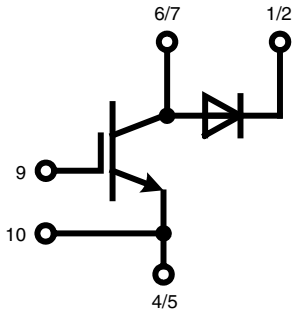
Boost / Brake Module
XPT IGBT

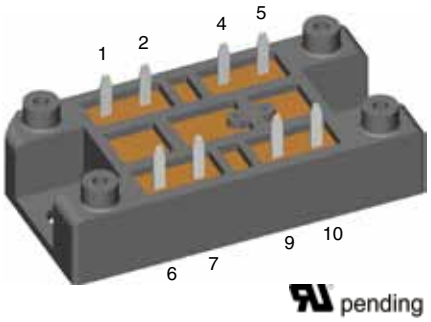
V_{CES} = 1200 V
I_{C25} = 120 A
$V_{CE(sat)}$ = 2.2 V

Part name (Marking on product)

MIXA80R1200VA

Preliminary data





Features:

- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- Improved temperature & power cycling

Application:

- Power Factor Correction
- Boost Converter
- Brake Unit

Package:

- DCB ceramic base plate
- Easy to mount with 2 screws
- Space and weight savings
- UL pending E 72873

Boost/Brake IGBT

Symbol	Definitions	Conditions		min.	Ratings 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			120	A
I_{C80}			T_C = 80°C			84	A
P_{tot}	*total power dissipation*		T_C = 25°C			390	W
$V_{CE(sat)}$	*collector emitter saturation voltage*	I_C = 77 A; V_{GE} = 15 V	T_{VJ} = 25°C		1.9	2.2	V
			T_{VJ} = 125°C		2.2		V
$V_{GE(th)}$	*gate emitter threshold voltage*	I_C = 3 mA; V_{GE} = V_{CE}	T_{VJ} = 25°C	5.4	6.0	6.5	V
I_{CES}	*collector emitter leakage current*	V_{CE} = V_{CES}; V_{GE} = 0 V	T_{VJ} = 25°C		0.03	0.2	mA
			T_{VJ} = 125°C			0.6	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 = 75 A			230		nC
$t_{d(on)}$	*turn-on delay time*	inductive load V_{CE} = 600 V; I_C = 75 A V_{GE} = ±15 V; R_G = 10 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*				6.8		mJ
E_{off}	*turn-off energy per pulse*				8.3		mJ
RBSOA	*reverse bias safe operating area*	V_{GE} = ±15 V; R_G = 10 Ω;	T_{VJ} = 125°C V_{CEK} = 1200 V			225	A
SCSOA	*short circuit safe operating area*						
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 = 10 Ω; non-repetitive			300		A
R_{thJC}	*thermal resistance junction to case*					0.32	K/W

Boost/Brake Diode

Symbol	Definitions	Conditions		min.	Ratings typ.	max.	Unit
V_{RRM}	*max. repetitve reverse voltage*		T_{VJ} = 25°C			1200	V
I_{F25}	*forward current*		T_C = 25°C			135	A
I_{F80}			T_C = 80°C			90	A
V_F	*forward voltage*	I_F = 100 A; V_{GE} = 0 V	T_{VJ} = 25°C		2.0	2.3	V
			T_{VJ} = 125°C		2.1	2.4	V
Q_{rr}	*reverse recovery charge*	V_R = 600 V di_F/dt = -1600 A/µs I_F = 100 A	T_{VJ} = 125°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*					0.4	K/W

T_C = 25°C unless otherwise stated

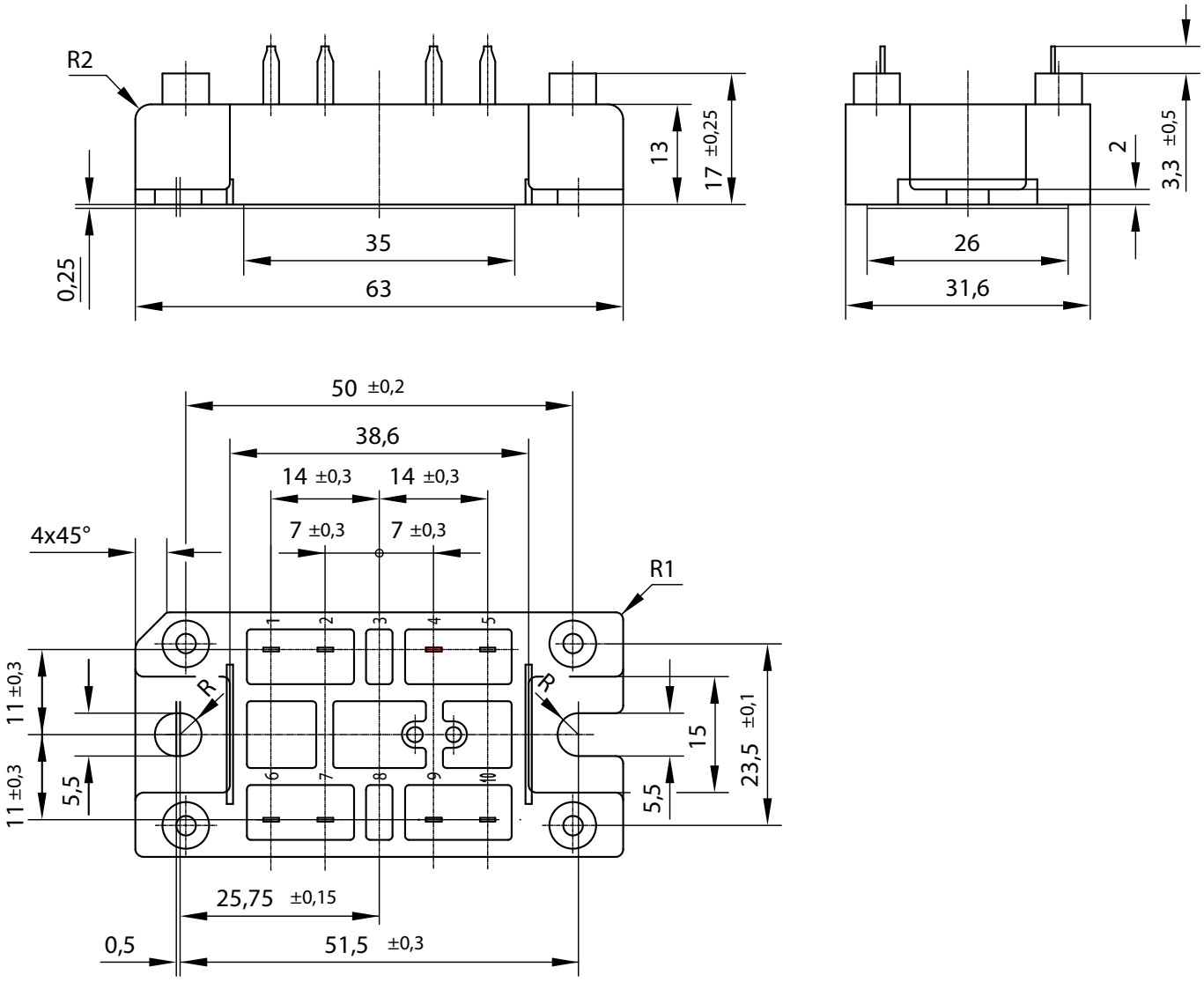
Module

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	t = 1 min.			3000	V~
			t = 1 s			3600	V~
M_d	*mounting torque (M5)*			2		2.5	Nm
a	*allowable acceleration*					50	m/s^2
R_{thCH}	*thermal resistance case to heatsink*				0.3		K/W
Weight					35		g

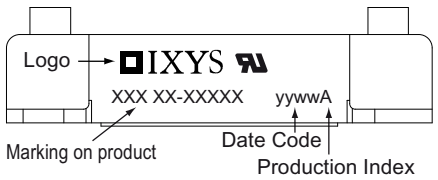
T_C = 25°C unless otherwise stated

Outline Drawing

Dimensions in mm (1 mm = 0.0394“)



Product Marking



Part number

M = Module
I = IGBT
XA = XPT standard
80 = Current Rating [A]
R = Boost/Brake Chopper
1200 = Reverse Voltage [V]
VA = V1-A-Pack

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MIXA80R1200VA	MIXA80R1200VA	Box	10	510585

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

20110307a

IGBT

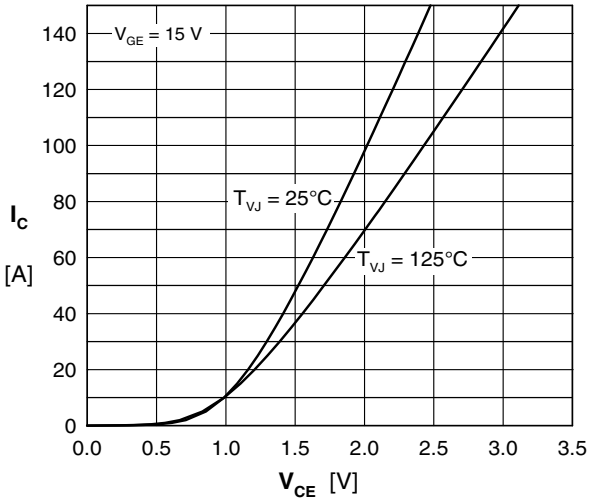


Fig. 1 Typ. output characteristics

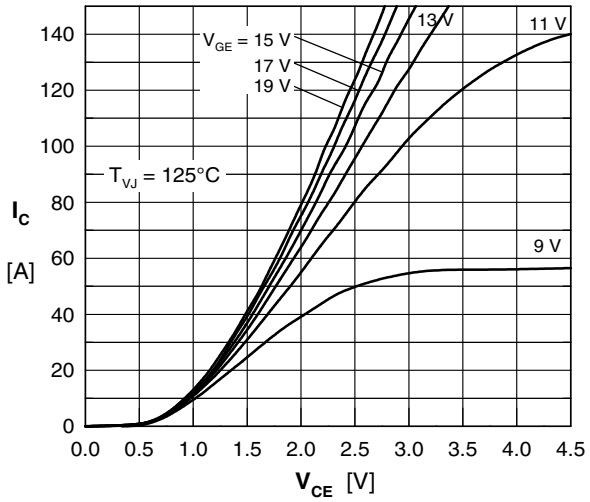


Fig. 2 Typ. output characteristics

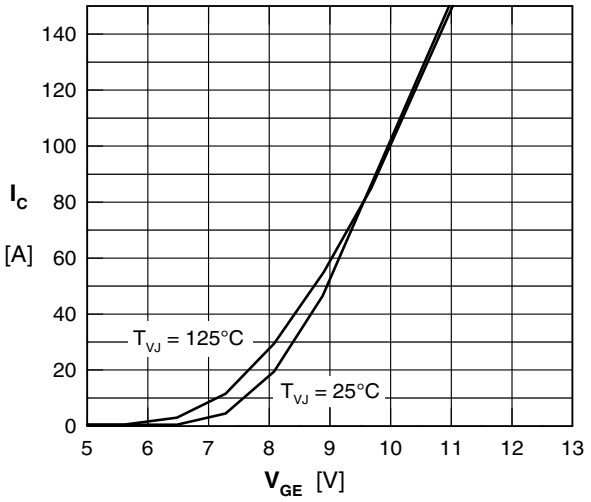


Fig. 3 Typ. tranfer characteristics

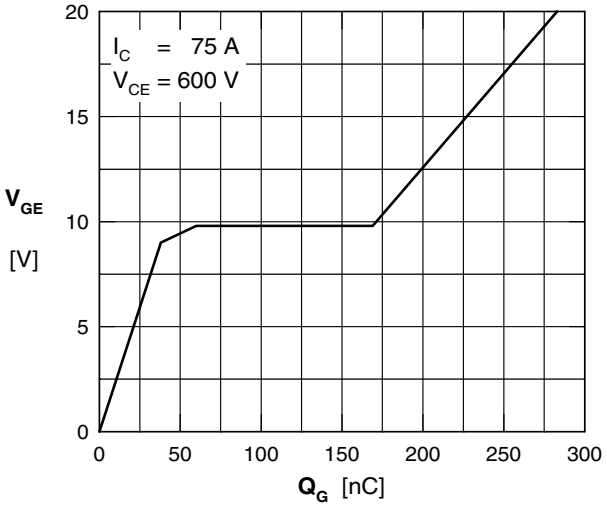


Fig. 4 Typ. turn-on gate charge

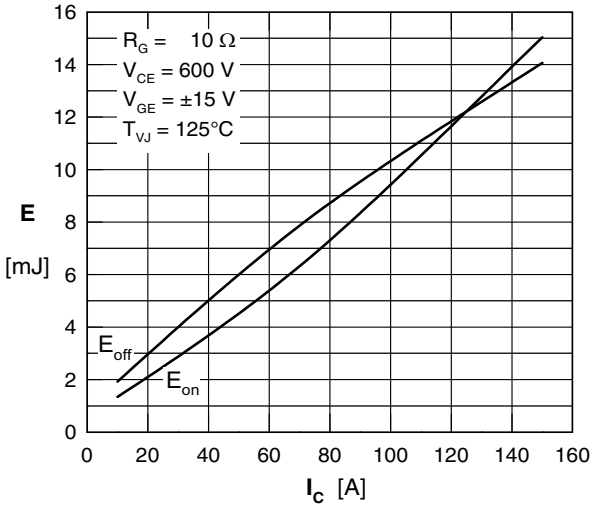


Fig. 5 Typ. switching energy vs. collector current

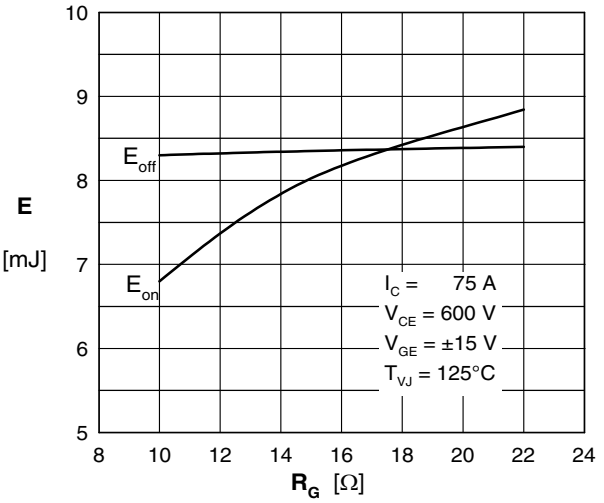


Fig. 6 Typ. switching energy vs. gate resistance

Diode

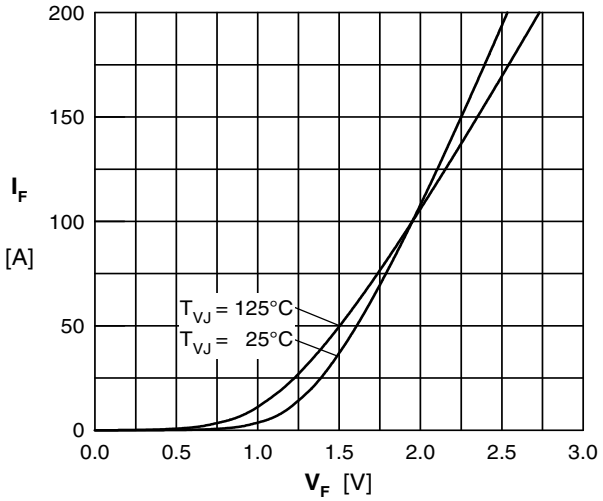


Fig. 7 Typ. Forward current versus V_F

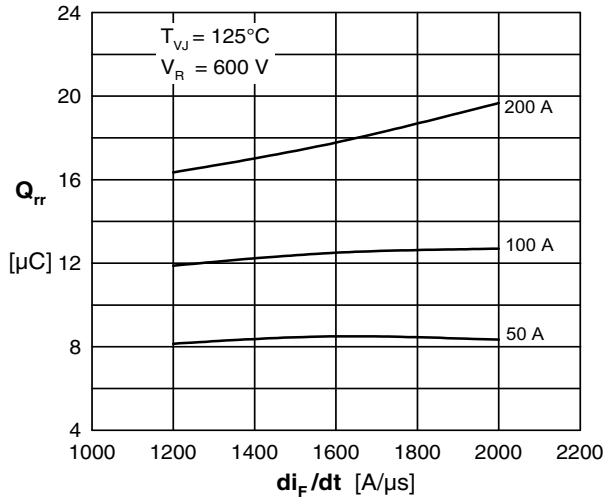


Fig. 8 Typ. reverse recov.charge Q_{rr} vs. di/dt

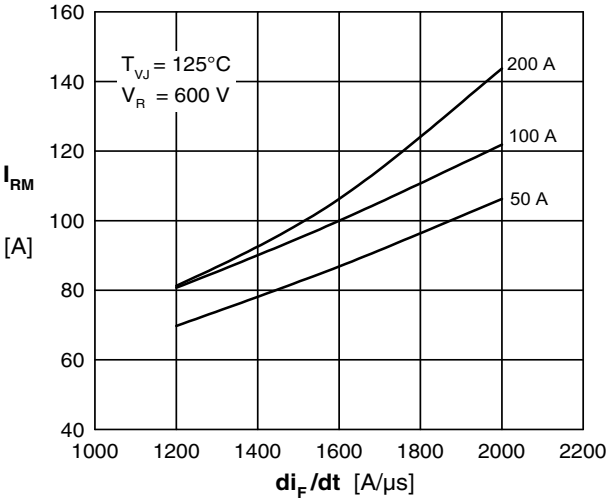


Fig. 9 Typ. peak reverse current I_{RM} vs. di/dt

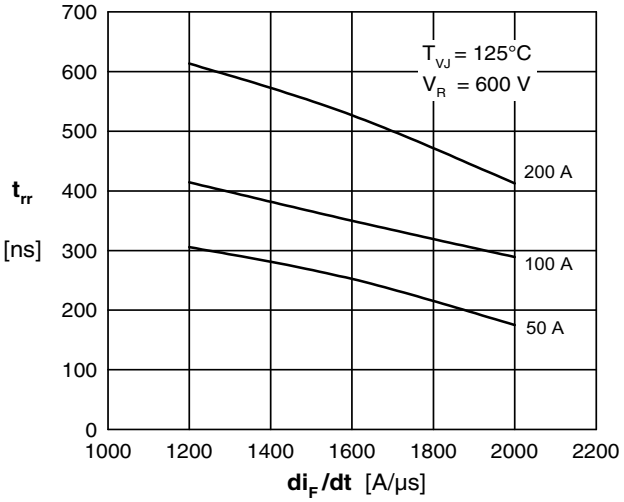


Fig. 10 Typ. recovery time t_{rr} versus di/dt

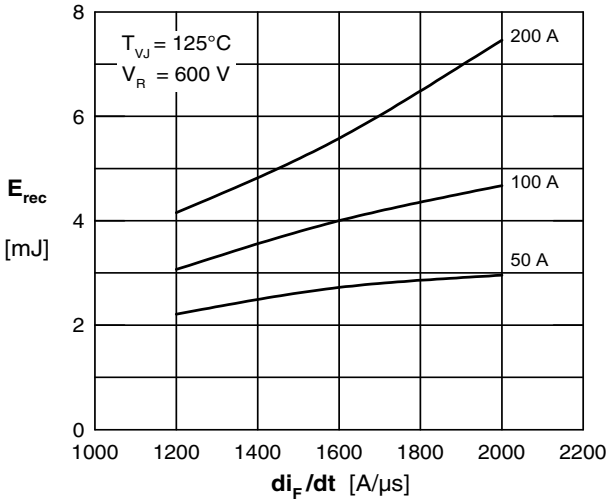
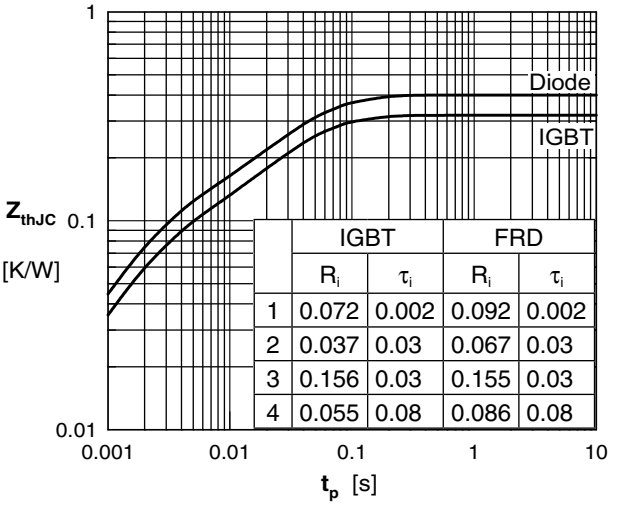


Fig. 11 Typ. recovery energy E_{rec} versus di/dt



	IGBT		FRD	
	R_i	τ_i	R_i	τ_i
1	0.072	0.002	0.092	0.002
2	0.037	0.03	0.067	0.03
3	0.156	0.03	0.155	0.03
4	0.055	0.08	0.086	0.08

Fig. 12 Typ. transient thermal impedance