

# Standard Rectifier Module

<b>3~ Rectifier</b>	
$V_{RRM}$	= 1800 V
$I_{DAV}$	= 60 A
$I_{FSM}$	= 550 A

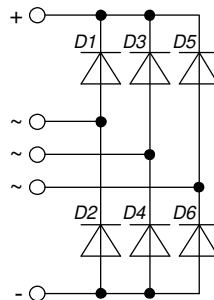
## 3~ Rectifier Bridge

Part number

**VUO62-18NO7**



 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

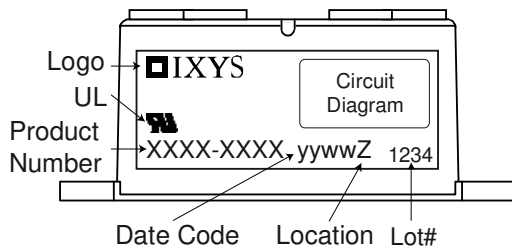
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Rectifier				Ratings				
Symbol	Definition	Conditions		min.	typ.	max.	Unit	
$V_{RSM}$	max. non-repetitive reverse blocking voltage					1900	V	
$V_{RRM}$	max. repetitive reverse blocking voltage					1800	V	
$I_R$	reverse current	$V_R = 1800$ V		$T_{VJ} = 25^\circ\text{C}$		40	$\mu\text{A}$	
		$V_R = 1800$ V		$T_{VJ} = 150^\circ\text{C}$		1.5	mA	
$V_F$	forward voltage drop	$I_F = 20$ A		$T_{VJ} = 25^\circ\text{C}$		1.07	V	
						$I_F = 60$ A		1.30
		$I_F = 20$ A		$T_{VJ} = 125^\circ\text{C}$		0.96	V	
						$I_F = 60$ A		1.27
$I_{DAV}$	bridge output current	$T_C = 120^\circ\text{C}$	rectangular	$d = \frac{1}{3}$	$T_{VJ} = 150^\circ\text{C}$		60	A
$V_{F0}$	threshold voltage	} for power loss calculation only				0.78	V	
$r_F$	slope resistance					8.1	m $\Omega$	
$R_{thJC}$	thermal resistance junction to case					1.1	K/W	
$R_{thCH}$	thermal resistance case to heatsink					0.4	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		$T_{VJ} = 45^\circ\text{C}$		550	A	
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		595	A	
		$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		470	A	
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		505	A	
$I^2t$	value for fusing	$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		1.52	kA <sup>2</sup> s	
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		1.48	kA <sup>2</sup> s	
		$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		1.11	kA <sup>2</sup> s	
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		1.06	kA <sup>2</sup> s	
$C_J$	junction capacitance	$V_R = 400$ V; $f = 1$ MHz		$T_{VJ} = 25^\circ\text{C}$		19	pF	

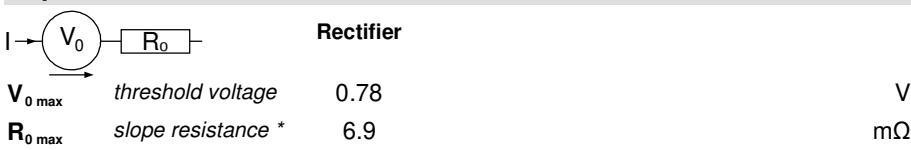


Package PWS-D			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal			150	A
$T_{VJ}$	virtual junction temperature		-40		150	°C
$T_{op}$	operation temperature		-40		125	°C
$T_{stg}$	storage temperature		-40		125	°C
<b>Weight</b>				159		g
$M_D$	mounting torque		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



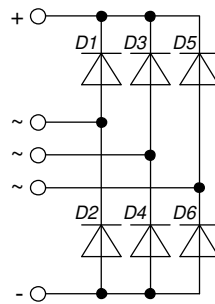
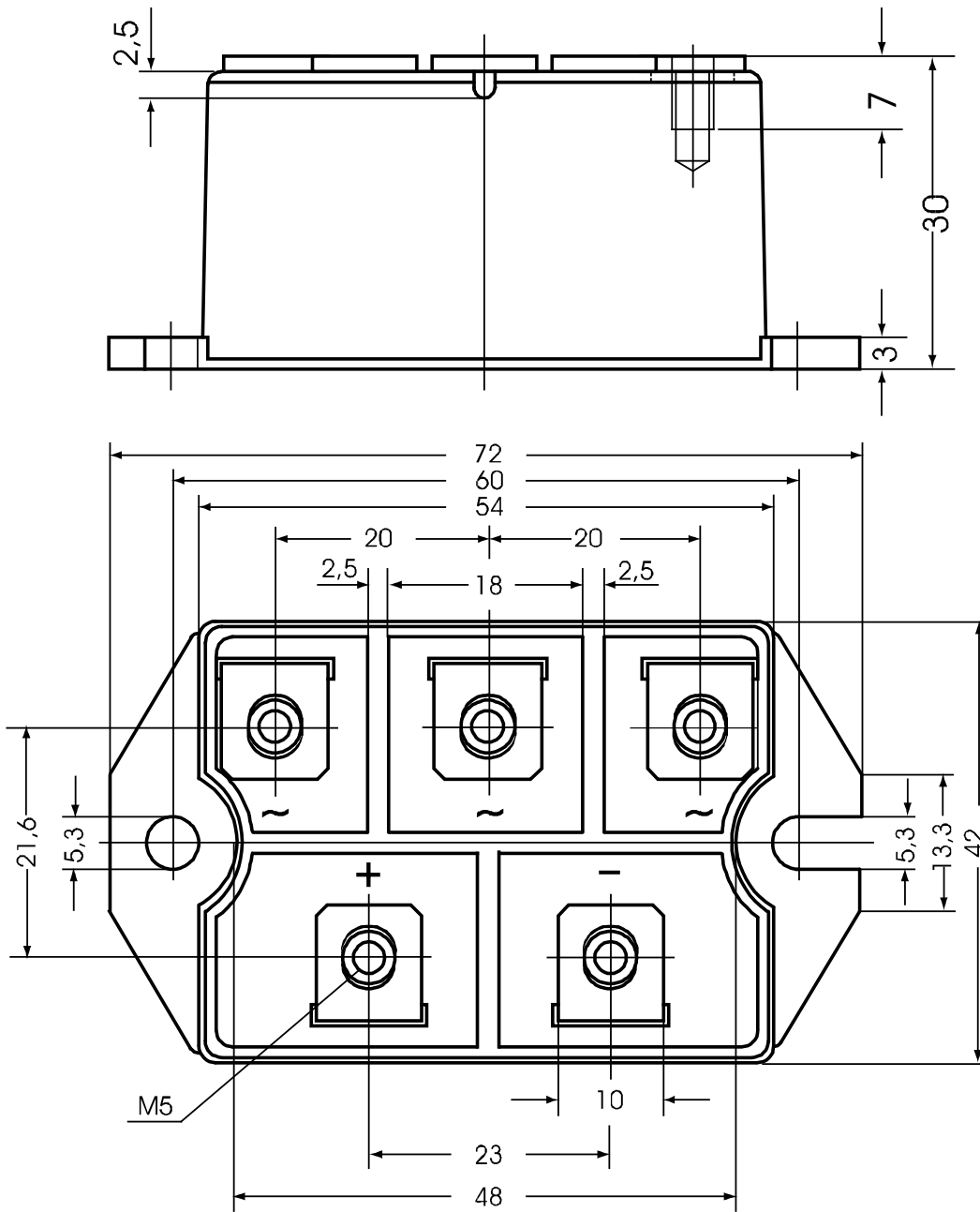
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO62-18NO7	VUO62-18NO7	Box	10	460486

**Equivalent Circuits for Simulation** \* on die level  $T_{VJ} = 150^{\circ}C$





**Outlines PWS-D**





**Rectifier**

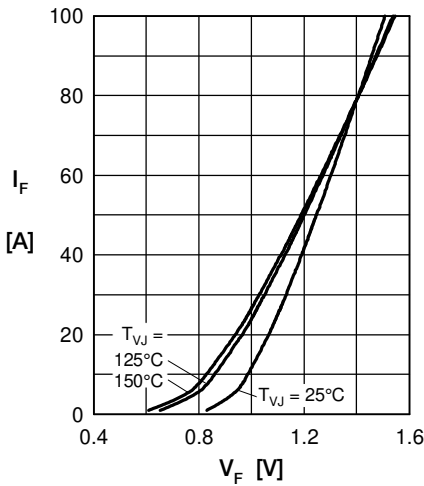


Fig. 1 Forward current vs. voltage drop per diode

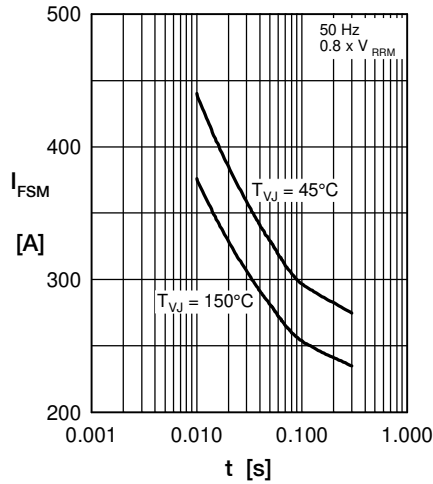


Fig. 2 Surge overload current vs. time per diode

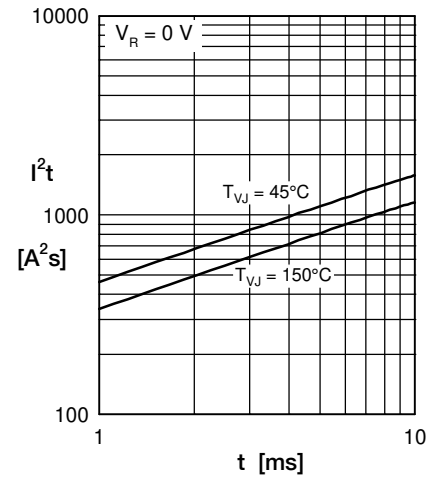


Fig. 3  $I^2t$  vs. time per diode

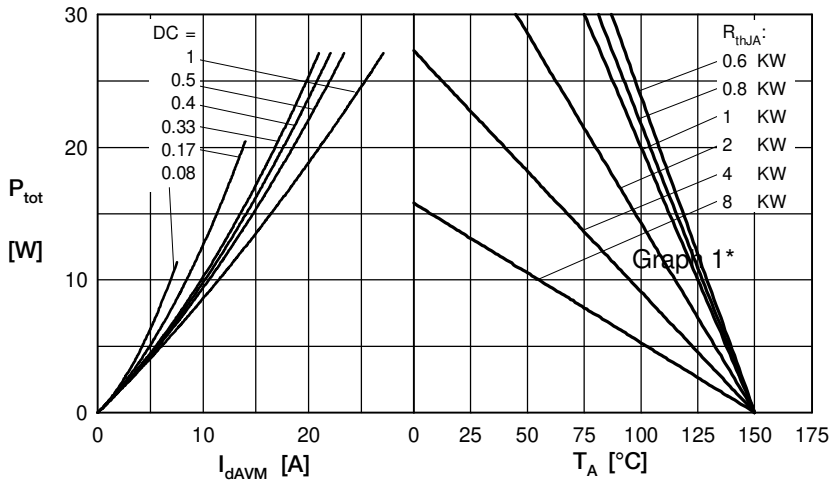


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

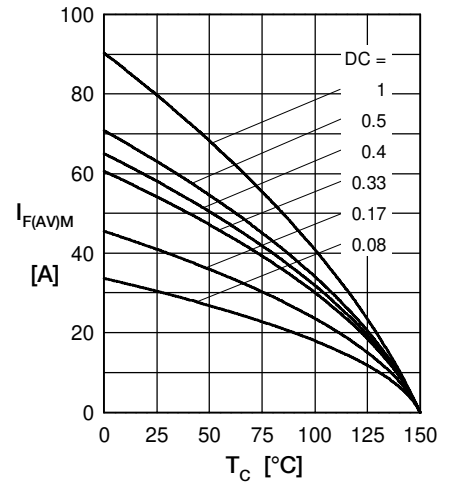


Fig. 5 Max. forward current vs. case temperature per diode

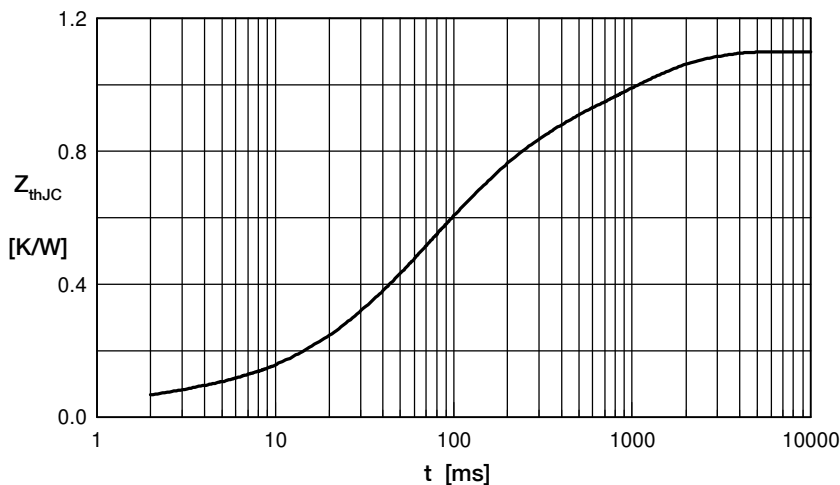


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for  $Z_{thJC}$  calculation:

i	$R_{th}$ (K/W)	$t_i$ (s)
1	0.05	0.001
2	0.14	0.030
3	0.25	0.060
4	0.35	0.130
5	0.31	0.920