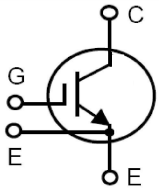
IXYS

1200V XPT™ IGBT GenX4™

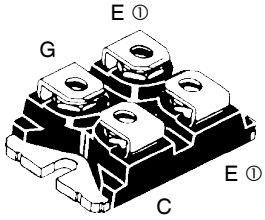
IXYN110N120A4

V_{CES} = 1200V
I_{C110} = 110A
$V_{CE(sat)}$ ≤ 1.80V
$t_{fi(typ)}$ = 300ns

Ultra Low-Vsat PT IGBT for up to 5kHz Switching



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 175°C	1200	V
V_{CGR}	T_J = 25°C to 175°C, R_{GE} = 1MΩ	1200	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C (Chip Capability)	275	A
I_{LRMS}	Terminal Current Limit	200	A
I_{C110}	T_C = 110°C	110	A
I_{CM}	T_C = 25°C, 1ms	950	A
SSOA (RBSOA)	V_{GE} = 15V, T_{VJ} = 125°C, R_G = 2Ω Clamped Inductive Load	I_{CM} = 220 0.8 • V_{CES}	A V
P_C	T_C = 25°C	830	W
T_J		-55 ... +175	°C
T_{JM}		175	°C
T_{stg}		-55 ... +175	°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 = 250μA, V_{GE} = 0V	1200			V
$V_{GE(th)}$	I_C = 3mA, V_{CE} = V_{GE}	4.5		6.5	V
I_{CES}	V_{CE} = V_{CES}, V_{GE} = 0V			25	μA
	T_J = 125°C			500	μA
I_{GES}	V_{CE} = 0V, V_{GE} = ±20V			±200	nA
$V_{CE(sat)}$	I_C = I_{C110}, V_{GE} = 15V, Note 1		1.45	1.80	V
	T_J = 150°C		1.60		V

Features

- miniBLOC, with Aluminium Nitride Isolation
- International Standard Package
- Isolation Voltage 2500V~
- Optimized for Low Conduction Losses
- Positive Thermal Coefficient of Vce(sat)
- High Current Handling Capability

Advantages

- High Power Density
- Low Gate Drive Requirement

Applications

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

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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	48	80	S
C_{ies}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz		6030	pF
C_{oes}			340	pF
C_{res}			225	pF
$Q_{g(on)}$	$I_C = I_{C110}$, V_{GE} = 15V, $V_{CE} = 0.5 \bullet V_{CES}$		305	nC
Q_{ge}			58	nC
Q_{gc}			148	nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**		42	ns
t_{ri}	I_C = 50A, V_{GE} = 15V		36	ns
E_{on}	$V_{CE} = 0.5 \bullet V_{CES}$, $R_G = 2\Omega$		2.5	mJ
$t_{d(off)}$	Note 2		550	ns
t_{fi}			300	ns
E_{off}			8.4	mJ
$t_{d(on)}$	**Inductive load, T_J = 150°C**		35	ns
t_{ri}	I_C = 50A, V_{GE} = 15V		33	ns
E_{on}	$V_{CE} = 0.5 \bullet V_{CES}$, $R_G = 2\Omega$		4.4	mJ
$t_{d(off)}$	Note 2		700	ns
t_{fi}			590	ns
E_{off}			14.0	mJ
R_{thJC}				0.18 °C/W
R_{thCS}			0.05	°C/W

Notes:

1. Pulse test, t ≤ 300µs, duty cycle, d ≤ 2%.
2. Switching times & energy losses may increase for higher V_{CE}(clamp), T_J or R_G.

Littelfuse 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 4,860,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405 B2 6,710,463 6,727,585 6,759,692 6,771,478 B2 7,005,734 B2 7,063,975 B2 7,071,537 7,157,338B2

Fig. 1. Output Characteristics @ T_J = 25°C

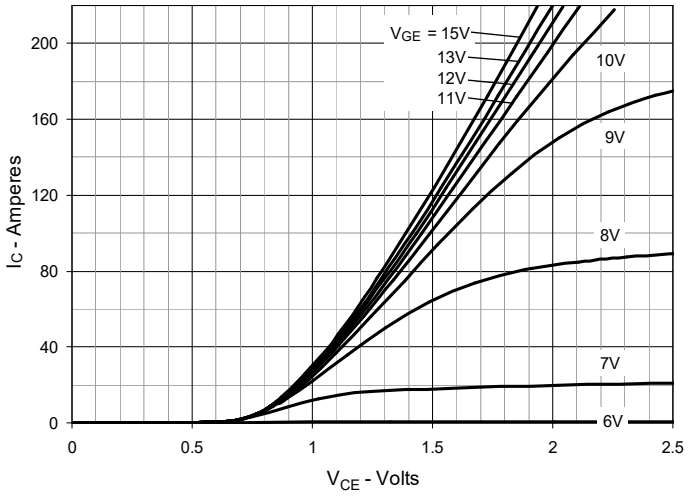


Fig. 2. Extended Output Characteristics @ T_J = 25°C

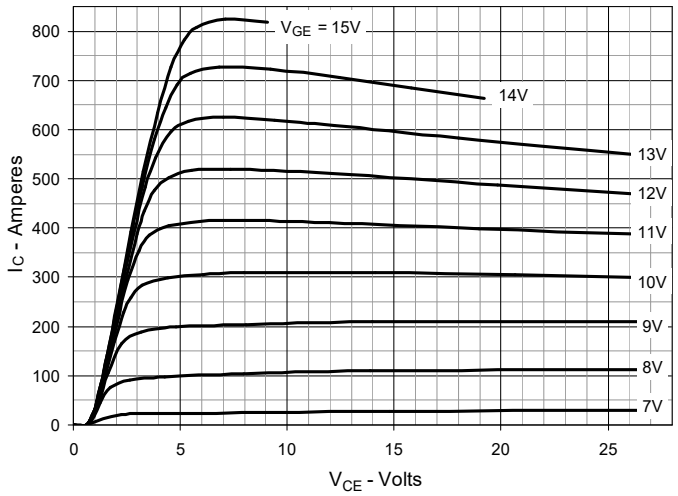


Fig. 3. Output Characteristics @ T_J = 150°C

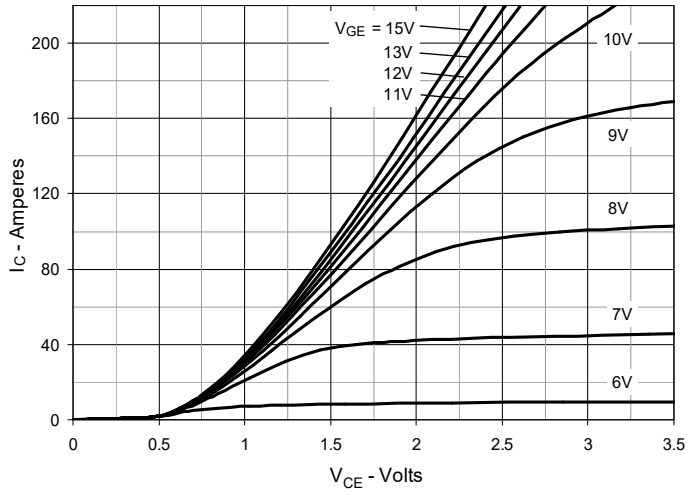


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

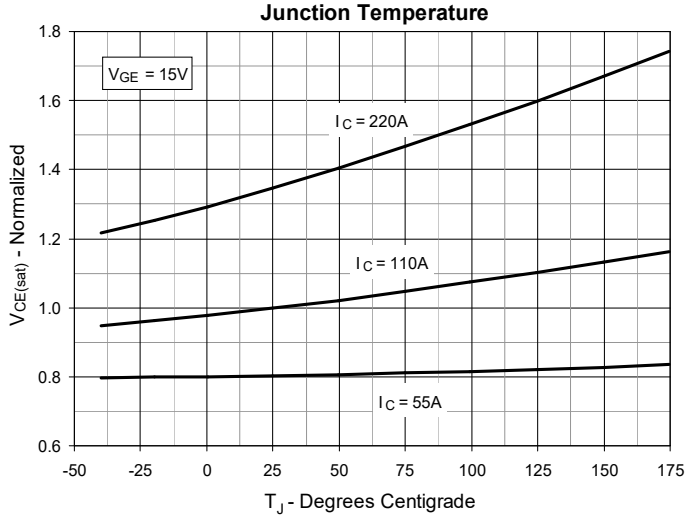


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

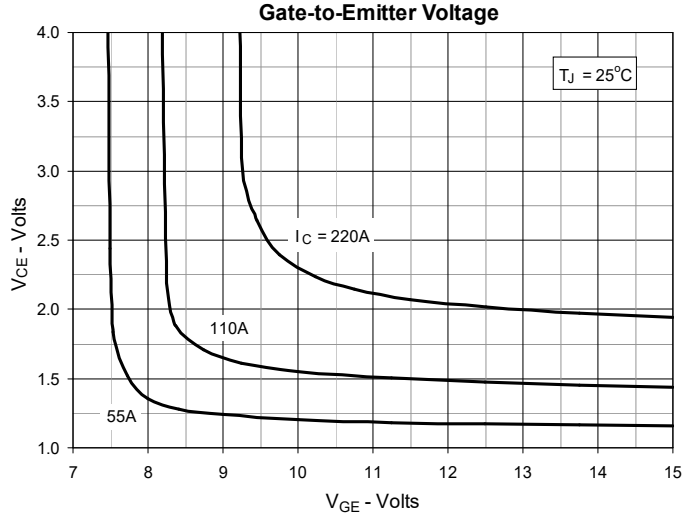
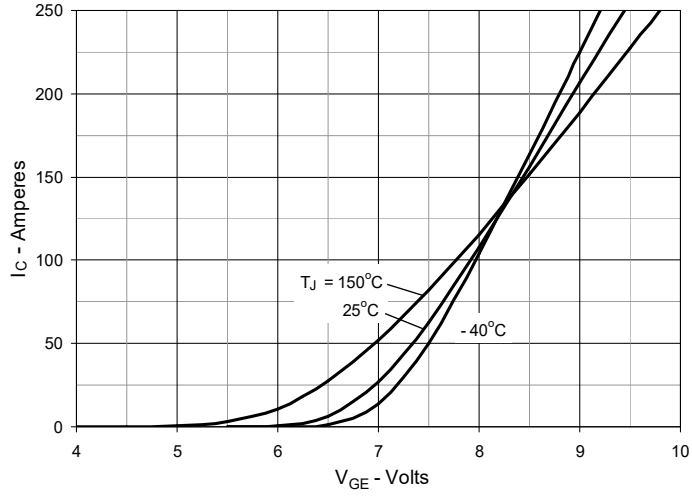


Fig. 6. Input Admittance



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Fig. 7. Transconductance

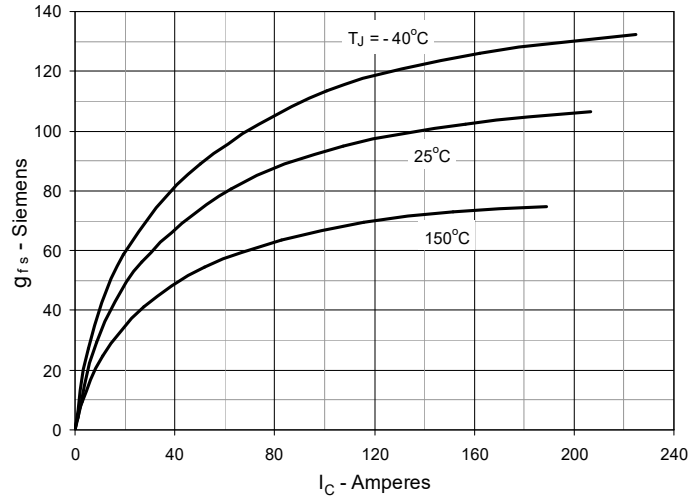


Fig. 8. Gate Charge

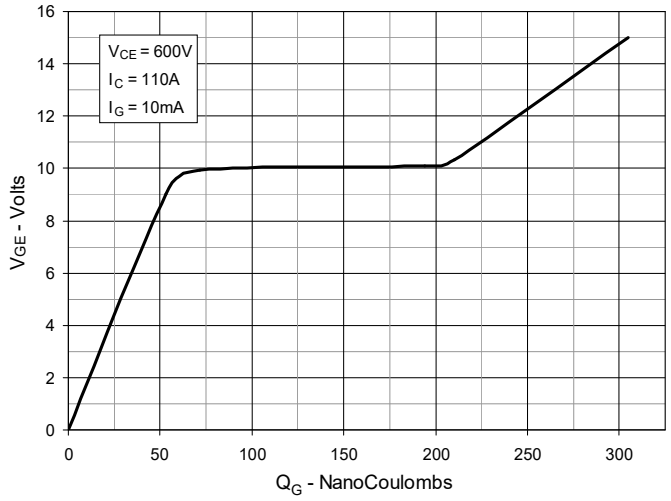


Fig. 9. Capacitance

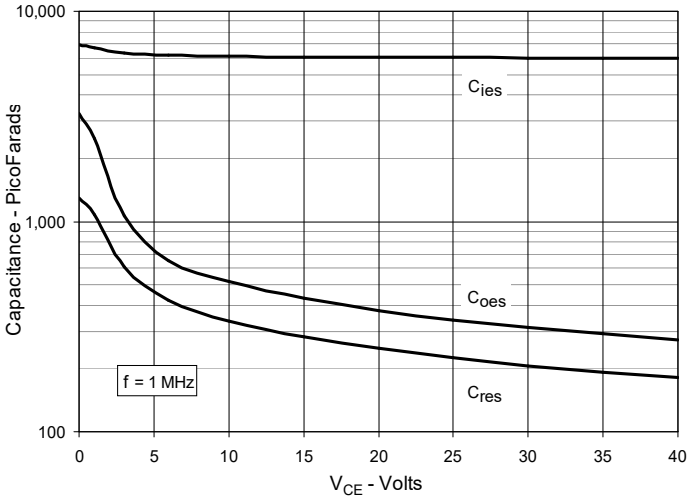


Fig. 10. Reverse-Bias Safe Operating Area

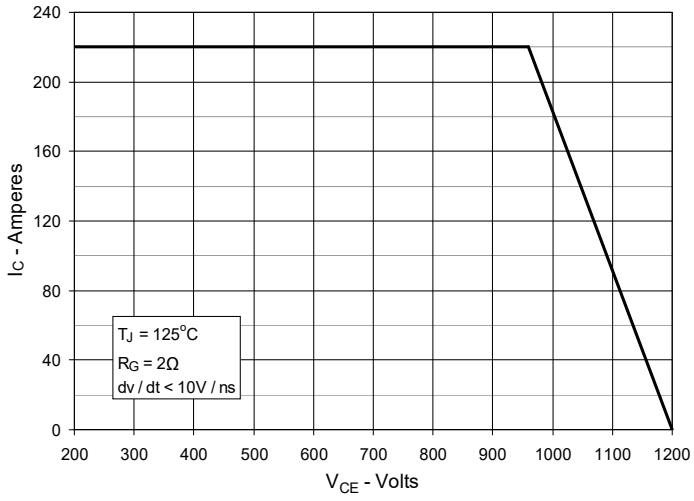
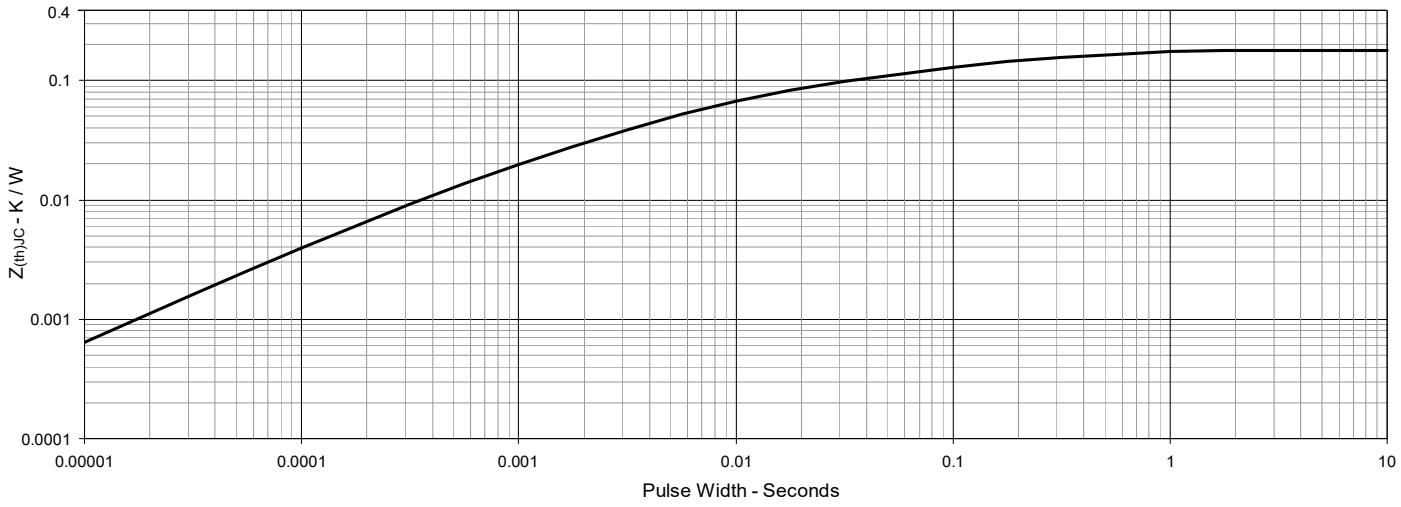


Fig. 11. Maximum Transient Thermal Impedance



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Fig. 12. Inductive Switching Energy Loss vs. Collector Current

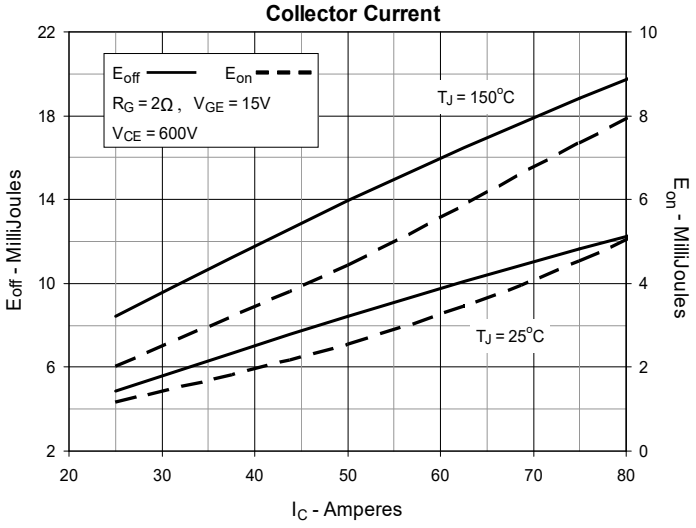


Fig. 13. Inductive Switching Energy Loss vs. Collector-Emitter Voltage

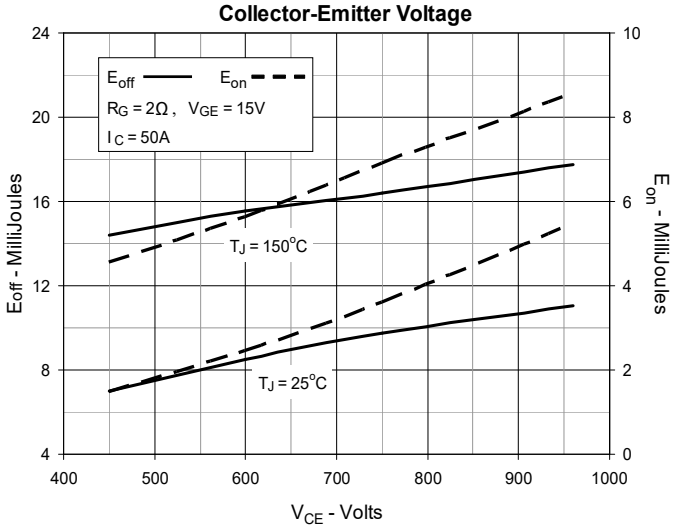


Fig. 14. Inductive Switching Energy Loss vs. Gate Resistance

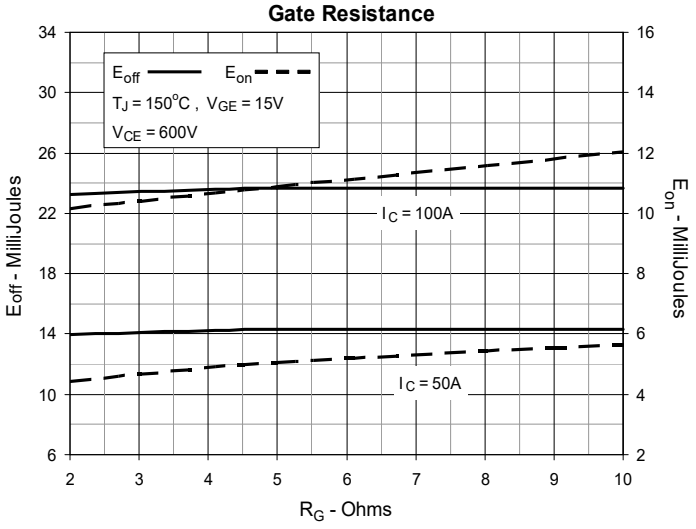


Fig. 15. Inductive Switching Energy Loss vs. Junction Temperature

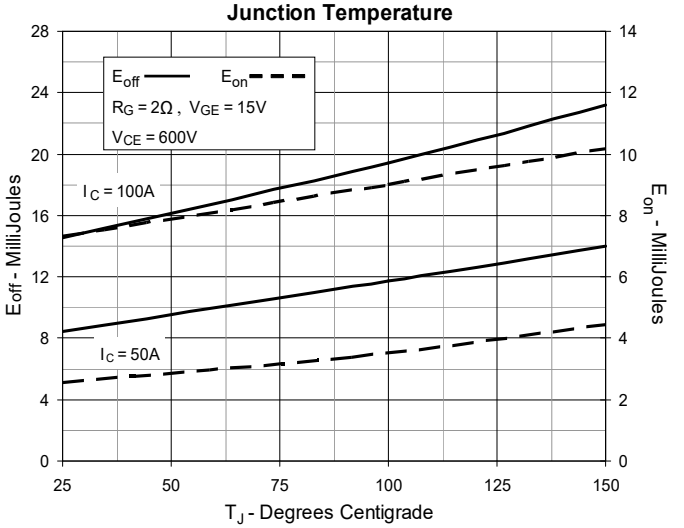


Fig. 16. Inductive Turn-off Switching Times vs. Gate Resistance

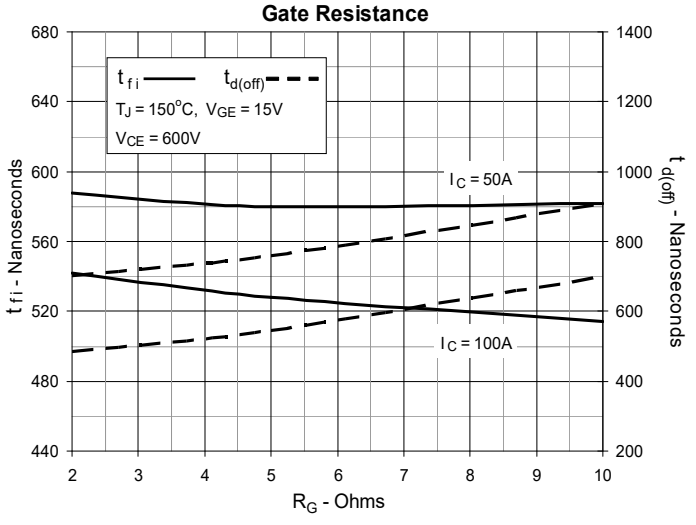
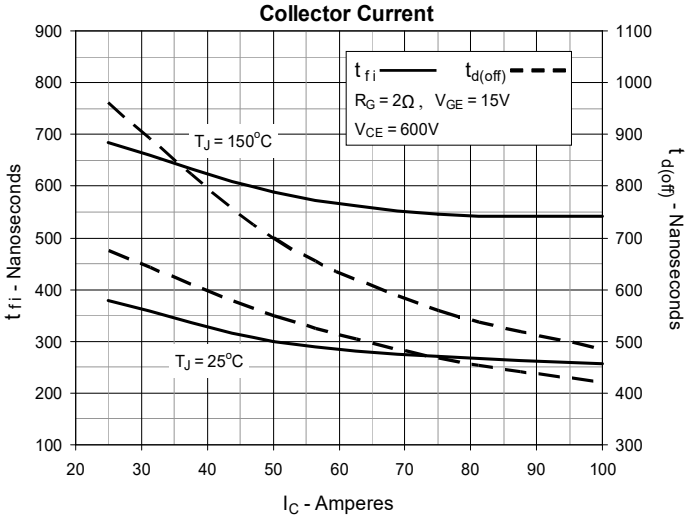


Fig. 17. Inductive Turn-off Switching Times vs. Collector Current



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Fig. 18. Inductive Turn-off Switching Times vs. Junction Temperature

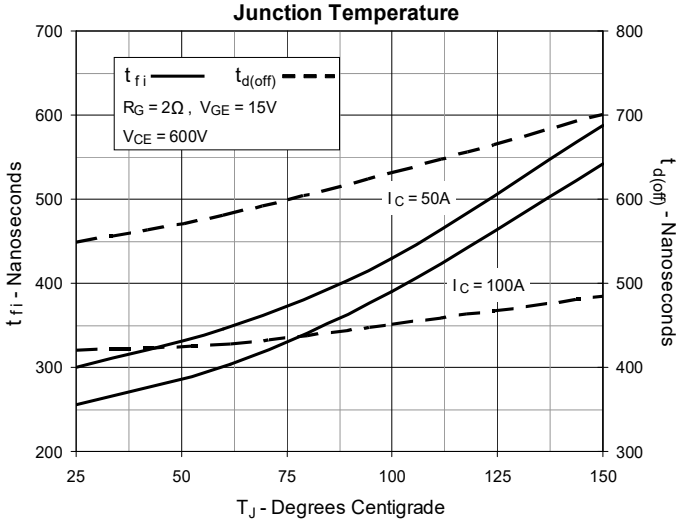


Fig. 19. Inductive Turn-on Switching Times vs. Gate Resistance

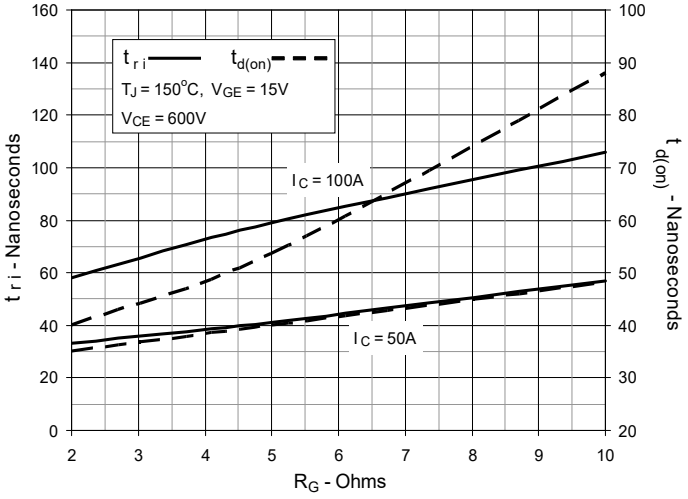


Fig. 20. Inductive Turn-on Switching Times vs. Collector Current

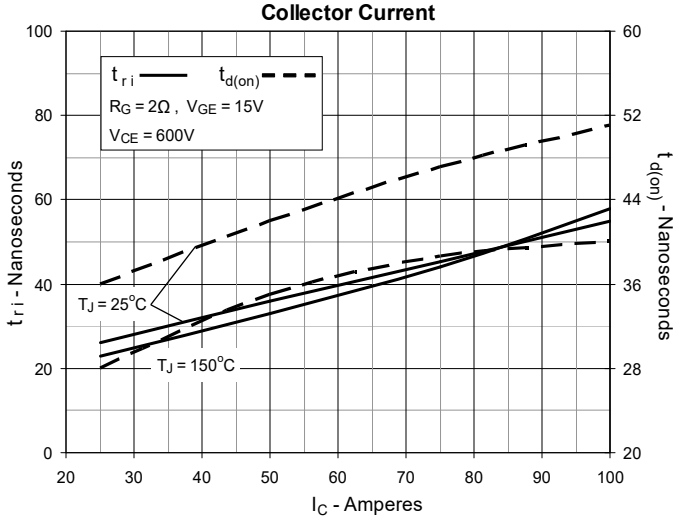
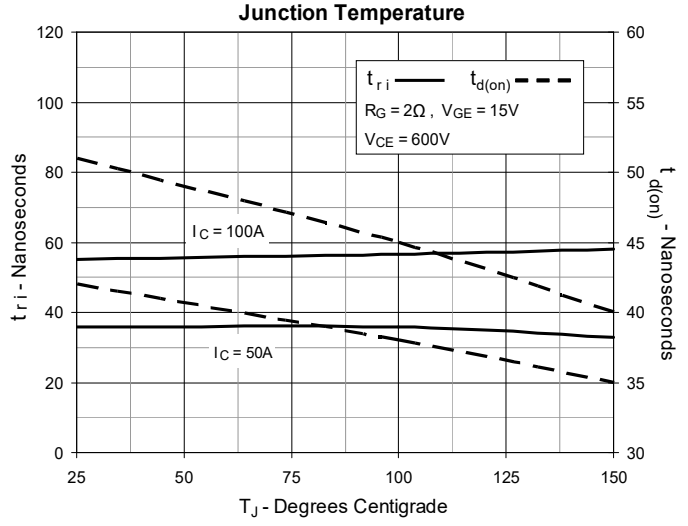
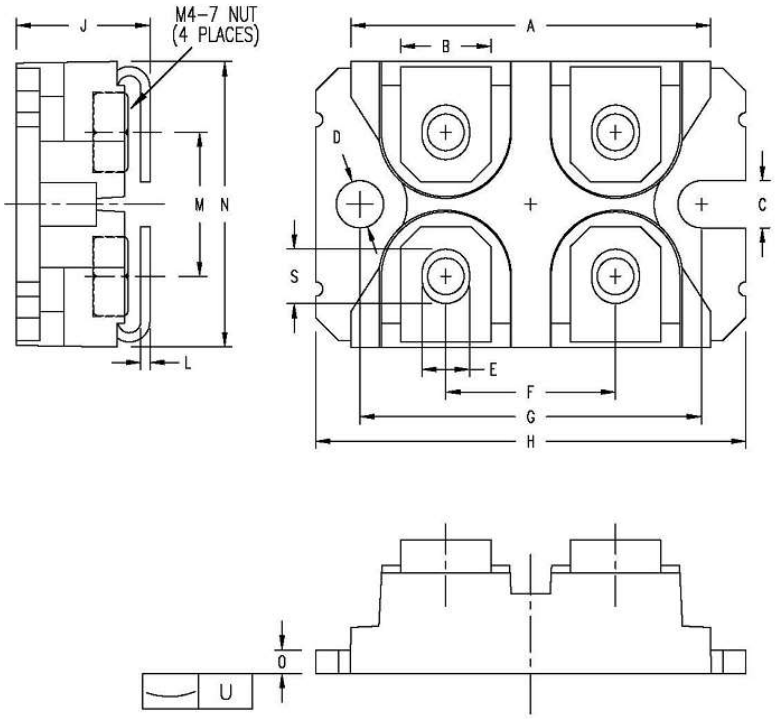


Fig. 21. Inductive Turn-on Switching Times vs. Junction Temperature



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SOT-227B miniBLOC (IXYN)



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	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

1. NUT MATERIAL:
   STANDARD – Low carbon steel with Ni plating.
   OPTIONAL: – Brass Nut is available.
   PART NUMBER–BN
2. ALL METAL SURFACE ARE PRE NI PLATED EXCEPT TRIM AREA.

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