![IXYS]

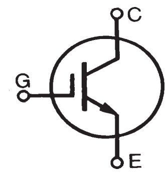
Preliminary Technical Information

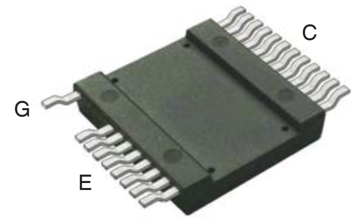
XPT™ 600V IGBT GenX3™ MMIX1X200N60B3

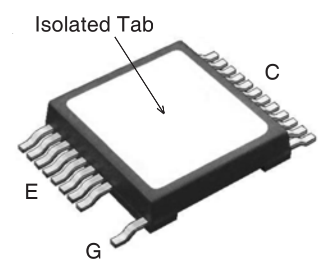
V_{CES} = 600V
I_{C110} = 120A
$V_{CE(sat)}$ ≤ 1.7V
$t_{fi(typ)}$ = 110ns

(Electrically Isolated Tab)

Extreme Light Punch Through
IGBT for 10-30kHz Switching







G = Gate E = Emitter
C = Collector

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 175°C	600	V
V_{CGR}	T_J = 25°C to 175°C, R_{GE} = 1MΩ	600	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C (Chip Capability)	223	A
I_{C110}	T_C = 110°C	120	A
I_{CM}	T_C = 25°C, 1ms	1000	A
I_A	T_C = 25°C	100	A
E_{AS}	T_C = 25°C	1	J
SSOA (RBSOA)	V_{GE} = 15V, T_{VJ} = 150°C, R_G = 1Ω Clamped Inductive Load	I_{CM} = 400 @$V_{CE} \le V_{CES}$	A
t_{sc} (SCSOA)	V_{GE} = 15V, V_{CE} = 360V, T_J = 150°C R_G = 10Ω, Non Repetitive	10	μs
P_C	T_C = 25°C	625	W
T_J		-55 ... +175	°C
T_{JM}		175	°C
T_{stg}		-55 ... +175	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	1.6 mm (0.062 in.) from Case for 10	260	°C
V_{ISOL}	50/60Hz, 1 minute	2500	V~
F_C	Mounting Force	50..200/11..45	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}	3.5		6.0	V
I_{CES}	V_{CE} = V_{CES}, V_{GE} = 0V			50	μA
	Note 2, T_J = 150°C			3	mA
I_{GES}	V_{CE} = 0V, V_{GE} = ±20V			±200	nA
$V_{CE(sat)}$	I_C = 100A, V_{GE} = 15V, Note 1		1.40	1.70	V
	T_J = 150°C		1.58		V

Features

- Silicon Chip on Direct-Copper Bond (DCB) Substrate
- Isolated Mounting Surface
- 2500V~ Electrical Isolation
- Optimized for Low Conduction and Switching Losses
- Avalanche Rated
- Short Circuit Capability
- Very High Current Capability
- Square RBSOA

Advantages

- High Power Density
- Low Gate Drive Requirement

Applications

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

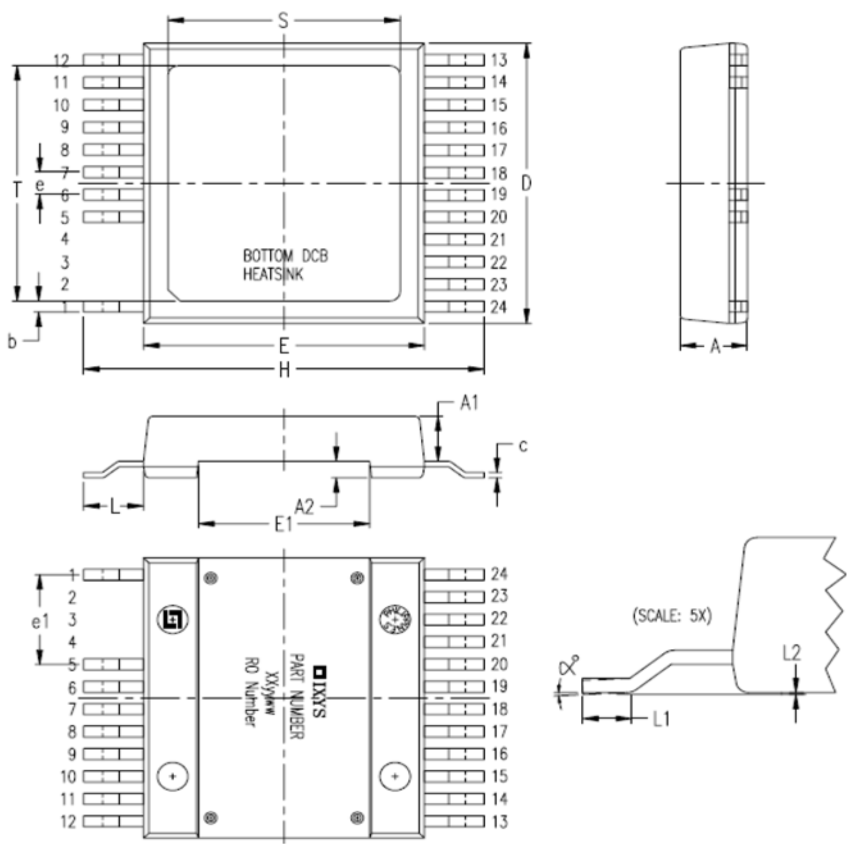
Symbol	Test Conditions ($T_J = 25°C$ Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	$I_C = 60A$, $V_{CE} = 10V$, Note 1	27	45		S
C_{ies}	$V_{CE} = 25V$, $V_{GE} = 0V$, f = 1MHz		9970		pF
C_{oes}			570		pF
C_{res}			183		pF
$Q_{g(on)}$	$I_C = 200A$, $V_{GE} = 15V$, $V_{CE} = 0.5 \bullet V_{CES}$		315		nC
Q_{ge}			98		nC
Q_{gc}			130		nC
$t_{d(on)}$	**Inductive load, $T_J = 25°C$**		48		ns
t_{ri}	$I_C = 100A$, $V_{GE} = 15V$		100		ns
E_{on}	$V_{CE} = 360V$, $R_G = 1\Omega$		2.85		mJ
$t_{d(off)}$	Note 3		160		ns
t_{fi}			110		ns
E_{off}			2.90	4.40	mJ
$t_{d(on)}$	**Inductive load, $T_J = 150°C$**		46		ns
t_{ri}	$I_C = 100A$, $V_{GE} = 15V$		94		ns
E_{on}	$V_{CE} = 360V$, $R_G = 1\Omega$		4.40		mJ
$t_{d(off)}$	Note 3		180		ns
t_{fi}			215		ns
E_{off}			3.45		mJ
R_{thJC}				0.24	°C/W
R_{thCS}			0.05		°C/W

Notes:

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

PRELIMANARY 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.



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.209	.224	5.30	5.70
A1	.154	.161	3.90	4.10
A2	.055	.063	1.40	1.60
b	.035	.045	0.90	1.15
c	.018	.026	0.45	0.65
D	.976	.994	24.80	25.25
E	.898	.915	22.80	23.25
E1	.543	.559	13.80	14.20
e	.079 BSC		2.00 BSC	
e1	.315 BSC		8.00 BSC	
H	1.272	1.311	32.30	33.30
L	.181	.209	4.60	5.30
L1	.051	.067	1.30	1.70
L2	.000	.006	0.00	0.15
S	.736	.760	18.70	19.30
T	.815	.839	20.70	21.30
α	0	4°	0	4°

PIN: 1 = Gate
5-12 = Emitter
13-24 = Collector

Fig. 1. Output Characteristics @ T_J = 25ºC

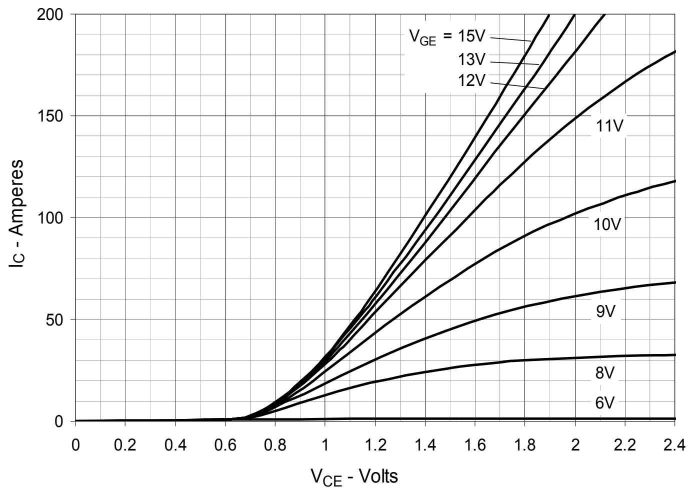


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

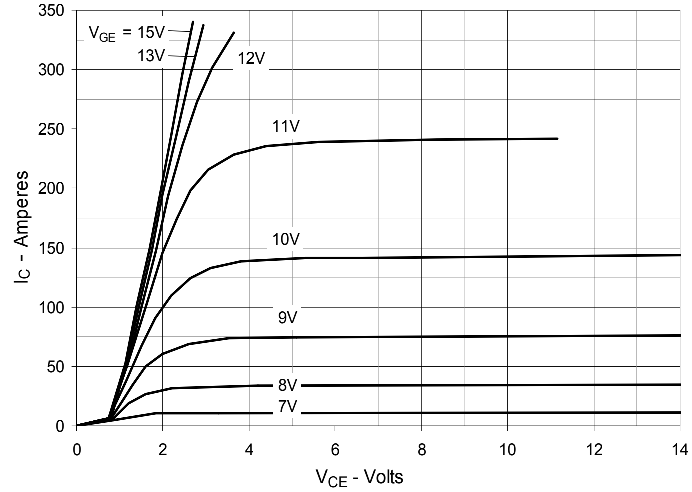


Fig. 3. Output Characteristics @ T_J = 150ºC

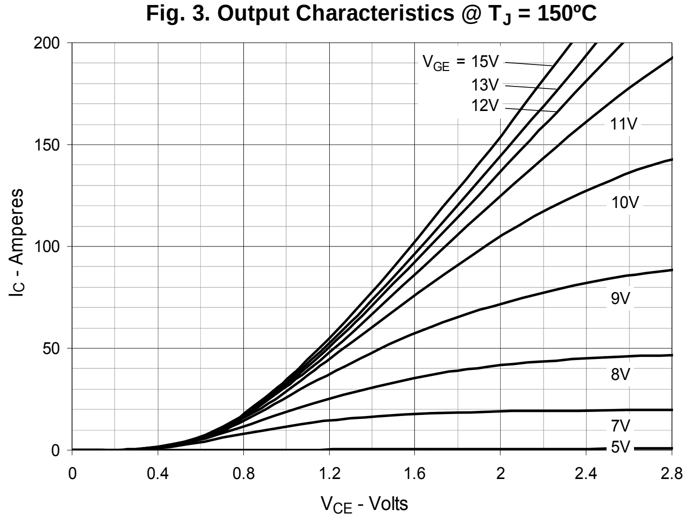


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

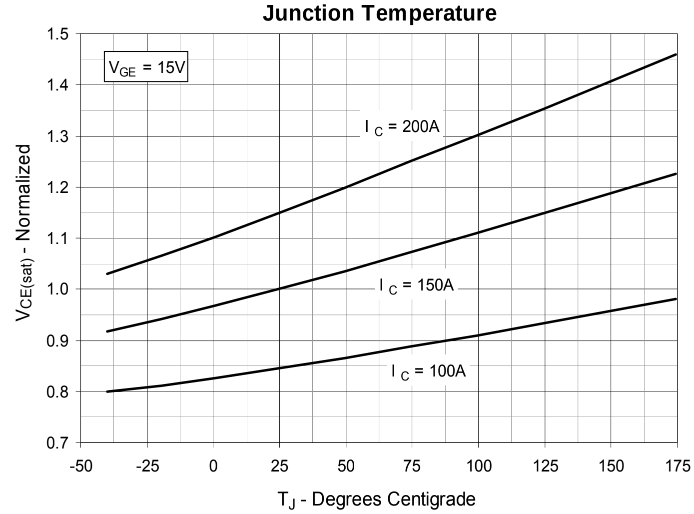


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

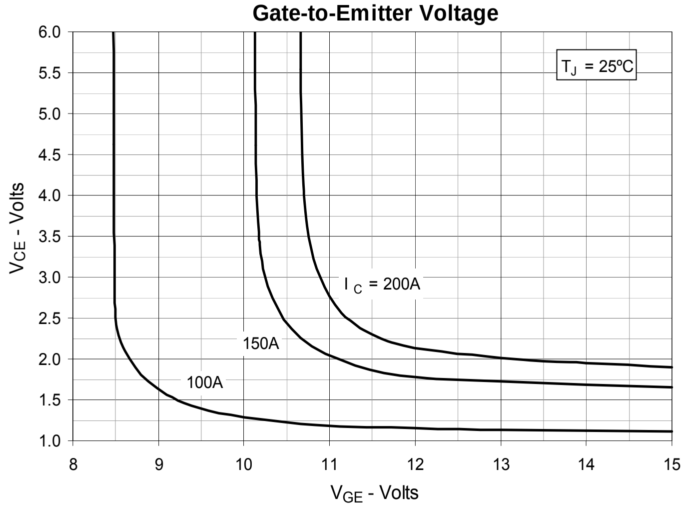
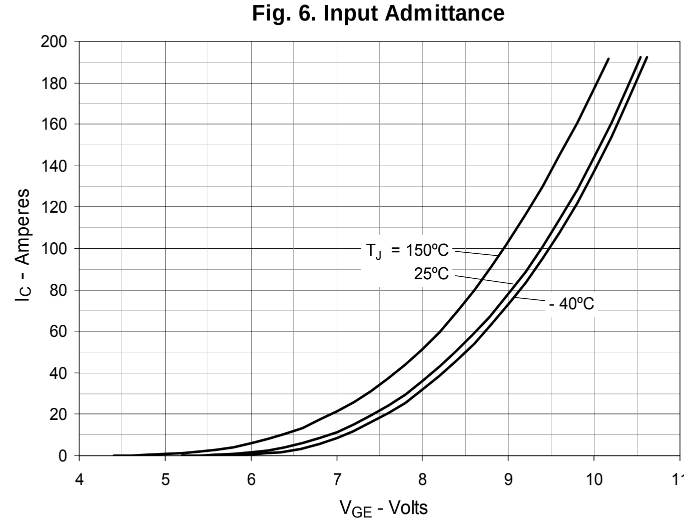


Fig. 6. Input Admittance



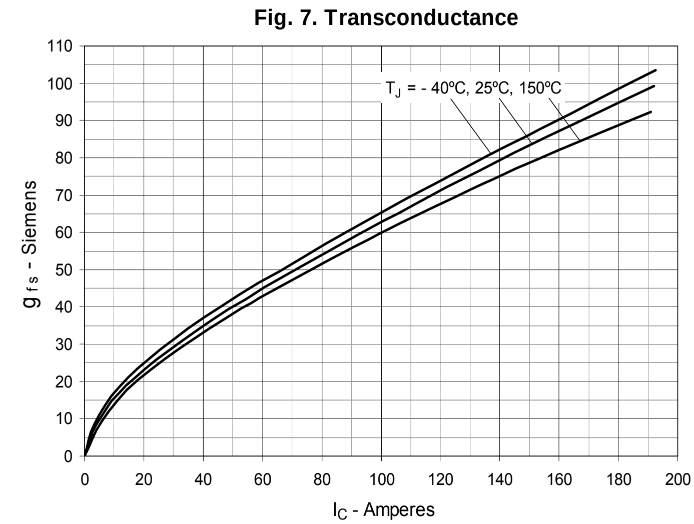


Fig. 7. Transconductance
T_J = - 40ºC, 25ºC, 150ºC
g_fs - Siemens
I_C - Amperes

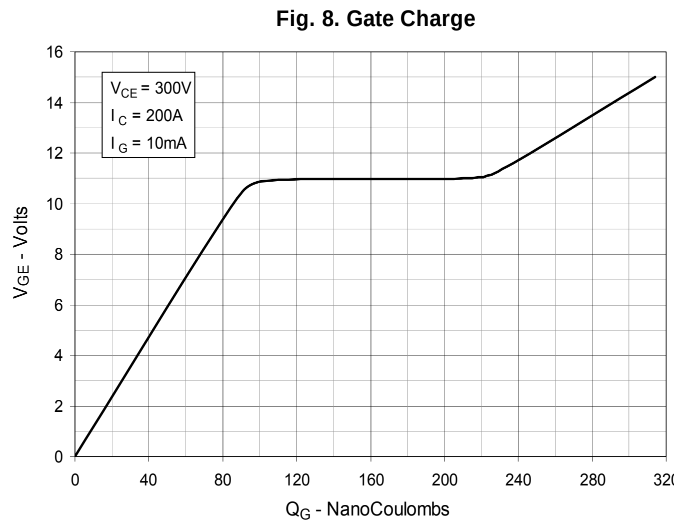


Fig. 8. Gate Charge
V_CE = 300V
I_C = 200A
I_G = 10mA
V_GE - Volts
Q_G - NanoCoulombs

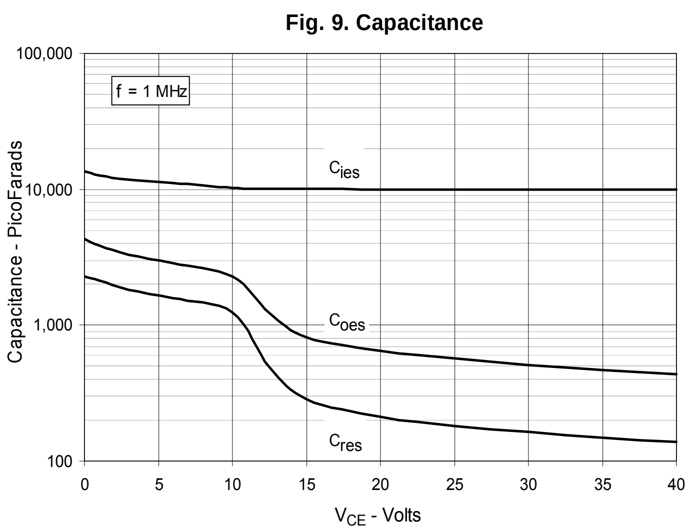


Fig. 9. Capacitance
f = 1 MHz
C_ies
C_oes
C_res
Capacitance - PicoFarads
V_CE - Volts

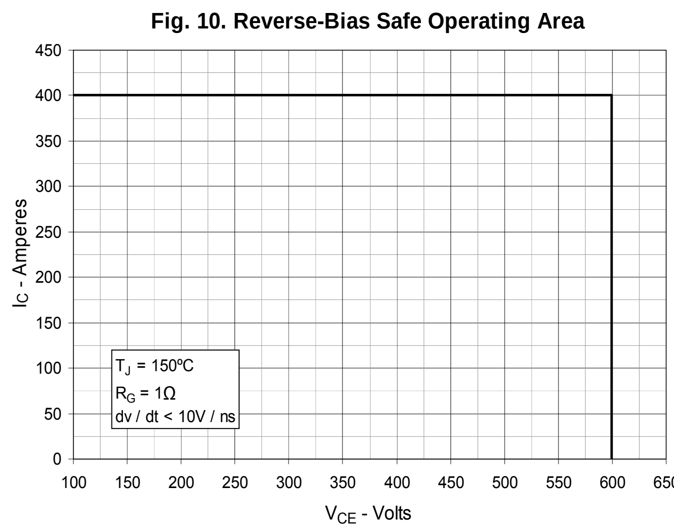


Fig. 10. Reverse-Bias Safe Operating Area
T_J = 150ºC
R_G = 1Ω
dv / dt < 10V / ns
I_C - Amperes
V_CE - Volts

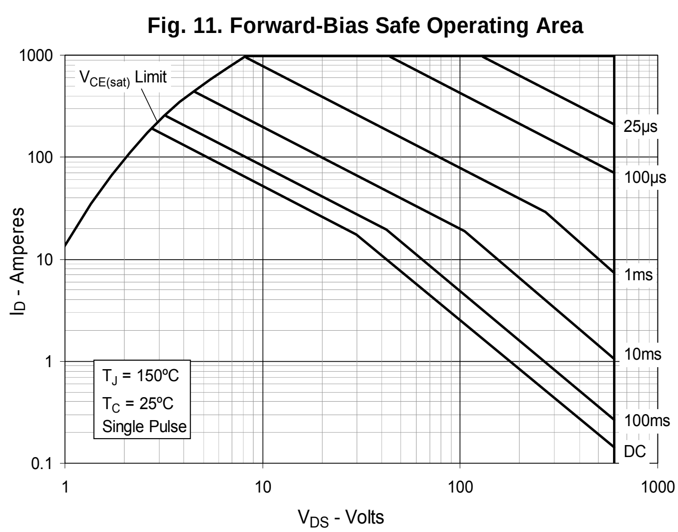


Fig. 11. Forward-Bias Safe Operating Area
V_CE(sat) Limit
25µs
100µs
1ms
10ms
100ms
DC
T_J = 150ºC
T_C = 25ºC
Single Pulse
I_D - Amperes
V_DS - Volts

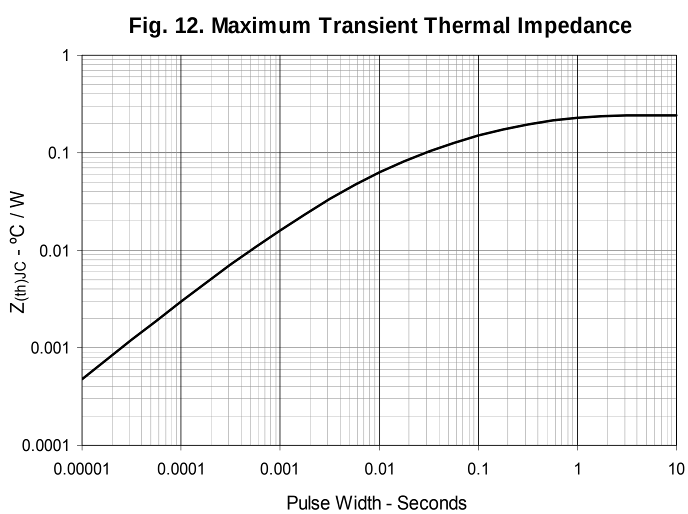


Fig. 12. Maximum Transient Thermal Impedance
Z_(th)JC - ºC / W
Pulse Width - Seconds

Fig. 13. Inductive Switching Energy Loss vs. Gate Resistance

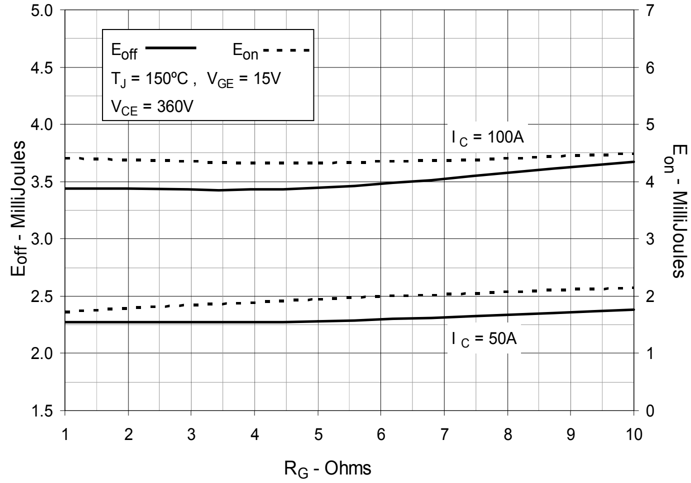


Fig. 14. Inductive Switching Energy Loss vs. Collector Current

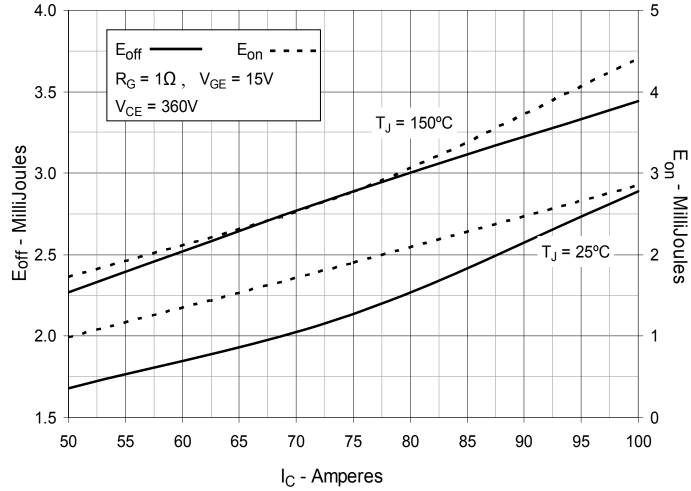


Fig. 15. Inductive Switching Energy Loss vs. Junction Temperature

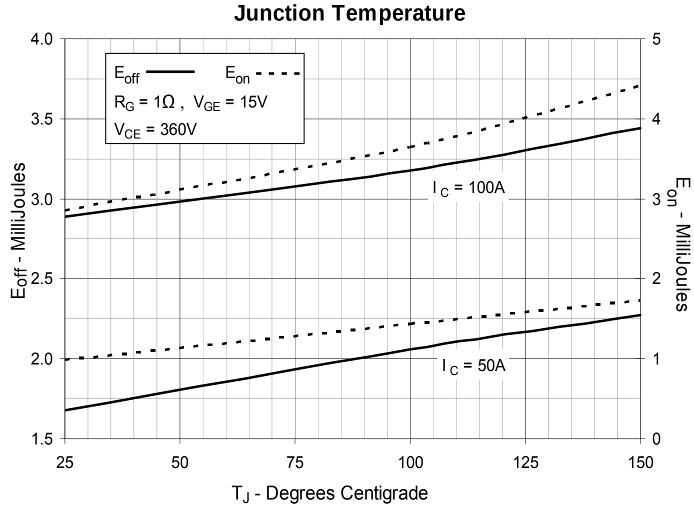


Fig. 16. Inductive Turn-off Switching Times vs. Gate Resistance

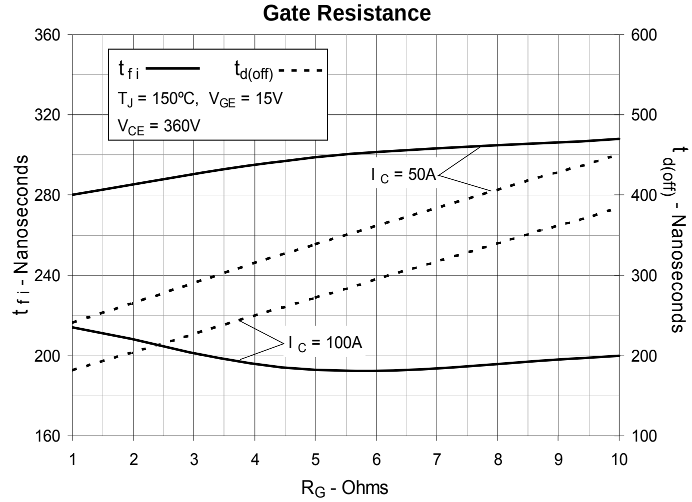


Fig. 17. Inductive Turn-off Switching Times vs. Collector Current

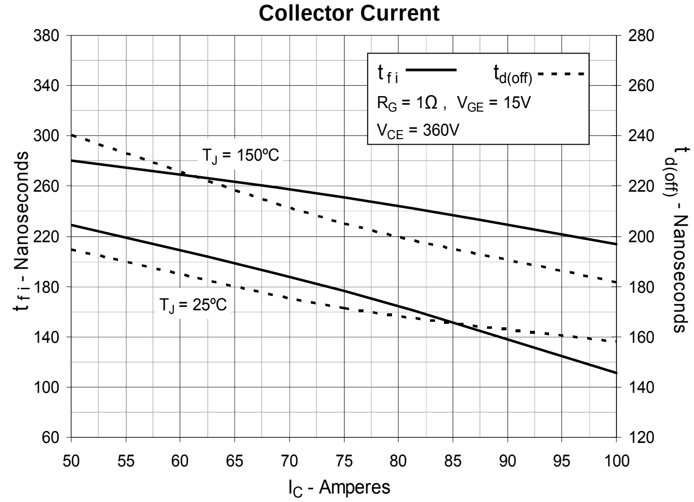


Fig. 18. Inductive Turn-off Switching Times vs. Junction Temperature

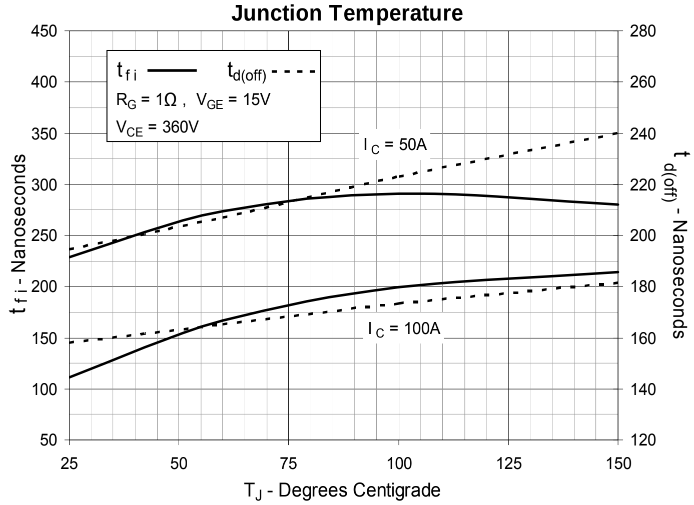


Fig. 19. Inductive Turn-on Switching Times vs. Gate Resistance

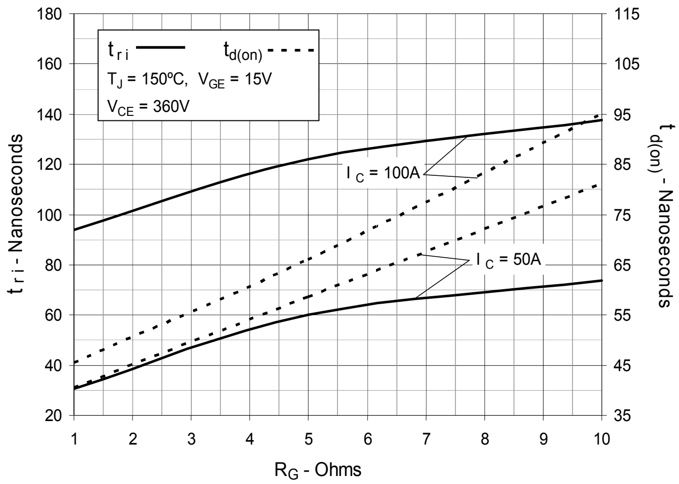


Fig. 20. Inductive Turn-on Switching Times vs. Collector Current

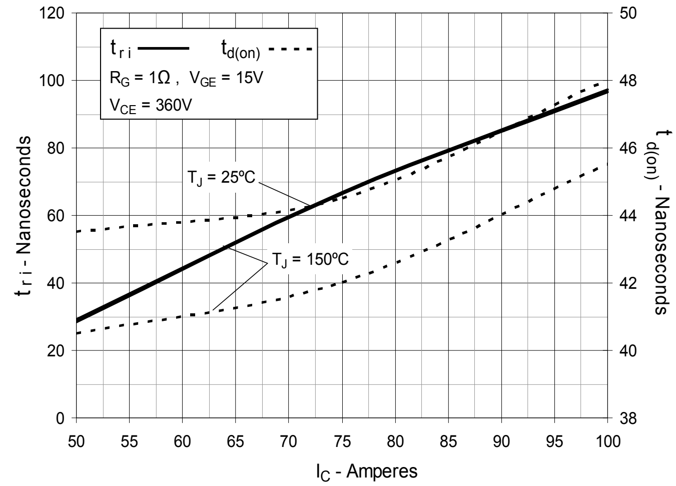
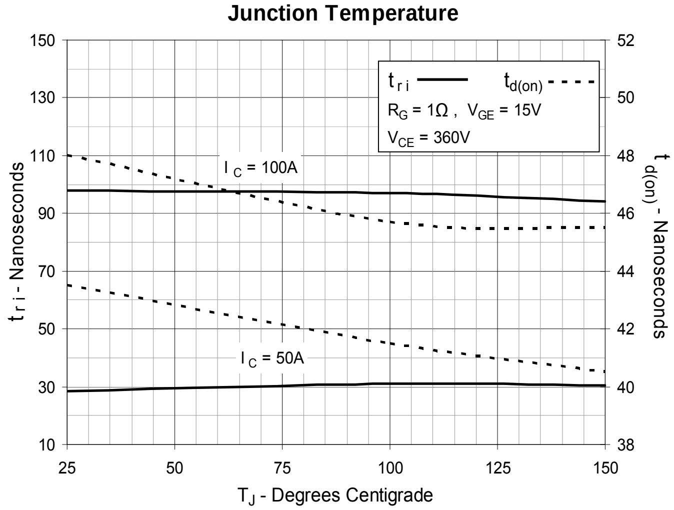


Fig. 21. Inductive Turn-on Switching Times vs. Junction Temperature



Стандарт
Электрон
Связь

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

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Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

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