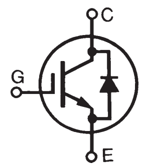
IXYS

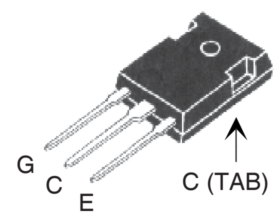
High Voltage IGBTs w/Diode

IXGH40N120B2D1
IXGT40N120B2D1

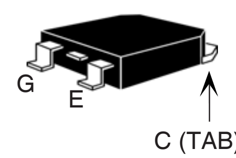
V_{CES} = 1200V
I_{C110} = 40A
$V_{CE(sat)} \leq$ 3.5V
$t_{fi(typ)}$ = 140ns



TO-247 (IXGH)



TO-268 (IXGT)



G = Gate C = Collector
E = Emitter TAB = Collector

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_C = 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 (Limited by Lead)	75	A
I_{C110}	T_C = 110°C	40	A
I_{F110}	T_C = 110°C	25	A
I_{CM}	T_C = 25°C, 1ms	200	A
SSOA	V_{GE} = 15V, T_{VJ} = 125°C, R_G = 2Ω	I_{CM} = 80	A
(RBSOA)	Clamped Inductive Load	@ 0.8 ≤ V_{CES}	V
P_C	T_C = 25°C	380	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	1.6mm (0.062 in.) from Case for 10s	300	°C
T_{SOLD}	Plastic Body for 10 seconds	260	°C
M_d	Mounting Torque (TO-247)	1.13/10	Nm/lb.in.
Weight	TO-247	6	g
	TO-268	4	g

Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
$V_{GE(th)}$	I_C = 250μA, V_{CE} = V_{GE}	3.0		5.0	V
I_{CES}	V_{CE} = $V_{CES,}$ V_{GE} = 0V			100	μA
	T_J = 125°C			3	mA
I_{GES}	V_{CE} = 0V, V_{GE} = ± 20V			±100	nA
$V_{CE(sat)}$	I_C = 40A, V_{GE} = 15V, Note 1		2.9	3.5	V

Features

- International Standard Packages
- IGBT and Anti-Parallel FRED for Resonant Power Supplies
  - Induction Heating
  - Rice Cookers
- Square RBSOA
- Fast Recovery Expitaxial Diode (FRED)
  - Soft Recovery with Low I_{RM}

Advantages

- High Power Density
- Low Gate Drive Requirement

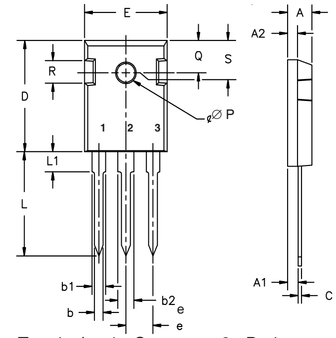
Symbol	Test Conditions ($T_J = 25°C$ Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fS}	$I_C = 40A$, $V_{CE} = 10V$, Note 1	23	37		S
C_{ies}	$V_{CE} = 25V$, $V_{GE} = 0V$, f = 1MHz		3360		pF
C_{oes}			190		pF
C_{res}			63		pF
Q_g	$I_C = 40A$, $V_{GE} = 15V$, $V_{CE} = 0.5 \bullet V_{CES}$		138		nC
Q_{ge}			20		nC
Q_{gc}			48		nC
$t_{d(on)}$	**Inductive load, $T_J = 25°C$**		21		ns
t_{ri}	$I_C = 40A$, $V_{GE} = 15V$		55		ns
E_{on}	$V_{CE} = 960V$, $R_G = 2\Omega$		4.5		mJ
$t_{d(off)}$	Note 2		290		ns
t_{fi}			140	270	ns
E_{off}			3.0	6.0	mJ
$t_{d(on)}$	**Inductive load, $T_J = 125°C$**		21		ns
t_{ri}	$I_C = 40A$, $V_{GE} = 15V$		58		ns
E_{on}	$V_{CE} = 960V$, $R_G = 2\Omega$		6.5		mJ
$t_{d(off)}$	Note 2		350		ns
t_{fi}			420		ns
E_{off}			8.3		mJ
R_{thJC}				0.33	°C/W
R_{thCS}			0.21		°C/W

Reverse Diode (FRED)

Symbol	Test Conditions ($T_J = 25°C$, Unless Otherwise Specified)		Characteristic Values Min.	Typ.	Max.	
V_F	$I_F = 30A$, $V_{GE} = 0V$				2.8	V
		$T_J = 150°C$		1.6		V
I_{RM}	$I_F = 30A$, $-di/dt = 100A/\mu s$, $V_R = 300V$, $V_{GE} = 0V$	$T_J = 100°C$			4	A
t_{rr}		$T_J = 100°C$		100		ns
R_{thJC}					0.9	°C/W

Note 1: Pulse Test, $t \leq 300\mu s$, Duty Cycle, $d \leq 2\%$.
2. Switching Times may Increase for V_{CE} (Clamp) > $0.8 \bullet V_{CES}$, Higher T_J or Increased R_G.

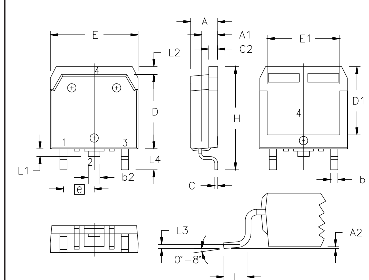
TO-247 (IXGH) Outline



Terminals: 1 - Gate, 2 - Drain, 3 - Source, Tab - Drain

Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	4.7	5.3	.185	.209
A_1	2.2	2.54	.087	.102
A_2	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b_1	1.65	2.13	.065	.084
b_2	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
∅P	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15 BSC		242 BSC	

TO-268 (IXGT) Outline



SYM	INCHES MIN	MAX	MILLIMETERS MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
e	.215 BSC		5.45 BSC	
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3	.010 BSC		0.25 BSC	
L4	.150	.161	3.80	4.10

IXYS Reserves the Right to Change Limits, Test Conditions and Dimensions.

Fig. 1. Output Characteristics @ 25ºC

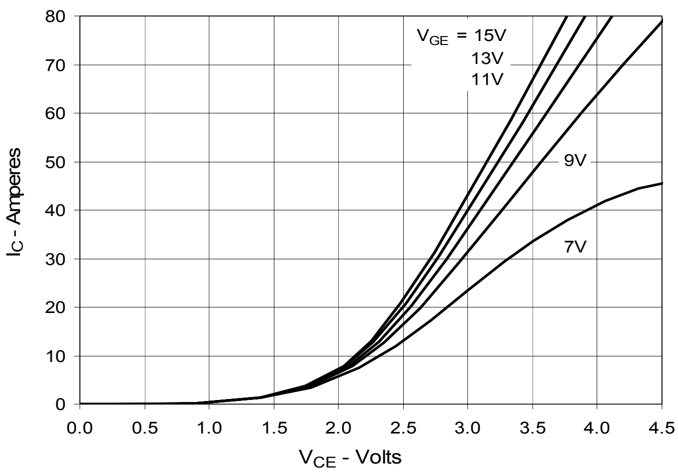


Fig. 2. Extended Output Characteristics @ 25ºC

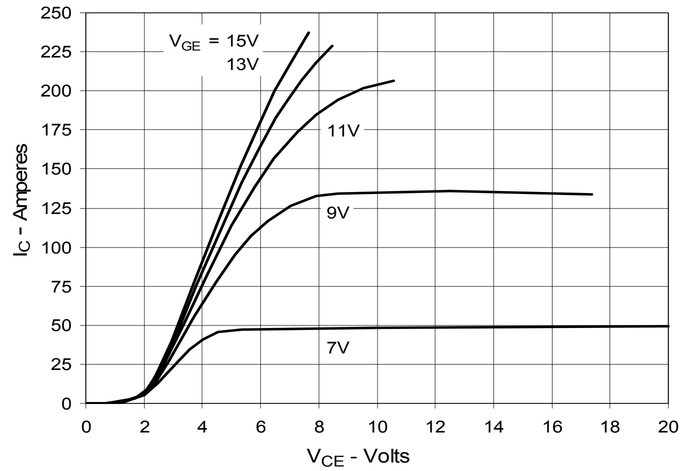


Fig. 3. Output Characteristics @ 125ºC

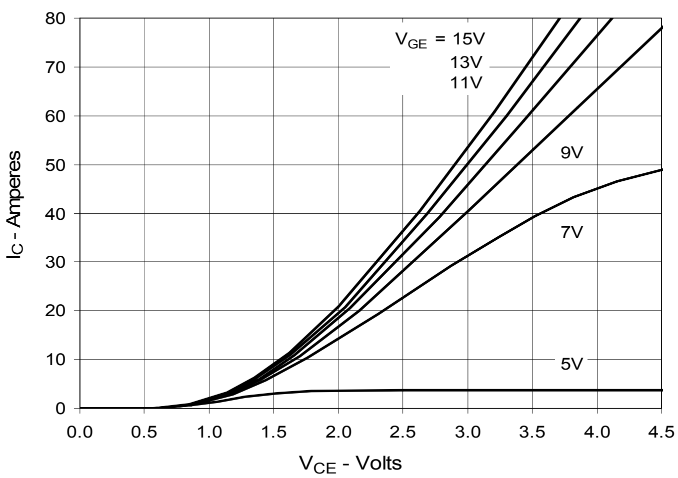


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

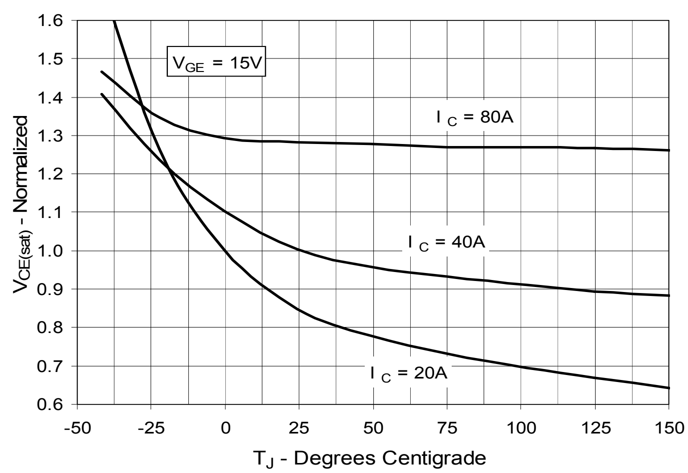


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

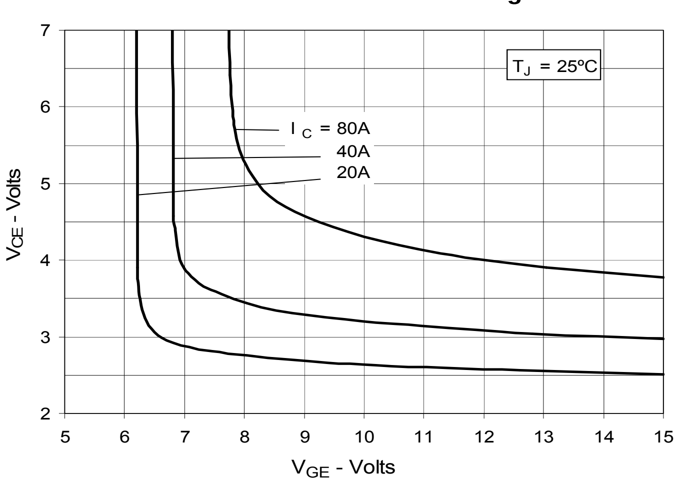
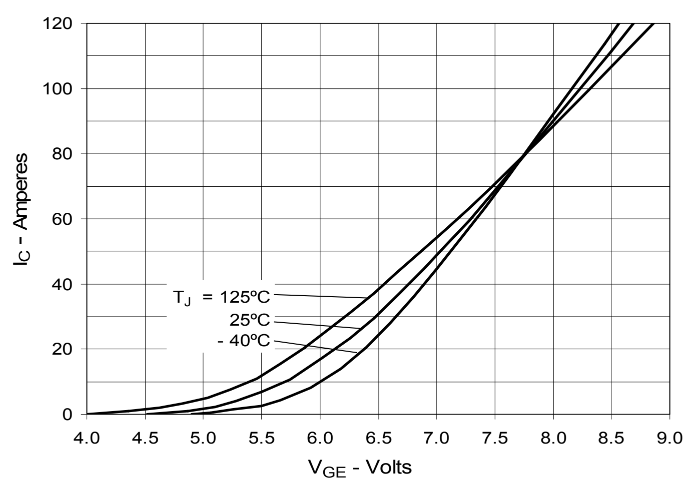
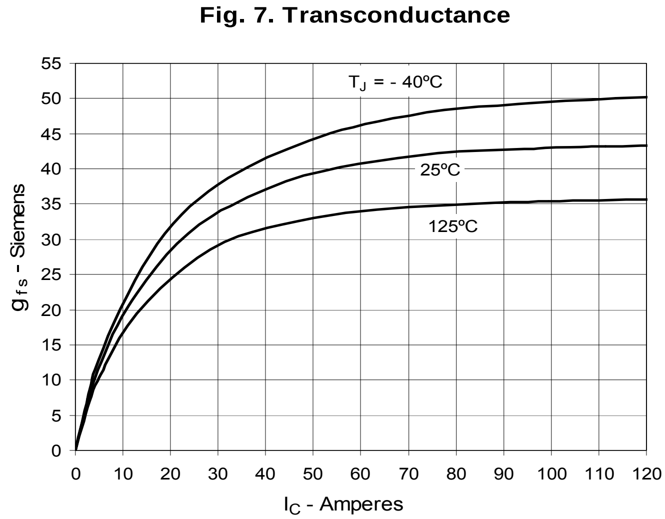
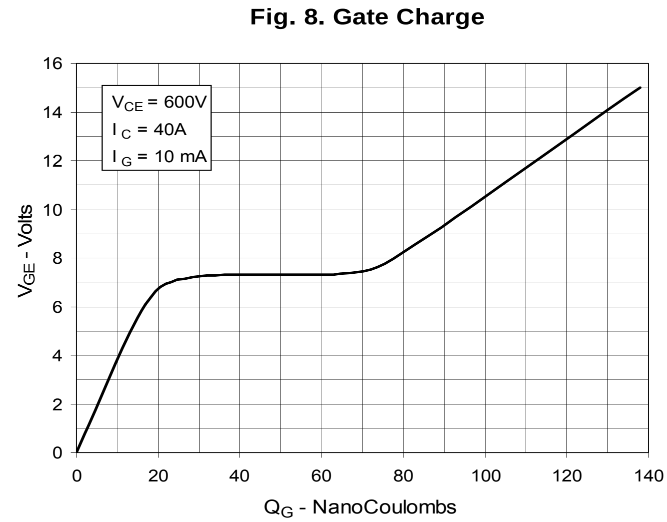
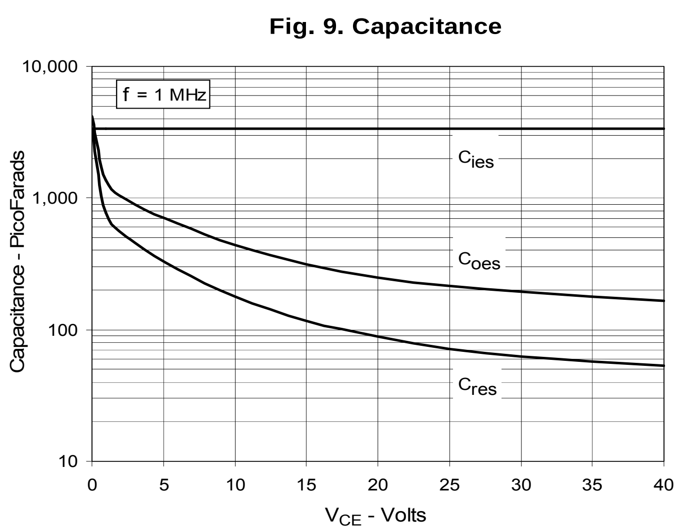


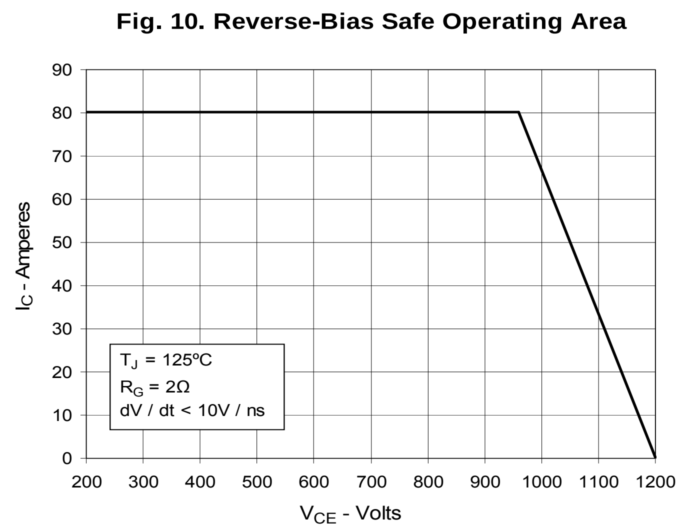
Fig. 6. Input Admittance











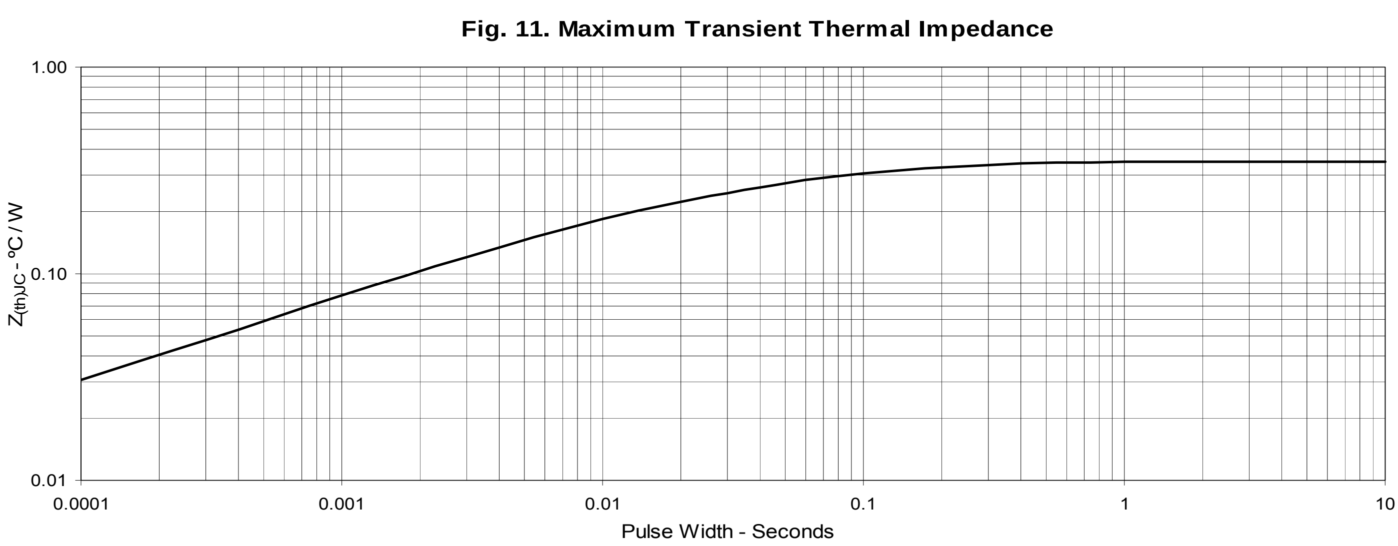


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Fig. 12. Inductive Switching Energy Loss vs. Gate Resistance

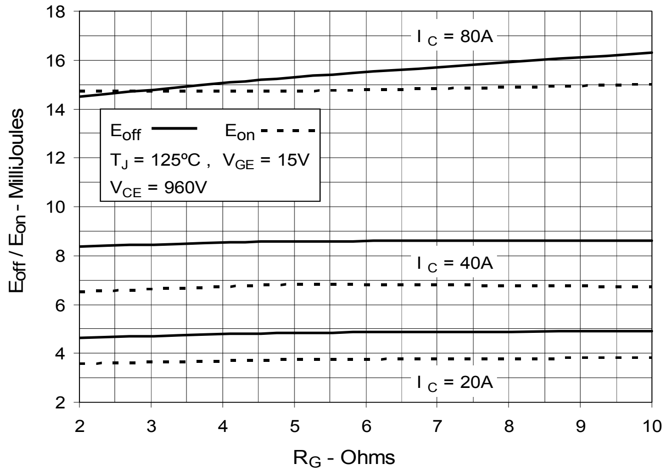


Fig. 13. Inductive Switching Energy Loss vs. Junction Temperature

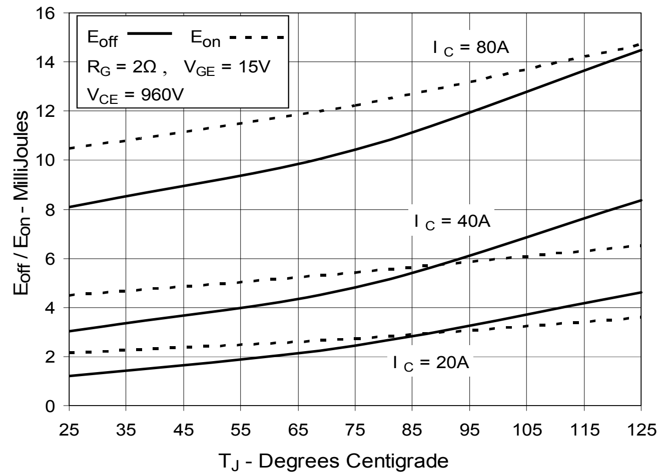


Fig. 14. Inductive Switching Energy Loss vs. Collector Current

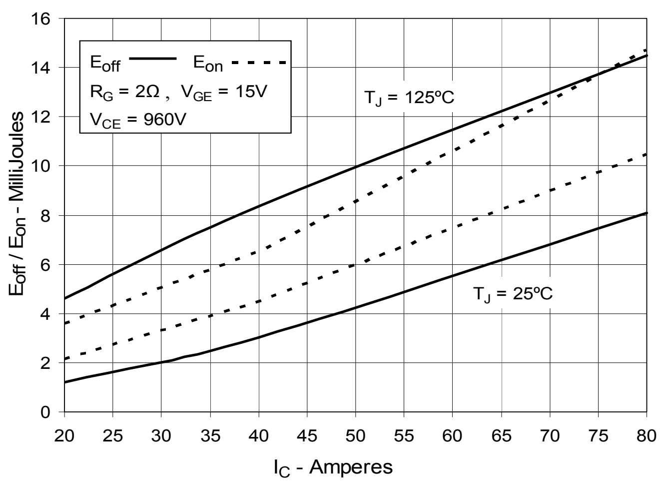


Fig. 15. Inductive Turn-off Switching Times vs. Gate Resistance

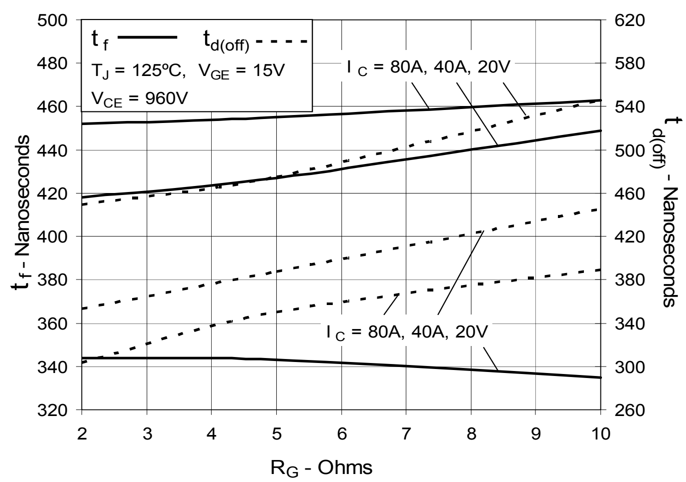


Fig. 16. Inductive Turn-off Switching Times vs. Junction Temperature

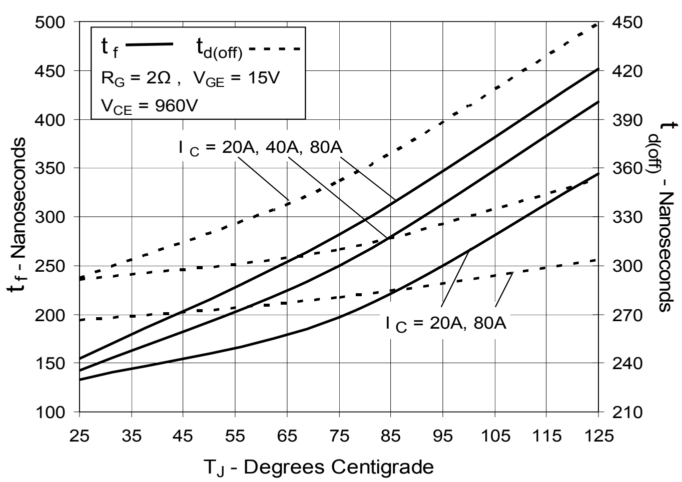


Fig. 17. Inductive Turn-off Switching Times vs. Collector Current

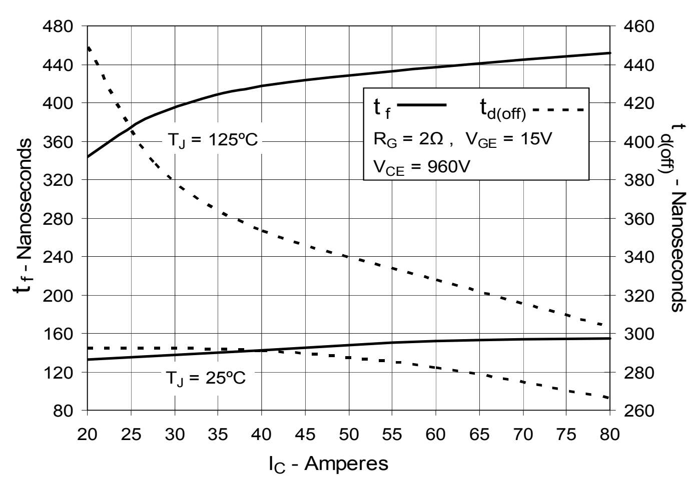


Fig. 18. Inductive Turn-on Switching Times vs. Gate Resistance

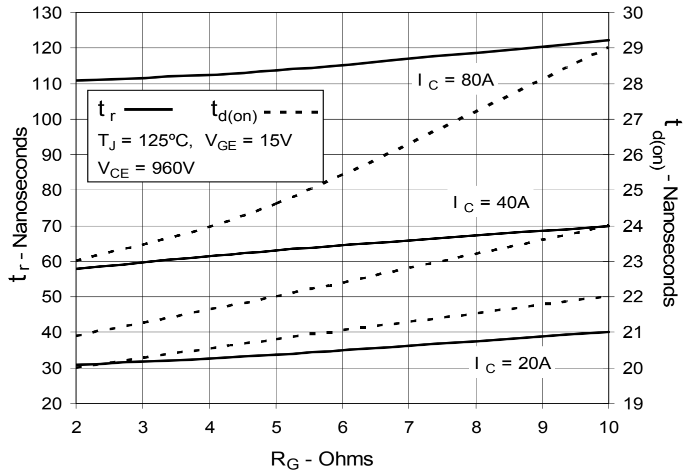


Fig. 19. Inductive Turn-on Switching Times vs. Junction Temperature

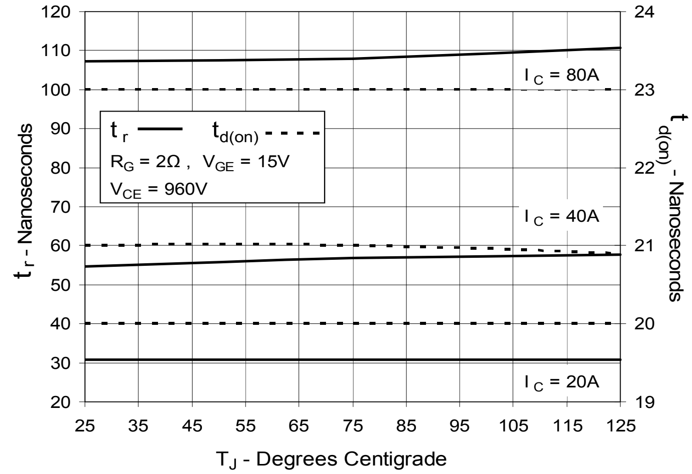
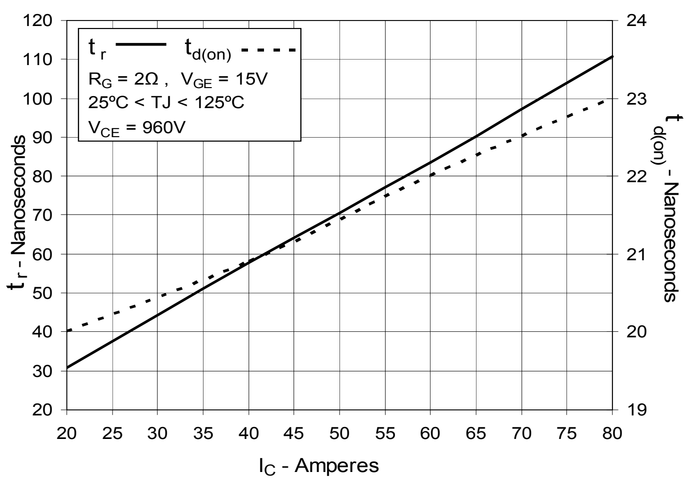


Fig. 20. Inductive Turn-on Switching Times vs. Collector Current



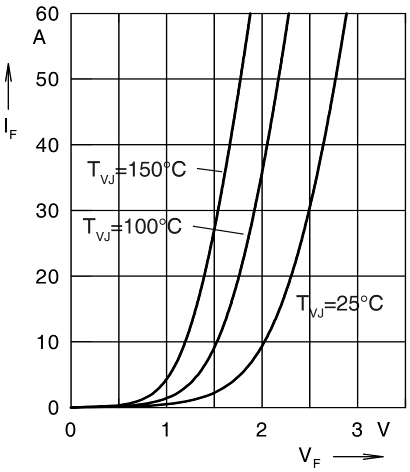


Fig. 21. Forward current I_F versus V_F

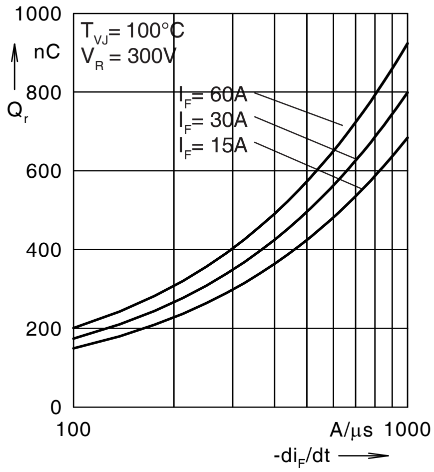


Fig. 22. Reverse recovery charge Q_r versus $-di_F/dt$

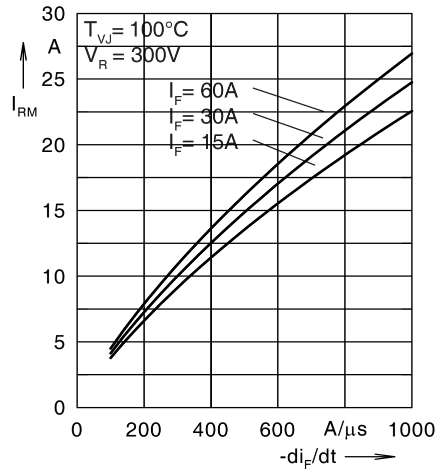


Fig. 23. Peak reverse current I_{RM} versus $-di_F/dt$

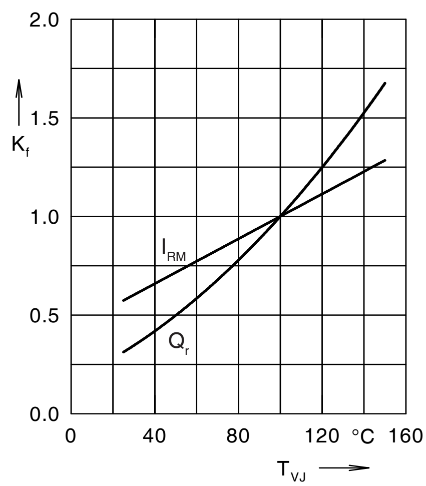


Fig. 24. Dynamic parameters Q_r, I_{RM} versus T_{VJ}

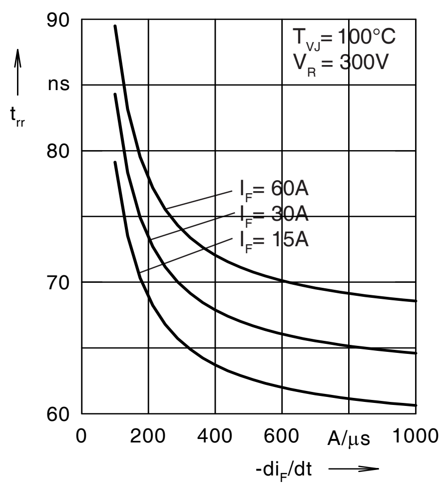


Fig. 25. Recovery time t_{rr} versus $-di_F/dt$

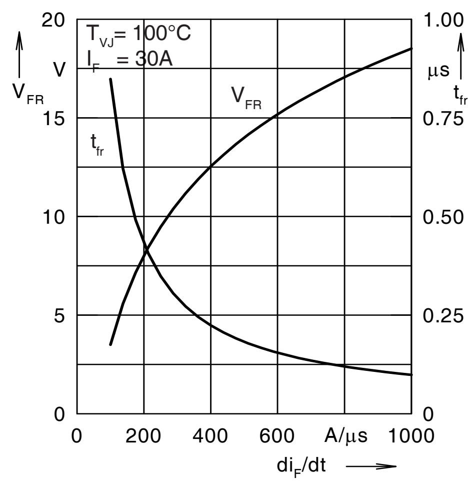


Fig. 26. Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

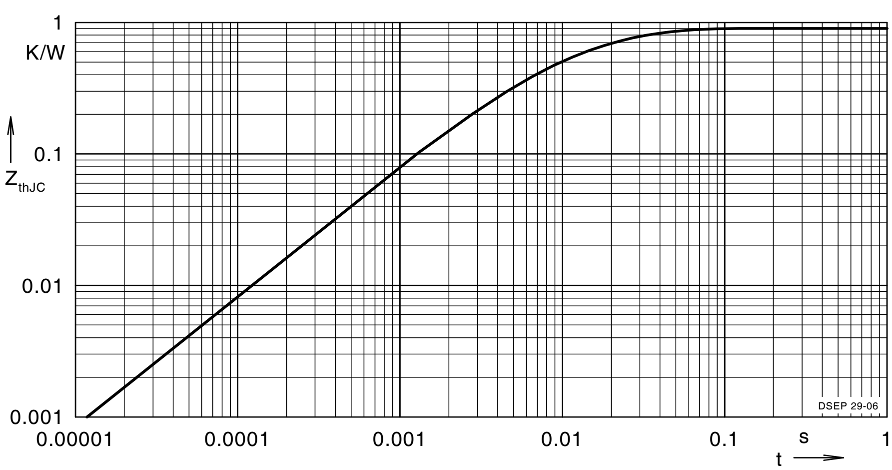


Fig. 27. Transient thermal resistance junction to case

Constants for Z_{thJC} calculation

i	R_{th} (°C/W)	t_i (s)
1	0.465	0.0052
2	0.179	0.0003
3	0.256	0.0397

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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