

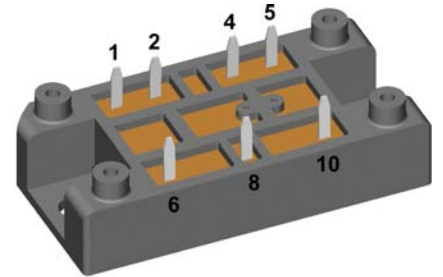
Standard Rectifier Module

3~ Rectifier	
V_{RRM}	= 1800 V
I_{DAV}	= 80 A
I_{FSM}	= 600 A

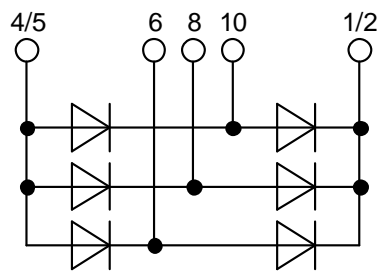
3~ Rectifier Bridge

Part number

VUO80-18NO1



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:

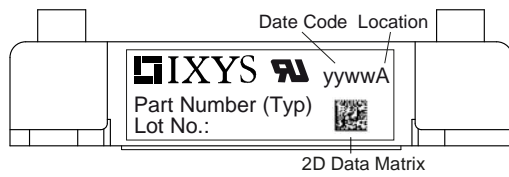
- Diode for main rectification
- For three phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

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					1900	V	
V_{RRM}	max. repetitive reverse blocking voltage					1800	V	
I_R	reverse current	$V_R = 1800$ V	$T_{VJ} = 25^\circ\text{C}$			40	μA	
		$V_R = 1800$ 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 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 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 ² s	
								t = 8,3 ms; (60 Hz), sine
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150^\circ\text{C}$				1.30	kA ² 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
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 50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000			V

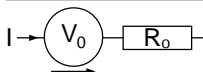


Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO80-18NO1	VUO80-18NO1	Box	10	469181

Equivalent Circuits for Simulation

* on die level

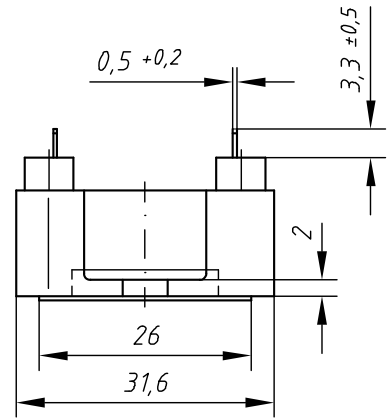
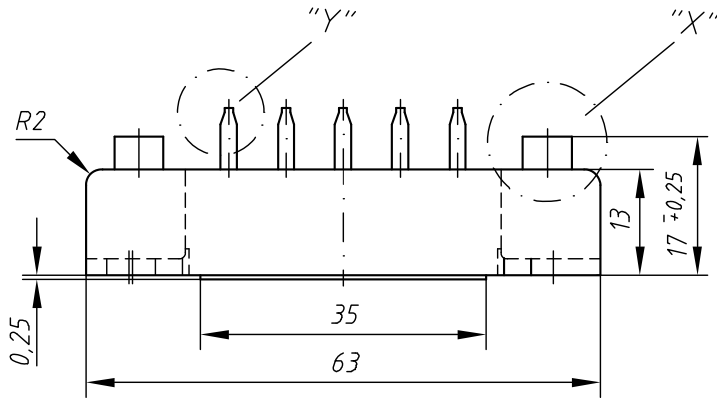
$T_{VJ} = 150^\circ\text{C}$



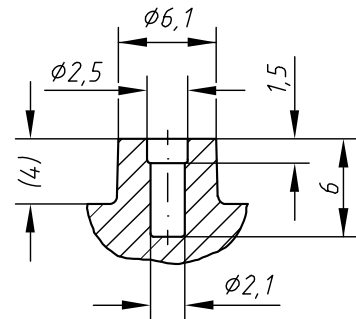
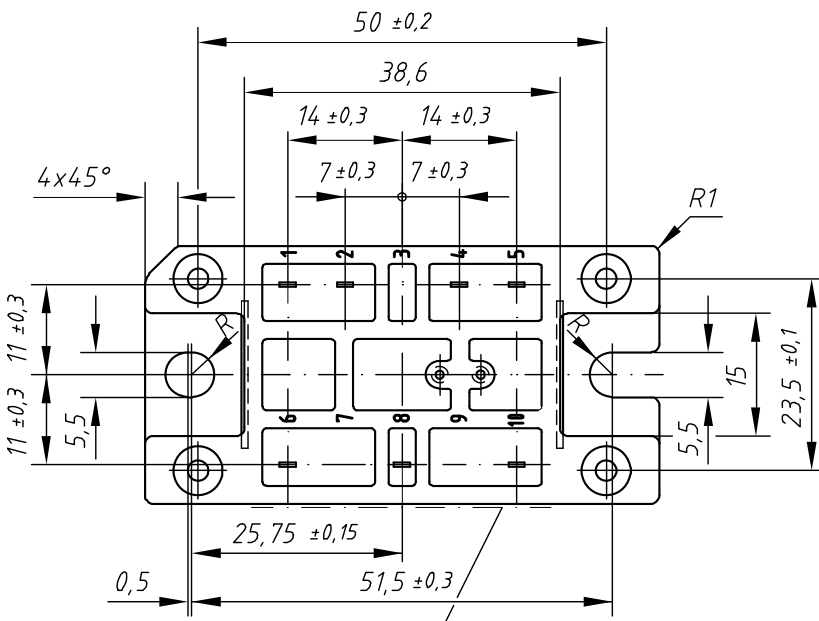
Rectifier

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

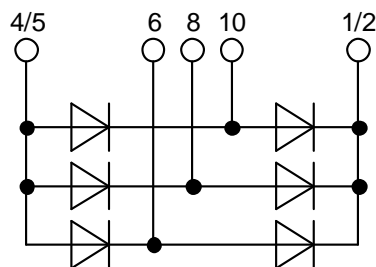
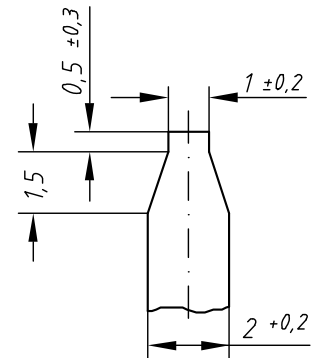
Outlines V1-A-Pack



Detail "X" M 2:1



Detail "Y" M 5:1



Rectifier

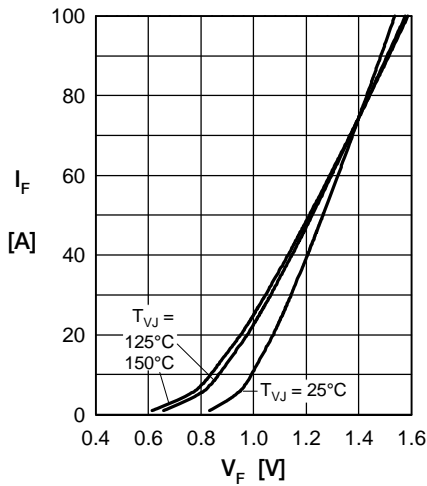


Fig. 1 Forward current vs. voltage drop per diode

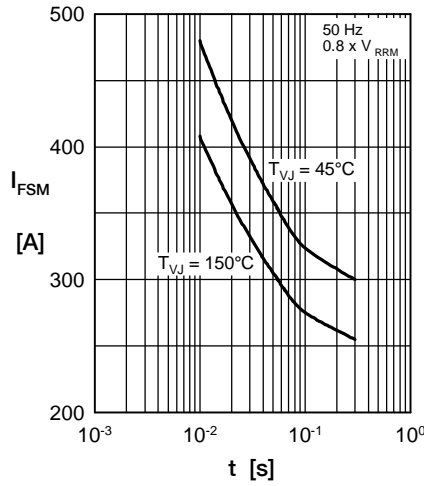


Fig. 2 Surge overload current vs. time per diode

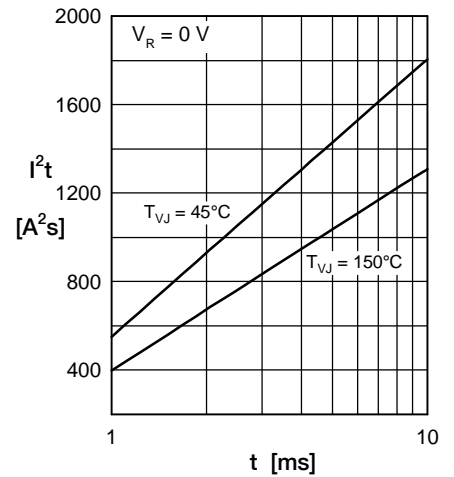


Fig. 3 I^2t vs. time per diode

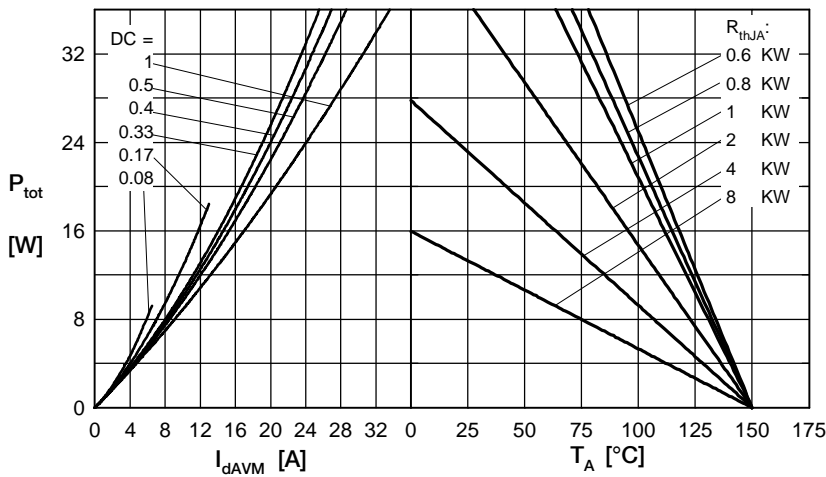


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

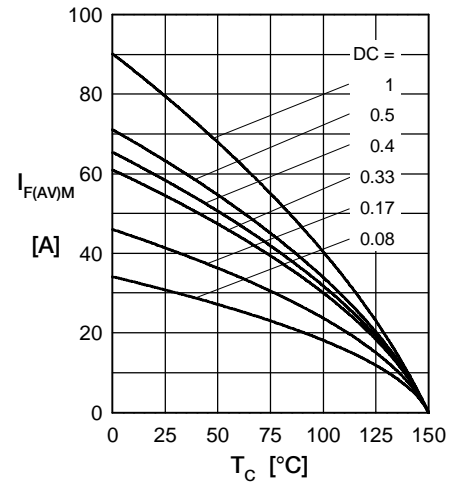


Fig. 5 Max. forward current vs. case temperature per diode

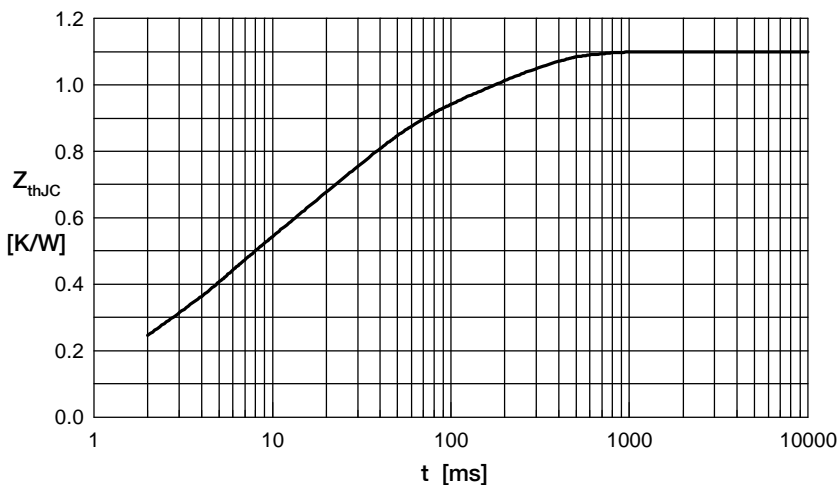


Fig. 6 Transient thermal impedance junction to case vs. time per diode

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