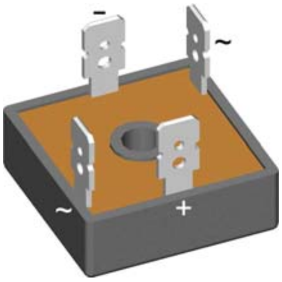
Standard Rectifier Module

1~ Rectifier		
V_{RRM}	=	1200 V
I_{DAV}	=	14 A
I_{FSM}	=	380 A

1~ Rectifier Bridge

Part number

VBO22-12NO8



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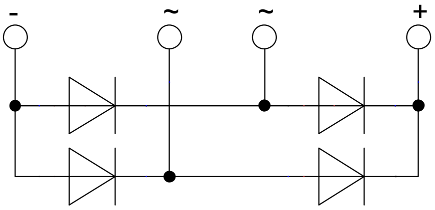


Features / Advantages:
- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

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

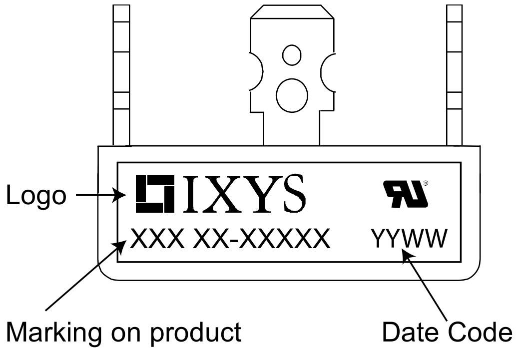
Data according to IEC 60747and per semiconductor unless otherwise specified

20130603e

Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1300	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
I_R	*reverse current*	V_R = 1200 V	T_{VJ} = 25°C			40	µA
		V_R = 1200 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
I²t	*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

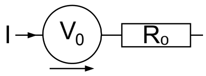
Symbol	Definition	Conditions			min.	typ.	max.	Unit
					Ratings			
I_{RMS}	*RMS current*	per terminal					100	A
T_{stg}	*storage temperature*				-40		125	°C
T_{VJ}	*virtual junction temperature*				-40		150	°C
Weight						19		g
M_D	*mounting torque*				1.8		2.2	Nm
$d_{Spp/App}$	*creepage distance on 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; $I_{ISOL} \le 1$ mA		3000			V
		t = 1 minute			2500			V



Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VBO22-12NO8	VBO22-12NO8	Box	50	476951

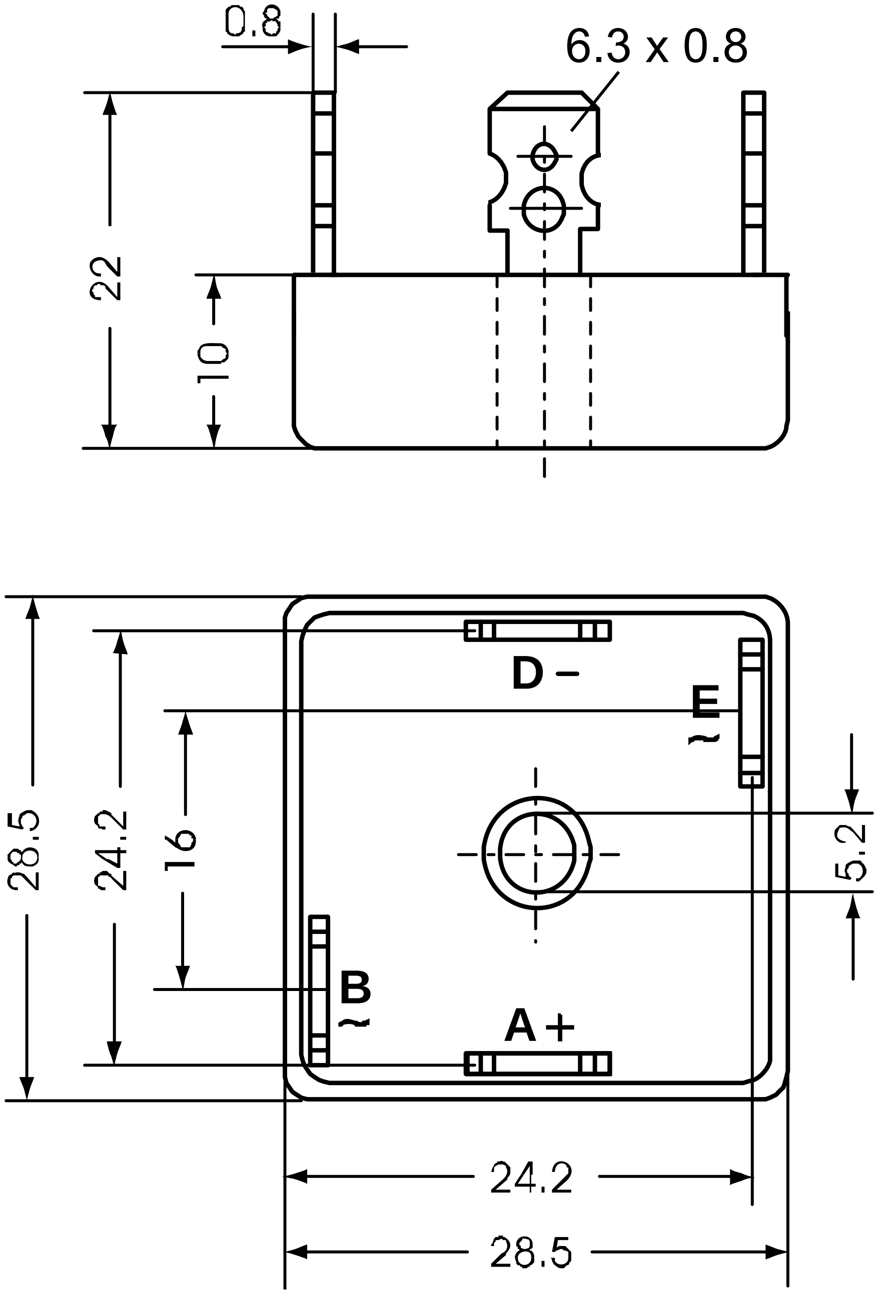
Equivalent Circuits for Simulation

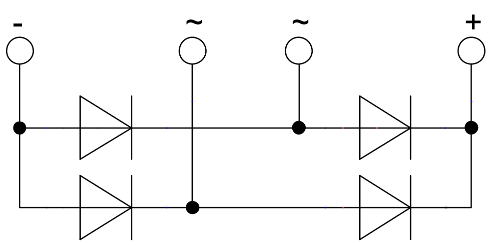
* on die level $T_{VJ} = 150\,°C$



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

Outlines FO-B





Rectifier

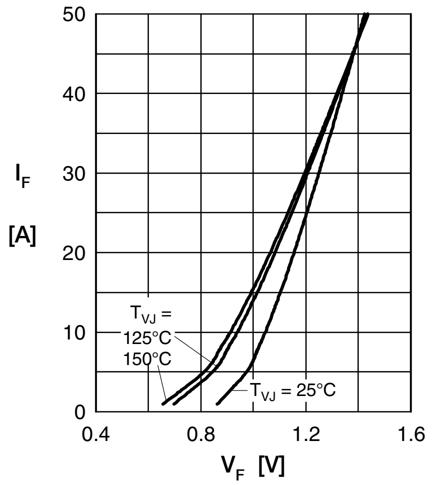


Fig. 1 Forward current vs. voltage drop per diode

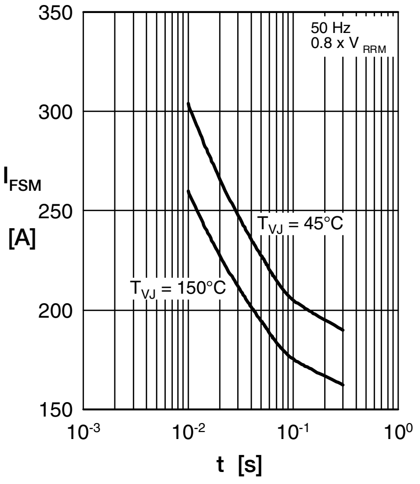


Fig. 2 Surge overload current vs. time per diode

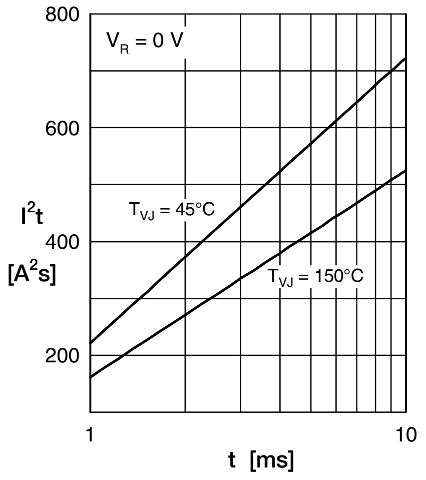


Fig. 3 I^2t vs. time per diode

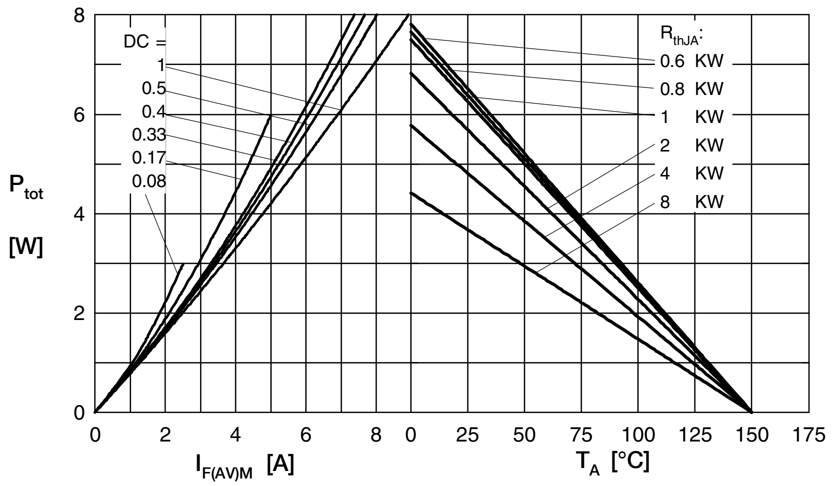


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

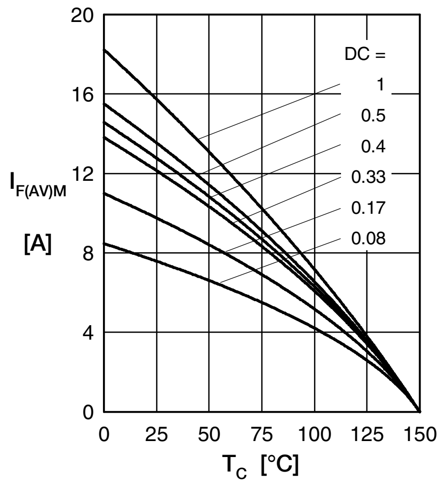


Fig. 5 Max. forward current vs. case temperature per diode

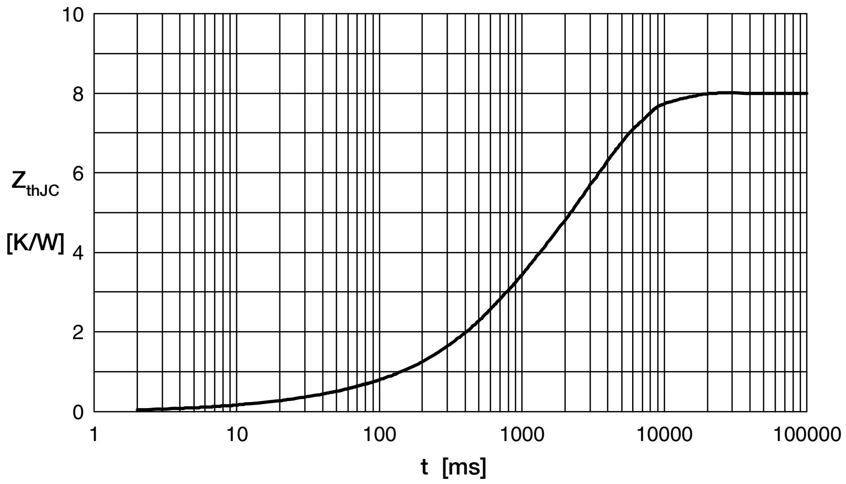


Fig. 6 Transient thermal impedance junction to case vs. time per diode

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