

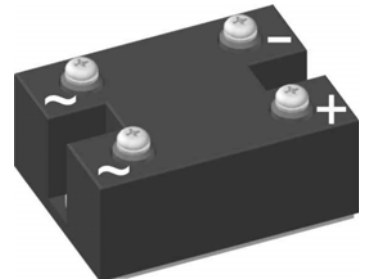
Standard Rectifier Module

1~ Rectifier	
V_{RRM}	= 800 V
I_{DAV}	= 100 A
I_{FSM}	= 1500 A

1~ Rectifier Bridge

Part number

VBO105-08NO7



 E72873



Features / Advantages:

- Package with DCB ceramic
- Improved temperature and power cycling
- Planar passivated chips
- Very low forward voltage drop
- Very low leakage current

Applications:

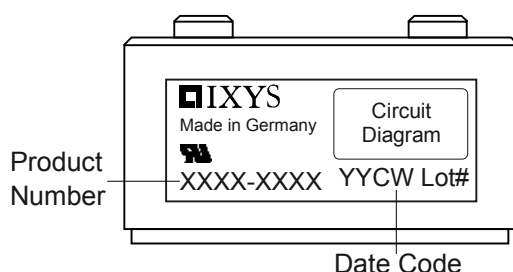
- Diode for main rectification
- For one phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Package: PWS-C

- Industry standard outline
- RoHS compliant
- Easy to mount with two screws
- Base plate: Copper internally DCB isolated
- Advanced power cycling

Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				900	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				800	V
I_R	reverse current	$V_R = 800\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			100	μA
		$V_R = 800\text{ V}$	$T_{VJ} = 150^{\circ}\text{C}$			2	mA
V_F	forward voltage drop	$I_F = 40\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			1.09	V
		$I_F = 80\text{ A}$				1.24	V
		$I_F = 40\text{ A}$	$T_{VJ} = 125^{\circ}\text{C}$			1.00	V
		$I_F = 80\text{ A}$				1.19	V
I_{DAV}	bridge output current	$T_C = 100^{\circ}\text{C}$ rectangular	$T_{VJ} = 150^{\circ}\text{C}$ d = 0.5			100	A
V_{FO}	threshold voltage	} for power loss calculation only		$T_{VJ} = 150^{\circ}\text{C}$		0.78	V
r_F	slope resistance					4.8	m Ω
R_{thJC}	thermal resistance junction to case					0.8	K/W
R_{thCH}	thermal resistance case to heatsink				0.30		K/W
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$				155	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^{\circ}\text{C}$			1.50	kA
		t = 8,3 ms; (60 Hz), sine	$V_R = 0\text{ V}$			1.62	kA
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150^{\circ}\text{C}$			1.28	kA
		t = 8,3 ms; (60 Hz), sine	$V_R = 0\text{ V}$			1.38	kA
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^{\circ}\text{C}$			11.3	kA ² s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0\text{ V}$			10.9	kA ² s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150^{\circ}\text{C}$			8.13	kA ² s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0\text{ V}$			7.87	kA ² s
C_J	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$			58		pF

Package PWS-C			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			150	A
T_{stg}	storage temperature		-40		125	°C
T_{VJ}	virtual junction temperature		-40		150	°C
Weight				237		g
M_D	mounting torque		4.25		5.75	Nm
M_T	terminal torque		4.25		5.75	Nm
$d_{Spp/App}$	creepage distance on surface striking distance through air	terminal to terminal	26.0			mm
$d_{Spt/Abp}$		terminal to backside	14.0			mm
V_{ISOL}	isolation voltage	t = 1 second	3000			V
		t = 1 minute	2500			V

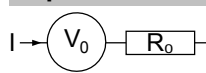


Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VBO105-08NO7	VBO105-08NO7	Box	10	475769

Equivalent Circuits for Simulation

* on die level

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



Rectifier

$V_{0\max}$	threshold voltage	0.78	V
$R_{0\max}$	slope resistance *	3.6	mΩ

Technical drawing of a rectangular plate, showing two views: a top view and a side view.

Top View Dimensions:

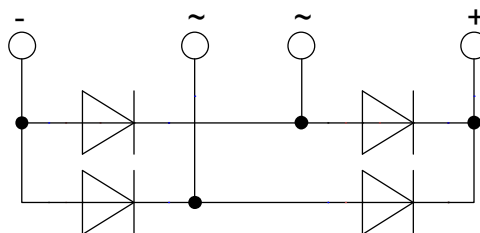
- Overall width: 67
- Overall height: 50
- Distance from left edge to center of left hole: 10
- Distance from right edge to center of right hole: 13.5
- Distance from top edge to center of top hole: 11
- Distance from bottom edge to center of bottom hole: 28
- Distance between centers of left holes: 50
- Distance between centers of right holes: 8.5
- Distance from top edge to center of top hole (alternative): 10.6
- Distance from bottom edge to center of bottom hole (alternative): 10
- Distance from left edge to center of left hole (alternative): 9
- Distance from right edge to center of right hole (alternative): 10

Side View Dimensions:

- Overall width: 6.5
- Overall height: 31
- Distance from top edge to center of top hole: 27.5
- Distance from bottom edge to center of bottom hole: 29
- Distance from top edge to center of top hole (alternative): 2
- Distance from bottom edge to center of bottom hole (alternative): 1.5
- Distance from left edge to center of left hole: 1
- Distance from right edge to center of right hole: 1

Other Features:

- Two holes on the left side, labeled "M5".
- Two holes on the right side, labeled "M5".
- Two holes on the top edge, labeled "M5".
- Two holes on the bottom edge, labeled "M5".
- Two holes on the left side, labeled "M5".
- Two holes on the right side, labeled "M5".
- Two holes on the top edge, labeled "M5".
- Two holes on the bottom edge, labeled "M5".



Rectifier

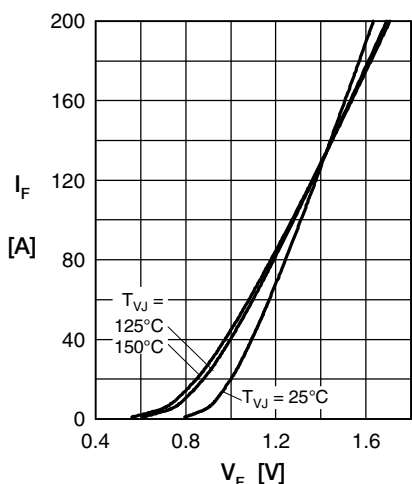


Fig. 1 Forward current versus voltage drop per diode

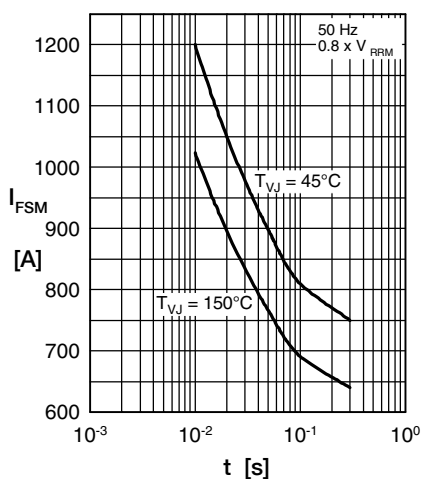


Fig. 2 Surge overload current vs. time per diode

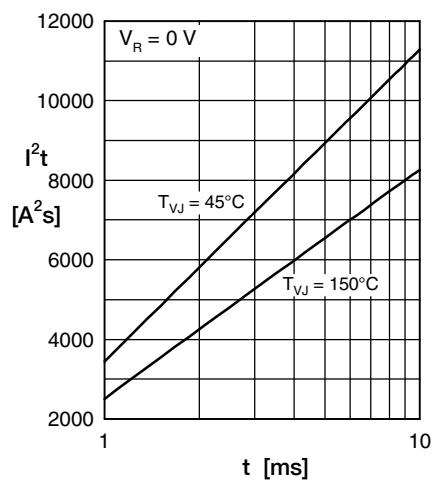


Fig. 3 I^2t versus time per diode

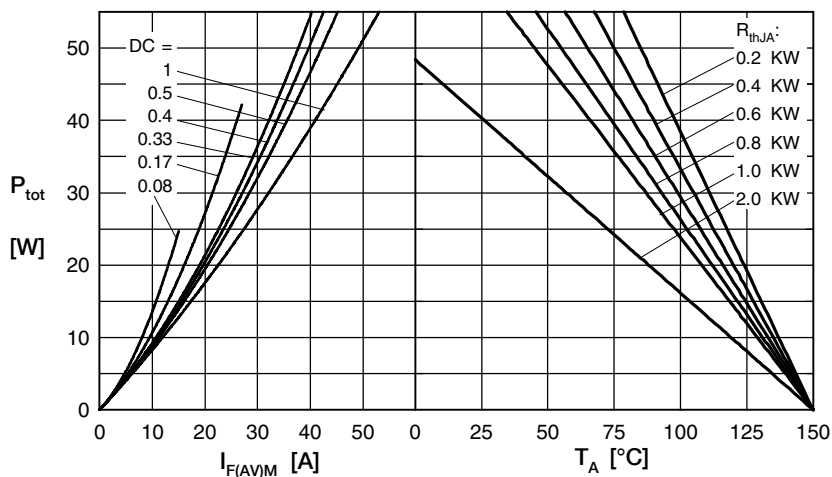


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

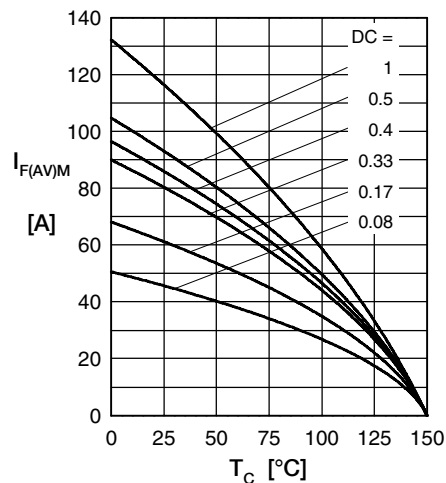


Fig. 5 Max. forward current vs. case temperature per diode

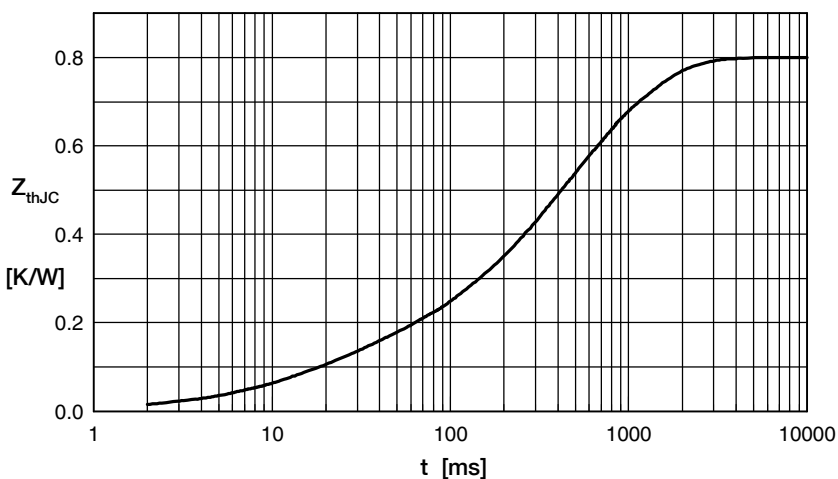


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.100	0.020
2	0.014	0.010
3	0.192	0.225
4	0.281	0.800
5	0.213	0.580

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