

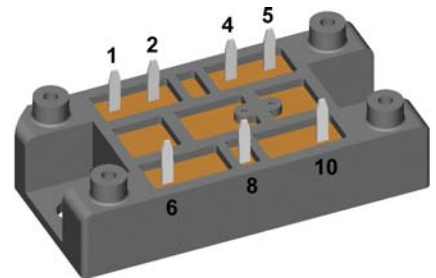
Standard Rectifier Module

3~ Rectifier	
V_{RRM}	= 1200 V
I_{DAV}	= 45 A
I_{FSM}	= 300 A

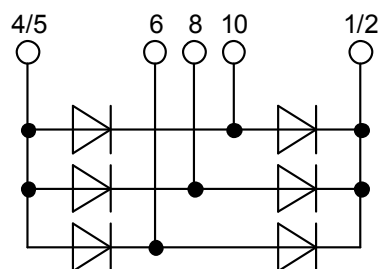
3~ Rectifier Bridge

Part number

VUO34-12NO1



 E72873



Features / Advantages:

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

Applications:

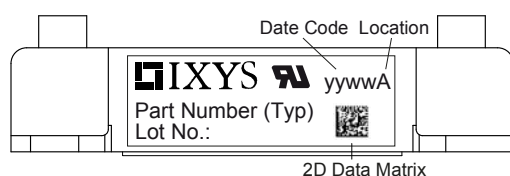
- Diode for main rectification
- For three phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Package: V1-A-Pack

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Height: 17 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	$T_{VJ} = 25^{\circ}\text{C}$				1300	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				1200	V
I_R	reverse current	$V_R = 1200\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			20	μA
		$V_R = 1200\text{ V}$	$T_{VJ} = 150^{\circ}\text{C}$			1	mA
V_F	forward voltage drop	$I_F = 15\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			1.13	V
		$I_F = 45\text{ A}$				1.46	V
		$I_F = 15\text{ A}$	$T_{VJ} = 125^{\circ}\text{C}$			1.06	V
		$I_F = 45\text{ A}$				1.48	V
I_{DAV}	bridge output current	$T_C = 110^{\circ}\text{C}$	$T_{VJ} = 150^{\circ}\text{C}$			45	A
		rectangular $d = \frac{1}{3}$					
V_{FO}	threshold voltage	} for power loss calculation only		$T_{VJ} = 150^{\circ}\text{C}$		0.81	V
r_F	slope resistance					14.9	m Ω
R_{thJC}	thermal resistance junction to case					1.7	K/W
R_{thCH}	thermal resistance case to heatsink				0.4		K/W
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$				70	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms; (50 Hz), sine}$	$T_{VJ} = 45^{\circ}\text{C}$			300	A
		$t = 8,3\text{ ms; (60 Hz), sine}$	$V_R = 0\text{ V}$			325	A
		$t = 10\text{ ms; (50 Hz), sine}$	$T_{VJ} = 150^{\circ}\text{C}$			255	A
		$t = 8,3\text{ ms; (60 Hz), sine}$	$V_R = 0\text{ V}$			275	A
I^2t	value for fusing	$t = 10\text{ ms; (50 Hz), sine}$	$T_{VJ} = 45^{\circ}\text{C}$			450	A ² s
		$t = 8,3\text{ ms; (60 Hz), sine}$	$V_R = 0\text{ V}$			440	A ² s
		$t = 10\text{ ms; (50 Hz), sine}$	$T_{VJ} = 150^{\circ}\text{C}$			325	A ² s
		$t = 8,3\text{ ms; (60 Hz), sine}$	$V_R = 0\text{ V}$			315	A ² s
C_J	junction capacitance	$V_R = 400\text{ V; } f = 1\text{ MHz}$		$T_{VJ} = 25^{\circ}\text{C}$		11	pF

Package V1-A-Pack			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
Weight				37		g
M_D	mounting torque		2		2.5	Nm
$d_{Spp/App}$	creepage distance on surface striking distance through air	terminal to terminal	6.0			mm
$d_{Spb/Apb}$		terminal to backside	12.0			mm
V_{ISOL}	isolation voltage	t = 1 second	3600			V
		t = 1 minute	3000			V



Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO34-12NO1	VUO34-12NO1	Box	10	461121

Equivalent Circuits for Simulation

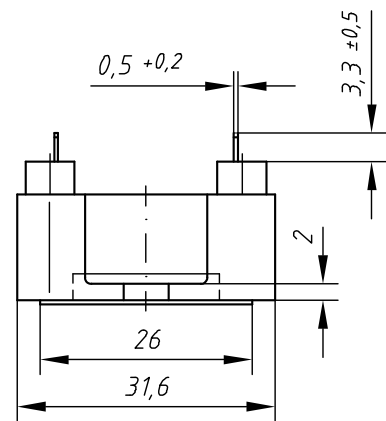
* on die level

 $T_{VJ} = 150\text{ °C}$ 

Rectifier

$V_{0\max}$	threshold voltage	0.81	V
$R_{0\max}$	slope resistance *	13.7	mΩ

Technical drawing of a mechanical part (Fig. 1) showing a cross-section. The part has a total width of 63 and a total height of 17 ± 0.25 . The top surface is rounded with a radius R2. The part features five vertical pins or studs on top, with a central distance of 35 between the first and last pins. The pins are labeled "Y" and "X". The part is shown with a dashed line indicating a hidden feature. The bottom surface is flat and has a thickness of 0.25.



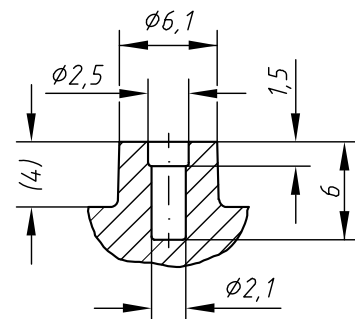
Technical drawing of a mechanical part, likely a base plate or bracket, showing dimensions and features. The drawing includes a top view and a side view.

Top View Dimensions:

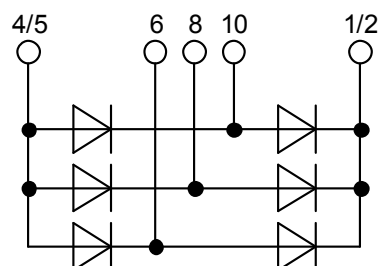
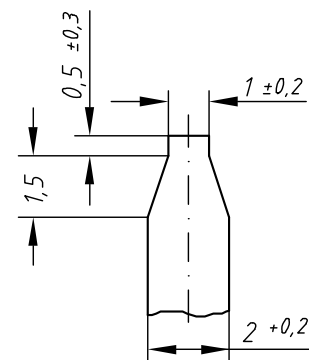
- Overall width: 50 ± 0.2
- Overall height: 23.5 ± 0.1
- Internal width dimensions: 38.6 , 14 ± 0.3 , 7 ± 0.3
- Internal height dimensions: 11 ± 0.3 , 5.5 , 15
- Chamfers: $4 \times 45^\circ$
- Fillet: $R1$
- Numbered slots: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Side View Dimensions:

- Overall width: 51.5 ± 0.3
- Internal width dimensions: 25.75 ± 0.15 , 0.5



Aufdruck der Typenbezeichnung



Rectifier

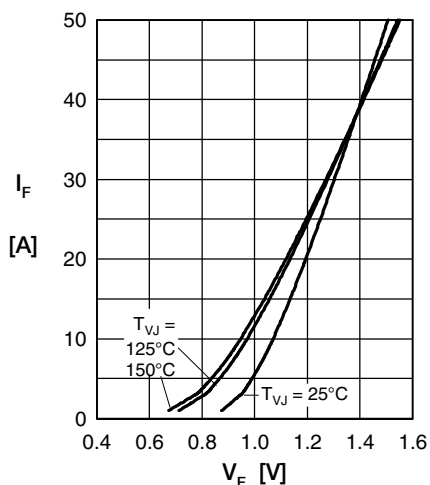


Fig. 1 Forward current vs. voltage drop per diode

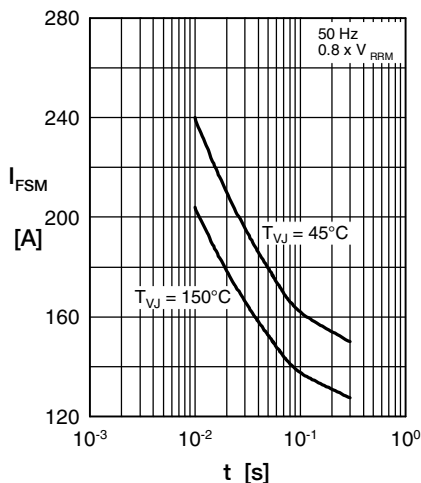


Fig. 2 Surge overload current vs. time per diode

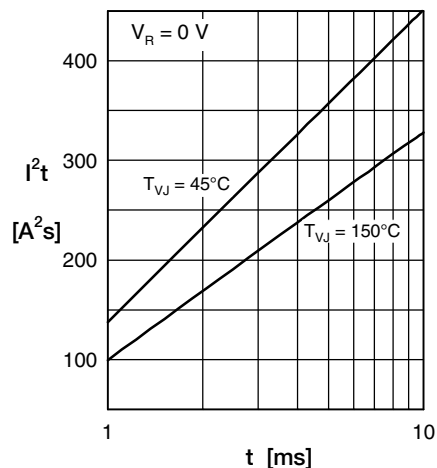


Fig. 3 I^2t vs. time per diode

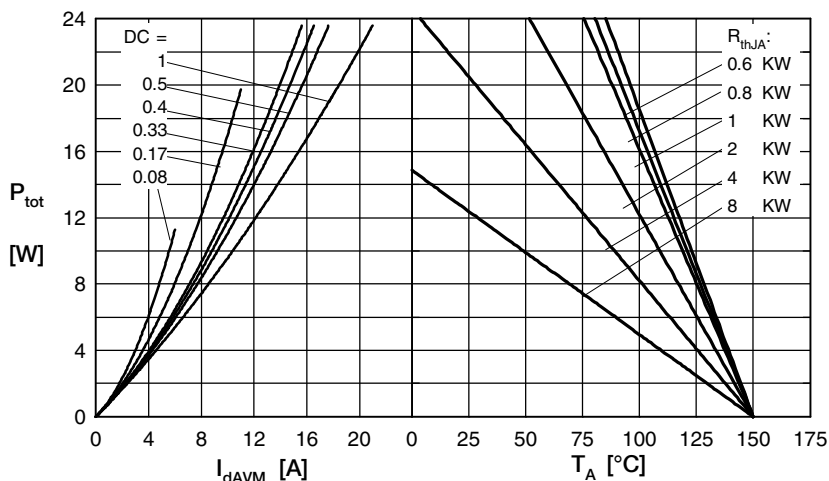


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

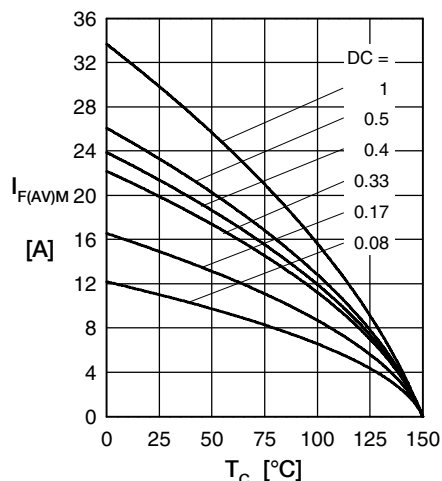


Fig. 5 Max. forward current vs. case temperature per diode

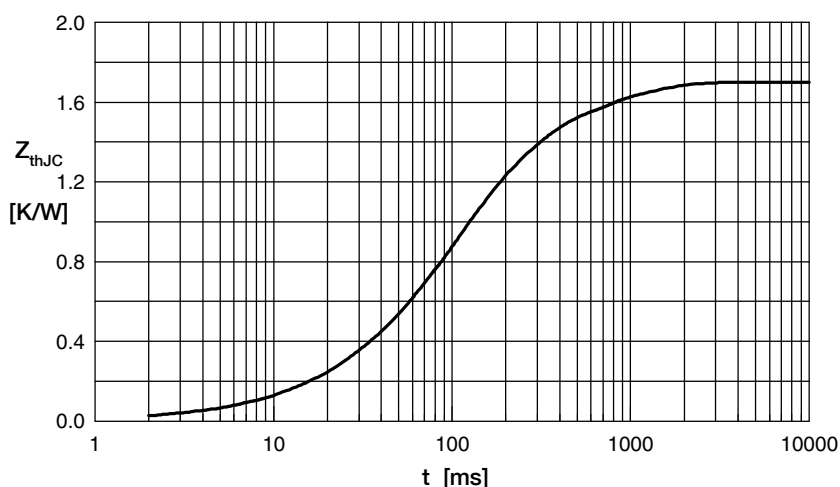


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	1.150	0.1015
2	0.150	0.1026
3	0.100	0.4919
4	0.300	0.6200