

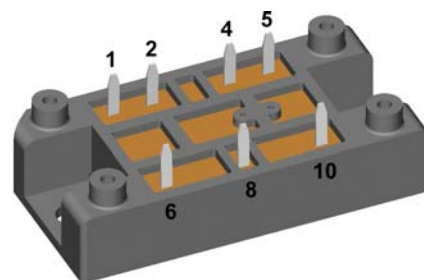
Standard Rectifier Module

3~ Rectifier	
V_{RRM}	= 1600 V
I_{DAV}	= 80 A
I_{FSM}	= 600 A

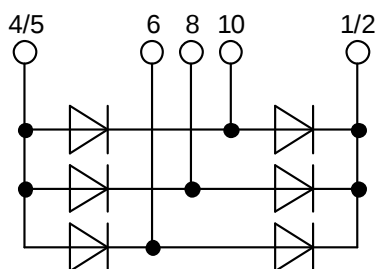
3~ Rectifier Bridge

Part number

VUO80-16NO1



 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:

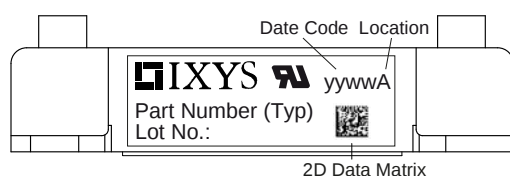
- Diode for main rectification
- For three phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Package: V1-A-Pack

- Isolation Voltage: 3600V~
- 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	$T_{VJ} = 25^{\circ}\text{C}$				1700	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				1600	V
I_R	reverse current	$V_R = 1600\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			40	μA
		$V_R = 1600\text{ V}$	$T_{VJ} = 150^{\circ}\text{C}$			1.5	mA
V_F	forward voltage drop	$I_F = 30\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			1.14	V
		$I_F = 90\text{ A}$				1.48	V
		$I_F = 30\text{ A}$	$T_{VJ} = 125^{\circ}\text{C}$			1.06	V
		$I_F = 90\text{ A}$				1.51	V
I_{DAV}	bridge output current	$T_C = 110^{\circ}\text{C}$ rectangular	$T_{VJ} = 150^{\circ}\text{C}$ $d = \frac{1}{3}$			80	A
V_{FO}	threshold voltage	} for power loss calculation only		$T_{VJ} = 150^{\circ}\text{C}$		0.81	V
r_F	slope resistance					7.8	m Ω
R_{thJC}	thermal resistance junction to case					1.1	K/W
R_{thCH}	thermal resistance case to heatsink				0.3		K/W
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$				110	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^{\circ}\text{C}$			600	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			650	A
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^{\circ}\text{C}$			510	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			550	A
I^2t	value for fusing	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^{\circ}\text{C}$			1.80	kA ² s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			1.76	kA ² s
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^{\circ}\text{C}$			1.30	kA ² s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			1.26	kA ² s
C_J	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$		$T_{VJ} = 25^{\circ}\text{C}$		18	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

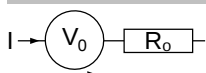


Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO80-16NO1	VUO80-16NO1	Box	10	469173

Equivalent Circuits for Simulation

* on die level

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

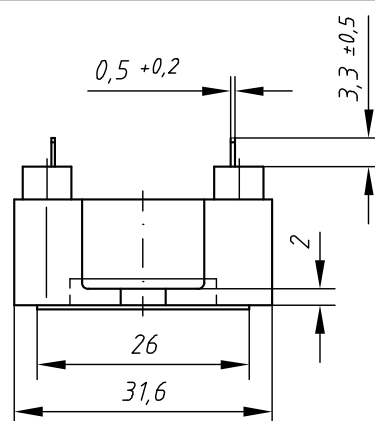


Rectifier

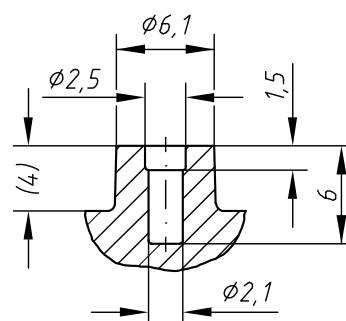
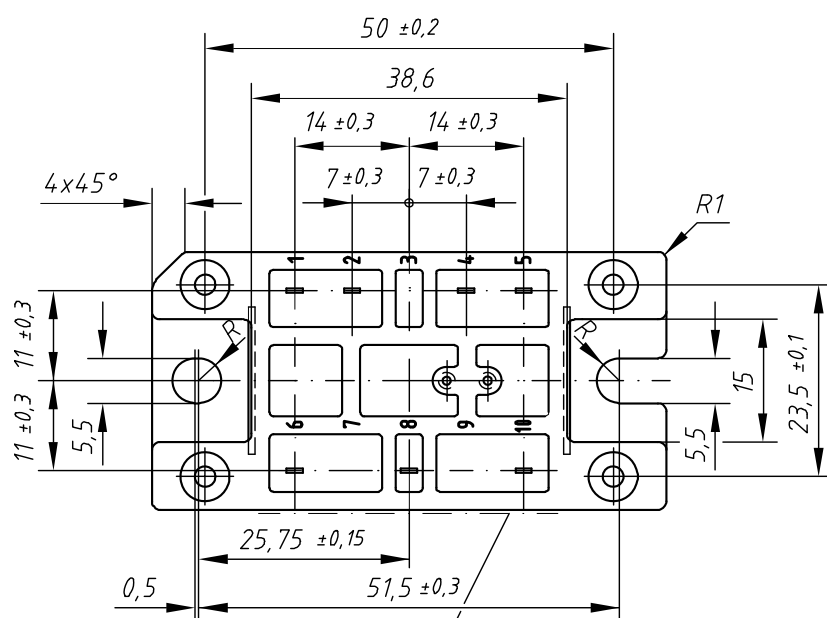
$V_{0\max}$	threshold voltage	0.81	V
$R_{0\max}$	slope resistance *	6.6	mΩ

Technical drawing of a mechanical part, likely a bracket or support, showing dimensions and labels:

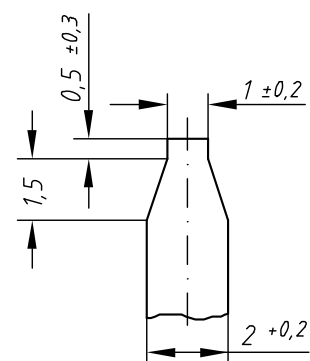
- Dimensions:**
 - Overall width: 63
 - Overall height: 17 ± 0.25
 - Height of the main body: 13
 - Radius of the top corner: R2
 - Distance from the left edge to the center of the first hole: 35
 - Distance between the centers of the two main hole groups: 63
 - Thickness of the part: 0.25
- Labels:**
 - "Y": Points to the first hole group.
 - "X": Points to the second hole group.



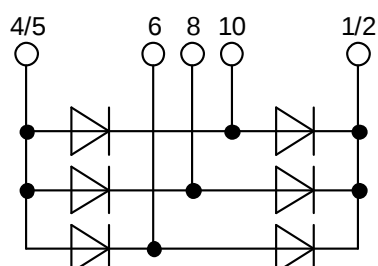
Detail "X" M 2:1



Detail "Y" M 5:1



Aufdruck der Typenbezeichnung



Rectifier

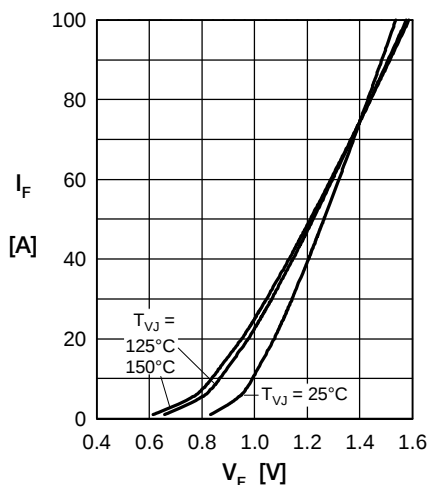


Fig. 1 Forward current vs. voltage drop per diode

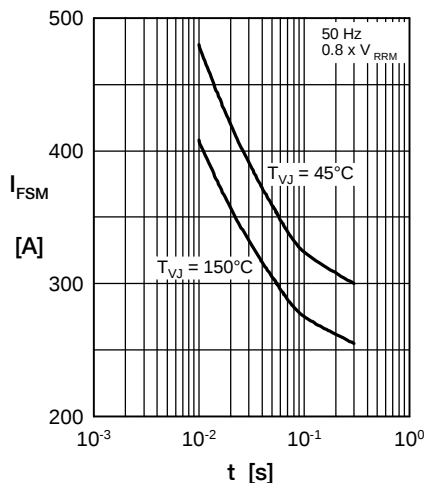


Fig. 2 Surge overload current vs. time per diode

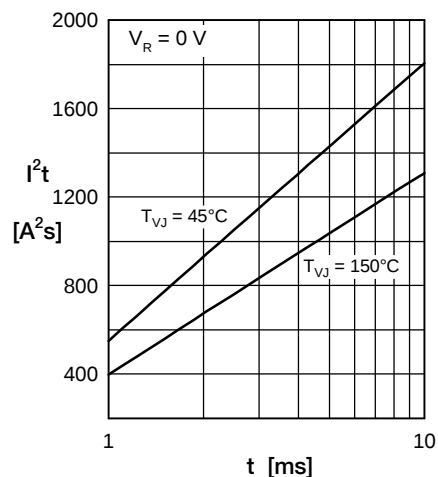


Fig. 3 I^2t vs. time per diode

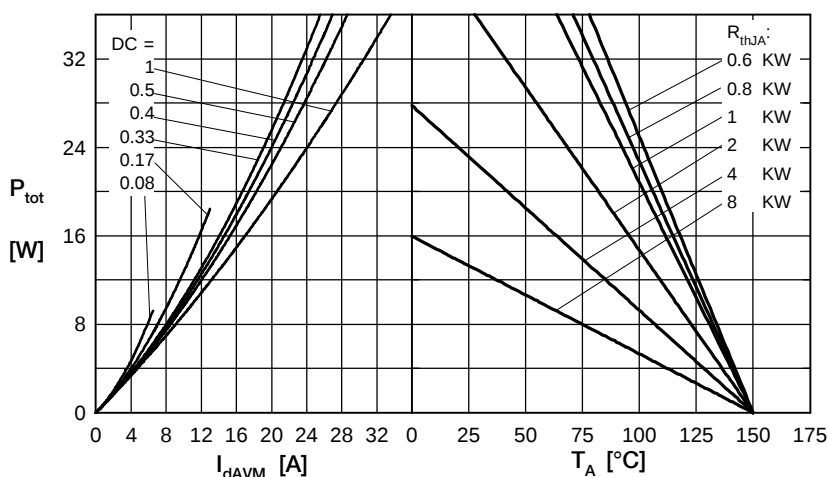


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

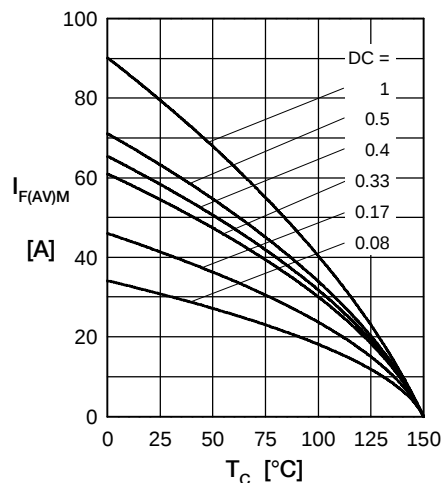


Fig. 5 Max. forward current vs. case temperature per diode

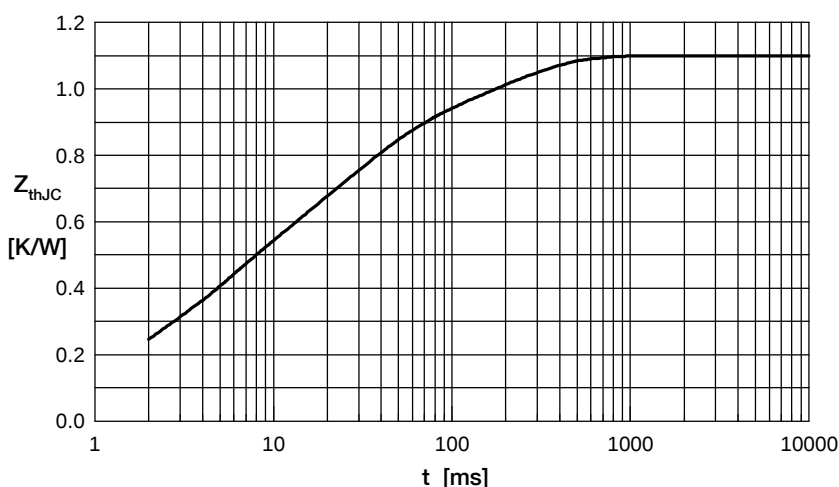


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.0607	0.0004
2	0.1230	0.00256
3	0.2305	0.0045
4	0.4230	0.0242
5	0.2628	0.1800