

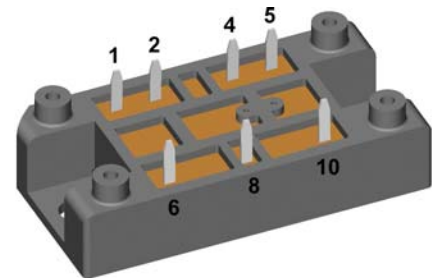
Standard Rectifier Module

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

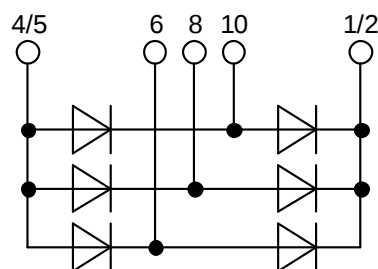
3~ Rectifier Bridge

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:

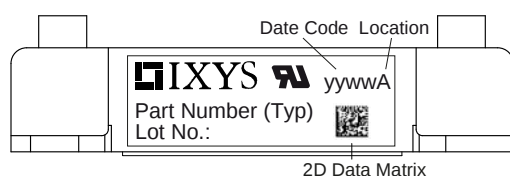
- Diode for main rectification
- For three phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

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	$T_{VJ} = 25^{\circ}\text{C}$				1900	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				1800	V
I_R	reverse current	$V_R = 1800\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			40	μA
		$V_R = 1800\text{ V}$	$T_{VJ} = 150^{\circ}\text{C}$			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 $d = \frac{1}{3}$	$T_{VJ} = 150^{\circ}\text{C}$			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
			50/60 Hz, RMS; I _{ISOL} ≤ 1 mA			

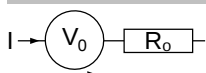


Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO80-18NO1	VUO80-18NO1	Box	10	469181

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

Technical drawing of a mechanical part, showing three views: front view, top view, and side view. The drawing includes dimensions and a title block.

Front View:

- Overall width: 63
- Overall height: 17 ± 0,25
- Top surface radius: R2
- Central slot width: 35
- Side slot width: 13
- Bottom surface radius: R1

Top View:

- Overall width: 50 ± 0,2
- Overall height: 23,5 ± 0,1
- Central slot width: 38,6
- Side slot width: 14 ± 0,3
- Bottom surface radius: R1
- Top surface radius: R2
- Bottom surface radius: R3
- Bottom surface radius: R4
- Bottom surface radius: R5
- Bottom surface radius: R6
- Bottom surface radius: R7
- Bottom surface radius: R8
- Bottom surface radius: R9
- Bottom surface radius: R10
- Bottom surface radius: R11
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- Bottom surface radius: R95
- Bottom surface radius: R96
- Bottom surface radius: R97
- Bottom surface radius: R98
- Bottom surface radius: R99
- Bottom surface radius: R100

Side View:

- Overall width: 31,6
- Overall height: 3,3 ± 0,5
- Top surface radius: R2
- Central slot width: 26
- Side slot width: 13
- Bottom surface radius: R1

Detail "X" (M 2:1):

- Overall width: 6,1
- Overall height: 1,5
- Top surface radius: R2
- Central slot width: 2,5
- Side slot width: 1,5
- Bottom surface radius: R1

Detail "Y" (M 5:1):

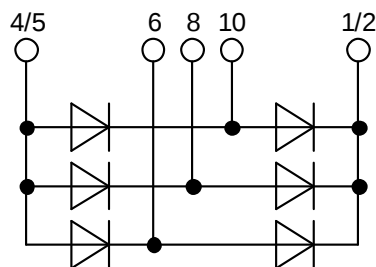
- Overall width: 1,5
- Overall height: 0,5 ± 0,3
- Top surface radius: R2
- Central slot width: 1 ± 0,2
- Side slot width: 1,5
- Bottom surface radius: R1

Other Dimensions:

- 0,25
- 0,5
- 11 ± 0,3
- 5,5
- 25,75 ± 0,15
- 51,5 ± 0,3
- 4x45°
- 1
- 2
- 3
- 4
- 5
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- 7
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- 9
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- 100

Title Block:

Aufdruck der Typenbezeichnung



Rectifier

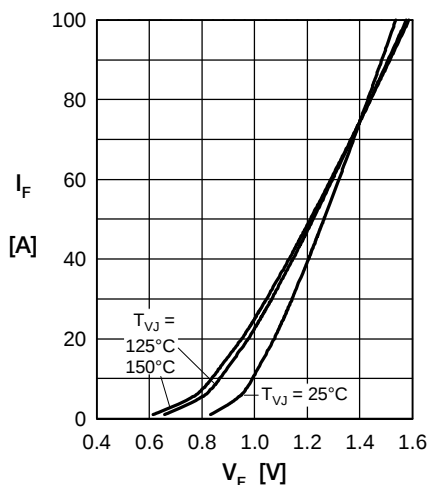


Fig. 1 Forward current vs. voltage drop per diode

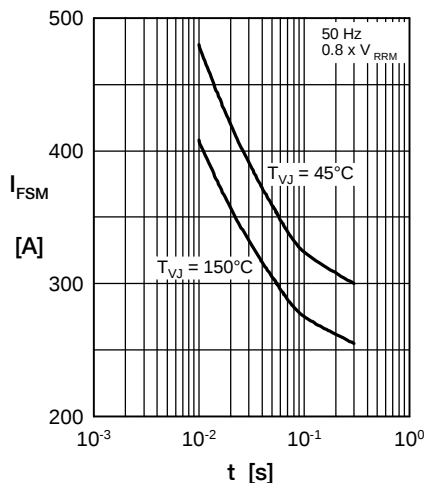


Fig. 2 Surge overload current vs. time per diode

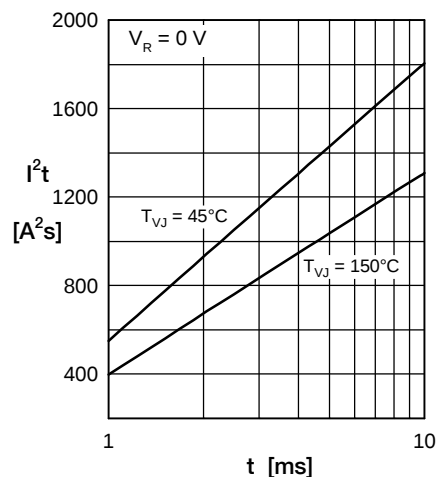


Fig. 3 I^2t vs. time per diode

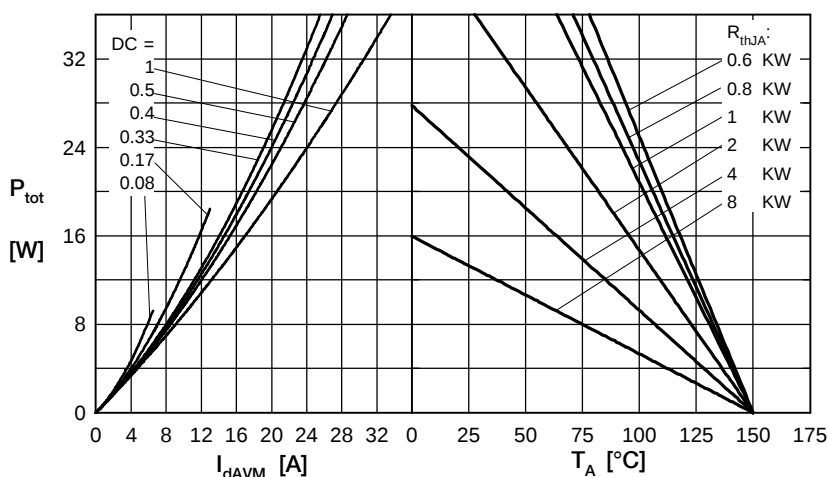


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

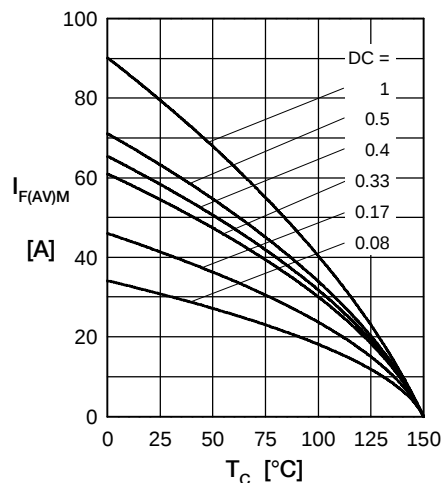


Fig. 5 Max. forward current vs. case temperature per diode

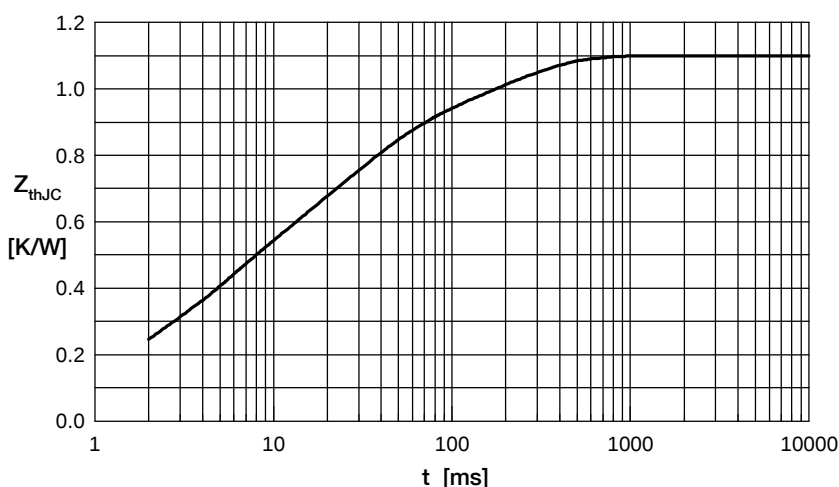


Fig. 6 Transient thermal impedance junction to case vs. time per diode

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