

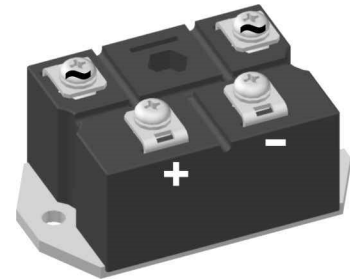
Standard Rectifier Module

1~ Rectifier	
$V_{RRM} =$	800 V
$I_{DAV} =$	70 A
$I_{FSM} =$	750 A

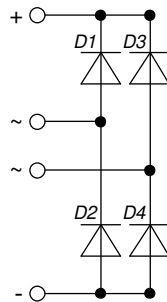
1~ Rectifier Bridge

Part number

VBO72-08NO7



 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-D

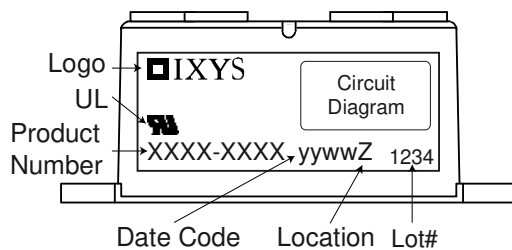
- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Easy to mount with two screws
- Base plate: Copper internally DCB isolated
- Advanced power cycling

Disclaimer Notice

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Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage					900	V
V_{RRM}	max. repetitive reverse blocking voltage					800	V
I_R	reverse current	$V_R = 800\text{ V}$	$T_{VJ} = 25^\circ\text{C}$			100	μA
		$V_R = 800\text{ V}$	$T_{VJ} = 150^\circ\text{C}$			1.5	mA
V_F	forward voltage drop	$I_F = 30\text{ A}$	$T_{VJ} = 25^\circ\text{C}$			1.08	V
		$I_F = 60\text{ A}$				1.22	V
		$I_F = 30\text{ A}$	$T_{VJ} = 125^\circ\text{C}$			0.99	V
		$I_F = 60\text{ A}$				1.17	V
I_{DAV}	bridge output current	$T_C = 110^\circ\text{C}$ rectangular	$T_{VJ} = 150^\circ\text{C}$			70	A
V_{FO}	threshold voltage	} for power loss calculation only				0.78	V
r_F	slope resistance					6	m Ω
R_{thJC}	thermal resistance junction to case					0.9	K/W
R_{thCH}	thermal resistance case to heatsink				0.4		K/W
P_{tot}	total power dissipation			$T_C = 25^\circ\text{C}$		135	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^\circ\text{C}$			750	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			810	A
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^\circ\text{C}$			640	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			690	A
I^2t	value for fusing	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^\circ\text{C}$			2.82	kA ² s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			2.73	kA ² s
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^\circ\text{C}$			2.05	kA ² s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			1.98	kA ² s
C_J	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$		27		pF

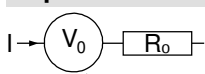
Package PWS-D				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
I_{RMS}	RMS current	per terminal			150	A	
T_{VJ}	virtual junction temperature		-40		150	°C	
T_{op}	operation temperature		-40		125	°C	
T_{stg}	storage temperature		-40		125	°C	
Weight					153	g	
M_D	mounting torque		4.25		5.75	Nm	
M_T	terminal torque		4.25		5.75	Nm	
$d_{Spp/App}$	creepage distance on surface striking distance through air	terminal to terminal	9.5			mm	
$d_{Spb/Apb}$		terminal to backside	26.0			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	VBO72-08NO7	VBO72-08NO7	Box	10	482102

Equivalent Circuits for Simulation

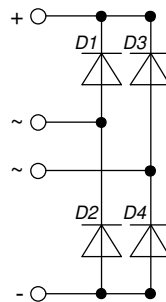
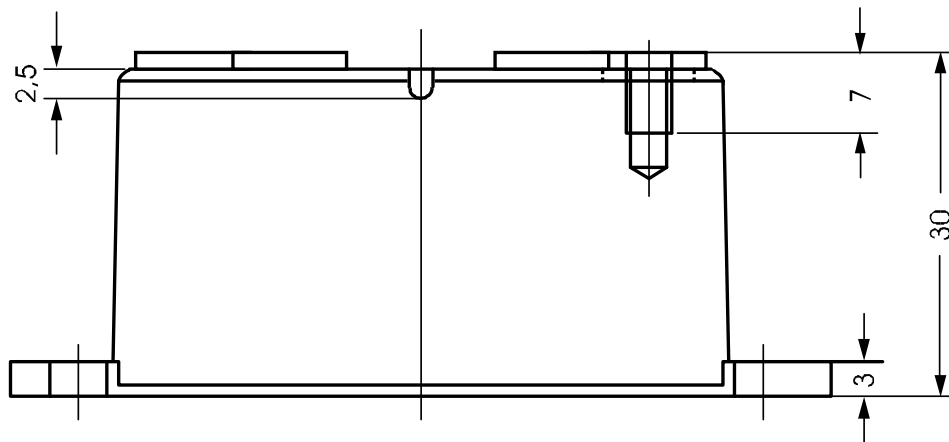
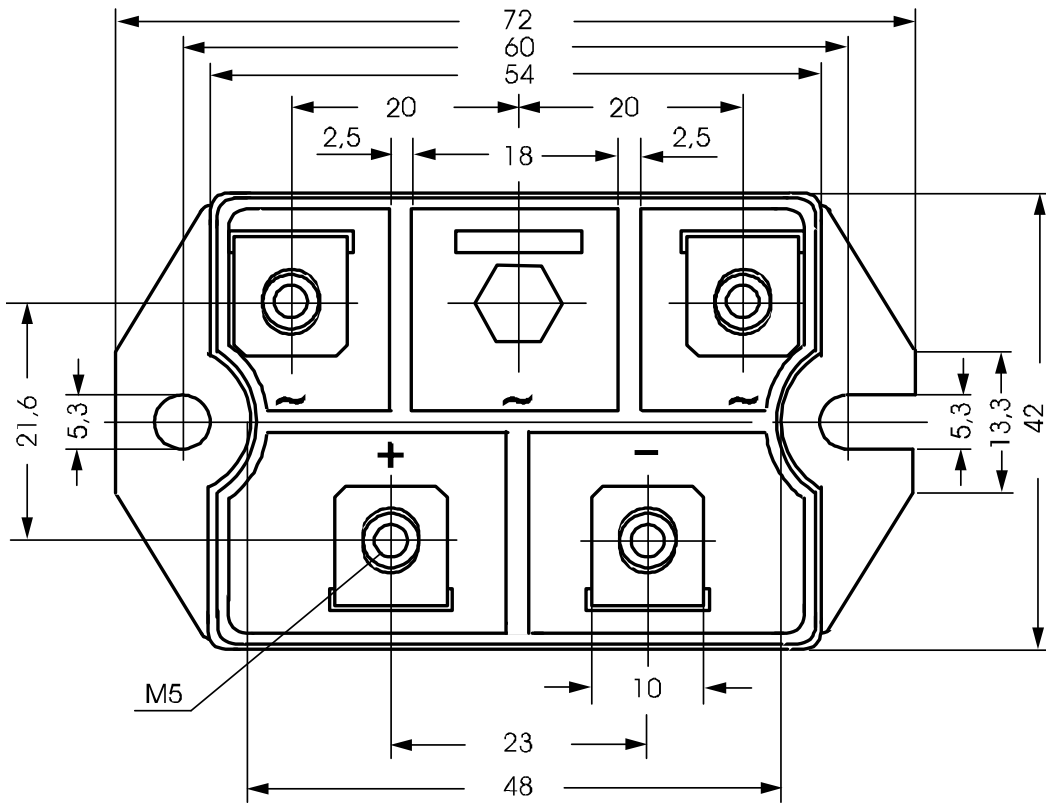
* on die level

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

Rectifier

$V_{0\ max}$	threshold voltage	0.78	V
$R_{0\ max}$	slope resistance *	4.8	mΩ



Outlines PWS-D





Rectifier



Fig. 1 Forward current versus voltage drop per diode



Fig. 2 Surge overload current

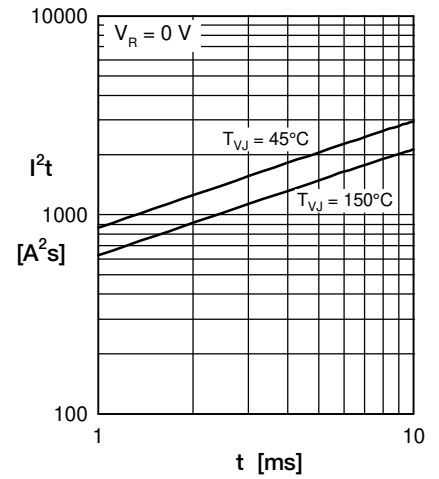


Fig. 3 I^2t versus time per diode

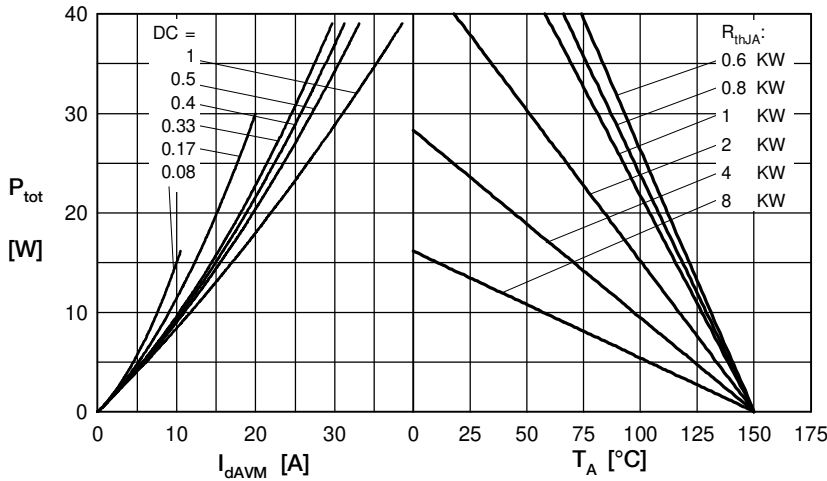


Fig. 4 Power dissipation vs. direct output current & ambient temperature



Fig. 5 Max. forward current vs. case temperature



Fig. 6 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.05	0.001
2	0.14	0.030
3	0.18	0.070
4	0.28	0.150
5	0.25	0.950