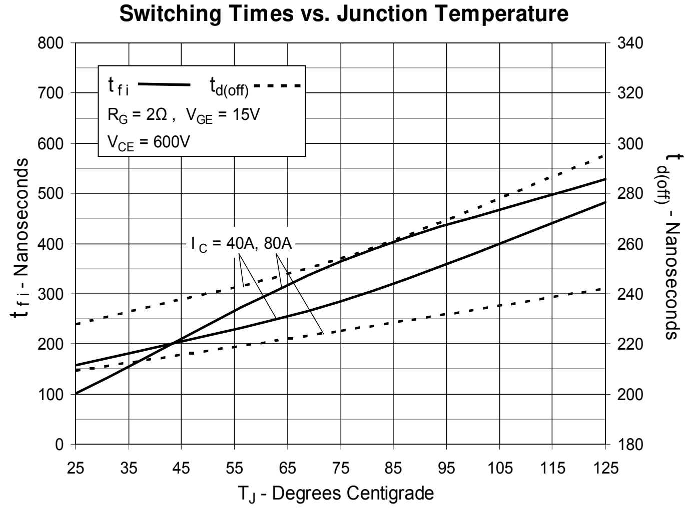


Fig. 18. Inductive Turn-on Switching Times vs. Gate Resistance

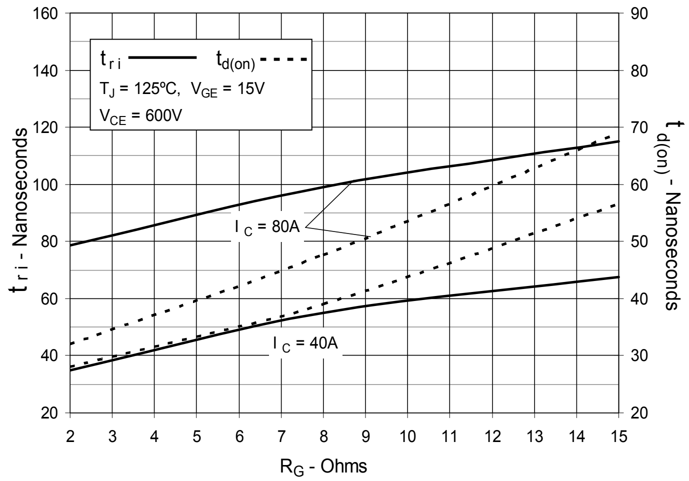


Fig. 19. Inductive Turn-on Switching Times vs. Collector Current

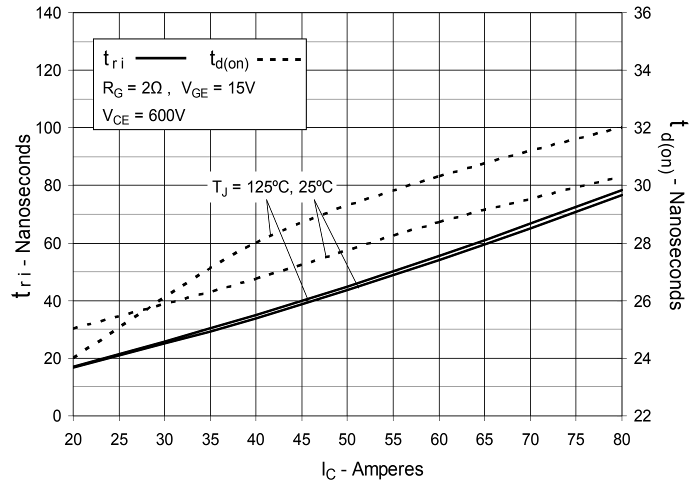


Fig. 20. Inductive Turn-on Switching Times vs. Junction Temperature

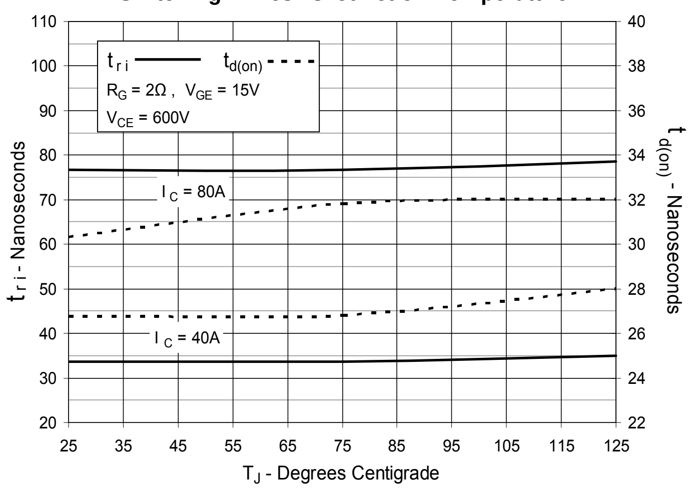


Fig. 21. Maximum Transient Thermal Impedance