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

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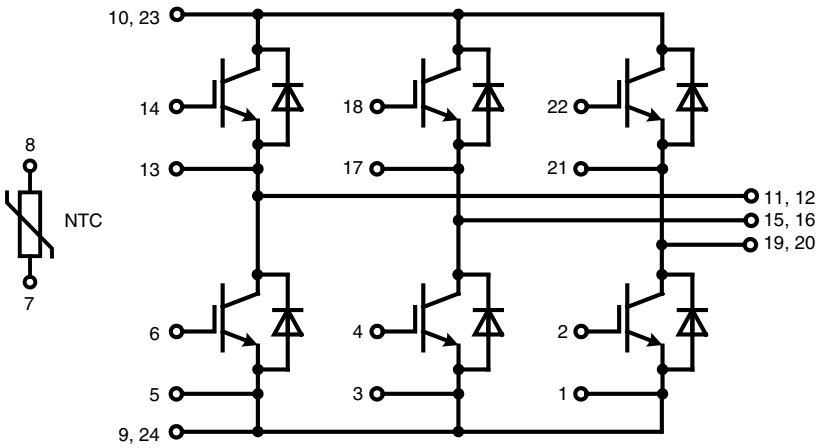
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

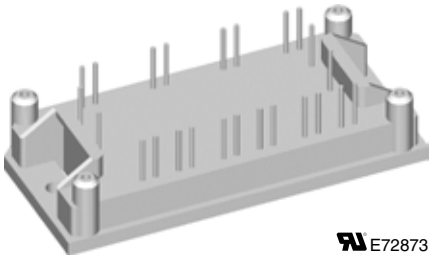
Six-Pack
XPT IGBT

V_{CES} = 1200 V
I_{C25} = 17 A
$V_{CE(sat)}$ = 1.8 V

Part name (Marking on product)

MIXA10W1200TML





Pin configuration see outlines.

Features:

- High level of integration
- Rugged XPT design
  (Xtreme light Punch Through) results in:
  - short circuit rated for 10 µsec.
  - very low gate charge
  - square RBSOA @ 3x I_C
  - low EMI
- Thin wafer technology combined with the XPT design results in a competitive low $V_{CE(sat)}$
- Temperature sense included
- SONIC™ diode
  - fast and soft reverse recovery
  - low operating forward voltage

Application:

- AC motor drives
- Pumps, Fans
- Washing machines
- Air-conditioning system
- Inverter and power supplies

Package:

- E1 package
- Assembly height is 17.1 mm
- Insulated base plate
- Pins suitable for wave soldering and PCB mounting
- UL registered E72873

Ouput Inverter T1 - T6

Symbol	Definitions	Conditions		Ratings min.	typ.	max.	Unit
V_{CES}	*collector emitter voltage*		T_{VJ} = 25°C			1200	V
V_{GES}	*max. DC gate voltage*	continuous				±20	V
V_{GEM}	*max. transient collector gate voltage*	transient				±30	V
I_{C25}	*collector current*		T_C = 25°C			17	A
I_{C80}			T_C = 80°C			12	A
P_{tot}	*total power dissipation*		T_C = 25°C			65	W
$V_{CE(sat)}$	*collector emitter saturation voltage*	I_C = 9 A; 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 = 0.3 mA; 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		0.02	0.15	mA
			T_{VJ} = 125°C		0.3		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 = 10 A			27		nC
$t_{d(on)}$	*turn-on delay time*	inductive load V_{CE} = 600 V; I_C = 10 A V_{GE} = ±15 V; R_G = 100 Ω	T_{VJ} = 125°C		70		ns
t_r	*current rise time*				40		ns
$t_{d(off)}$	*turn-off delay time*				250		ns
t_f	*current fall time*				100		ns
E_{on}	*turn-on energy per pulse*				1.1		mJ
E_{off}	*turn-off energy per pulse*				1.1		mJ
RBSOA	*reverse bias safe operating area*	V_{GE} = ±15 V; R_G = 100 Ω; V_{CEK} = 1200 V	T_{VJ} = 125°C			30	A
I_{SC} **(SCSOA)**	*short circuit safe operating area*	V_{CE} = 900 V; V_{GE} = ±15 V; R_G = 100 Ω; t_p = 10 µs; non-repetitive	T_{VJ} = 125°C		40		A
R_{thJC}	*thermal resistance junction to case*	(per IGBT)				2.0	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.7		K/W

Output Inverter D1 - D6

Symbol	Definitions	Conditions		Ratings min.	typ.	max.	Unit
V_{RRM}	*max. repetitve reverse voltage*		T_{VJ} = 25°C			1200	V
I_{F25}	*forward current*		T_C = 25°C			19	A
I_{F80}			T_C = 80°C			13	A
V_F	*forward voltage*	I_F = 10 A; V_{GE} = 0 V	T_{VJ} = 25°C		1.95	2.2	V
			T_{VJ} = 125°C		1.95		V
Q_{rr}	*reverse recovery charge*	V_R = 600 V di_F/dt = -250 A/µs I_F = 10 A; V_{GE} = 0 V	T_{VJ} = 125°C		1.3		µC
I_{RM}	*max. reverse recovery current*				10.5		A
t_{rr}	*reverse recovery time*				350		ns
E_{rec}	*reverse recovery energy*				0.35		mJ
R_{thJC}	*thermal resistance junction to case*	(per diode)				2.4	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.8		K/W

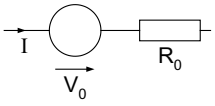
Module

Symbol	Definitions	Conditions	Ratings min.	typ.	max.	Unit
T_{VJ}	*operating temperature*		-40		125	°C
T_{VJM}	*max. virtual junction temperature*				150	°C
T_{stg}	*storage temperature*		-40		125	°C
V_{ISOL}	*isolation voltage*	$I_{ISOL} \leq 1$ mA; 50/60 Hz			2500	V~
CTI	*comparative tracking index*				-	
F_C	*mounting force*		40		80	N
d_S	*creep distance on surface*		12.7			mm
d_A	*strike distance through air*		12.7			mm
Weight				40		g

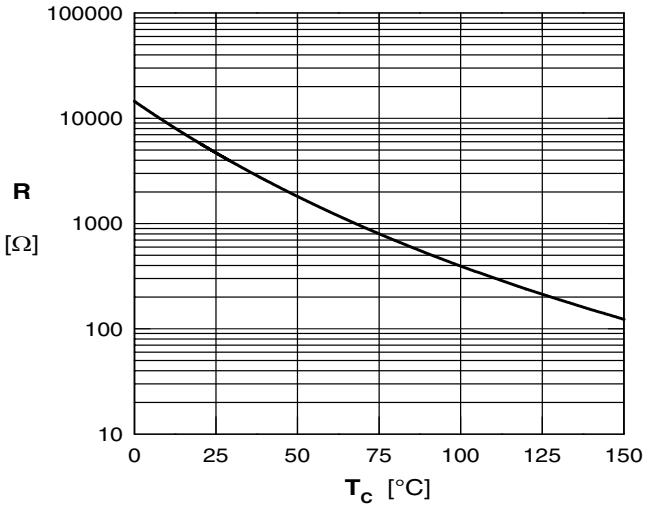
Temperature Sensor NTC

Symbol	Definitions	Conditions	Ratings min.	typ.	max.	Unit
R_{25}	*resistance*	T_C = 25°C	4.75	5.0	5.25	kΩ
$B_{25/50}$				3375		K

Equivalent Circuits for Simulation

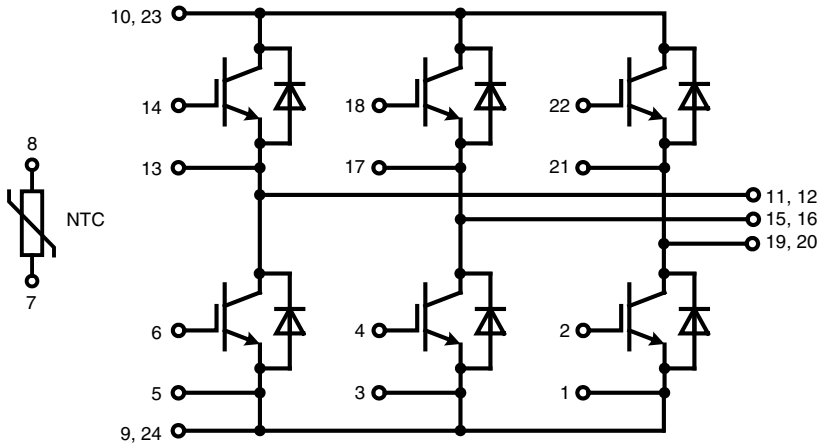


Symbol	Definitions	Conditions	Ratings min.	typ.	max.	Unit
V_0	*IGBT*	T_{VJ} = 150°C		1.1		V
R_0				153		mΩ
V_0	*Diode*	T_{VJ} = 150°C		1.25		V
R_0				85		mΩ



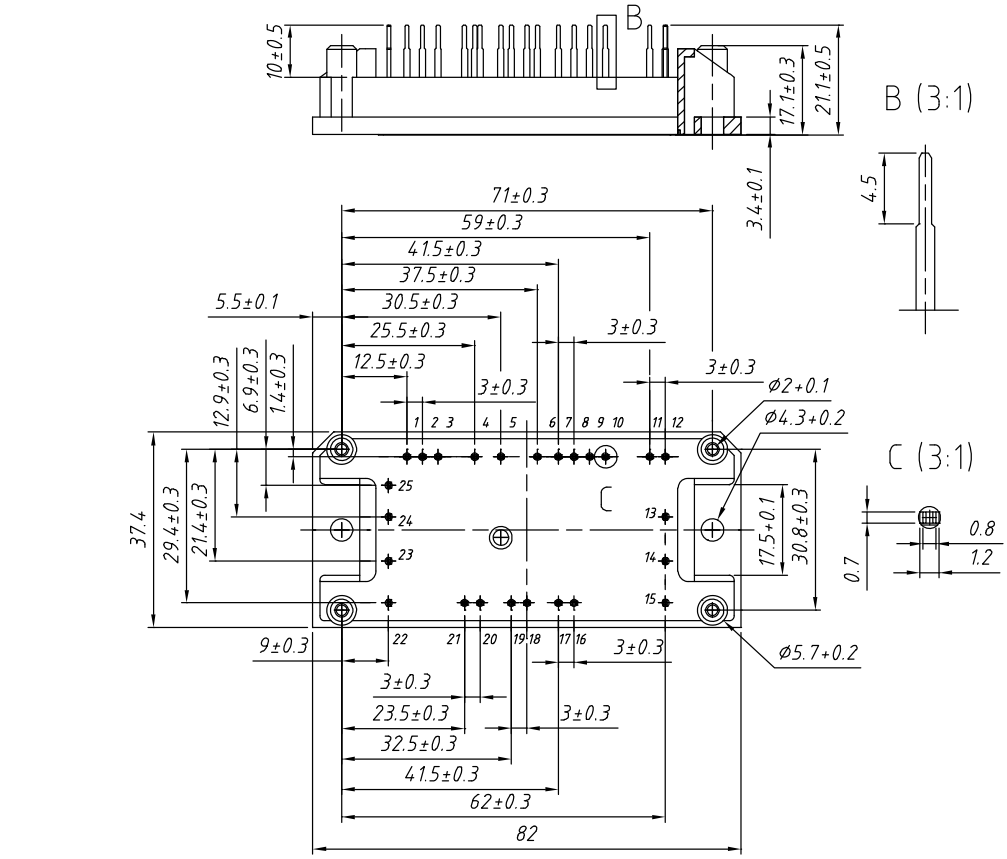
Typ. NTC resistance versus temperature

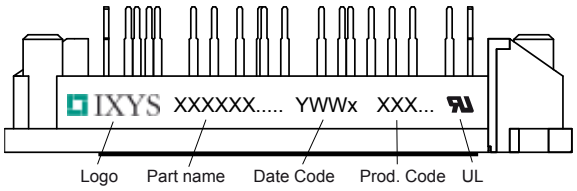
Circuit Diagram



Outline Drawing

Dimensions in mm (1 mm = 0.0394“)





Part number

M = Module
I = IGBT
X = XPT
A = standard
10 = Current Rating [A]
W = 6-Pack
1200 = Reverse Voltage [V]
T = NTC
ML = E1-Pack

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MIXA 10 W 1200 TML	MIXA10W1200TML	Box	10	510155

IXYS reserves the right to change limits, test conditions and dimensions.

20110223b

IGBT T1 - T6

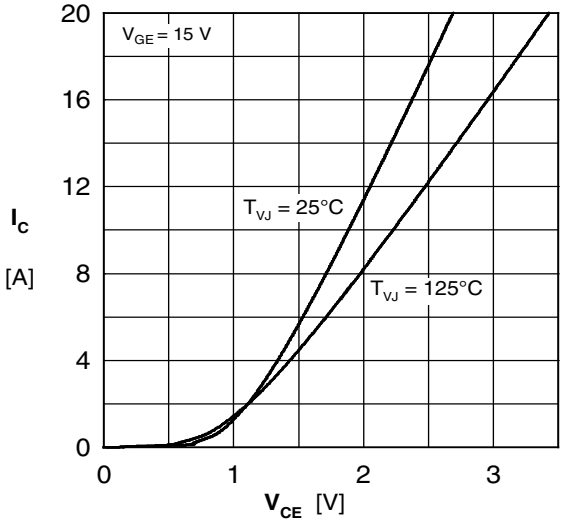


Fig. 1 Typ. output characteristics

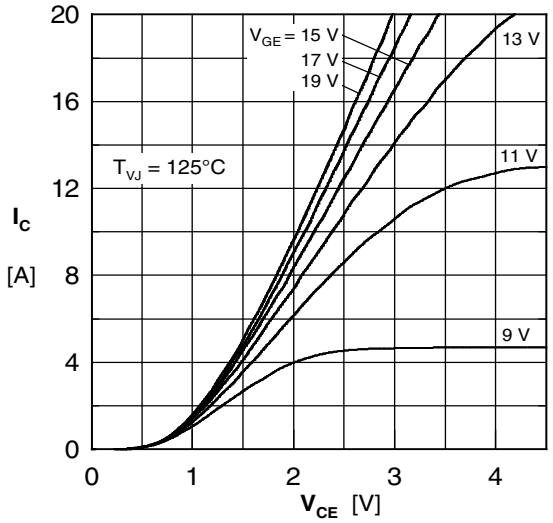


Fig. 2 Typ. output characteristics

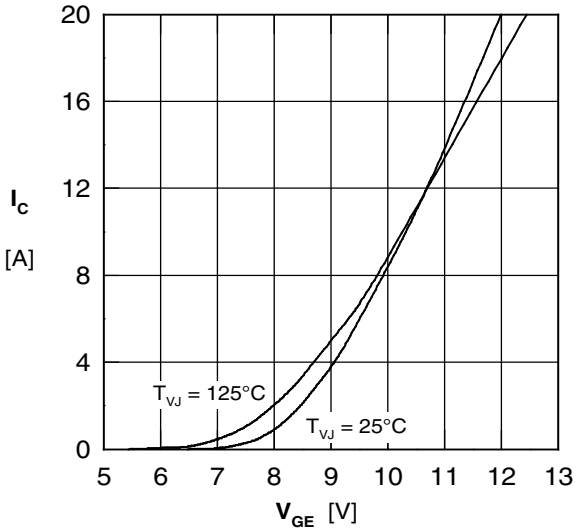


Fig. 3 Typ. tranfer characteristics

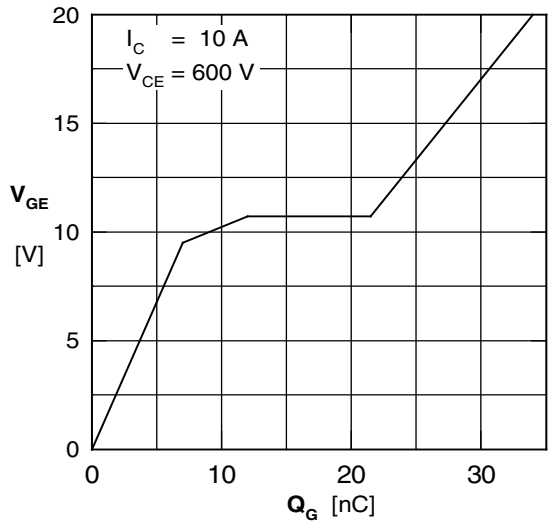


Fig. 4 Typ. turn-on gate charge

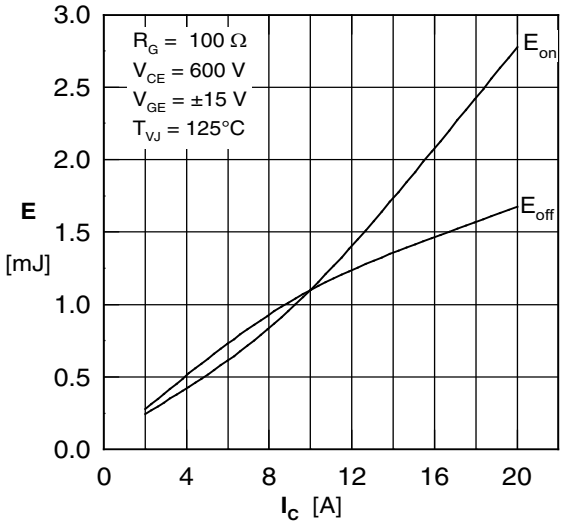


Fig. 5 Typ. switching energy vs. collector current

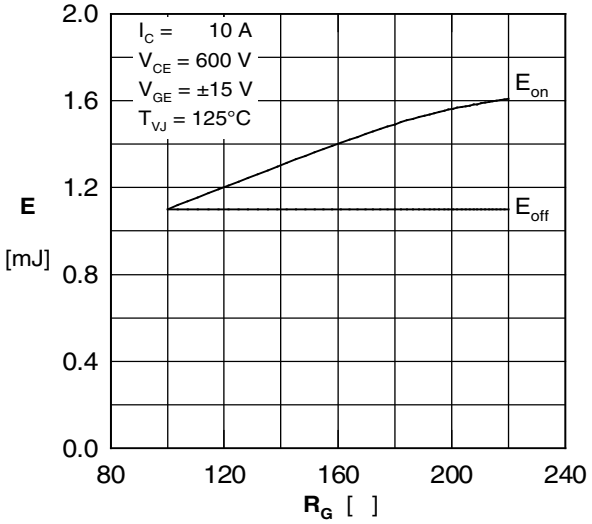


Fig. 6 Typ. switching energy vs. gate resistance

Diode D1 - D6

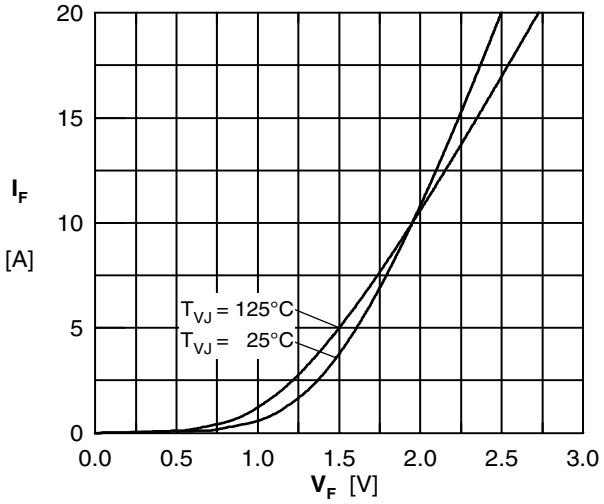


Fig. 7 Typ. forward characteristics

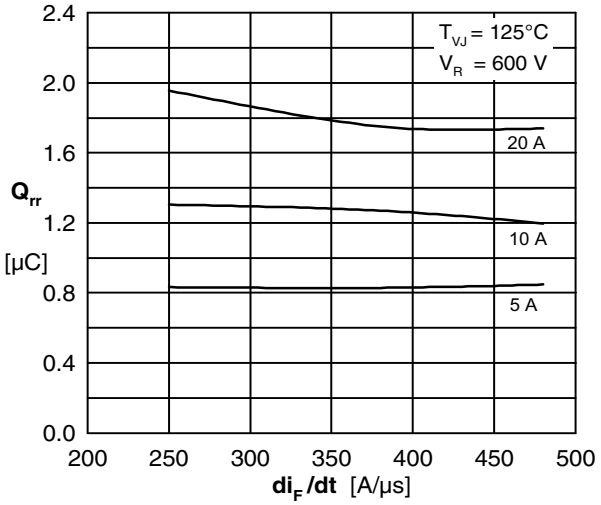


Fig. 8 Typical reverse recovery charge Q_{rr} versus. di_F/dt (125°C)

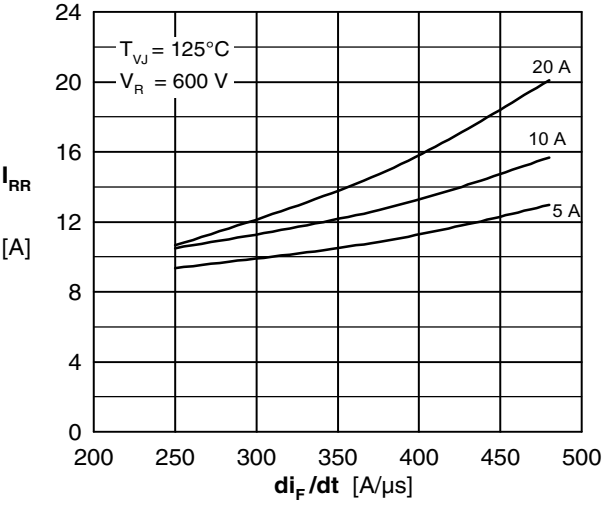


Fig. 9 Typical peak reverse current I_{RR} versus di_F/dt (125°C)

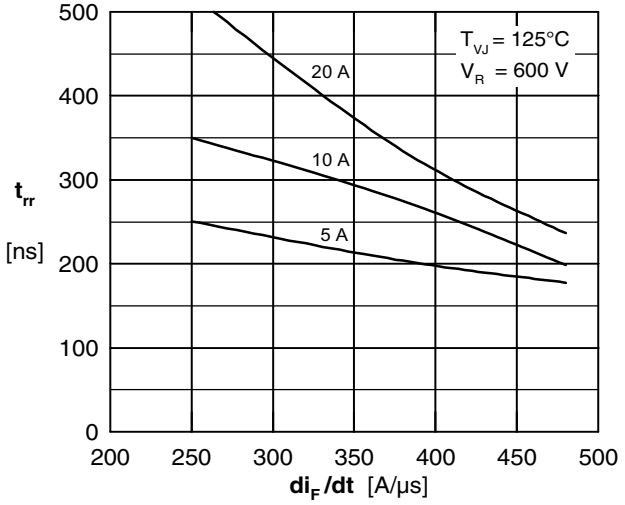


Fig. 10 Typ. recovery time t_{rr} vs. di/dt (125°C)

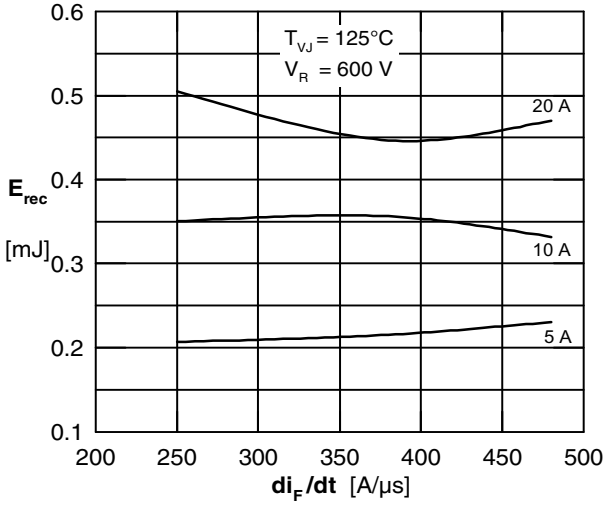
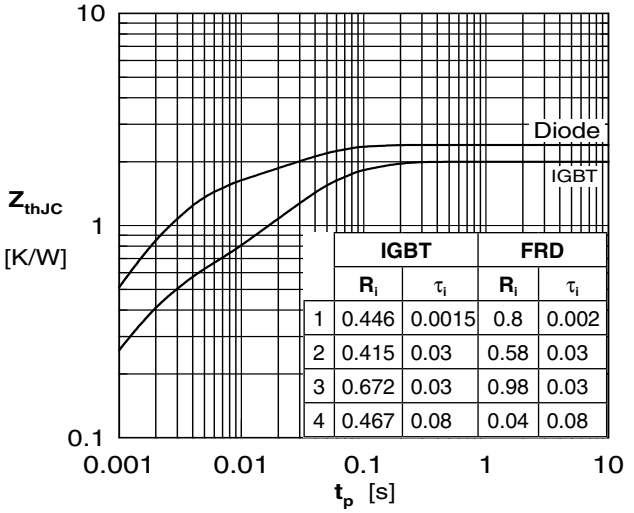


Fig. 11 Typ. recovery energy E_{rec} vs. di_F/dt (125°C)



	IGBT		FRD	
	R_i	τ_i	R_i	τ_i
1	0.446	0.0015	0.8	0.002
2	0.415	0.03	0.58	0.03
3	0.672	0.03	0.98	0.03
4	0.467	0.08	0.04	0.08

Fig. 12 Transient thermal impedance