



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

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

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

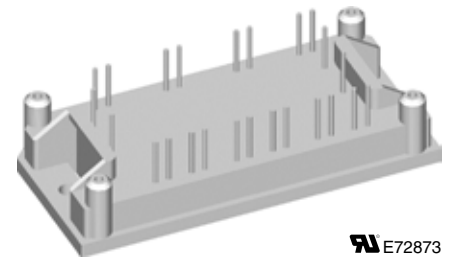
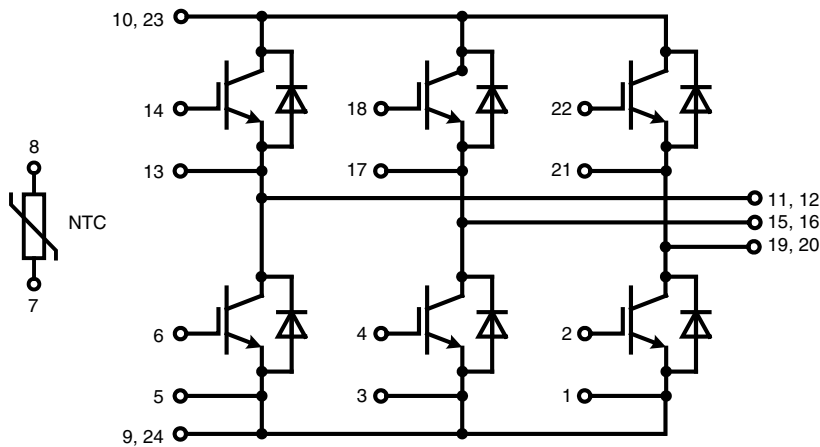


# Six-Pack XPT IGBT

 $V_{CES} = 1200\text{ V}$ 
 $I_{C25} = 43\text{ A}$ 
 $V_{CE(sat)} = 1.8\text{ V}$ 

**Part name** (Marking on product)

MIXA30W1200TML



E72873

Pin configuration see outlines.

**Features:**

- High level of integration
- Rugged XPT design (Xtreme light Punch Through) results in:
  - short circuit rated for 10  $\mu\text{sec}$ .
  - 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**

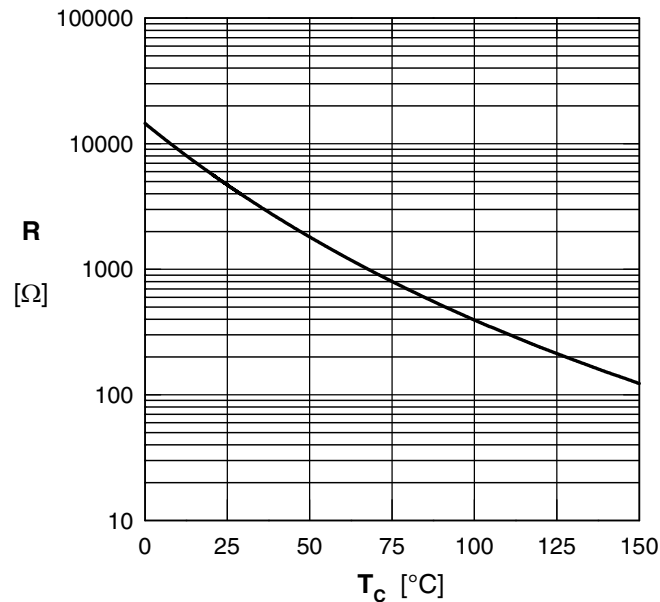
Symbol	Definitions	Conditions	Ratings			Unit	
			min.	typ.	max.		
$V_{CES}$	collector emitter voltage		$T_{VJ} = 25^{\circ}\text{C}$		1200	V	
$V_{GES}$	max. DC gate voltage	continuous			$\pm 20$	V	
$V_{GEM}$	max. transient collector gate voltage	transient			$\pm 30$	V	
$I_{C25}$	collector current		$T_C = 25^{\circ}\text{C}$		43	A	
$I_{C80}$			$T_C = 80^{\circ}\text{C}$		30	A	
$P_{tot}$	total power dissipation		$T_C = 25^{\circ}\text{C}$		150	W	
$V_{CE(sat)}$	collector emitter saturation voltage	$I_C = 25\text{ A}; V_{GE} = 15\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	1.8 2.1	2.1	V V	
$V_{GE(th)}$	gate emitter threshold voltage	$I_C = 1\text{ mA}; V_{GE} = V_{CE}$	$T_{VJ} = 25^{\circ}\text{C}$	5.4	5.9	6.5	V
$I_{CES}$	collector emitter leakage current	$V_{CE} = V_{CES}; V_{GE} = 0\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	0.02 0.3	0.15	mA mA	
$I_{GES}$	gate emitter leakage current	$V_{GE} = \pm 20\text{ V}$			500	nA	
$Q_{G(on)}$	total gate charge	$V_{CE} = 600\text{ V}; V_{GE} = 15\text{ V}; I_C = 25\text{ A}$			76	nC	
$t_{d(on)}$	turn-on delay time	inductive load $V_{CE} = 600\text{ V}; I_C = 25\text{ A}$ $V_{GE} = \pm 15\text{ V}; R_G = 39\ \Omega$	$T_{VJ} = 125^{\circ}\text{C}$		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				2.5	mJ	
$E_{off}$	turn-off energy per pulse				3.0	mJ	
<b>RBSOA</b>	reverse bias safe operating area	$V_{GE} = \pm 15\text{ V}; R_G = 39\ \Omega; V_{CEK} = 1200\text{ V}$	$T_{VJ} = 125^{\circ}\text{C}$		75	A	
<b><math>I_{SC}</math> (SCSOA)</b>	short circuit safe operating area	$V_{CE} = 900\text{ V}; V_{GE} = \pm 15\text{ V};$ $R_G = 39\ \Omega; t_p = 10\ \mu\text{s};$ non-repetitive	$T_{VJ} = 125^{\circ}\text{C}$		100	A	
$R_{thJC}$	thermal resistance junction to case	(per IGBT)			0.24	K/W	
$R_{thCH}$	thermal resistance case to heatsink				0.84	K/W	

**Diode D1 - D6**

Symbol	Definitions	Conditions	Ratings			Unit
			min.	typ.	max.	
$V_{RRM}$	max. repetitive reverse voltage		$T_{VJ} = 25^{\circ}\text{C}$		1200	V
$I_{F25}$	forward current		$T_C = 25^{\circ}\text{C}$		44	A
$I_{F80}$			$T_C = 80^{\circ}\text{C}$		29	A
$V_F$	forward voltage	$I_F = 30\text{ A}; V_{GE} = 0\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	1.95 1.95	2.2	V V
$Q_{rr}$	reverse recovery charge	$V_R = 600\text{ V}$ $di_F/dt = -600\text{ A}/\mu\text{s}$ $I_F = 30\text{ A}; V_{GE} = 0\text{ V}$	$T_{VJ} = 125^{\circ}\text{C}$		3.5	$\mu\text{C}$
$I_{RM}$	max. reverse recovery current				30	A
$t_{rr}$	reverse recovery time				350	ns
$E_{rec}$	reverse recovery energy				0.9	mJ
$R_{thJC}$	thermal resistance junction to case	(per diode)			0.4	K/W
$R_{thCH}$	thermal resistance case to heatsink				1.2	K/W

**Temperature Sensor NTC**

Symbol	Definitions	Conditions	Ratings			Unit
			min.	typ.	max.	
$R_{25}$	resistance	$T_C = 25^\circ\text{C}$	4.75	5.0	5.25	k $\Omega$
$B_{25/50}$				3375		K

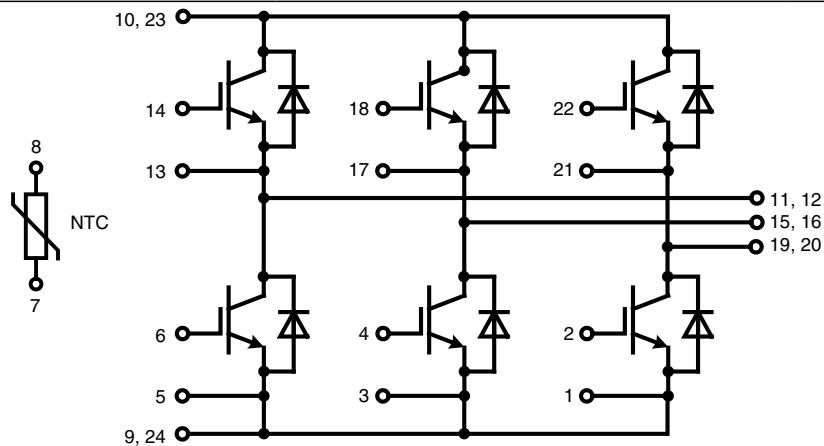


Typ. NTC resistance vs. temperature

**Module**

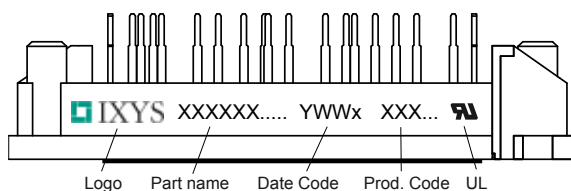
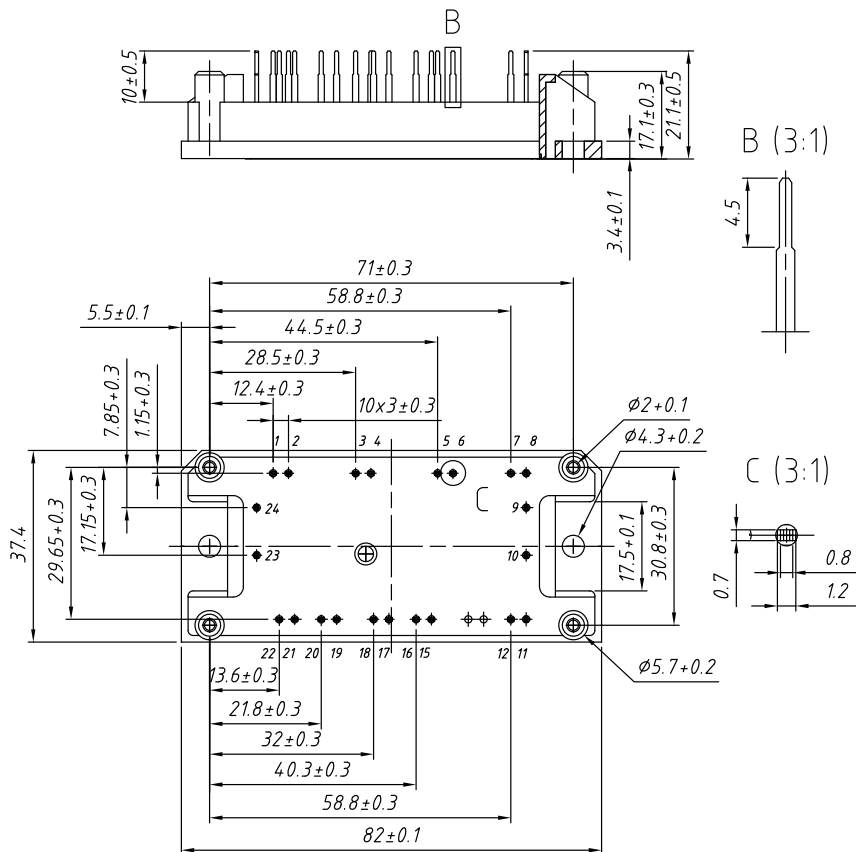
Symbol	Definitions	Conditions	Ratings			Unit
			min.	typ.	max.	
$T_{VJ}$	operating temperature		-40		125	$^\circ\text{C}$
$T_{VJM}$	max. virtual junction temperature				150	$^\circ\text{C}$
$T_{stg}$	storage temperature		-40		125	$^\circ\text{C}$
$V_{ISOL}$	isolation voltage	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$			2500	V~
<b>CTI</b>	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
<b>Weight</b>				40		g

### Circuit Diagram



### Outline Drawing

Dimensions in mm (1 mm = 0.0394")



#### Part number

- M = Module
- I = IGBT
- X = XPT
- A = standard
- 30 = 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 30 W 1200 TML	MIXA30W1200TML	Box	10	510798

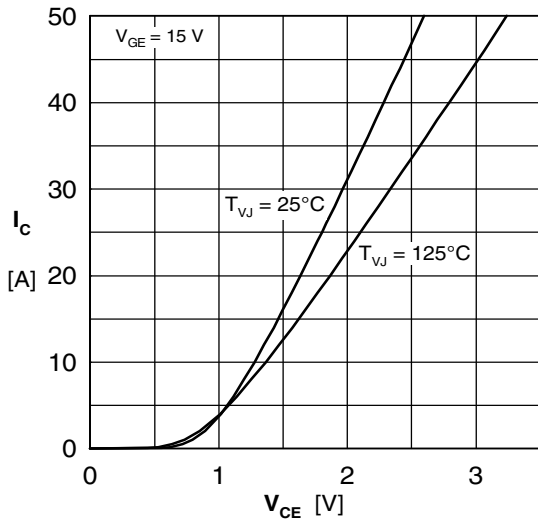
**IGBT T1 - T6**


Fig. 1 Typ. output characteristics

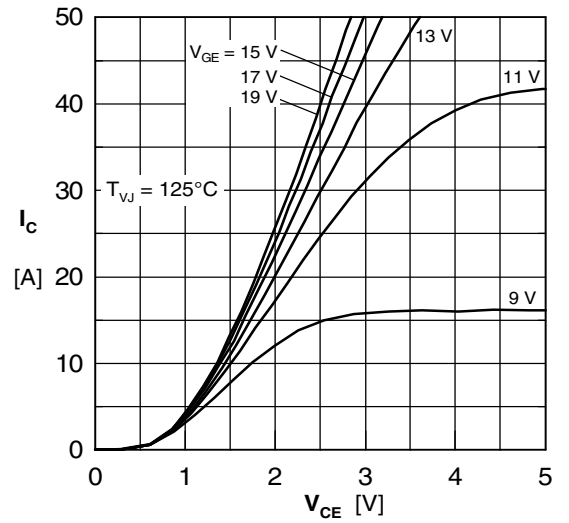


Fig. 2 Typ. output characteristics

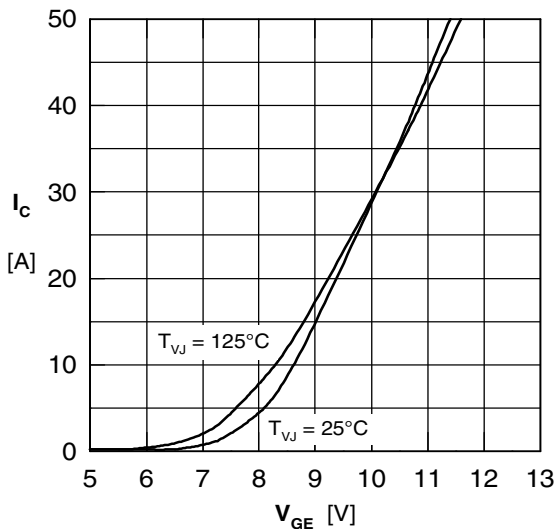


Fig. 3 Typ. transfer characteristics

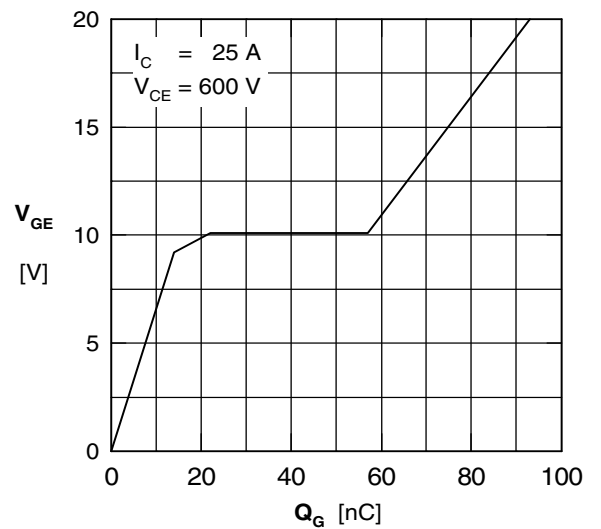


Fig. 4 Typ. turn-on gate charge

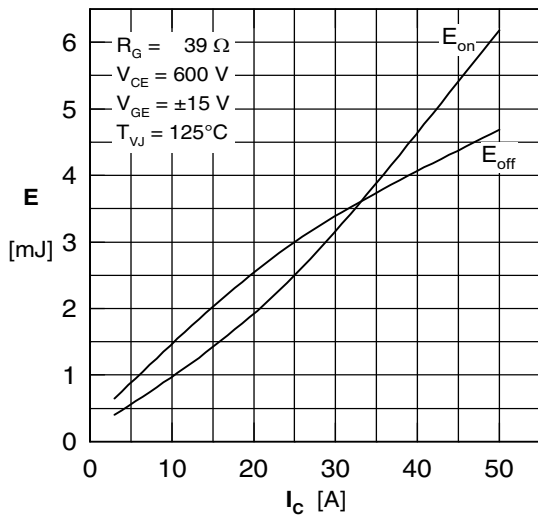


Fig. 5 Typ. switching energy vs. collector current

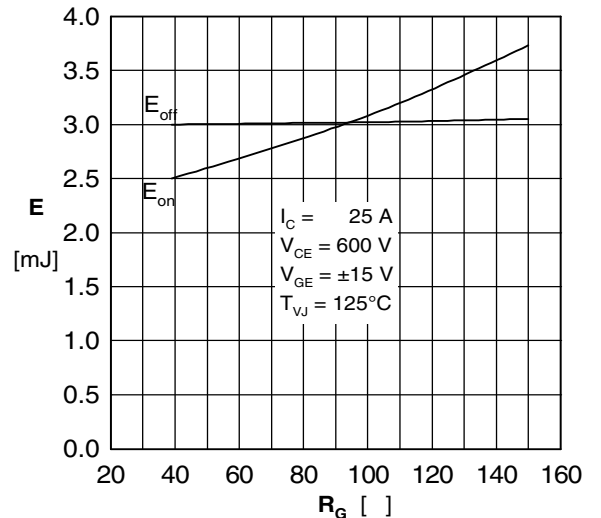


Fig. 6 Typ. switching energy vs. gate resistance

## Diode D1 - D6

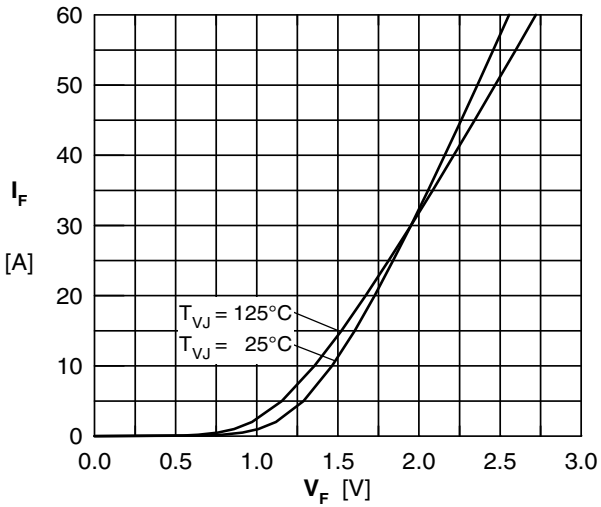


Fig. 7 Typ. Forward current versus  $V_F$

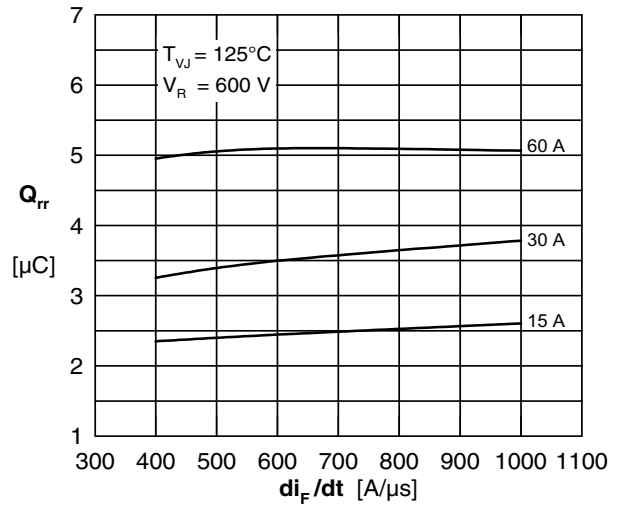


Fig. 8 Typ. reverse recov.charge  $Q_{rr}$  vs.  $di/dt$

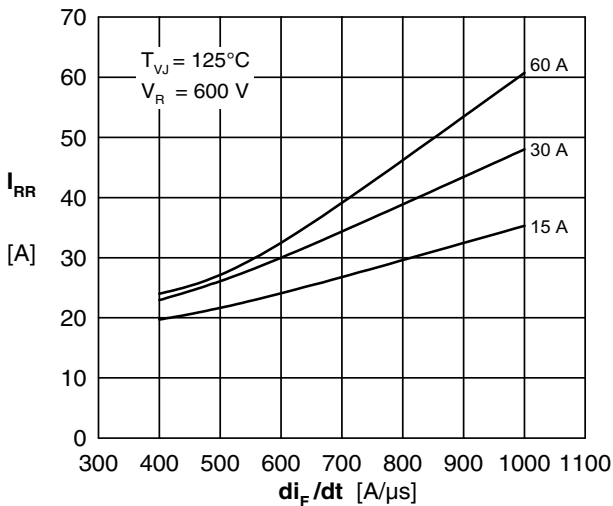


Fig. 9 Typ. peak reverse current  $I_{RRM}$  vs.  $di/dt$

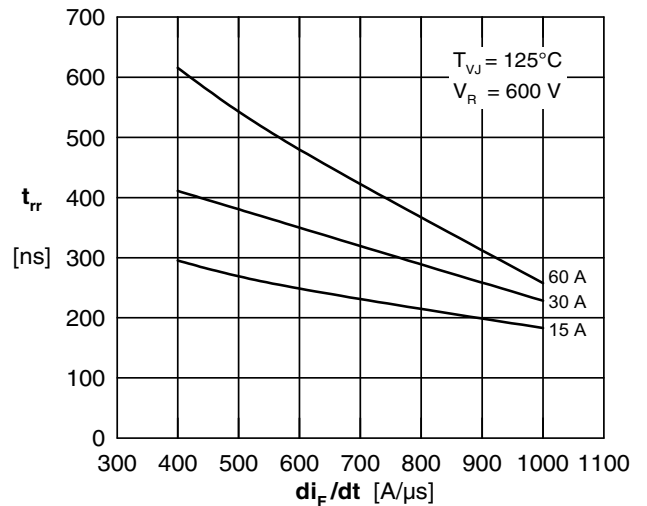


Fig. 10 Typ. recovery time  $t_{rr}$  versus  $di/dt$

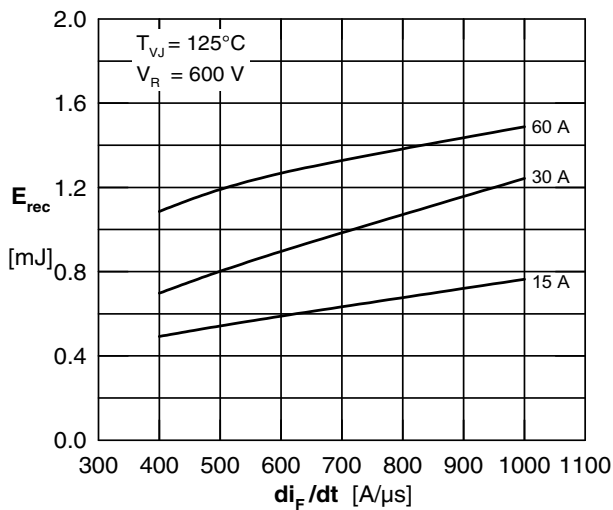


Fig. 11 Typ. recovery energy  $E_{rec}$  versus  $di/dt$

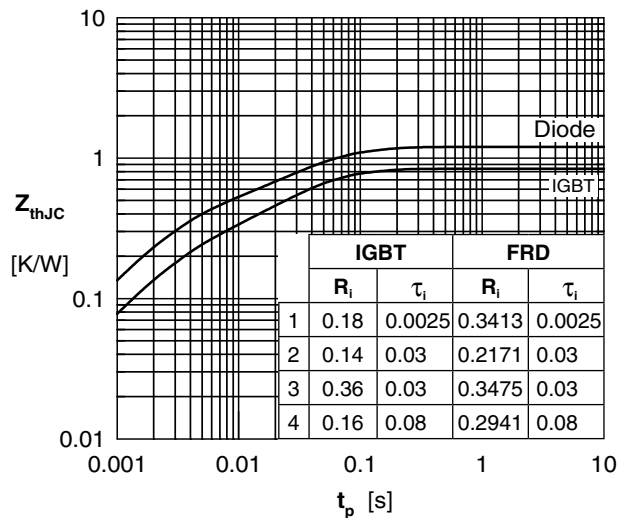


Fig. 12 Typ. transient thermal impedance