

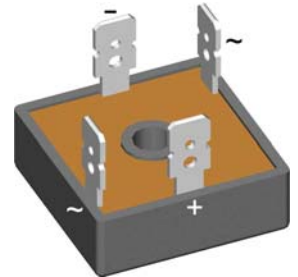
Standard Rectifier Module


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

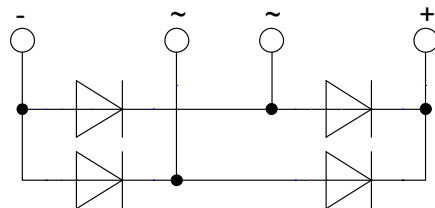
1~ Rectifier Bridge

Part number

VBO22-18NO8



 E72873



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

Applications:

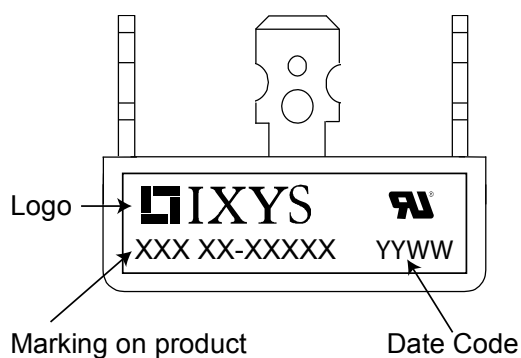
- Diode for main rectification
- For one phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Package: FO-B

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

Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				1900	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				1800	V
I_R	reverse current	$V_R = 1800\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			40	μA
		$V_R = 1800\text{ V}$	$T_{VJ} = 150^{\circ}\text{C}$			1.5	mA
V_F	forward voltage drop	$I_F = 10\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			1.05	V
		$I_F = 20\text{ A}$				1.15	V
		$I_F = 10\text{ A}$	$T_{VJ} = 125^{\circ}\text{C}$			0.94	V
		$I_F = 20\text{ A}$				1.08	V
I_{DAV}	bridge output current	$T_C = 85^{\circ}\text{C}$ rectangular $d = 0.5$	$T_{VJ} = 150^{\circ}\text{C}$			14	A
V_{FO}	threshold voltage	} for power loss calculation only		$T_{VJ} = 150^{\circ}\text{C}$		0.77	V
r_F	slope resistance					14.2	m Ω
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	$T_C = 25^{\circ}\text{C}$				15	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms; (50 Hz), sine}$	$T_{VJ} = 45^{\circ}\text{C}$			380	A
		$t = 8,3\text{ ms; (60 Hz), sine}$	$V_R = 0\text{ V}$			410	A
		$t = 10\text{ ms; (50 Hz), sine}$	$T_{VJ} = 150^{\circ}\text{C}$			325	A
		$t = 8,3\text{ ms; (60 Hz), sine}$	$V_R = 0\text{ V}$			350	A
I^2t	value for fusing	$t = 10\text{ ms; (50 Hz), sine}$	$T_{VJ} = 45^{\circ}\text{C}$			720	A ² s
		$t = 8,3\text{ ms; (60 Hz), sine}$	$V_R = 0\text{ V}$			700	A ² s
		$t = 10\text{ ms; (50 Hz), sine}$	$T_{VJ} = 150^{\circ}\text{C}$			530	A ² s
		$t = 8,3\text{ ms; (60 Hz), sine}$	$V_R = 0\text{ V}$			510	A ² s
C_J	junction capacitance	$V_R = 400\text{ V; } f = 1\text{ MHz}$		$T_{VJ} = 25^{\circ}\text{C}$	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} ≤ 1 mA		3000			V
		t = 1 minute			2500			V

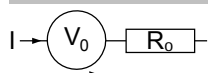


Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VBO22-18NO8	VBO22-18NO8	Box	50	477613

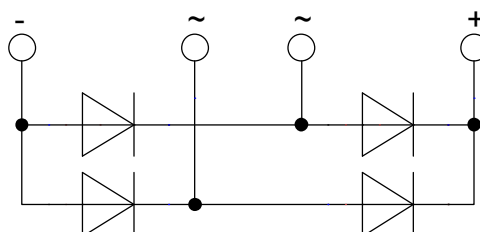
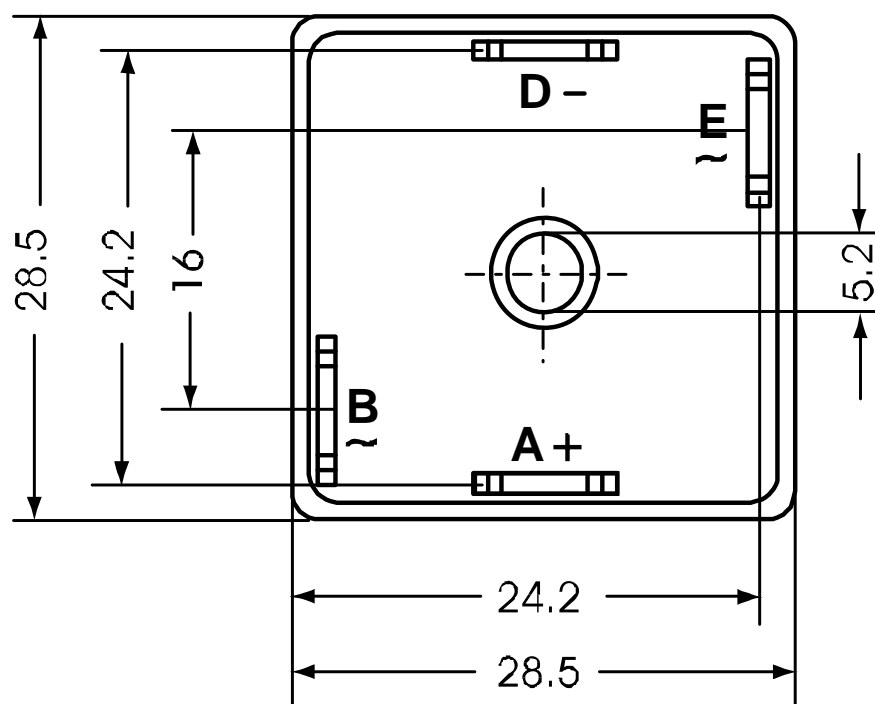
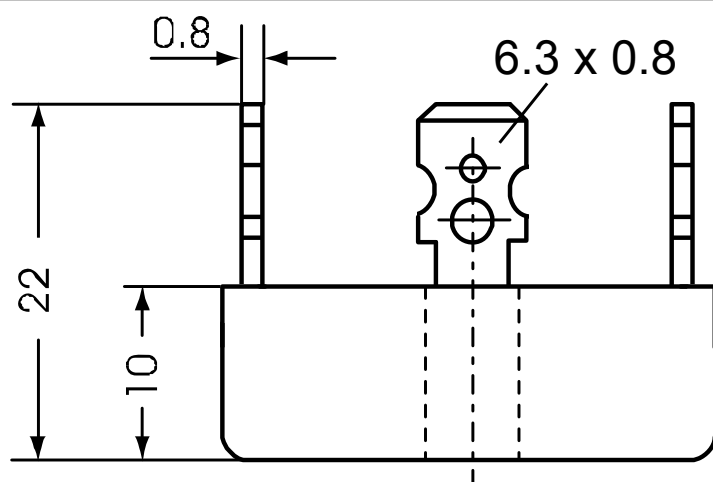
Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 150^\circ\text{C}$

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

Outlines FO-B



Rectifier

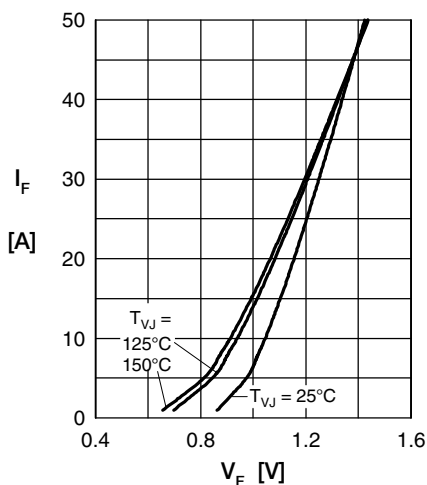


Fig. 1 Forward current vs. voltage drop per diode

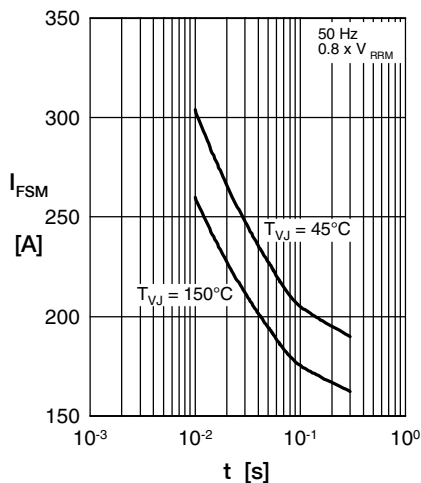


Fig. 2 Surge overload current vs. time per diode

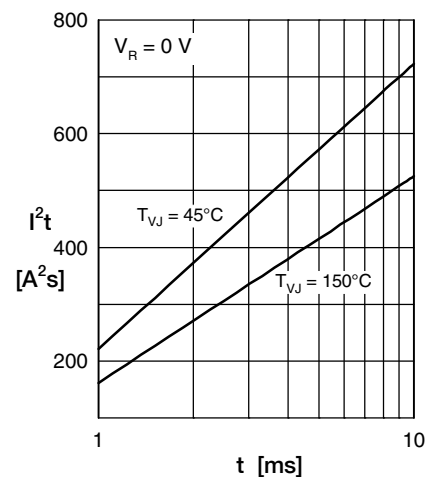


Fig. 3 I^2t vs. time per diode

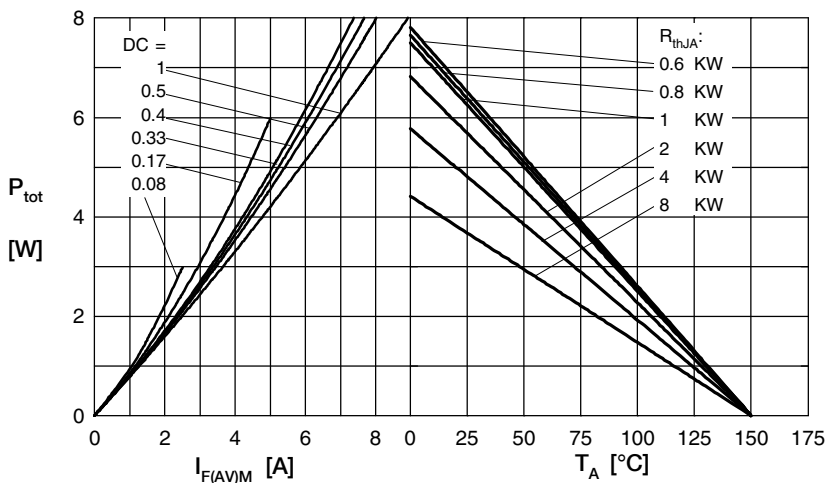


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

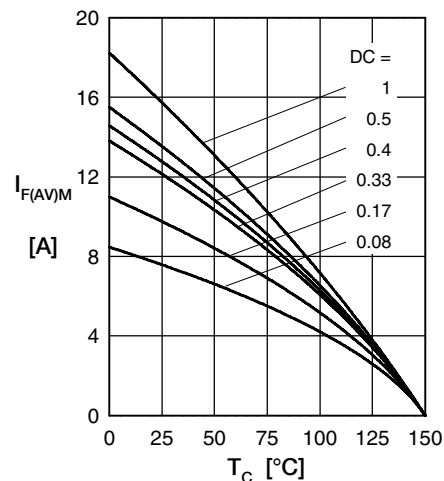


Fig. 5 Max. forward current vs. case temperature per diode

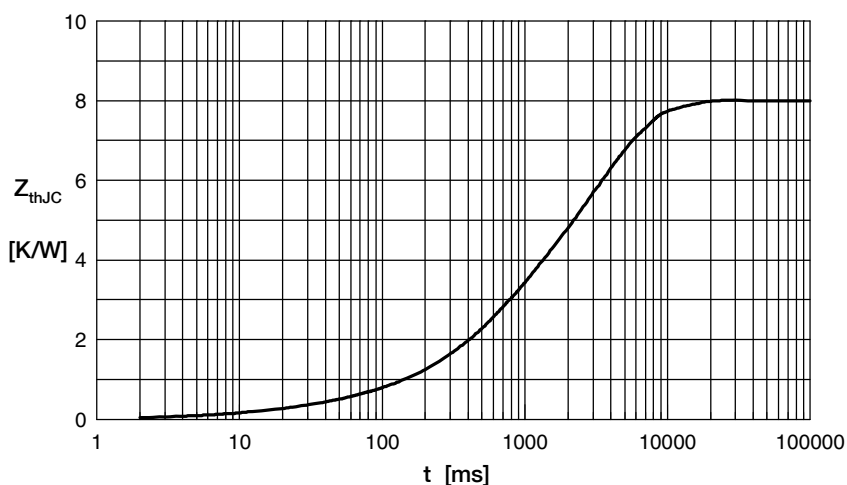


Fig. 6 Transient thermal impedance junction to case vs. time per diode

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