Standard Rectifier Module

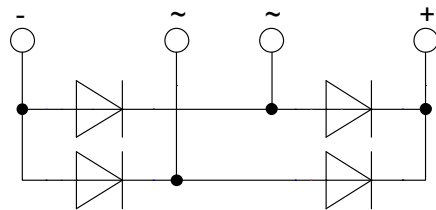| 1~ Rectifier		
V_{RRM} =		1800 V
I_{DAV} =		14 A
I_{FSM} =		380 A

1~ Rectifier Bridge

Part number

VBO22-18NO8
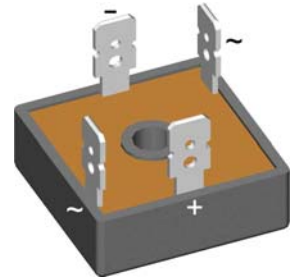
R E72873

Features / Advantages:
- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
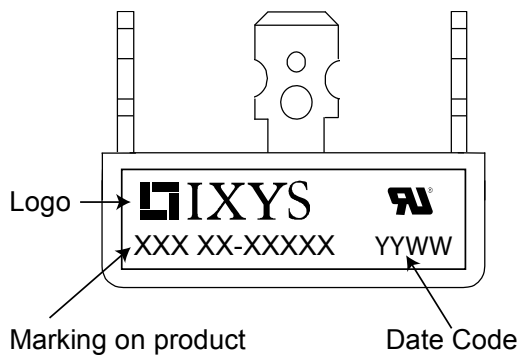- Improved thermal behaviour

Applications:
- Diode for main rectification
- For one phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Package: FO-B
- Industry standard outline
- RoHS compliant
- ¼" fast-on terminals
- Easy to mount with one screw

Data according to IEC 60747and per semiconductor unless otherwise specified

20130603e

Rectifier				Ratings			
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
V_{RSM}	max. non-repetitive reverse blocking voltage	T_{VJ} = 25°C				1900	V
V_{RRM}	max. repetitive reverse blocking voltage	T_{VJ} = 25°C				1800	V
I_R	reverse current	V_R = 1800 V	T_{VJ} = 25°C			40	μA
		V_R = 1800 V	T_{VJ} = 150°C			1.5	mA
V_F	forward voltage drop	I_F = 10 A	T_{VJ} = 25°C			1.05	V
		I_F = 20 A				1.15	V
		I_F = 10 A	T_{VJ} = 125 °C			0.94	V
		I_F = 20 A				1.08	V
I_{DAV}	bridge output current	T_C = 85°C	T_{VJ} = 150°C			14	A
		rectangular d = 0.5					
V_{F0}	threshold voltage	for power loss calculation only	T_{VJ} = 150°C			0.77	V
r_F	slope resistance					14.2	mΩ
R_{thJC}	thermal resistance junction to case					8	K/W
R_{thCH}	thermal resistance case to heatsink				1		K/W
P_{tot}	total power dissipation	T_C = 25°C				15	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			380	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			410	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			325	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			350	A
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			720	A²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			700	A²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			530	A²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			510	A²s
C_J	junction capacitance	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°C		10		pF

Package	FO-B				Ratings		
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal				100	A
T_{stg}	storage temperature			-40		125	°C
T_{VJ}	virtual junction temperature			-40		150	°C
Weight					19		g
M_D	mounting torque				1.8	2.2	Nm
$d_{Spp/App}$	creepage distance on surface | striking distance through air	terminal to terminal	9.0	7.0			mm
$d_{Spb/Apb}$		terminal to backside	10.0	10.0			mm
V_{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000			V
		t = 1 minute		2500			V

Logo →

XXX XX-XXXXX   YYWW

Marking on product   Date Code

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VBO22-18NO8	VBO22-18NO8	Box	50	477613

Equivalent Circuits for Simulation

* on die level $T_{VJ} = 150\,°C$

I → (V₀) — [R₀]
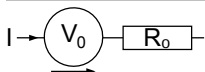
Rectifier

$V_{0\,max}$	threshold voltage	0.77	V
$R_{0\,max}$	slope resistance *	13	mΩ

Outlines   FO-B

0.8

6.3 x 0.8

22

10

D –

E ~

28.5

24.2

16

B ~

A +

5.2
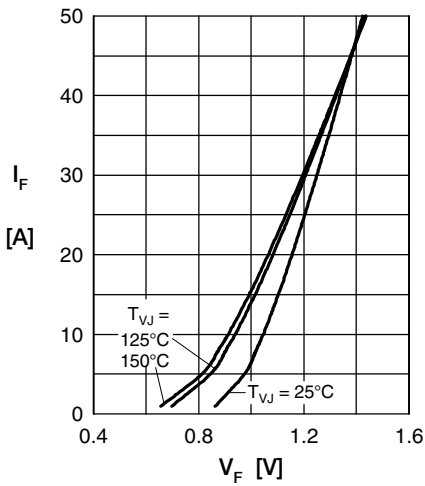
24.2

28.5

-     ~   ~   +
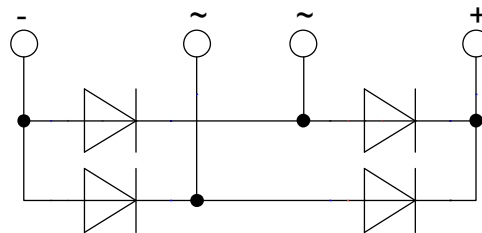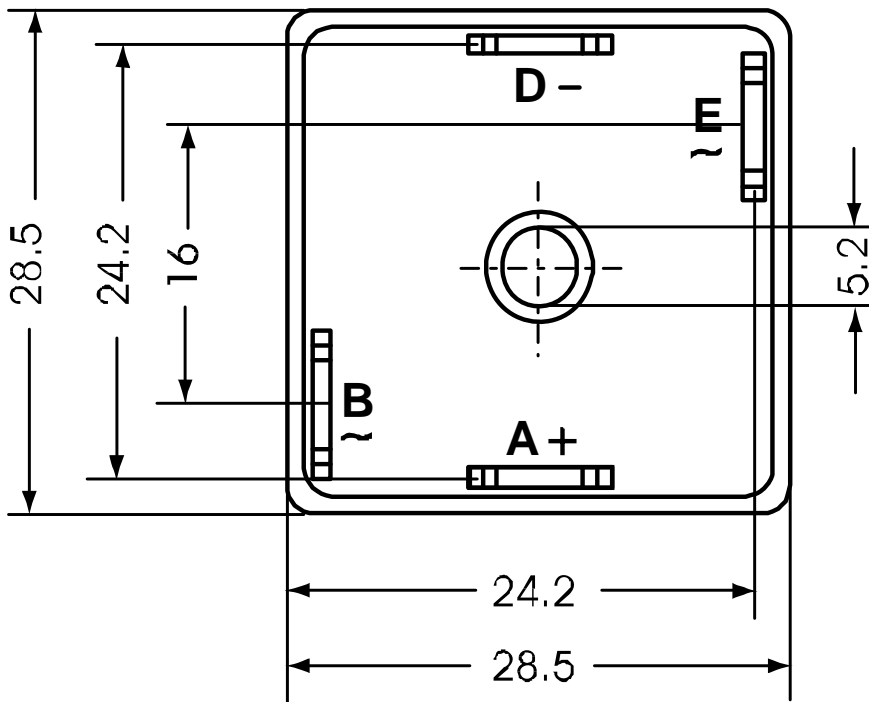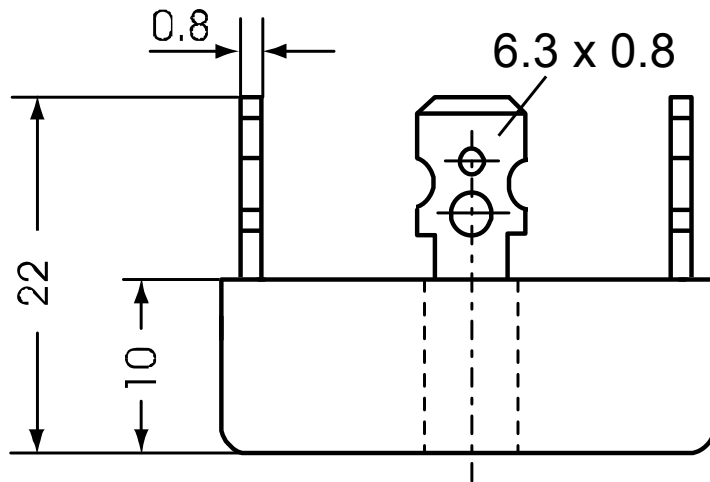
Rectifier

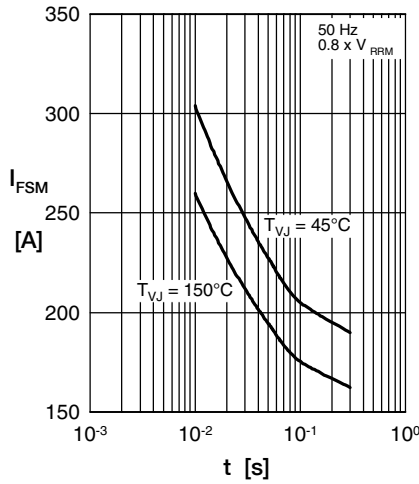Fig. 1 Forward current vs.
voltage drop per diode

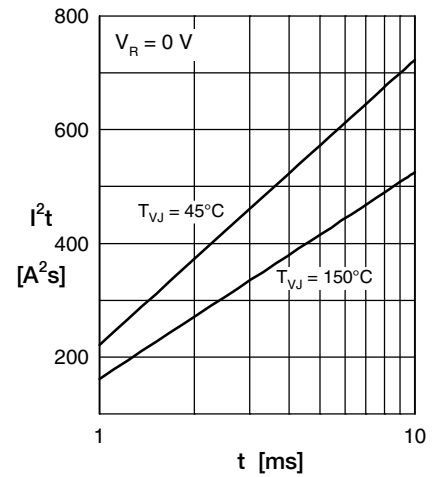Fig. 2 Surge overload current
vs. time per diode
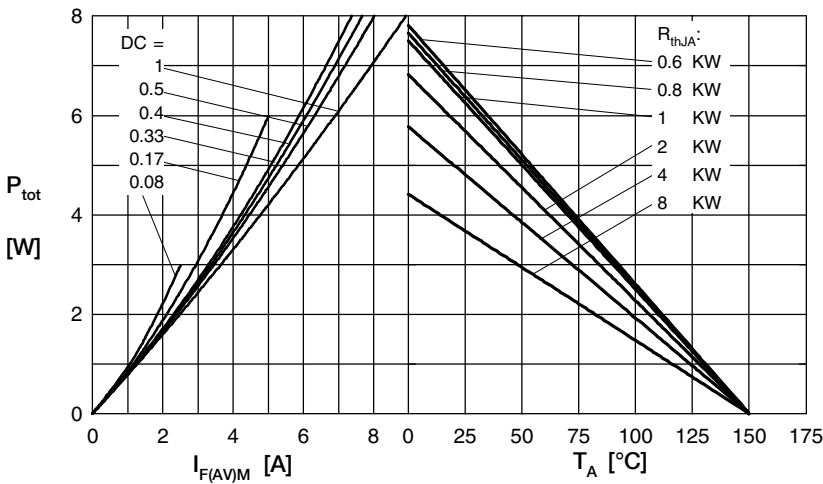
Fig. 3 I^{2}t vs. time per diode

Fig. 4 Power dissipation vs. forward current
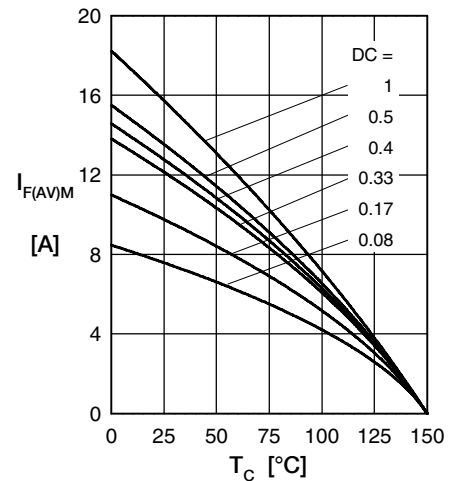and ambient temperature per diode
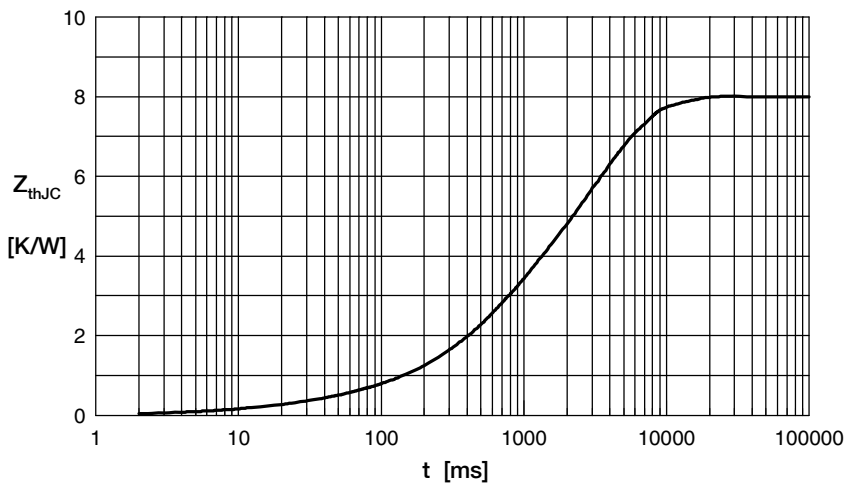
Fig. 5 Max. forward current vs.
case temperature per diode

Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.040	0.005
2	0.250	0.030
3	1.810	0.500
4	5.900	3.200

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20130603e

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