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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!



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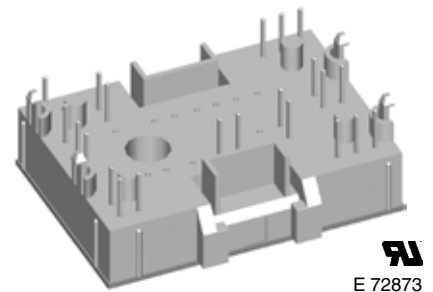
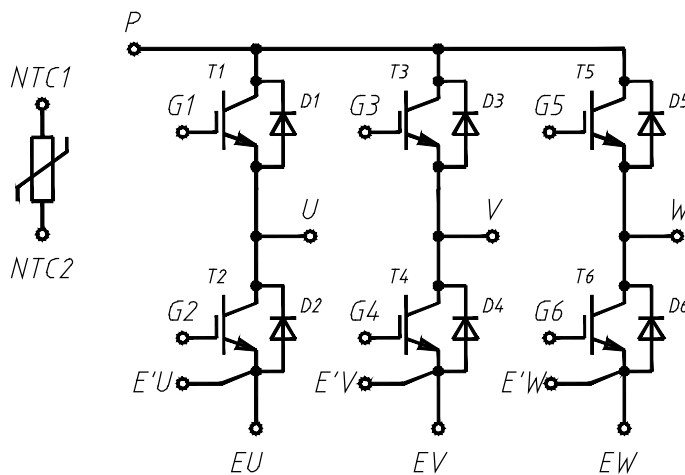


Six-Pack XPT IGBT

 $V_{CES} = 1200\text{ V}$
 $I_{C25} = 60\text{ A}$
 $V_{CE(sat)} = 1.8\text{ V}$

Part name (Marking on product)

MIXA40W1200TMH



Pin configuration see outlines.

Features:

- High level of integration - only one power semiconductor module required for the whole drive
- Rugged XPT design (Xtreme light Punch Through) results in:
 - short circuit rated for 10 μsec .
 - very low gate charge
 - square RBSOA @ $3 \times I_c$
 - 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:

- "Mini" package
- Assembly height is 17 mm
- Insulated base plate
- Pins suitable for wave soldering and PCB mounting
- Assembly clips available
 - IXKU 5-505 screw clamp
 - IXRB 5-506 click clamp
- UL registered E72873

Output Inverter T1 - T6

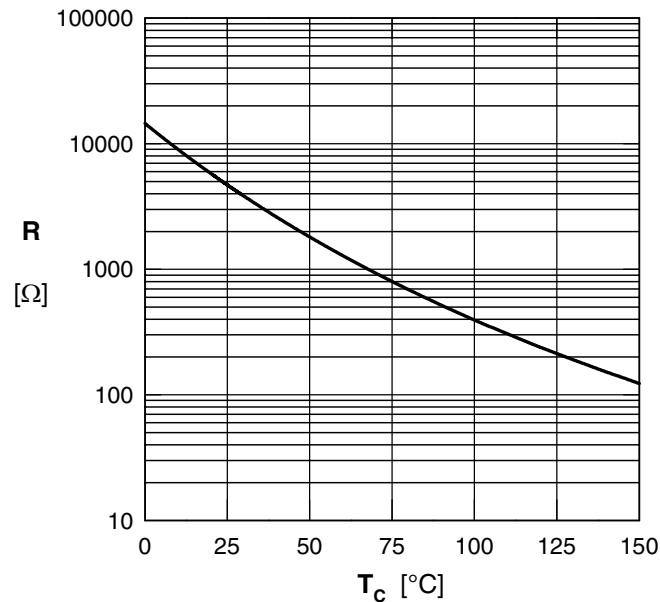
Symbol	Definitions	Conditions	Ratings			Unit	
			min.	typ.	max.		
V_{CES}	collector emitter voltage		$T_{VJ} = 25^{\circ}\text{C}$		1200	V	
V_{GES}	max. DC gate voltage	continuous			± 20	V	
V_{GEM}	max. transient collector gate voltage	transient			± 30	V	
I_{C25}	collector current		$T_C = 25^{\circ}\text{C}$		60	A	
I_{C80}			$T_C = 80^{\circ}\text{C}$		40	A	
P_{tot}	total power dissipation		$T_C = 25^{\circ}\text{C}$		195	W	
$V_{CE(sat)}$	collector emitter saturation voltage	$I_C = 35\text{ A}; V_{GE} = 15\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	1.8 2.1	2.1	V V	
$V_{GE(th)}$	gate emitter threshold voltage	$I_C = 1.5\text{ mA}; V_{GE} = V_{CE}$	$T_{VJ} = 25^{\circ}\text{C}$	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	$V_{CE} = 600\text{ V}; V_{GE} = 15\text{ V}; I_C = 35\text{ A}$			106	nC	
$t_{d(on)}$	turn-on delay time	inductive load $V_{CE} = 600\text{ V}; I_C = 35\text{ A}$ $V_{GE} = \pm 15\text{ V}; R_G = 27\ \Omega$	$T_{VJ} = 125^{\circ}\text{C}$		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				3.8	mJ	
E_{off}	turn-off energy per pulse				4.1	mJ	
RBSOA	reverse bias safe operating area	$V_{GE} = \pm 15\text{ V}; R_G = 27\ \Omega; V_{CEK} = 1200\text{ V}$	$T_{VJ} = 125^{\circ}\text{C}$		105	A	
I_{SC} (SCSOA)	short circuit safe operating area	$V_{CE} = 900\text{ V}; V_{GE} = \pm 15\text{ V};$ $R_G = 27\ \Omega; t_p = 10\ \mu\text{s};$ non-repetitive	$T_{VJ} = 125^{\circ}\text{C}$		140	A	
R_{thJC}	thermal resistance junction to case	(per IGBT)			0.21	K/W	
R_{thCH}	thermal resistance case to heatsink				0.64	K/W	

Output Inverter 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	μC
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 Ω
$B_{25/50}$				3375		K

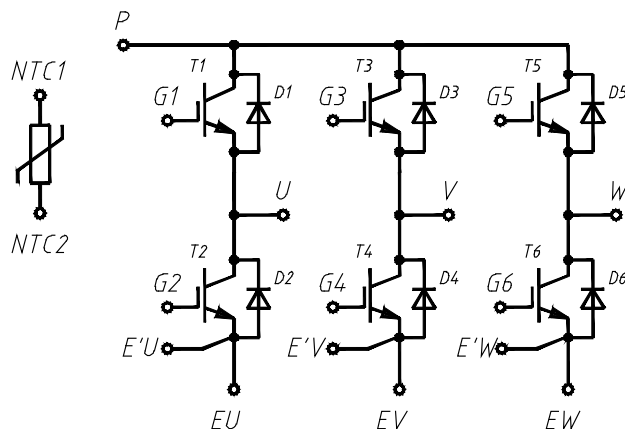


Typ. NTC resistance vs. temperature

Module

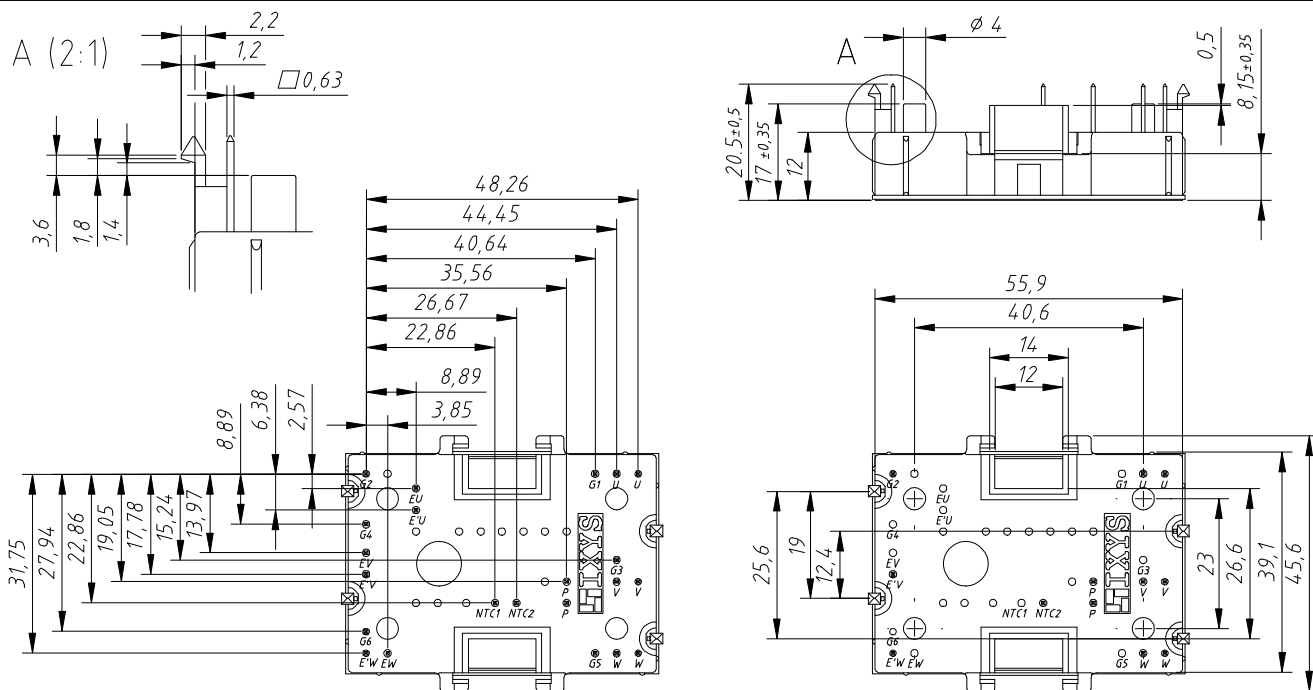
Symbol	Definitions	Conditions	Ratings			Unit
			min.	typ.	max.	
T_{VJ}	operating temperature		-40		125	$^\circ\text{C}$
T_{VJM}	max. virtual junction temperature				150	$^\circ\text{C}$
T_{stg}	storage temperature		-40		125	$^\circ\text{C}$
V_{ISOL}	isolation voltage	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$			2500	V~
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			mm
Weight				35		g

Circuit Diagram



Outline Drawing

Dimensions in mm (1 mm = 0.0394")

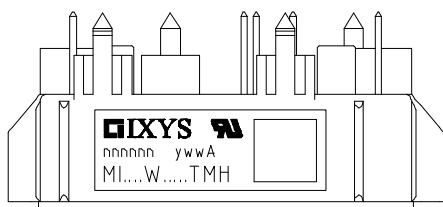


Bemerkungen:

- 1) Toleranz für Pin Positionen entsprechend $\pm 0,4$
- 2) Vorgesehen für die Montage auf Leiterplatten mit einer Dicke von $16 \pm 0,2$ mm

Remarks:

- 1.) pin positions with tolerance $\pm 0,4$
- 2) mounting on PCB with thickness of $16 \pm 0,2$ mm



Part number

- M = Module
- I = IGBT
- X = XPT
- A = standard
- 40 = Current Rating [A]
- W = 6-Pack
- 1200 = Reverse Voltage [V]
- T = NTC
- MH = MiniPack2

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MIXA 40 W 1200 TMH	MIXA40W1200TMH	Box	20	509395

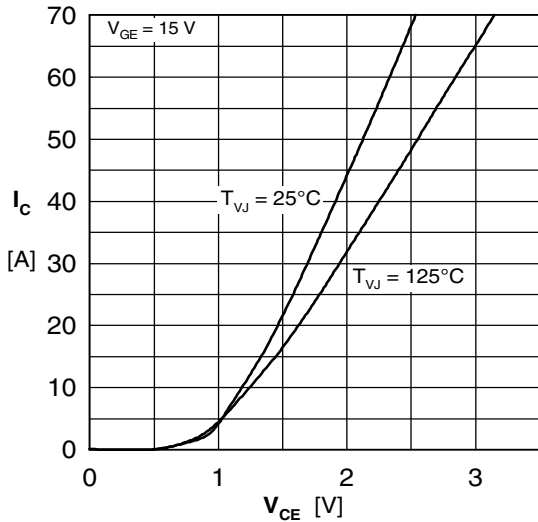
IGBT T1 - T6


Fig. 1 Typ. output characteristics

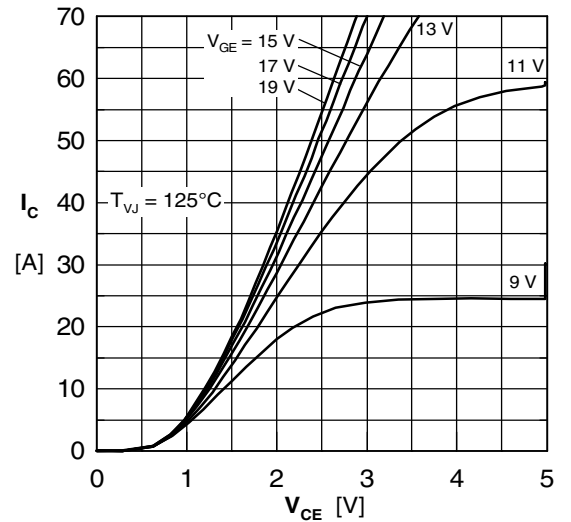


Fig. 2 Typ. output characteristics

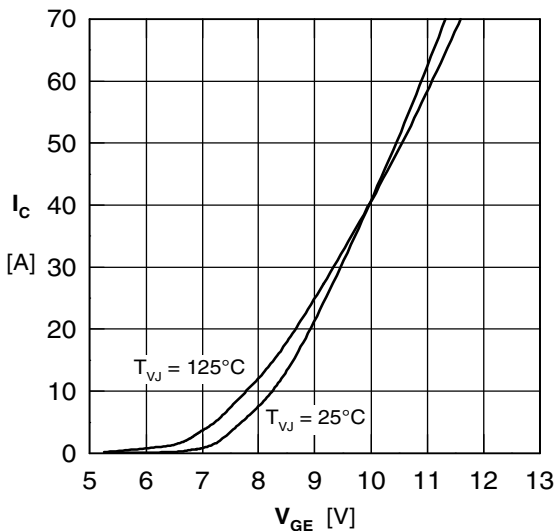


Fig. 3 Typ. transfer characteristics

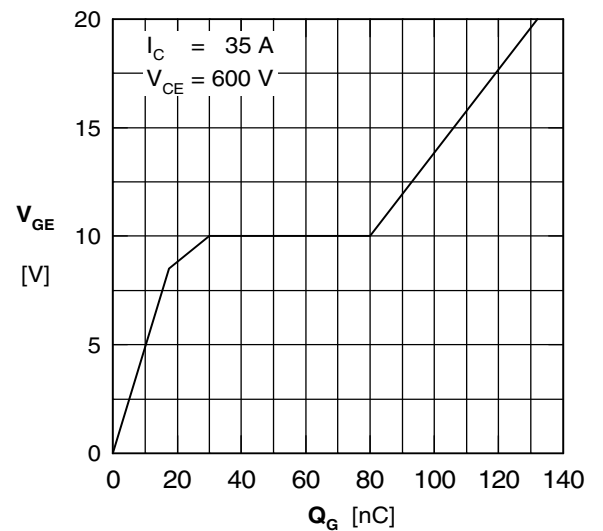


Fig. 4 Typ. turn-on gate charge

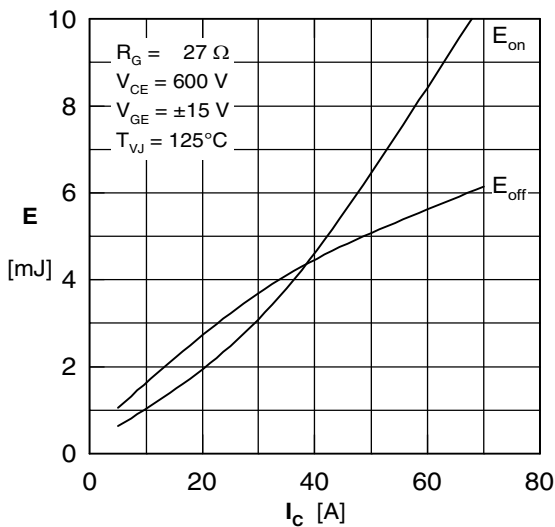


Fig. 5 Typ. switching energy vs. collector current

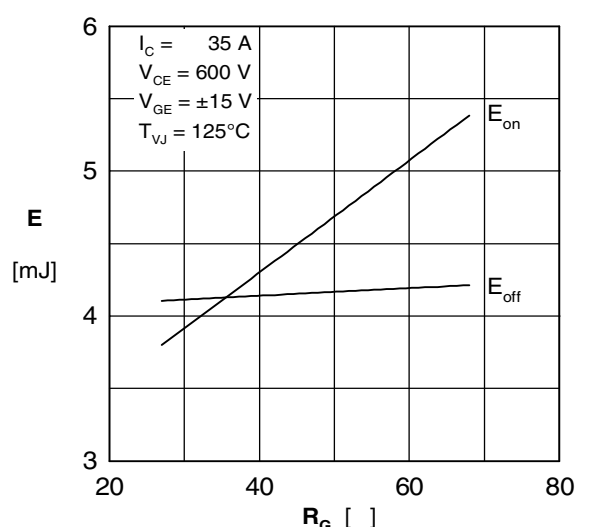


Fig. 6 Typ. switching energy vs. gate resistance

Diode D1 - D6

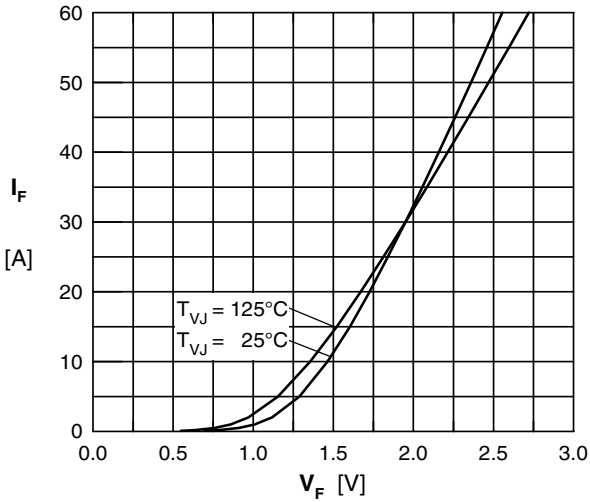


Fig. 7 Typ. Forward current versus V_F

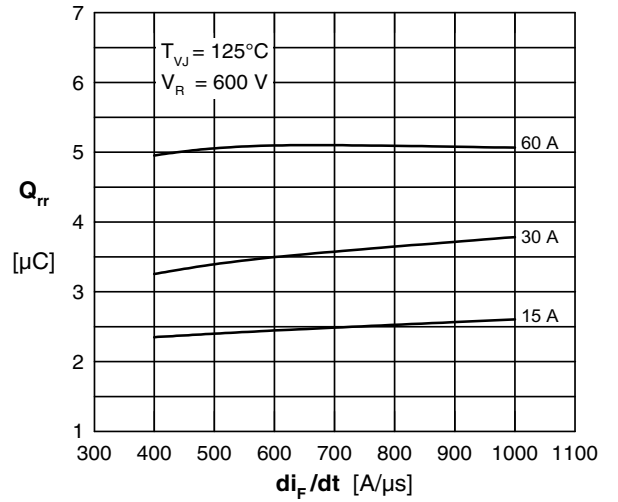


Fig. 8 Typ. reverse recov.charge Q_{rr} vs. di/dt

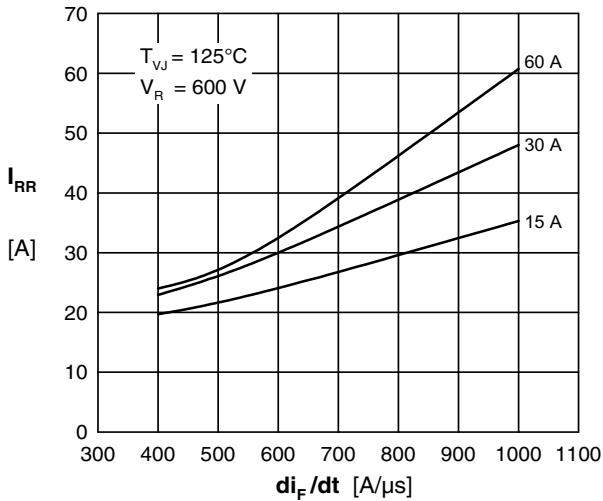


Fig. 9 Typ. peak reverse current I_{RM} vs. di/dt

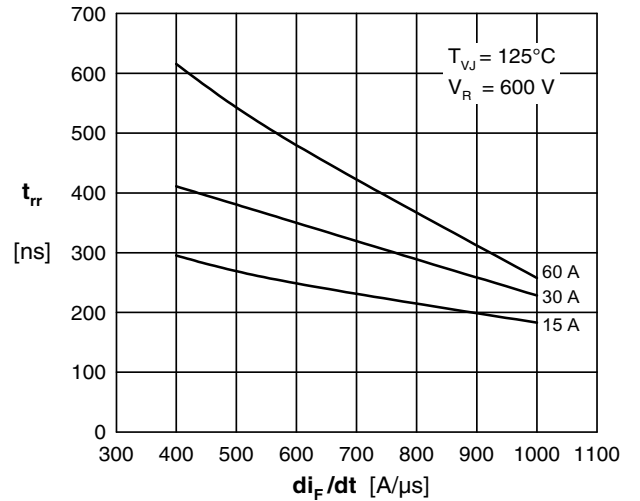


Fig. 10 Typ. recovery time t_{rr} versus di/dt

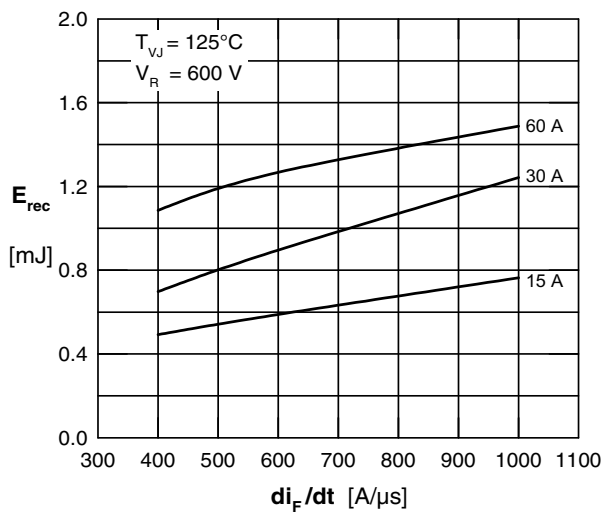


Fig. 11 Typ. recovery energy E_{rec} versus di/dt

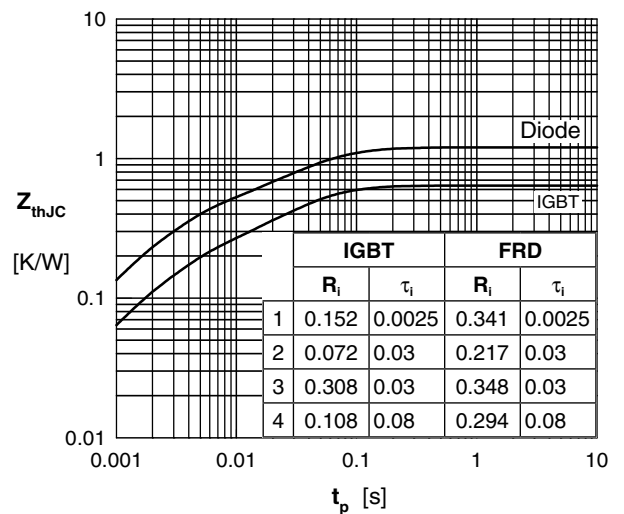


Fig. 12 Typ. transient thermal impedance