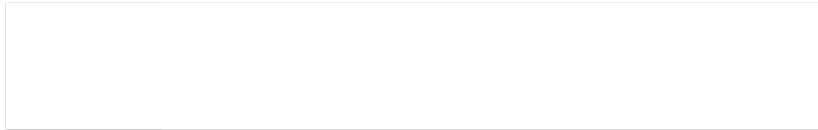


# Standard Rectifier Module

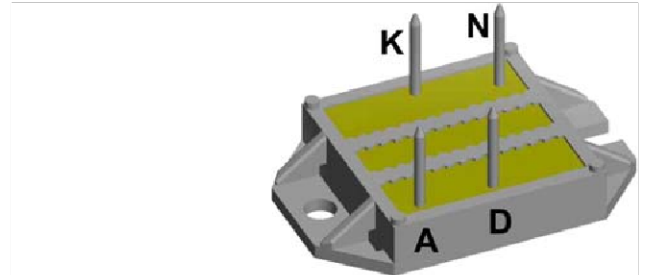


1~ Rectifier	
$V_{RRM}$	= 800 V
$I_{DAV}$	= 70 A
$I_{FSM}$	= 550 A

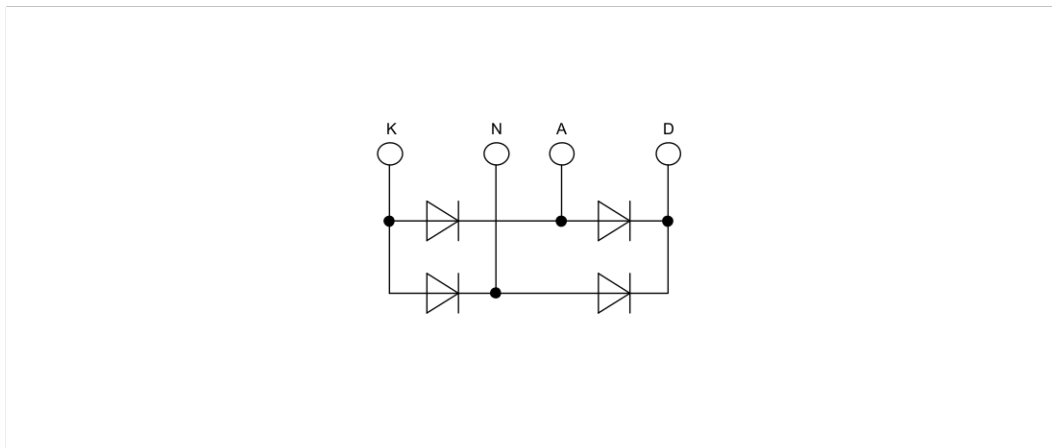
1~ Rectifier Bridge

Part number

VBO68-08NO7



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:

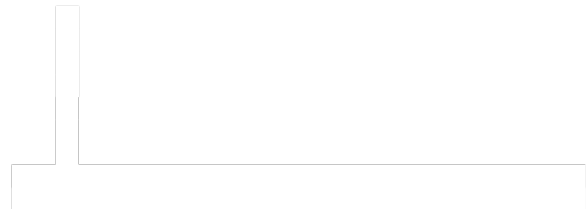
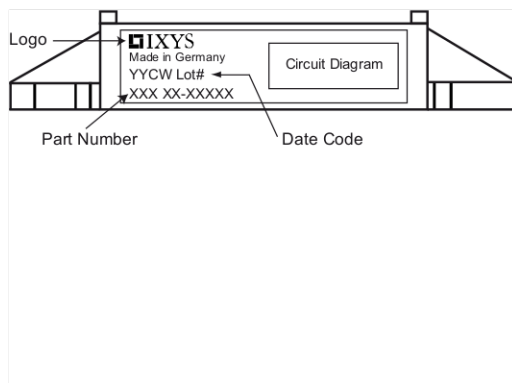
- Diode for main rectification
- For one phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

### Package: ECO-PAC1

- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Height: 9 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

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	$V_R = 800\text{ V}$			40	$\mu\text{A}$	
		$V_R = 800\text{ V}$			1.5	mA	
$V_F$	forward voltage drop	$I_F = 30\text{ A}$			1.14	V	
		$I_F = 60\text{ A}$			1.32	V	
		$I_F = 30\text{ A}$	$T_{VJ} = 125^\circ\text{C}$			1.06	V
		$I_F = 60\text{ A}$	$T_{VJ} = 125^\circ\text{C}$			1.30	V
$I_{DAV}$	bridge output current	$T_C = 105^\circ\text{C}$ rectangular $d = 0.5$			70	A	
$V_{FO}$	threshold voltage	} for power loss calculation only			0.81	V	
$r_F$	slope resistance				7.8	m $\Omega$	
$R_{thJC}$	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				135	W	
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^\circ\text{C}$		550	A	
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$		595	A	
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^\circ\text{C}$		470	A	
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$		505	A	
$I^2t$	value for fusing	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^\circ\text{C}$		1.52	kA <sup>2</sup> s	
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$		1.48	kA <sup>2</sup> s	
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^\circ\text{C}$		1.11	kA <sup>2</sup> s	
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$		1.06	kA <sup>2</sup> s	
$C_J$	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$		18	pF	

Package ECO-PAC1		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
<b>Weight</b>				19		g
$M_D$	mounting torque		1.5		2	Nm
$d_{Spp/App}$	creepage distance on surface   striking distance through air	terminal to terminal	6.0			mm
$d_{Spb/Apb}$		terminal to backside	10.0			mm
$V_{ISOL}$	isolation voltage	t = 1 second	3000			V
		t = 1 minute 50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	2500			V



Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VBO68-08NO7	VBO68-08NO7	Box	25	485098

### Equivalent Circuits for Simulation

\* on die level

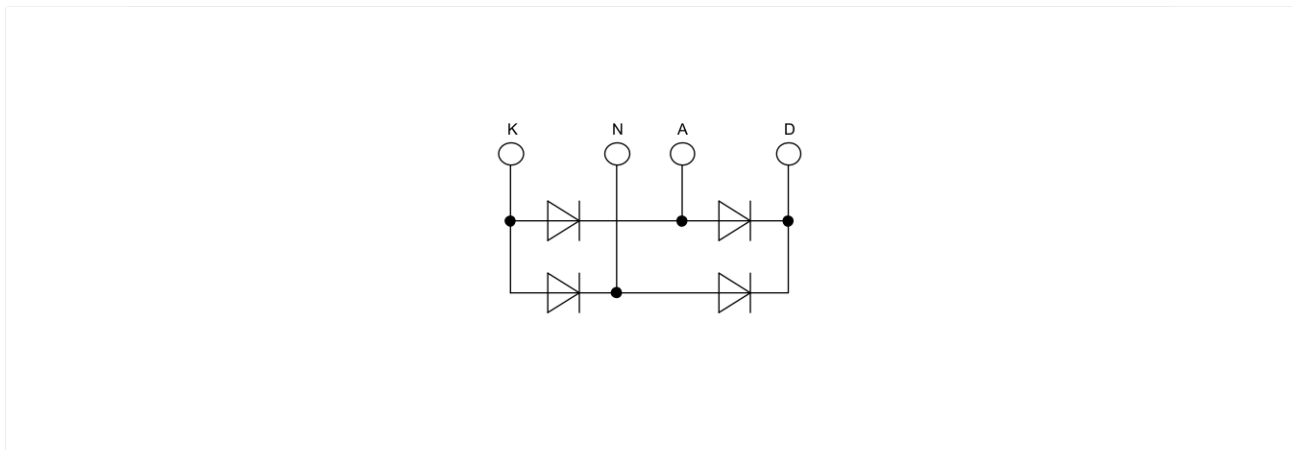
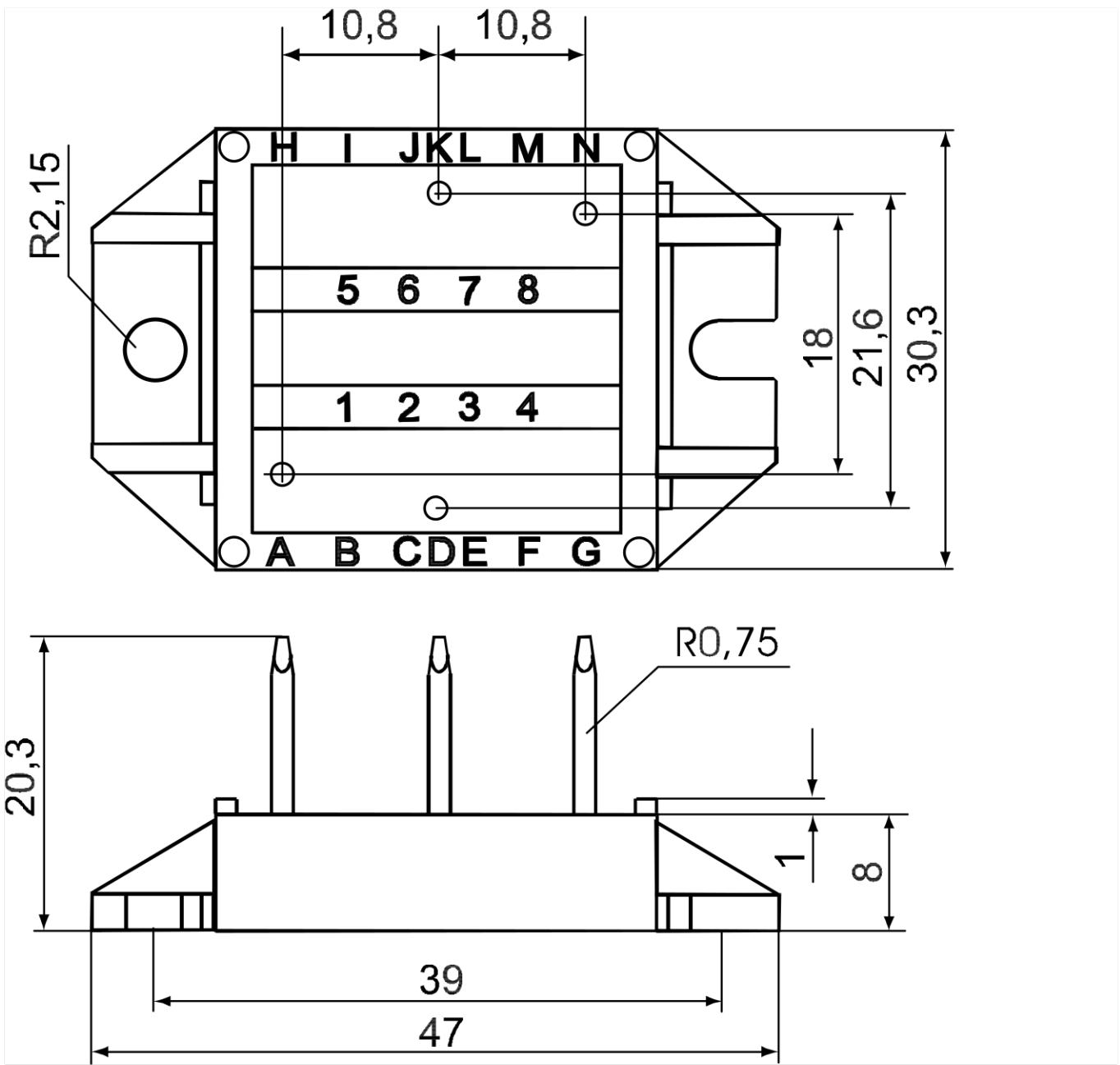
$T_{VJ} = 150$  °C



Rectifier

$V_{0 \max}$	threshold voltage	0.81	V
$R_{0 \max}$	slope resistance *	6.6	mΩ

Outlines ECO-PAC1



## Rectifier

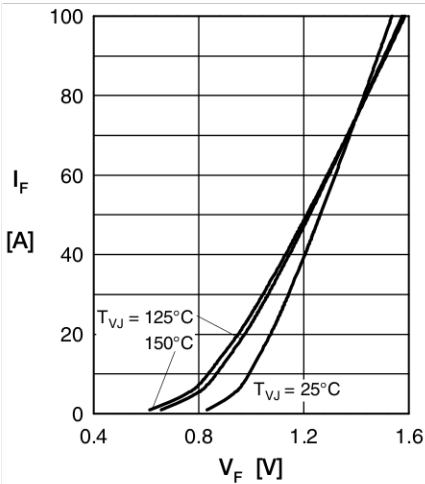


Fig. 1 Forward current versus voltage drop per diode

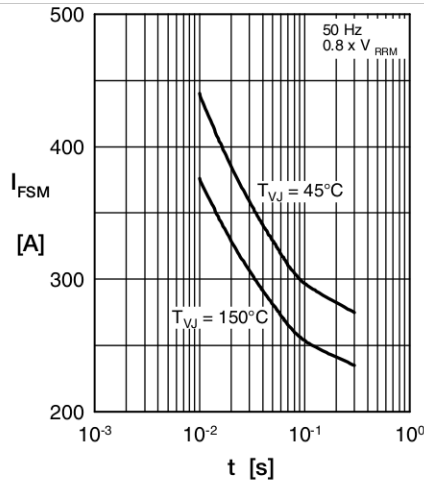


Fig. 2 Surge overload current

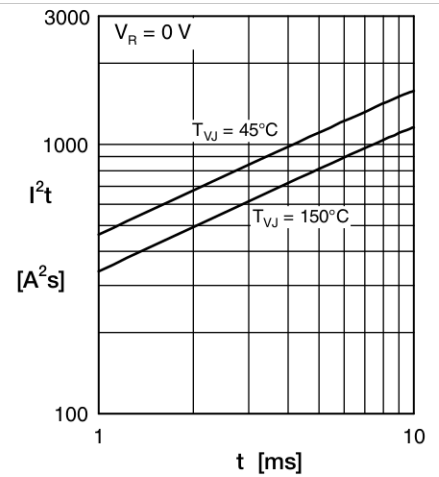


Fig. 3  $I^2t$  versus time per diode

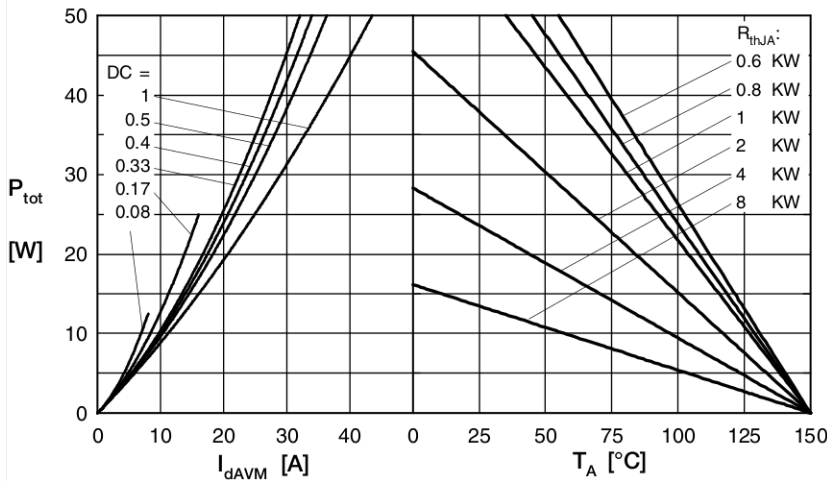


Fig. 4 Power dissipation vs. direct output current & ambient temperature

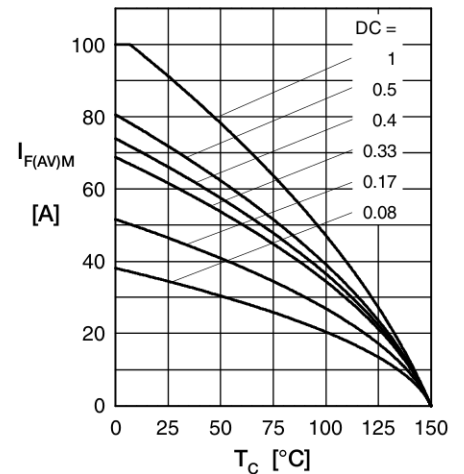


Fig. 5 Max. forward current vs. case temperature

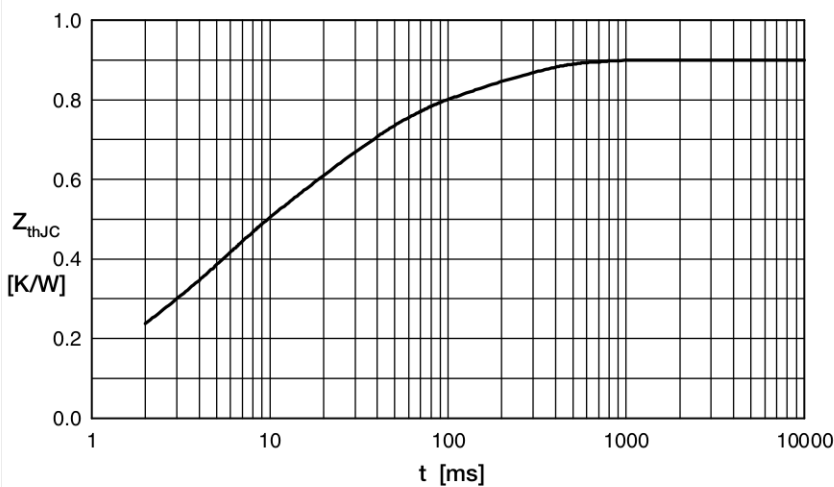


Fig. 6 Transient thermal impedance junction to case

Constants for  $Z_{thJC}$  calculation:

i	$R_{th}$ (K/W)	$t_i$ (s)
1	0.0607	0.000
2	0.1230	0.00256
3	0.2330	0.0045
4	0.3230	0.0242
5	0.1628	0.18