

## Excellent Integrated System Limited

Stocking Distributor

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[IXYS Corporation](#)

[VBO125-12NO7](#)

For any questions, you can email us directly:

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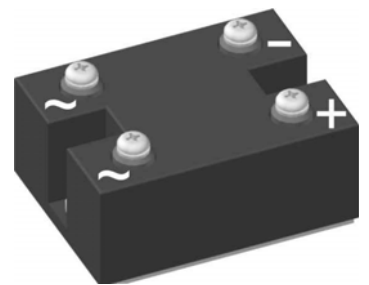
## Standard Rectifier Module


<b>1~ Rectifier</b>	
$V_{RRM}$	= 1200 V
$I_{DAV}$	= 125 A
$I_{FSM}$	= 1800 A

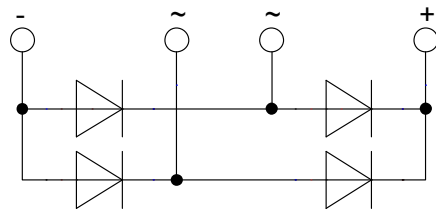
### 1~ Rectifier Bridge

Part number

**VBO125-12N07**



 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

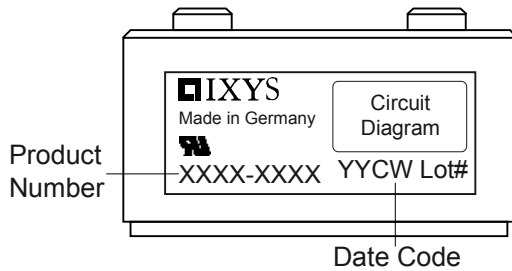
- Industry standard outline
- RoHS compliant
- Easy to mount with two screws
- Base plate: Copper internally DCB isolated
- Advanced power cycling

Rectifier				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
$V_{RSM}$	max. non-repetitive reverse blocking voltage				1300	V	
$V_{RRM}$	max. repetitive reverse blocking voltage				1200	V	
$I_R$	reverse current	$V_R = 1200\text{ V}$			200	$\mu\text{A}$	
		$V_R = 1200\text{ V}$			2	mA	
$V_F$	forward voltage drop	$I_F = 50\text{ A}$			1.07	V	
		$I_F = 100\text{ A}$			1.21	V	
		$I_F = 50\text{ A}$	$T_{VJ} = 125^\circ\text{C}$			0.97	V
		$I_F = 100\text{ A}$				1.15	V
$I_{DAV}$	bridge output current	$T_C = 105^\circ\text{C}$ rectangular $d = 0.5$			125	A	
$V_{F0}$	threshold voltage	} for power loss calculation only			0.76	V	
$r_F$	slope resistance				3.6	m $\Omega$	
$R_{thJC}$	thermal resistance junction to case				0.6	K/W	
$R_{thCH}$	thermal resistance case to heatsink			0.3		K/W	
$P_{tot}$	total power dissipation				205	W	
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^\circ\text{C}$			1.80	kA
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			1.95	kA
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^\circ\text{C}$			1.53	kA
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			1.65	kA
$I^2t$	value for fusing	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^\circ\text{C}$			16.2	kA <sup>2</sup> s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			15.7	kA <sup>2</sup> s
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^\circ\text{C}$			11.7	kA <sup>2</sup> s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			11.3	kA <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$		58	pF	



# VBO125-12NO7

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
<b>Weight</b>				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
$d_{Spb/Apb}$		terminal to backside	14.0			mm
$V_{ISOL}$	isolation voltage	t = 1 second	3000			V
		t = 1 minute	2500			V

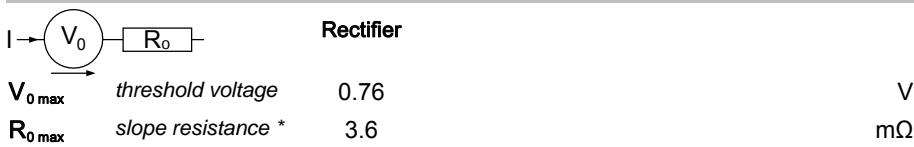


Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VBO125-12NO7	VBO125-12NO7	Box	10	482552

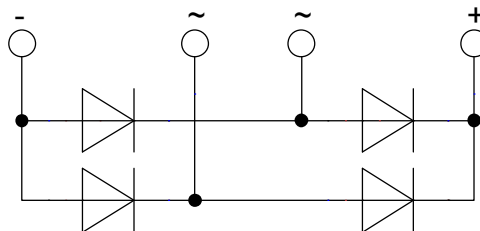
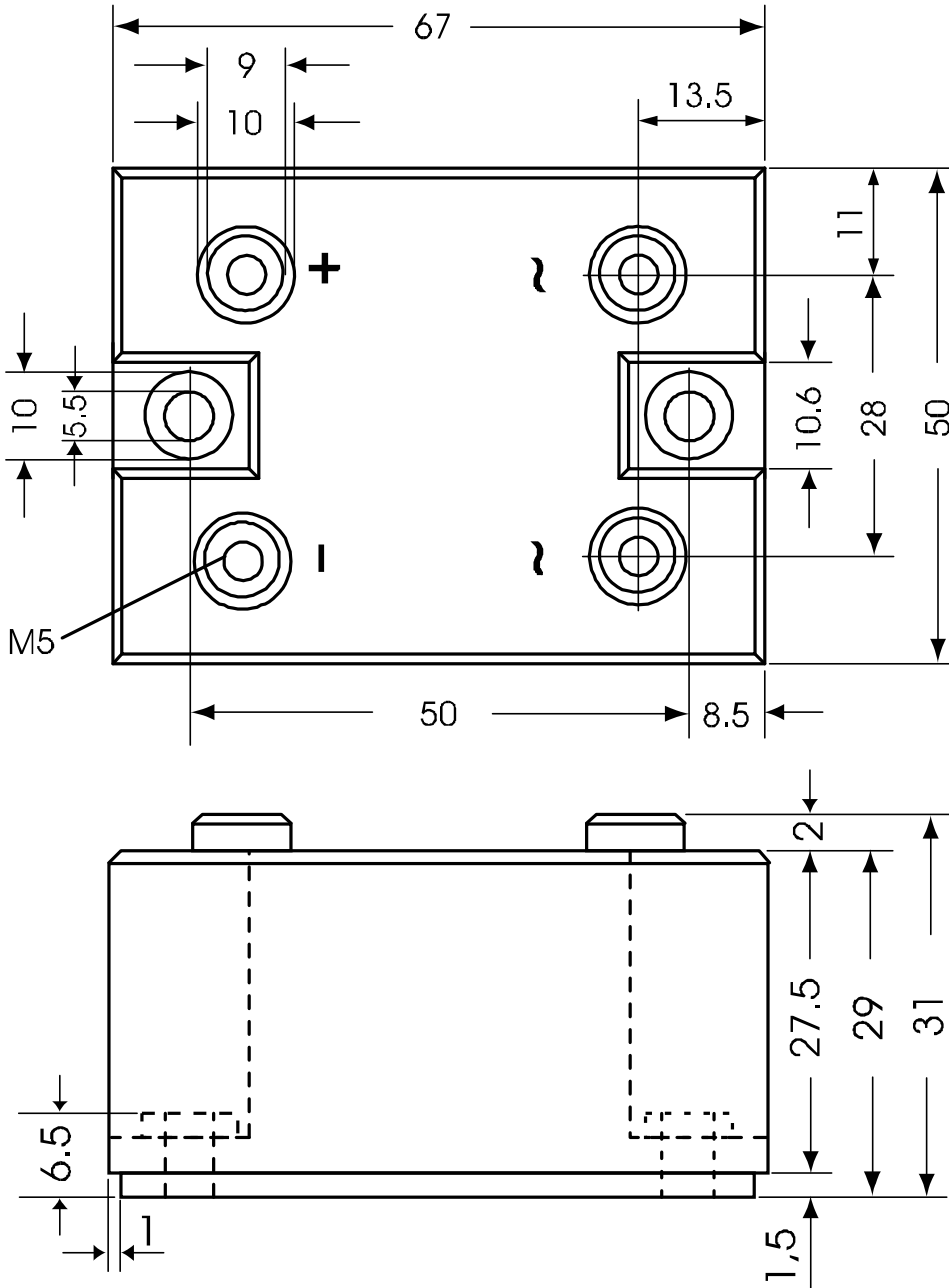
### Equivalent Circuits for Simulation

\* on die level

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



Outlines PWS-C



**Rectifier**

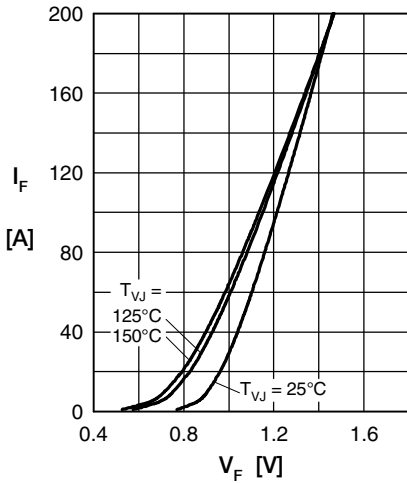


Fig. 1 Forward current versus voltage drop per diode

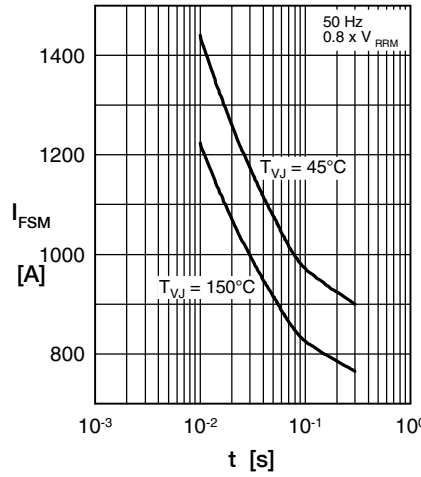


Fig. 2 Surge overload current vs. time per diode

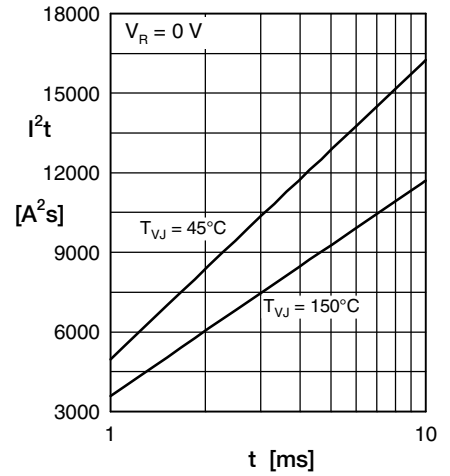


Fig. 3 I<sup>2</sup>t versus time per diode

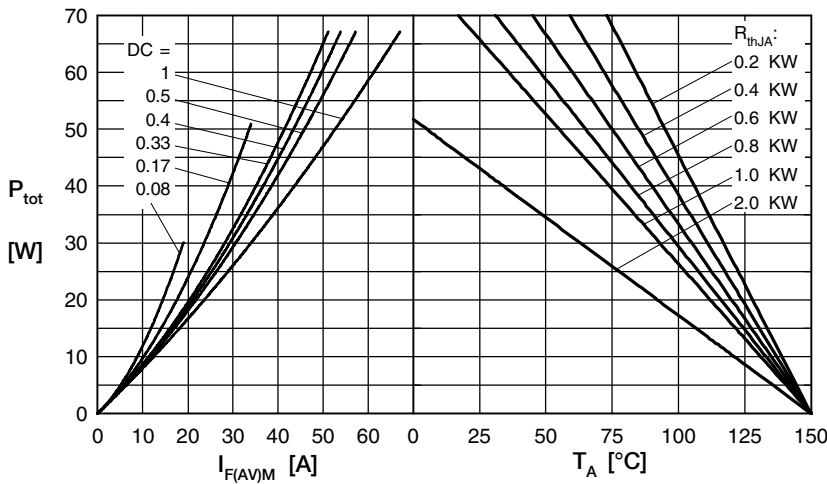


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

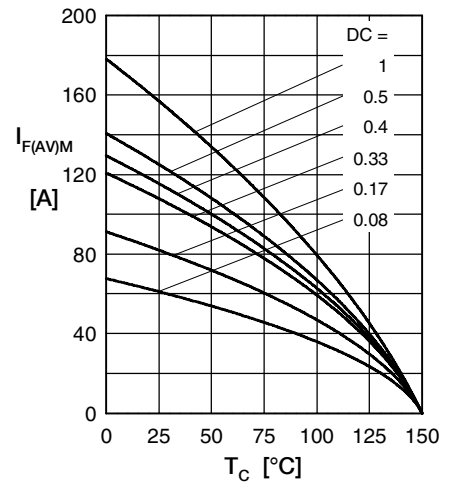


Fig. 5 Max. forward current vs. case temperature per diode

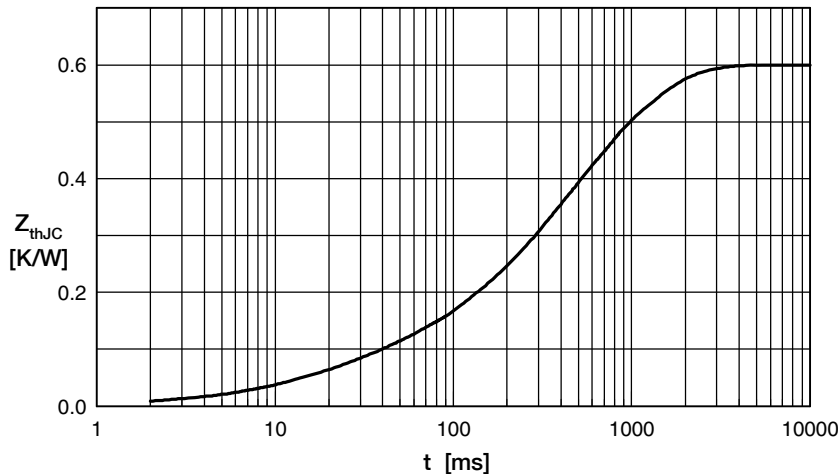


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for  $Z_{thJC}$  calculation:

i	$R_{th}$ (K/W)	$t_i$ (s)
1	0.060	0.020
2	0.003	0.010
3	0.150	0.225
4	0.243	0.800
5	0.144	0.580