

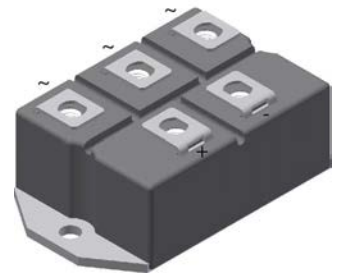
# Standard Rectifier Module

<b>3~ Rectifier</b>	
$V_{RRM} =$	1600 V
$I_{DAV} =$	90 A
$I_{FSM} =$	750 A

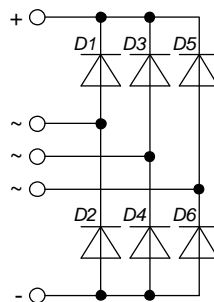
## 3~ Rectifier Bridge

Part number

**VUO82-16N07**



 E72873



### Features / Advantages:

- Package with DCB ceramic
- 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: PWS-D

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Easy to mount with two screws
- Base plate: Copper internally DCB isolated
- Advanced power cycling

### Disclaimer Notice

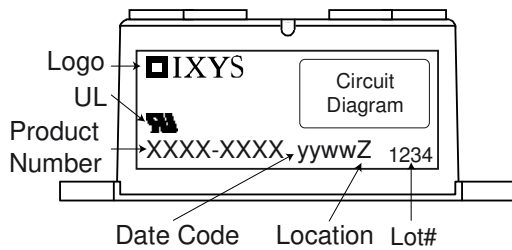
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Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage					1700	V
$V_{RRM}$	max. repetitive reverse blocking voltage					1600	V
$I_R$	reverse current	$V_R = 1600$ V		$T_{VJ} = 25^\circ\text{C}$		100	$\mu\text{A}$
		$V_R = 1600$ V		$T_{VJ} = 150^\circ\text{C}$		1,5	mA
$V_F$	forward voltage drop	$I_F = 30$ A		$T_{VJ} = 25^\circ\text{C}$		1,08	V
		$I_F = 90$ A				1,35	V
		$I_F = 30$ A		$T_{VJ} = 125^\circ\text{C}$		0,99	V
		$I_F = 90$ A				1,33	V
$I_{DAV}$	bridge output current	$T_C = 115^\circ\text{C}$	rectangular	$T_{VJ} = 150^\circ\text{C}$		90	A
			$d = \frac{1}{3}$				
$V_{FO}$	threshold voltage	} for power loss calculation only		$T_{VJ} = 150^\circ\text{C}$		0,78	V
$r_F$	slope resistance					6	m $\Omega$
$R_{thJC}$	thermal resistance junction to case					0,9	K/W
$R_{thCH}$	thermal resistance case to heatsink				0,4		K/W
$P_{tot}$	total power dissipation			$T_C = 25^\circ\text{C}$		135	W
$I_{FSM}$	max. forward surge current	$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		750	A
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		810	A
		$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		640	A
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		690	A
$I^2t$	value for fusing	$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		2,82	kA <sup>2</sup> s
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		2,73	kA <sup>2</sup> s
		$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		2,05	kA <sup>2</sup> s
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		1,98	kA <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 400$ V; $f = 1$ MHz		$T_{VJ} = 25^\circ\text{C}$		27	pF



Package PWS-D				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
$I_{RMS}$	RMS current	per terminal			150	A	
$T_{VJ}$	virtual junction temperature		-40		150	°C	
$T_{op}$	operation temperature		-40		125	°C	
$T_{stg}$	storage temperature		-40		125	°C	
<b>Weight</b>					159	g	
$M_D$	mounting torque		4,25		5,75	Nm	
$M_T$	terminal torque		4,25		5,75	Nm	
$d_{Spp/App}$	creepage distance on surface   striking distance through air	terminal to terminal	9,5			mm	
$d_{Spb/Apb}$		terminal to backside	26,0			mm	
$V_{ISOL}$	isolation voltage	t = 1 second	3000			V	
		t = 1 minute	2500			V	

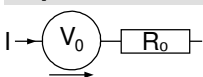


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO82-16NO7	VUO82-16NO7	Box	10	504848

**Equivalent Circuits for Simulation**

\* on die level

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

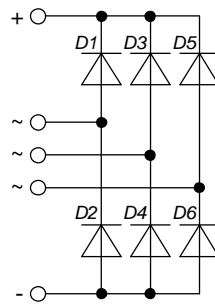
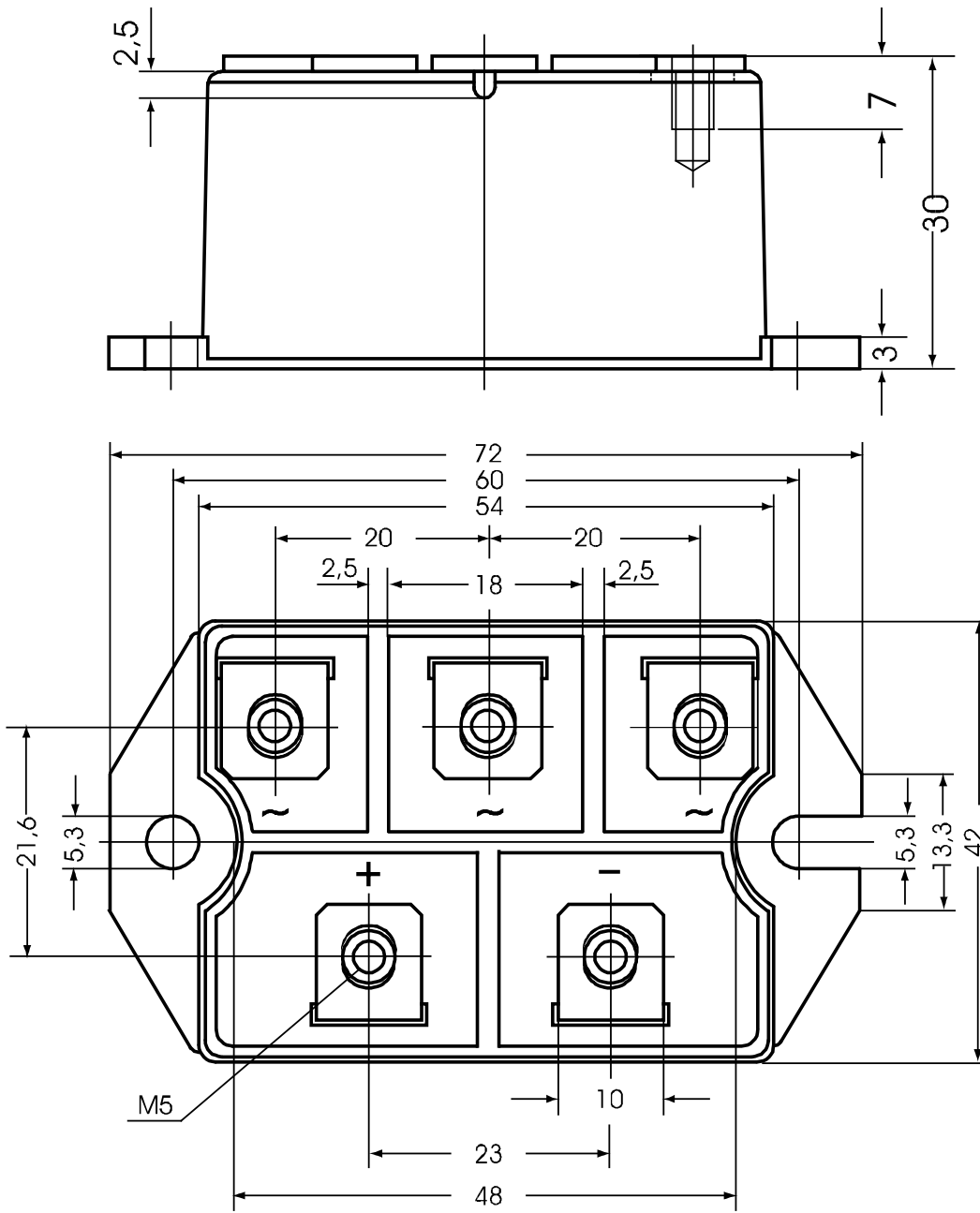


**Rectifier**

$V_{0\ max}$	threshold voltage	0,78	V
$R_{0\ max}$	slope resistance *	4,8	mΩ



**Outlines PWS-D**





**Rectifier**

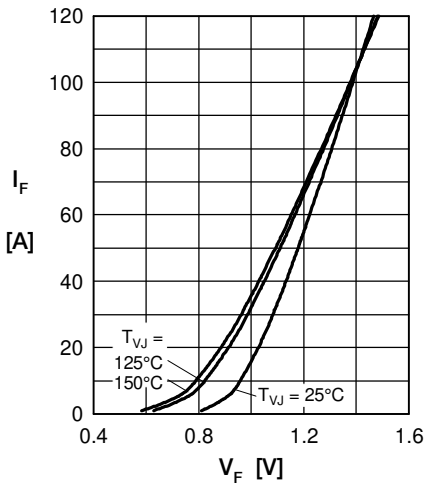


Fig. 1 Forward current versus voltage drop per diode

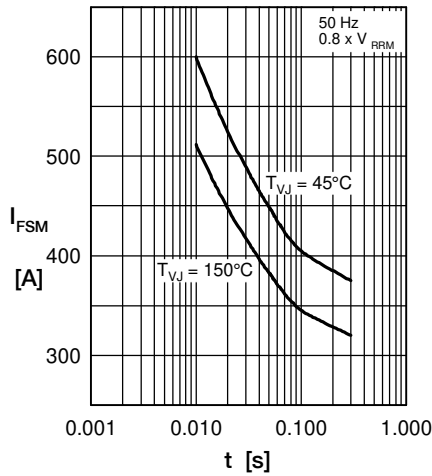


Fig. 2 Surge overload current

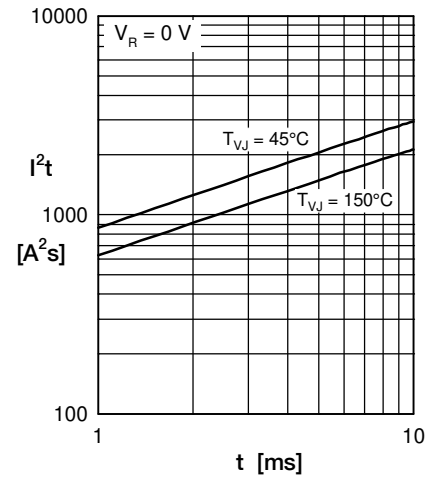


Fig. 3  $I^2t$  versus time per diode

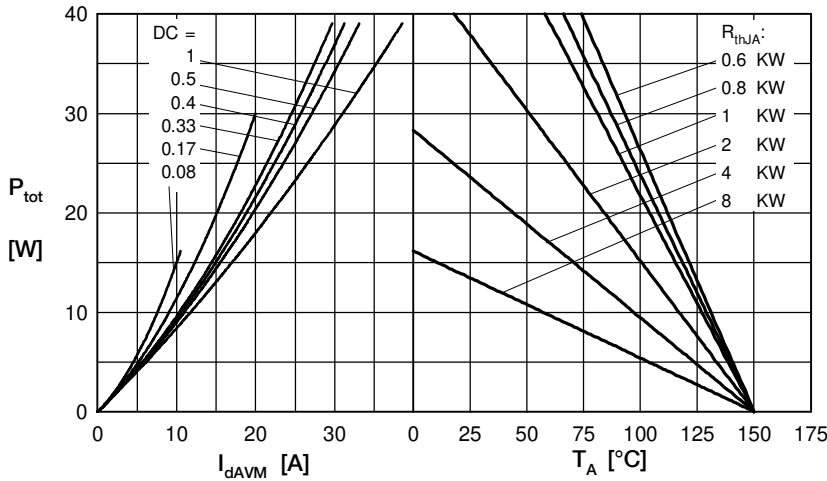


Fig. 4 Power dissipation vs. direct output current & ambient temperature

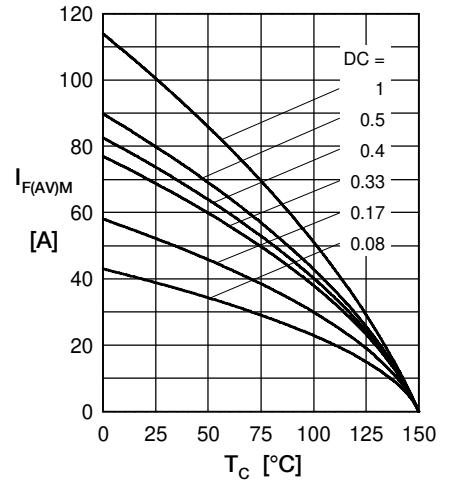


Fig. 5 Max. forward current vs. case temperature

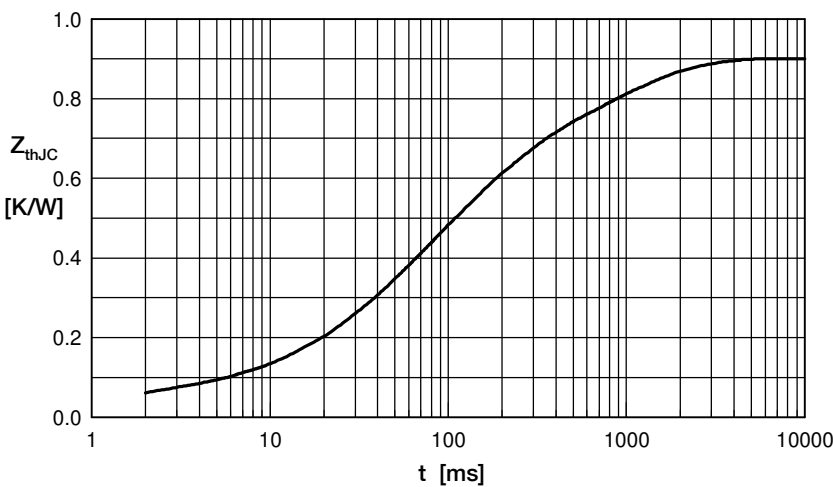


Fig. 6 Transient thermal impedance junction to case

Constants for  $Z_{thJC}$  calculation:

i	$R_{th}$ (K/W)	$t_i$ (s)
1	0.05	0.001
2	0.14	0.030
3	0.18	0.070
4	0.28	0.150
5	0.25	0.950