

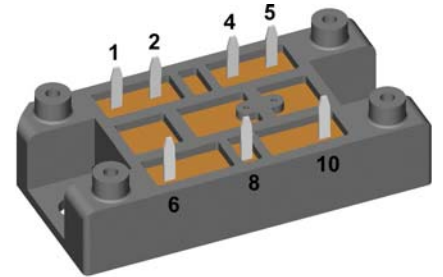
## Standard Rectifier Module

<b>3~ Rectifier</b>	
$V_{RRM}$	= 1600 V
$I_{DAV}$	= 80 A
$I_{FSM}$	= 600 A

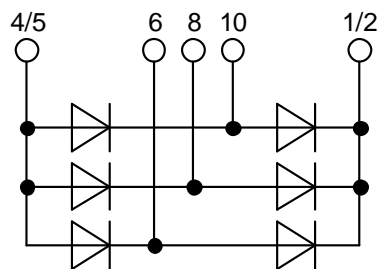
### 3~ Rectifier Bridge

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:

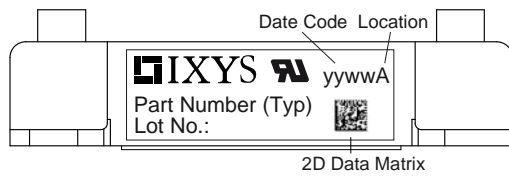
- Diode for main rectification
- For three phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

#### 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					1700	V	
$V_{RRM}$	max. repetitive reverse blocking voltage					1600	V	
$I_R$	reverse current	$V_R = 1600$ V	$T_{VJ} = 25^\circ\text{C}$			40	$\mu\text{A}$	
		$V_R = 1600$ V	$T_{VJ} = 150^\circ\text{C}$			1.5	mA	
$V_F$	forward voltage drop	$I_F = 30$ A	$T_{VJ} = 25^\circ\text{C}$			1.14	V	
						1.48	V	
		$I_F = 90$ A	$T_{VJ} = 125^\circ\text{C}$			1.06	V	
						1.51	V	
$I_{DAV}$	bridge output current	$T_C = 110^\circ\text{C}$ rectangular	$T_{VJ} = 150^\circ\text{C}$			80	A	
								$d = \frac{1}{3}$
$V_{FO}$	threshold voltage					0.81	V	
$r_F$	slope resistance					7.8	m $\Omega$	
$R_{thJC}$	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 ms; (50 Hz), sine	$T_{VJ} = 45^\circ\text{C}$			600	A	
								t = 8,3 ms; (60 Hz), sine
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150^\circ\text{C}$				510	A
$I^2t$	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^\circ\text{C}$			1.80	kA <sup>2</sup> s	
								t = 8,3 ms; (60 Hz), sine
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150^\circ\text{C}$				1.30	kA <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 400$ V; f = 1 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
<b>Weight</b>				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 50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000			V

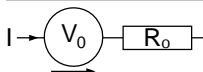


Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO80-16NO1	VUO80-16NO1	Box	10	469173

### Equivalent Circuits for Simulation

\* on die level

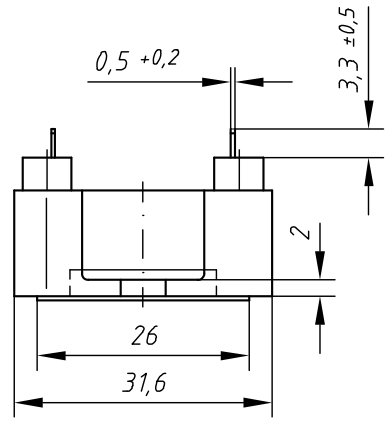
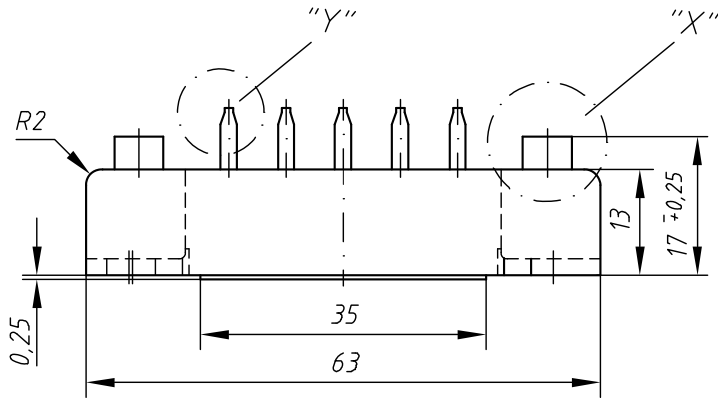
$T_{VJ} = 150^\circ\text{C}$



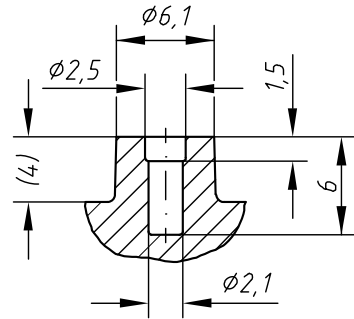
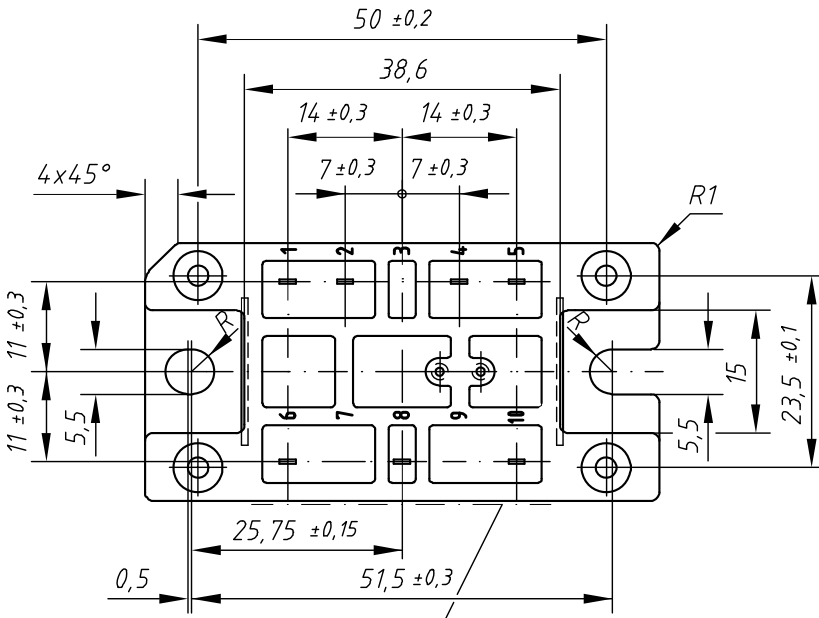
Rectifier

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

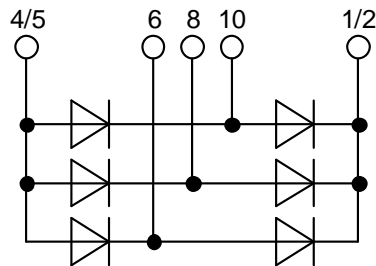
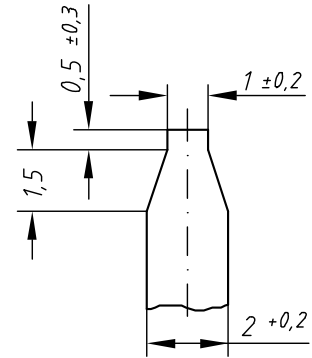
**Outlines V1-A-Pack**



Detail "X" M 2:1



Detail "Y" M 5:1



## Rectifier

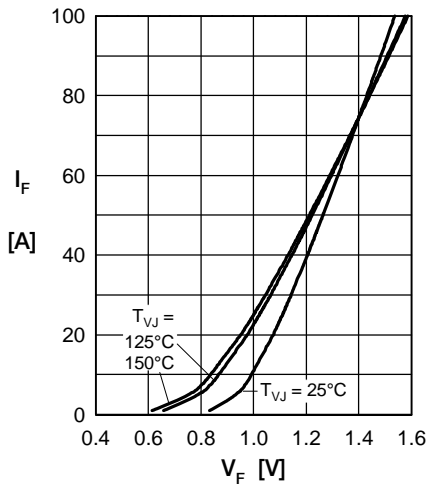


Fig. 1 Forward current vs. voltage drop per diode

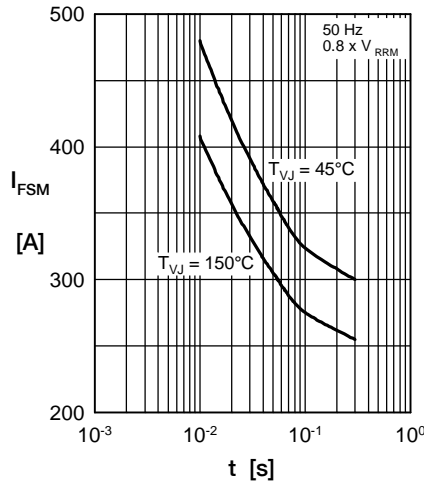


Fig. 2 Surge overload current vs. time per diode

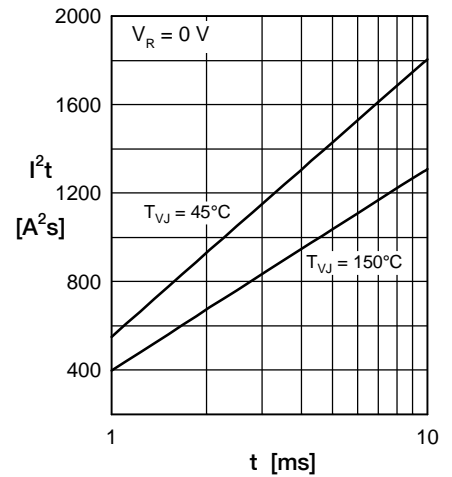


Fig. 3  $I^2t$  vs. time per diode

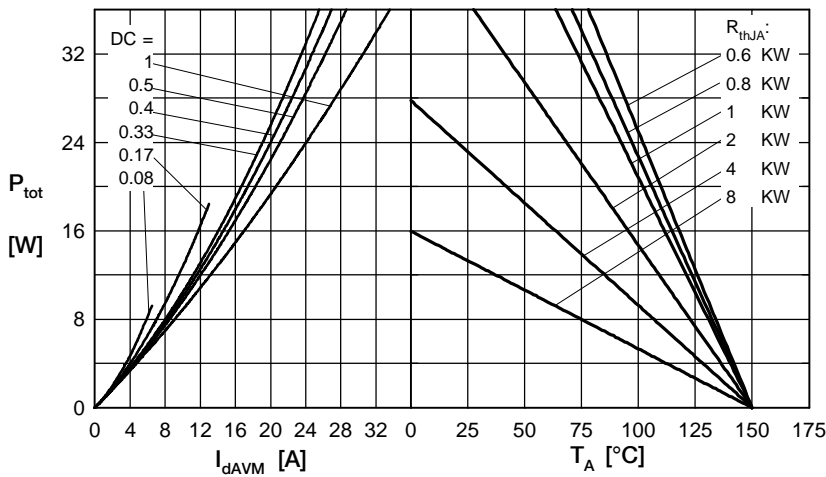


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

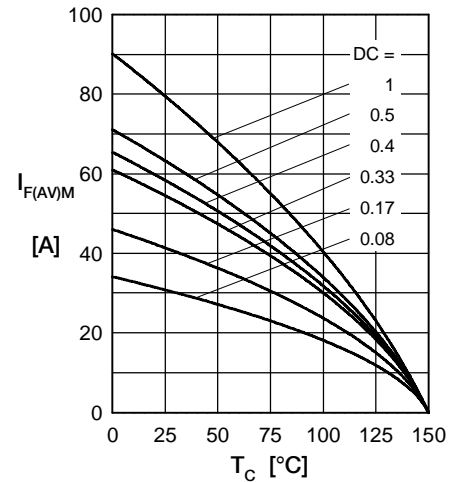


Fig. 5 Max. forward current vs. case temperature per diode

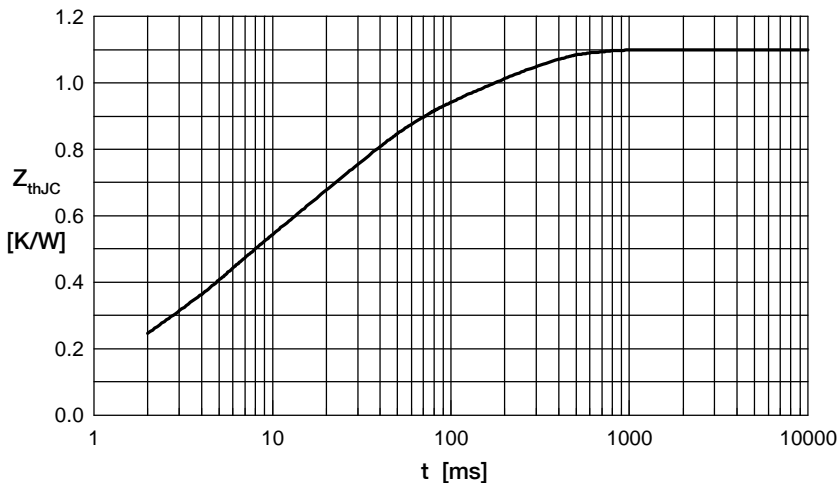


Fig. 6 Transient thermal impedance junction to case vs. time per diode

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