Chipsmall

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!

Contact us

XPT IGBT

V_{CES}	=	1200 V
I_{C25}	=	88 A
$V_{CE(sat)}$	=	1.8 V

Copack

Part number

IXA60IF1200NA

Backside: isolated

UL E72873

C (3)

(G) 2

E (1+4)
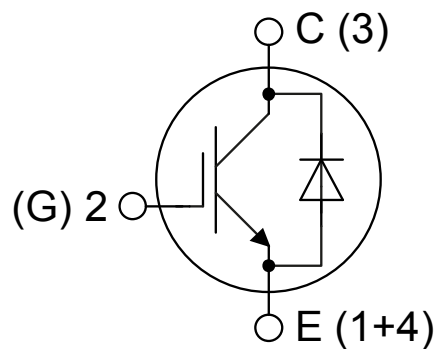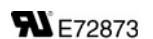
Features / Advantages:

● Easy paralleling due to the positive temperature
   coefficient of the on-state voltage
● Rugged XPT design (Xtreme light Punch Through)
   results in:
   - short circuit rated for 10 μsec.
   - very low gate charge
   - low EMI
   - square RBSOA @ 3x Ic
● Thin wafer technology combined with the XPT design
   results in a competitive low VCE(sat)
● SONIC™ diode
   - fast and soft reverse recovery
   - low operating forward voltage

Applications:

● AC motor drives
● Solar inverter
● Medical equipment
● Uninterruptible power supply
● Air-conditioning systems
● Welding equipment
● Switched-mode and resonant-mode
   power supplies
● Inductive heating, cookers
● Pumps, Fans

Package: SOT-227B (minibloc)

● Isolation Voltage: 3000 V~
● Industry standard outline
● RoHS compliant
● Epoxy meets UL 94V-0
● Base plate: Copper
   internally DCB isolated
● Advanced power cycling
● Either emitter terminal can be used
   as main or Kelvin emitter

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20140708a

IGBT

Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{CES}	collector emitter voltage		T_{VJ} = 25°C			1200	V
V_{GES}	max. DC gate voltage					±20	V
V_{GEM}	max. transient gate emitter voltage					±30	V
I_{C25}	collector current	T_C = 25°C				88	A
I_{C80}		T_C = 80°C				56	A
P_{tot}	total power dissipation	T_C = 25°C				290	W
$V_{CE(sat)}$	collector emitter saturation voltage	I_C = 50A; V_{GE} = 15 V	T_{VJ} = 25°C		1.8	2.1	V
			T_{VJ} = 125°C		2.1		V
$V_{GE(th)}$	gate emitter threshold voltage	I_C = 2mA; V_{GE} = V_{CE}	T_{VJ} = 25°C	5.4	5.9	6.5	V
I_{CES}	collector emitter leakage current	V_{CE} = V_{CES}; V_{GE} = 0 V	T_{VJ} = 25°C			0.1	mA
			T_{VJ} = 125°C		0.1		mA
I_{GES}	gate emitter leakage current	V_{GE} = ±20 V				500	nA
$Q_{G(on)}$	total gate charge	V_{CE} = 600 V; V_{GE} = 15 V; I_C = 50 A			190		nC
$t_{d(on)}$	turn-on delay time				70		ns
t_r	current rise time				40		ns
$t_{d(off)}$	turn-off delay time	inductive load	T_{VJ} = 125°C		250		ns
t_f	current fall time	V_{CE} = 600V; I_C = 50A			100		ns
E_{on}	turn-on energy per pulse	V_{GE} = ±15 V; R_G = 15 Ω			4.5		mJ
E_{off}	turn-off energy per pulse				5.5		mJ
RBSOA	reverse bias safe operating area	V_{GE} = ±15 V; R_G = 15 Ω	T_{VJ} = 125°C				
I_{CM}		V_{CEmax} = 1200V				150	A
SCSOA	short circuit safe operating area	V_{CEmax} = 1200 V					
t_{SC}	short circuit duration	V_{CE} = 900 V; V_{GE} = ±15 V	T_{VJ} = 125°C			10	µs
I_{SC}	short circuit current	R_G = 15 Ω; non-repetitive			200		A
R_{thJC}	thermal resistance junction to case					0.43	K/W
R_{thCH}	thermal resistance case to heatsink				0.10		K/W

Diode

Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RRM}	max. repetitive reverse voltage		T_{VJ} = 25°C			1200	V
I_{F25}	forward current	T_C = 25°C				85	A
I_{F80}		T_C = 80°C				51	A
V_F	forward voltage	I_F = 60A	T_{VJ} = 25°C			2.20	V
			T_{VJ} = 125°C		1.95		V
I_R	reverse current	V_R = V_{RRM}	T_{VJ} = 25°C			*	mA
	* not applicable, see Ices at IGBT		T_{VJ} = 125°C		*		mA
Q_{rr}	reverse recovery charge	V_R = 600 V			8		µC
I_{RM}	max. reverse recovery current	-di$_F$/dt = E+03 A/µs	T_{VJ} = 125°C		60		A
t_{rr}	reverse recovery time	I_F = 60A; V_{GE} = 0 V			350		ns
E_{rec}	reverse recovery energy				2.5		mJ
R_{thJC}	thermal resistance junction to case					0.6	K/W
R_{thCH}	thermal resistance case to heatsink				0.10		K/W

Data according to IEC 60747and per semiconductor unless otherwise specified

20140708a

Symbol	Definition	Conditions		min.	typ.	max.	Unit
Package	**SOT-227B (minibloc)**					**Ratings**	
I_{RMS}	RMS current	per terminal [1]				150	A
T_{VJ}	virtual junction temperature			-40		150	°C
T_{op}	operation temperature			-40		125	°C
T_{stg}	storage temperature			-40		150	°C
Weight					30		g
M_D	mounting torque				1.1	1.5	Nm
M_T	terminal torque				1.1	1.5	Nm
$d_{Spp/App}$	creepage distance on surface | striking distance through air	terminal to terminal	10.5	3.2			mm
$d_{Spb/Apb}$		terminal to backside	8.6	6.8			mm
V_{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000			V
		t = 1 minute		2500			V

[1] I_{RMS} is typically limited by the pin-to-chip resistance (1); or by the current capability of the chip (2). In case of (1) and a product with multiple pins for one chip-potential, the current capability can be increased by connecting the pins as one contact.

Product Marking

Logo → IXYS XXXXX ®RU — Part No.

Zyyww — Assembly Line DateCode

abcd — Assembly Code
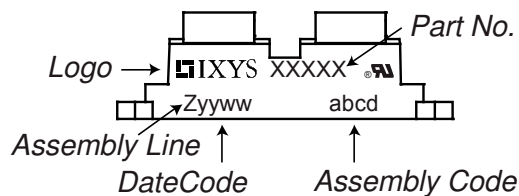
Part description

I	=	IGBT
X	=	XPT IGBT
A	=	Gen 1 / std
60	=	Current Rating [A]
IF	=	Copack
1200	=	Reverse Voltage [V]
NA	=	SOT-227B (minibloc)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	IXA60IF1200NA	IXA60IF1200NA	Tube	10	508765

Similar Part	Package	Voltage class
IXA70I1200NA	SOT-227B (minibloc)	1200

Equivalent Circuits for Simulation
on die level T_{VJ} = 150 °C

I → (V₀) → [R₀]
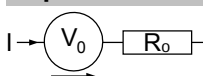
		IGBT	Diode	
$V_{0\,max}$	threshold voltage	1.1	1.25	V
$R_{0\,max}$	slope resistance *	28	14.2	mΩ

Outlines   SOT-227B (minibloc)

Nut M4 DIN 934
Lens Head
Screw M4x8
DIN 7985
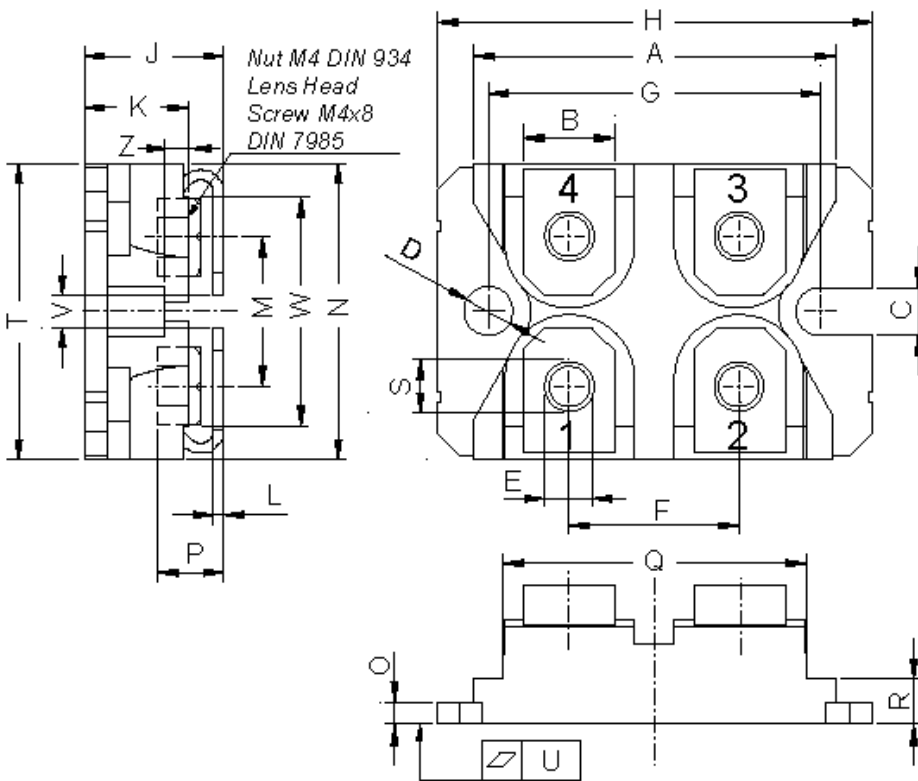
Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
O	1.95	2.13	0.077	0.084
P	4.95	6.20	0.195	0.244
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.167
S	4.55	4.85	0.179	0.191
T	24.59	25.25	0.968	0.994
U	-0.05	0.10	-0.002	0.004
V	3.20	5.50	0.126	0.217
W	19.81	21.08	0.780	0.830
Z	2.50	2.70	0.098	0.106

C (3)

(G) 2

E (1+4)

IXYS
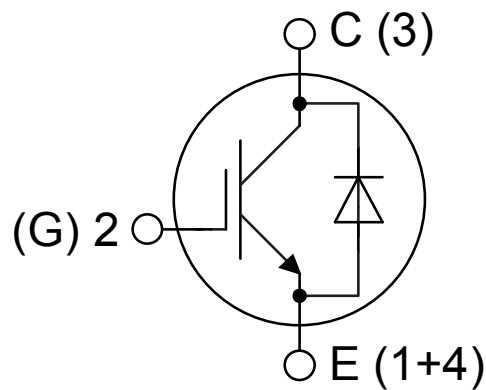
IGBT
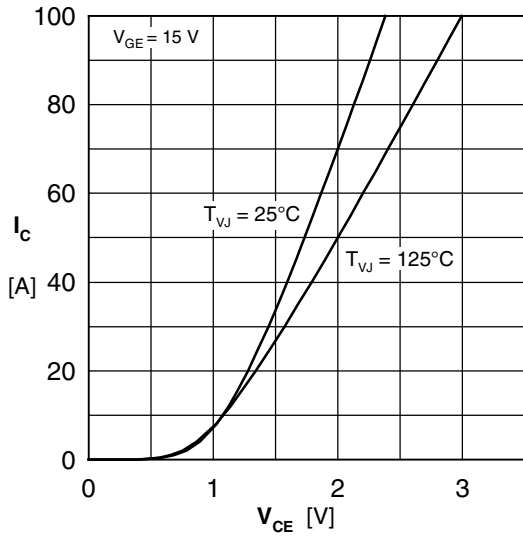
Fig. 1 Typ. output characteristics
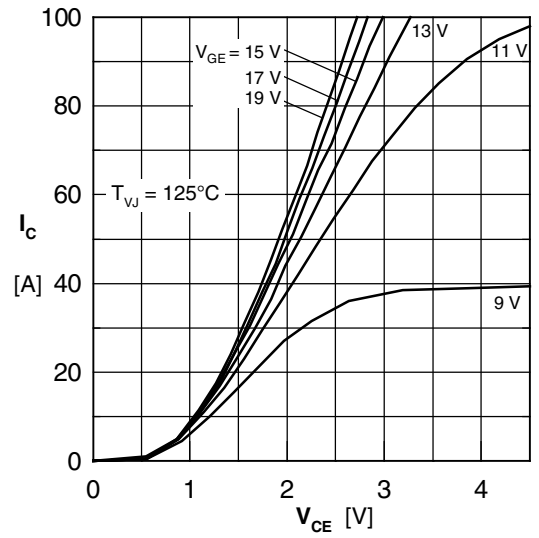
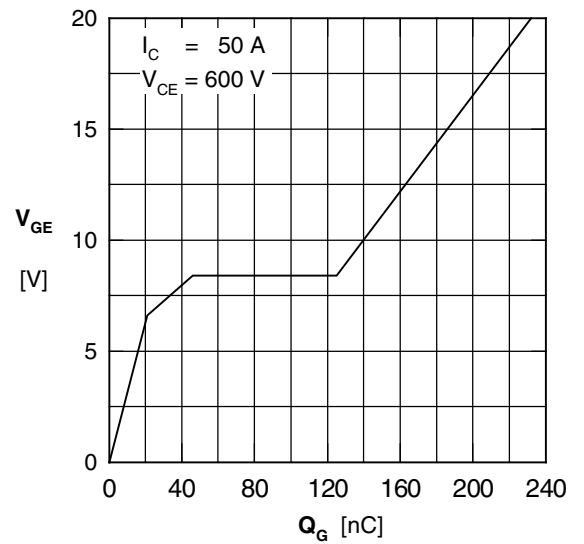Fig. 2 Typ. output characteristics
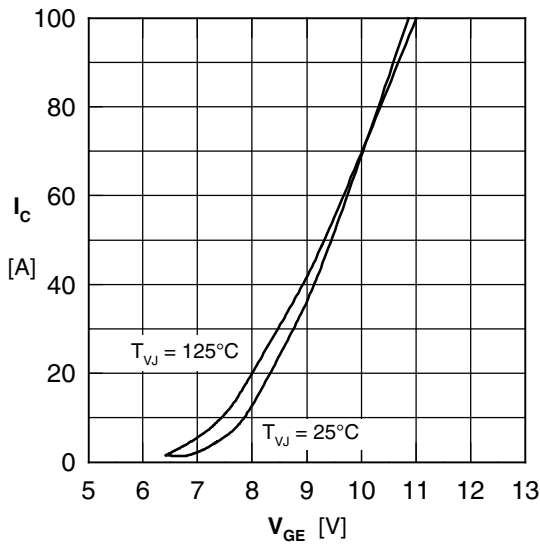
Fig. 3 Typ. tranfer characteristics

Fig. 4 Typ. turn-on gate charge
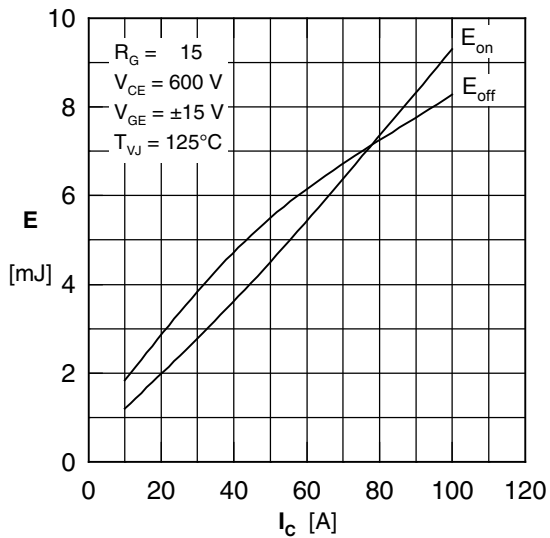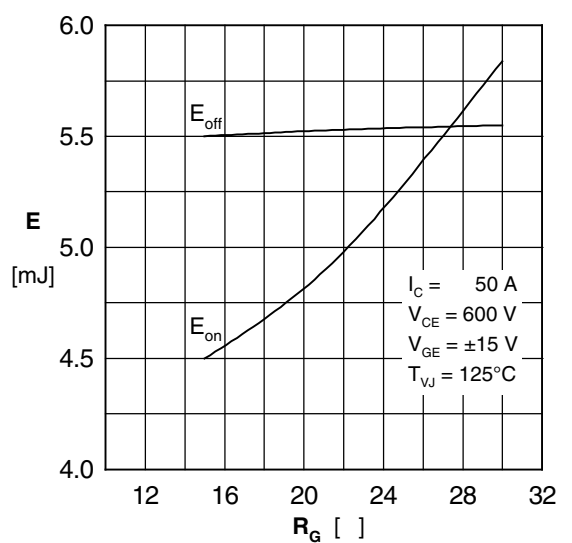

Fig. 5 Typ. switching energy vs. collector current
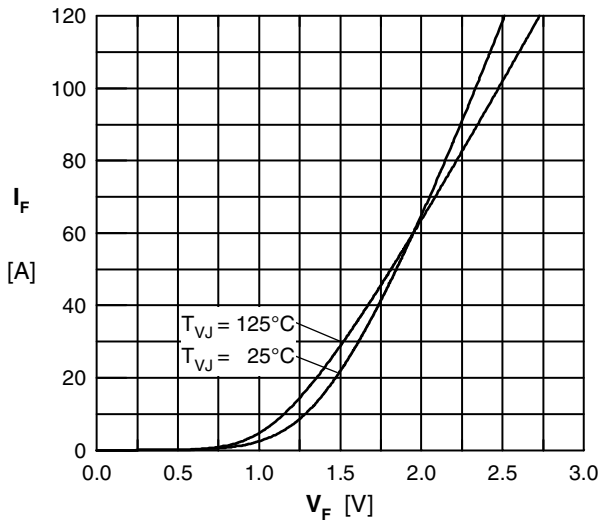

Fig. 6 Typ. switching energy vs. gate resistance

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Diode

Fig. 7 Typ. Forward current versus V_F
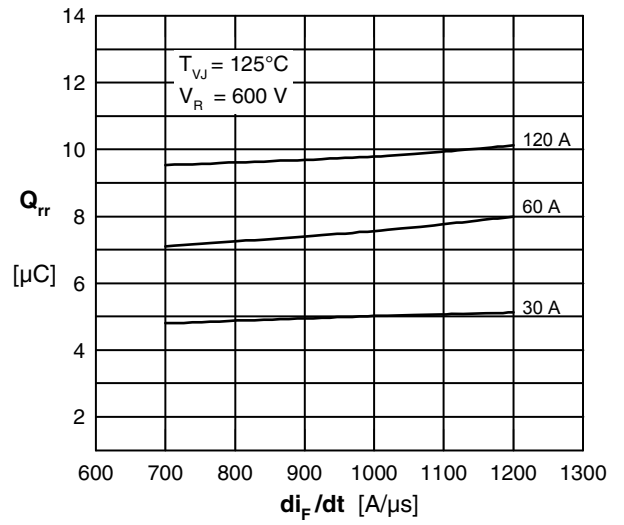
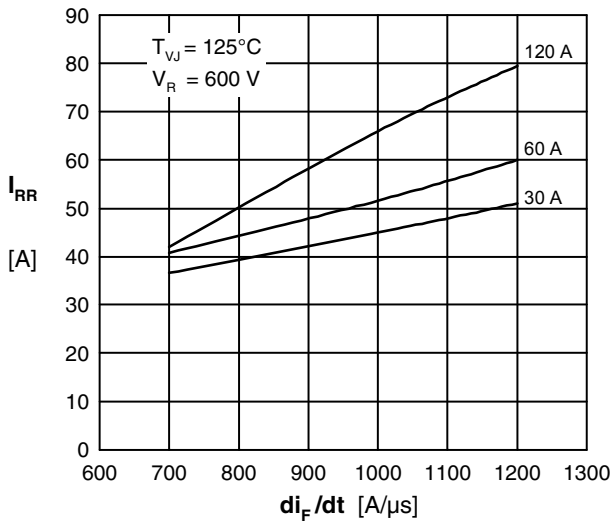Fig. 8 Typ. reverse recov.charge Q_{rr} vs. di/dt

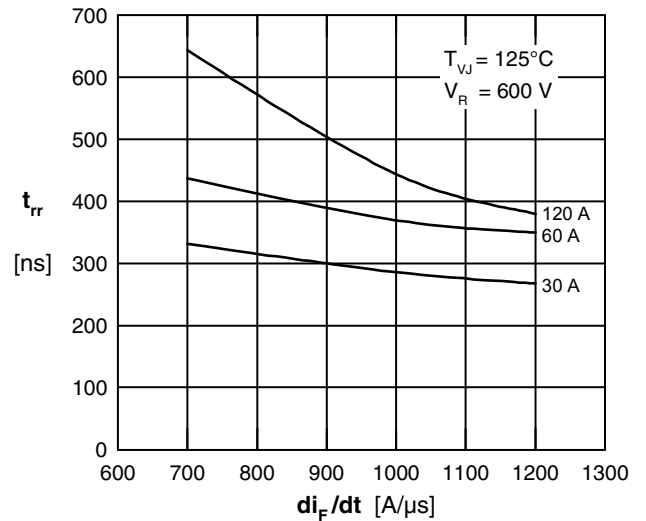Fig. 9 Typ. peak reverse current I_{RM} vs. di/dt
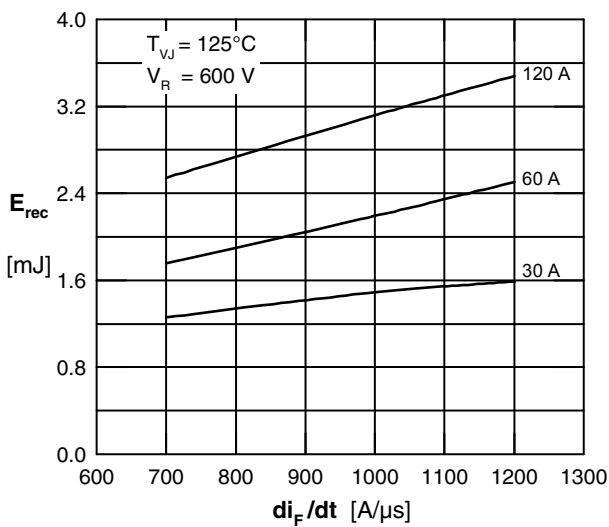

Fig. 10 Typ. recovery time t_{rr} versus di/dt
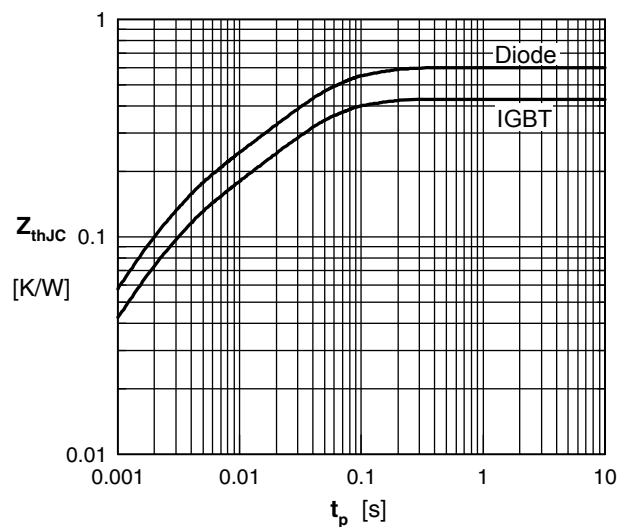

Fig. 11 Typ. recovery energy E_{rec} versus di/dt

Fig. 12 Typ. transient thermal impedance

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