

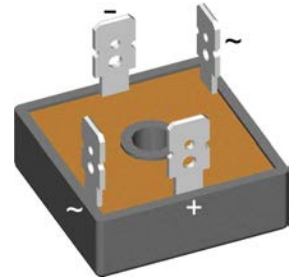
Standard Rectifier Module

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

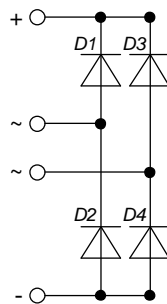
1~ Rectifier Bridge

Part number

VBO22-12N08



 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

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- ¼" fast-on terminals
- Easy to mount with one screw

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Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage					1300	V
V_{RRM}	max. repetitive reverse blocking voltage					1200	V
I_R	reverse current	$V_R = 1200$ V		$T_{VJ} = 25^\circ\text{C}$		40	μA
		$V_R = 1200$ V		$T_{VJ} = 150^\circ\text{C}$		1,5	mA
V_F	forward voltage drop	$I_F = 10$ A		$T_{VJ} = 25^\circ\text{C}$		1,05	V
		$I_F = 20$ A				1,15	V
		$I_F = 10$ A		$T_{VJ} = 125^\circ\text{C}$		0,94	V
		$I_F = 20$ A				1,08	V
I_{DAV}	bridge output current	$T_C = 85^\circ\text{C}$		$T_{VJ} = 150^\circ\text{C}$		14	A
		rectangular	d = 0.5				
V_{FO}	threshold voltage			$T_{VJ} = 150^\circ\text{C}$		0,77	V
r_F	slope resistance					14,2	m Ω
							for power loss calculation only
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 ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		380	A
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		410	A
		t = 10 ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		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		$T_{VJ} = 45^\circ\text{C}$		720	A ² s
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		700	A ² s
		t = 10 ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		530	A ² s
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		510	A ² s
C_J	junction capacitance	$V_R = 400$ V; f = 1 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_{VJ}	virtual junction temperature		-40		150	°C
T_{op}	operation temperature		-40		125	°C
T_{stg}	storage temperature		-40		125	°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	3000			V
		t = 1 minute	2500			V



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

Equivalent Circuits for Simulation

* on die level

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

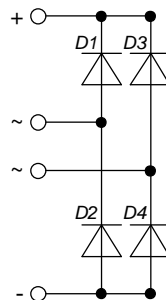
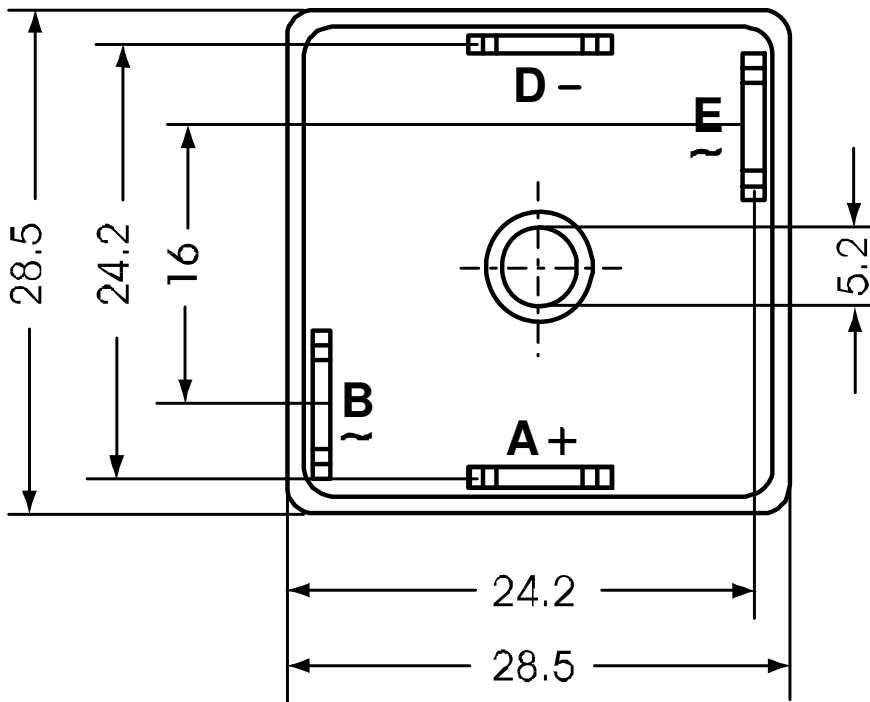
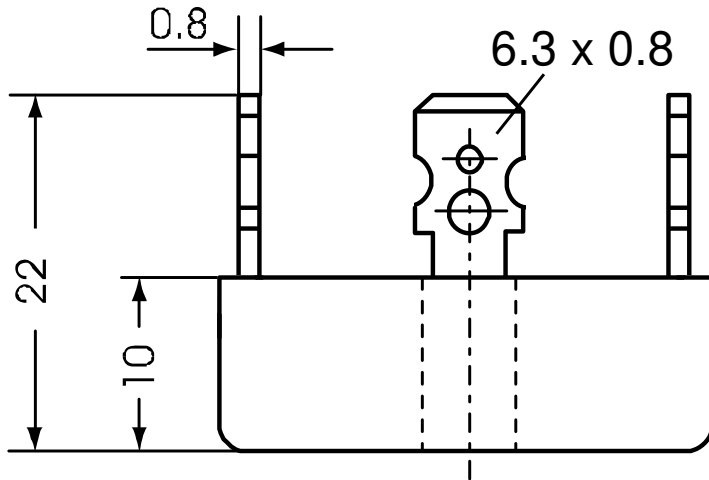


Rectifier

$V_{0\ max}$	threshold voltage	0,77	V
$R_{0\ max}$	slope resistance *	13	mΩ



Outlines FO-B



Rectifier

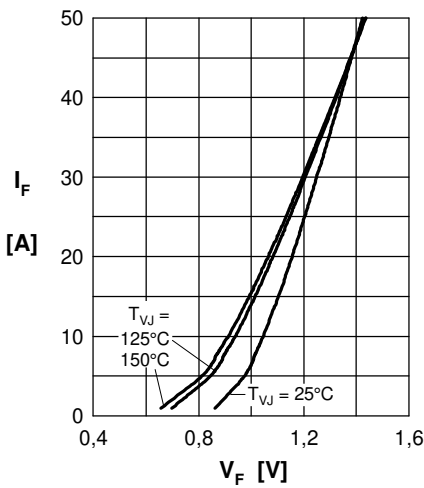


Fig. 1 Forward current vs. voltage drop per diode

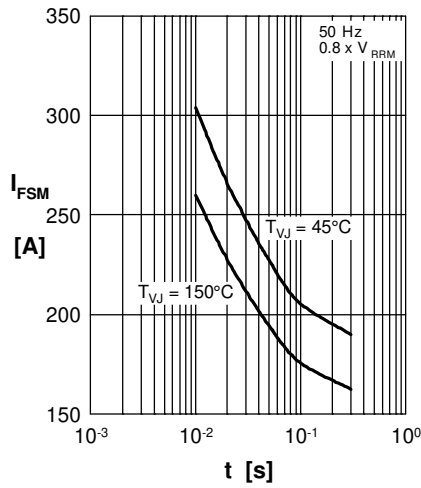


Fig. 2 Surge overload current vs. time per diode

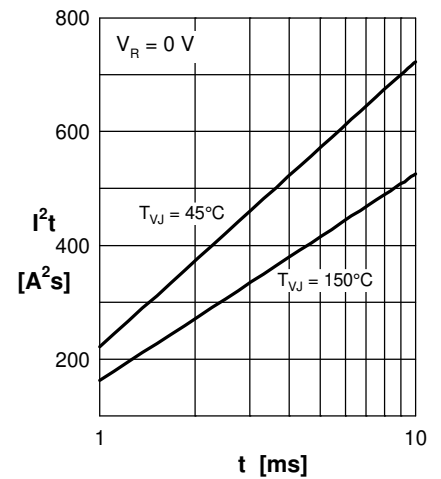


Fig. 3 I^2t vs. time per diode

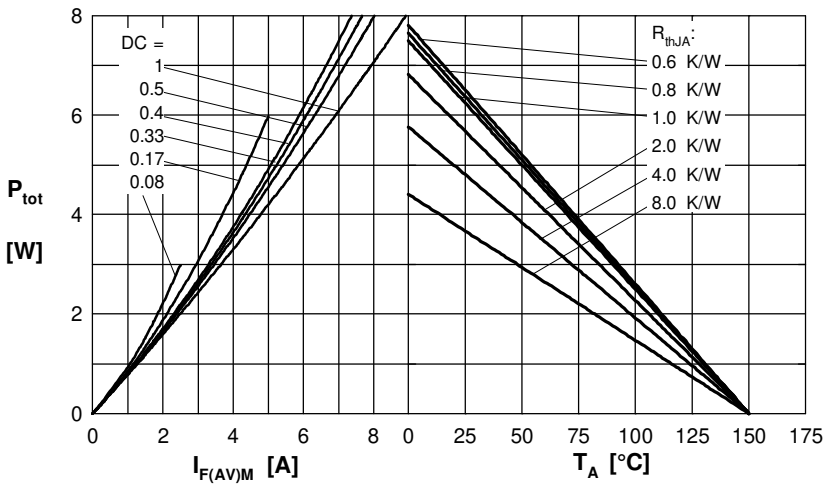


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

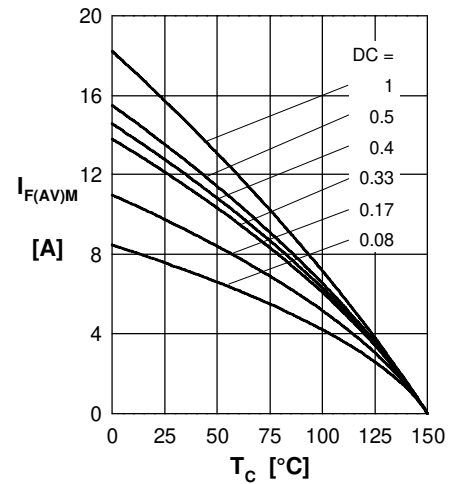


Fig. 5 Max. forward current vs. case temperature per diode

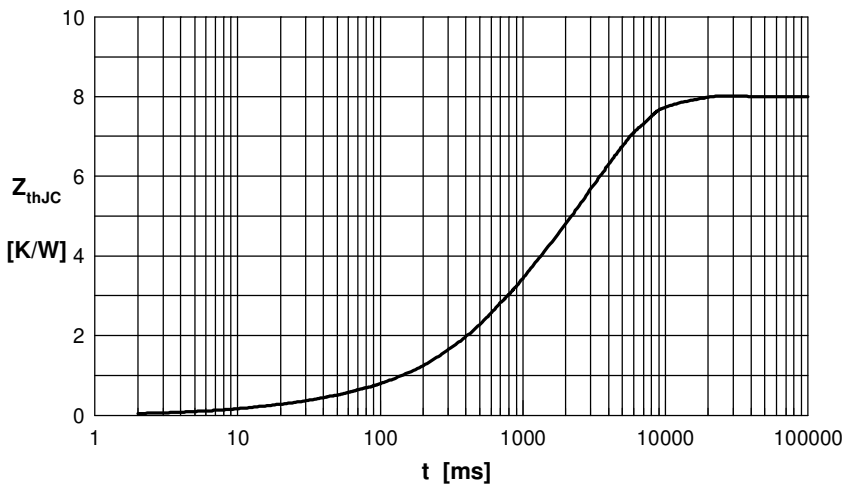


Fig. 6 Transient thermal impedance junction to case vs. time per diode

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