

Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

[IXYS Corporation](#)

[MIXA81H1200EH](#)

For any questions, you can email us directly:

sales@integrated-circuit.com



MIXA81H1200EH

IGBT Module H Bridge

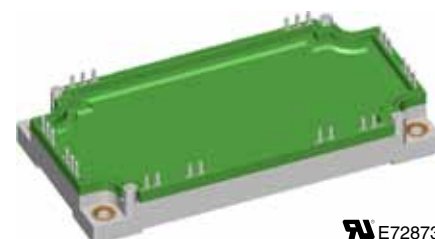
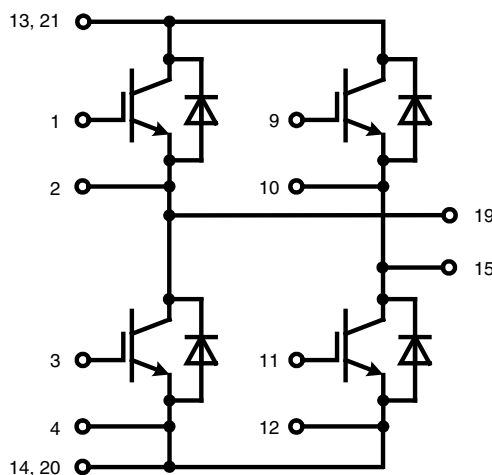
$$V_{CES} = 1200 \text{ V}$$

$$I_{C25} = 120 \text{ A}$$

$$V_{CE(sat)} = 1.8 \text{ V}$$

Part name (Marking on product)

MIXA81H1200EH



E72873

Features:

- 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 μ 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 $V_{CE(sat)}$
- SONIC™ diode
 - fast and soft reverse recovery
 - low operating forward voltage

Application:

- AC motor drives
- Solar inverter
- Medical equipment
- Uninterruptible power supply
- Air-conditioning systems
- Welding equipment
- Switched-mode and resonant-mode power supplies

Package:

- "E3-Pack" standard outline
- Insulated copper base plate
- Soldering pins for PCB mounting
- Optimizes pin layout



MIXA81H1200EH

Output Inverter T1 - T6

Ratings

Symbol	Definitions	Conditions	min.	typ.	max.	Unit
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	$T_C = 25^{\circ}\text{C}$			120	A
I_{C80}		$T_C = 80^{\circ}\text{C}$			84	A
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$			390	W
$V_{CE(sat)}$	collector emitter saturation voltage	$I_C = 77\text{ A}; V_{GE} = 15\text{ V}$		1.8 2.1	2.1	V V
$V_{GE(th)}$	gate emitter threshold voltage	$I_C = 3\text{ mA}; V_{GE} = V_{CE}$	5.4	6.0	6.5	V
I_{CES}	collector emitter leakage current	$V_{CE} = V_{CES}; V_{GE} = 0\text{ V}$		0.03 0.6	0.2	mA mA
I_{GES}	gate emitter leakage current	$V_{GE} = \pm 20\text{ V}$			500	nA
$Q_{G(on)}$	total gate charge	$V_{CE} = 600\text{ V}; V_{GE} = 15\text{ V}; I_C = 75\text{ A}$		230		nC
$t_{d(on)}$	turn-on delay time	inductive load $V_{CE} = 600\text{ V}; I_C = 75\text{ A}$ $V_{GE} = \pm 15\text{ V}; R_G = 10\ \Omega$	$T_{VJ} = 125^{\circ}\text{C}$	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			6.8		mJ
E_{off}	turn-off energy per pulse			8.3		mJ
RBSOA	reverse bias safe operating area	$V_{GE} = \pm 15\text{ V}; R_G = 10\ \Omega;$	$T_{VJ} = 125^{\circ}\text{C}$ $V_{CEK} = 1200\text{ V}$		225	A
SCSOA	short circuit safe operating area	$V_{CE} = 900\text{ V}; V_{GE} = \pm 15\text{ V};$	$T_{VJ} = 125^{\circ}\text{C}$		10	μs
t_{SC}	short circuit duration	$R_G = 10\ \Omega;$ non-repetitive		300		A
I_{SC}	short circuit current					
R_{thJC}	thermal resistance junction to case	(per IGBT)			0.32	K/W

Output Inverter D1 - D6

Ratings

Symbol	Definitions	Conditions	min.	typ.	max.	Unit
V_{RRM}	max. repetitive reverse voltage	$T_{VJ} = 25^{\circ}\text{C}$			1200	V
I_{F25}	forward current	$T_C = 25^{\circ}\text{C}$			135	A
I_{F80}		$T_C = 80^{\circ}\text{C}$			90	A
V_F	forward voltage	$I_F = 100\text{ A}; V_{GE} = 0\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	1.95 1.95	2.2	V V
Q_{rr}	reverse recovery charge	$V_R = 600\text{ V}$ $di_f/dt = -1600\text{ A}/\mu\text{s}$ $I_F = 100\text{ A}; V_{GE} = 0\text{ V}$	$T_{VJ} = 125^{\circ}\text{C}$	12.5		μC
I_{RM}	max. reverse recovery current			100		A
t_{rr}	reverse recovery time			350		ns
E_{rec}	reverse recovery energy			4		mJ
R_{thJC}	thermal resistance junction to case	(per diode)			0.4	K/W

 $T_C = 25^{\circ}\text{C}$ unless otherwise stated

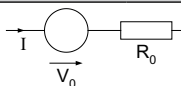


MIXA81H1200EH

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	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$			3000	V~
CTI	comparative tracking index				200	
M_d	mounting torque (M5)		3		6	Nm
d_s	creep distance on surface		10			mm
d_A	strike distance through air		7.5			mm
$R_{pin-chip}$	resistance pin to chip			2.5		mΩ
R_{thCH}	thermal resistance case to heatsink	with heatsink compound		0.02		K/W
Weight				300		g

Equivalent Circuits for Simulation



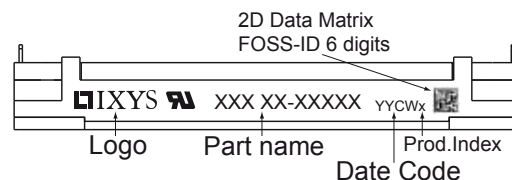
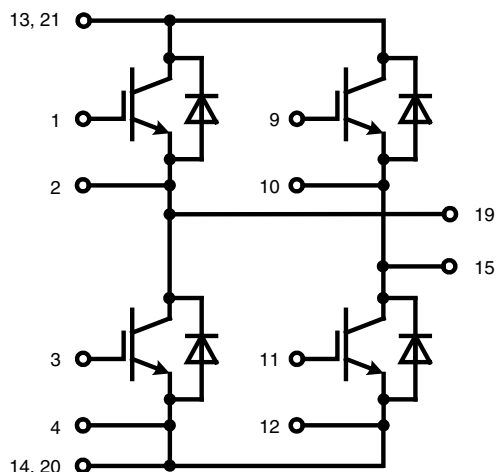
Symbol	Definitions	Conditions	min.	Ratings		
				typ.	max.	Unit
V_0	IGBT	T1 - T6	$T_{VJ} = 150^\circ\text{C}$	1.1		V
R_0				17.9		mΩ
V_0	free wheeling diode	D1 - D6	$T_{VJ} = 150^\circ\text{C}$	1.09		V
R_0				9.1		mΩ

$T_C = 25^\circ\text{C}$ unless otherwise stated

IXYS

MIXA81H1200EH

Circuit Diagram

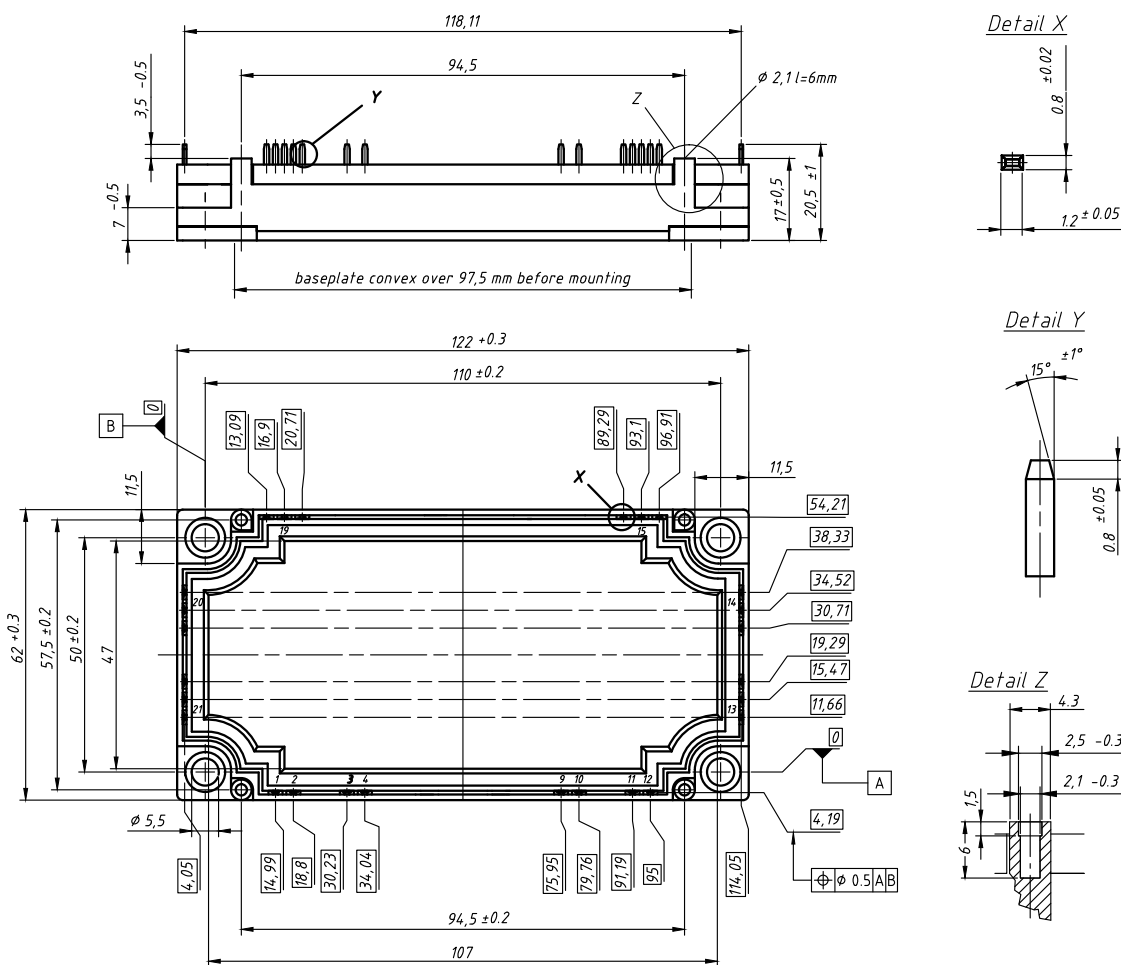


Part number

M = Module
I = IGBT
X = XPT
A = standard
81 = Current Rating [A]
H = H- Bridge
1200 = Reverse Voltage [V]
EH = E3-Pack

Outline Drawing

Dimensions in mm (1 mm = 0.0394")



Remark:
Dimensions without tolerances acc. DIN ISO 2768-T1-m

Product Marking

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MIXA 81 H 1200 EH	MIXA81H1200EH	Box	5	511053

Transistor T1 - T6

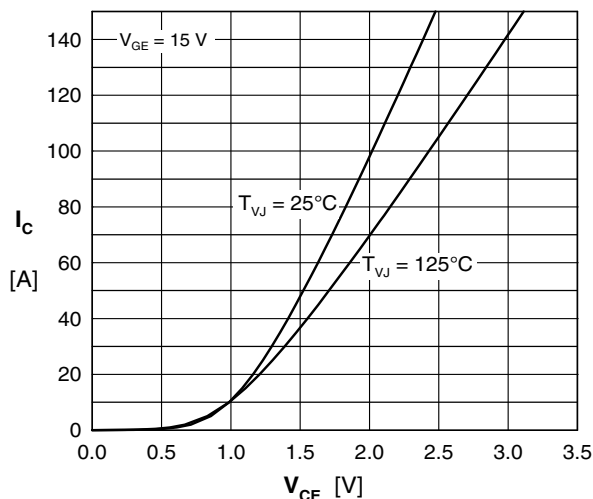


Fig. 1 Typ. output characteristics

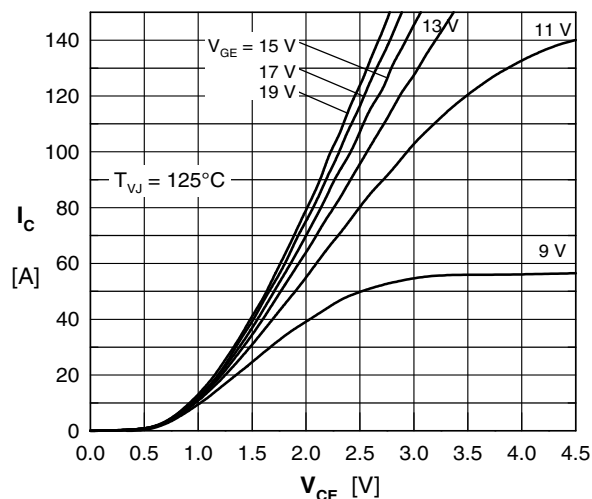


Fig. 2 Typ. output characteristics

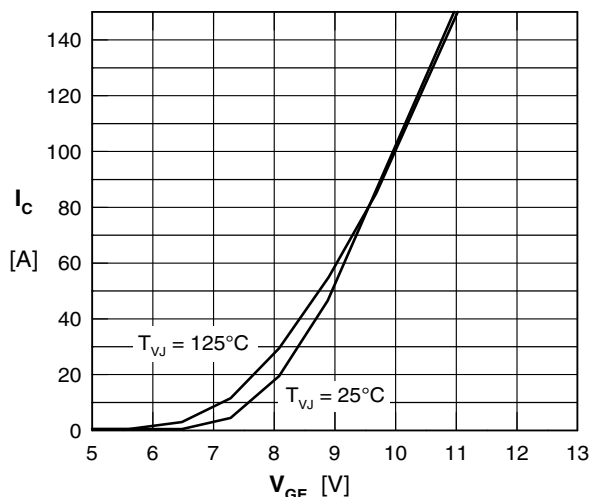


Fig. 3 Typ. transfer characteristics

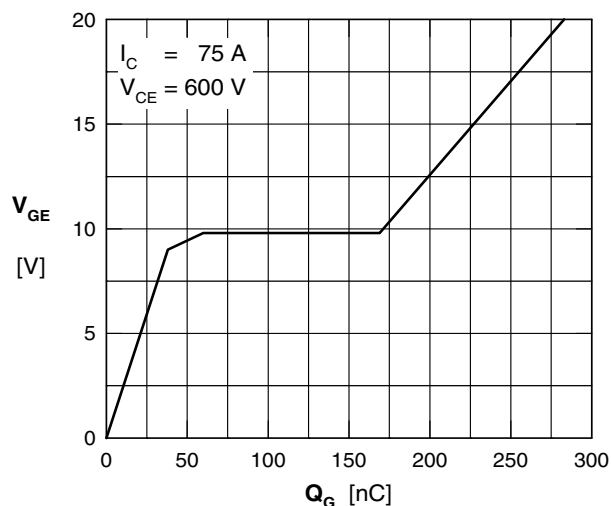


Fig. 4 Typ. turn-on gate charge

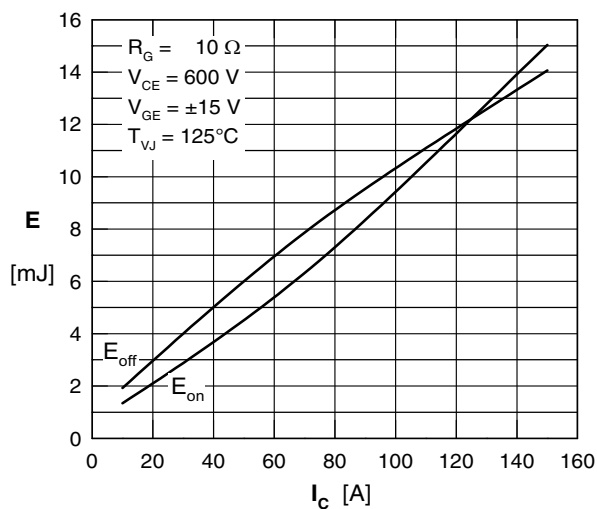


Fig. 5 Typ. switching energy vs. collector current

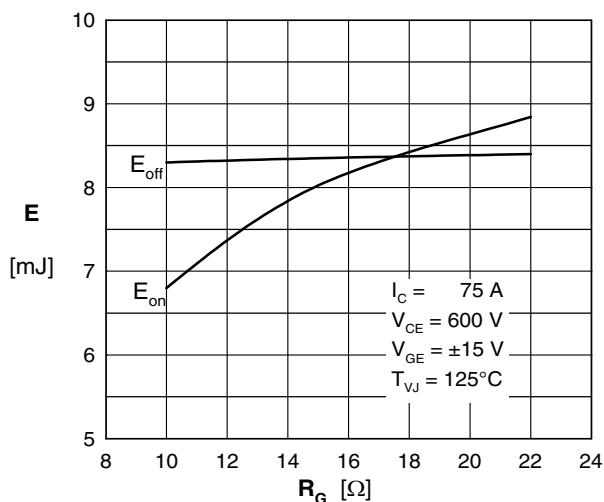


Fig. 6 Typ. switching energy vs. gate resistance

Inverter D1 - D6

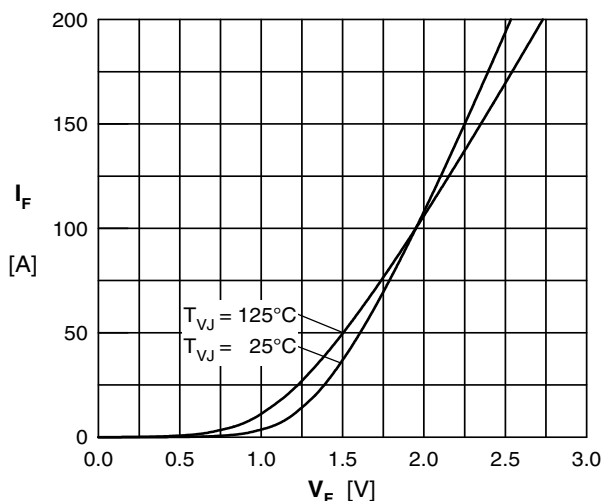


Fig. 7 Typ. Forward current versus V_F

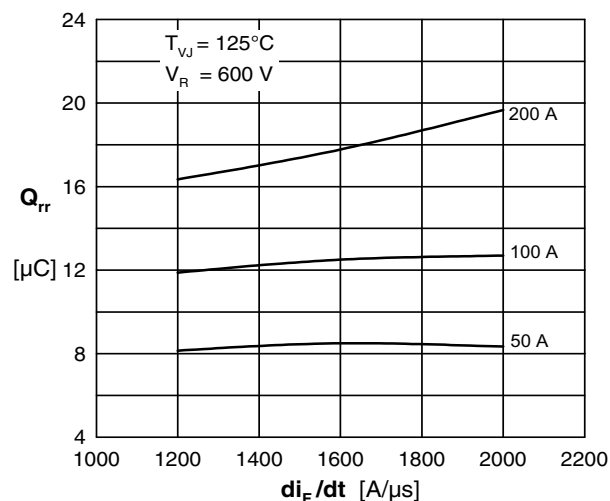


Fig. 8 Typ. reverse recov.charge Q_{rr} vs. di/dt

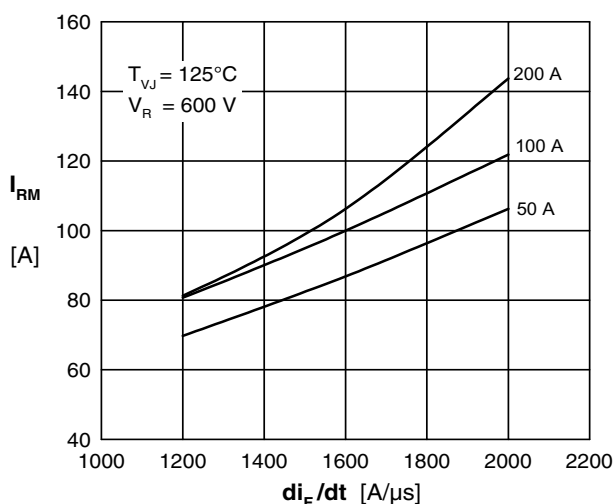


Fig. 9 Typ. peak reverse current I_{RM} vs. di/dt

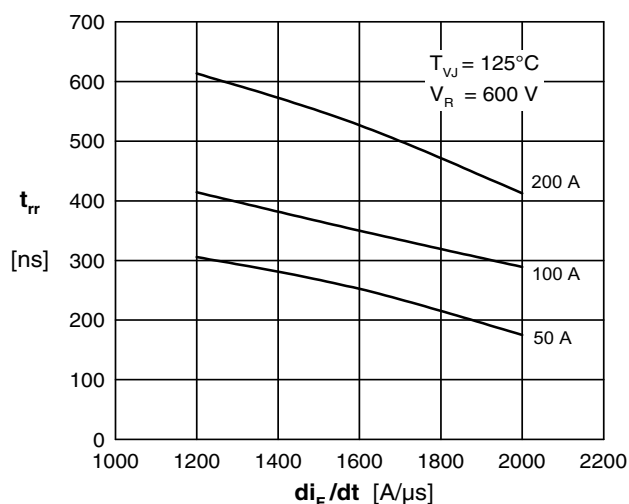


Fig. 10 Typ. recovery time t_{rr} versus di/dt

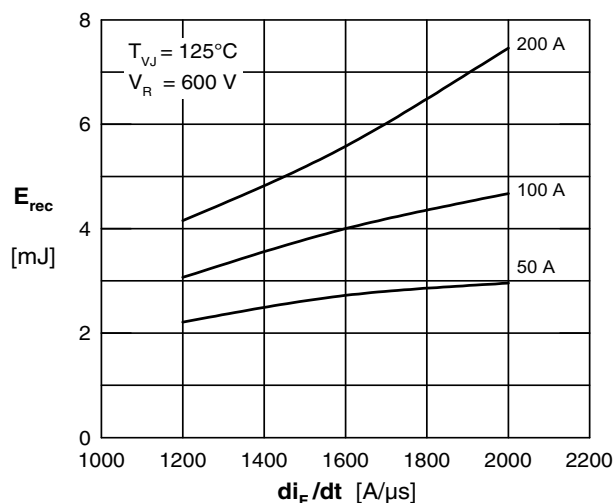


Fig. 11 Typ. recovery energy E_{rec} versus di/dt

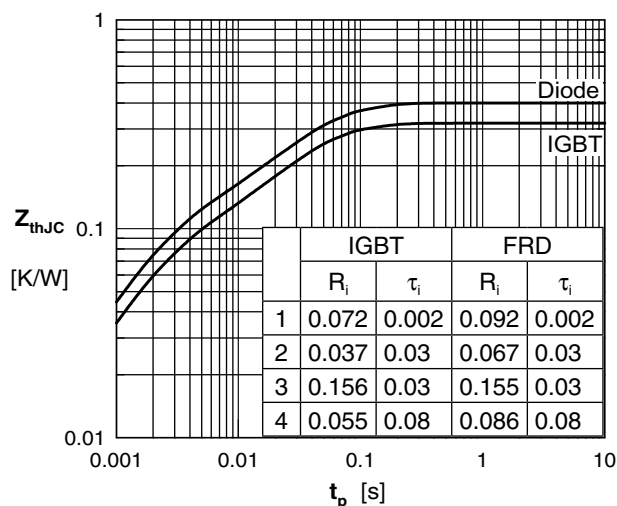


Fig. 12 Typ. transient thermal impedance