

Standard Rectifier Module

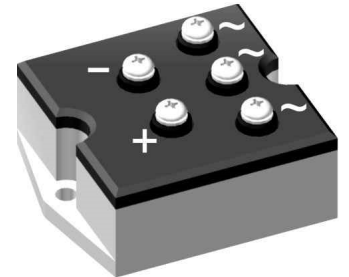
PHASE OUT

3~ Rectifier Bridge

3~ Rectifier	
V_{RRM}	= 1200 V
I_{DAV}	= 60 A
I_{FSM}	= 750 A

Part number

VUO55-12NO7



 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-B

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

Recommended replacement: VUO82-12NO7

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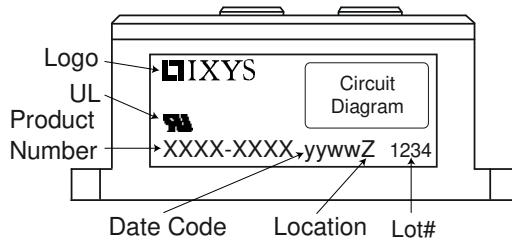


Rectifier				Ratings				
Symbol	Definition	Conditions		min.	typ.	max.	Unit	
V_{RSM}	max. non-repetitive reverse blocking voltage					1300	V	
V_{RRM}	max. repetitive reverse blocking voltage					1200	V	
I_R	reverse current	$V_R = 1200$ V	$T_{VJ} = 25^\circ\text{C}$			100	μA	
		$V_R = 1200$ V	$T_{VJ} = 150^\circ\text{C}$			1.5	mA	
V_F	forward voltage drop	$I_F = 20$ A	$T_{VJ} = 25^\circ\text{C}$			1.03	V	
		$I_F = 60$ A				1.23	V	
		$I_F = 20$ A	$T_{VJ} = 125^\circ\text{C}$			0.92	V	
		$I_F = 60$ A				1.18	V	
I_{DAV}	bridge output current	$T_C = 85^\circ\text{C}$ rectangular	$T_{VJ} = 150^\circ\text{C}$ $d = \frac{1}{3}$			60	A	
V_{FO}	threshold voltage	} for power loss calculation only				0.76	V	
r_F	slope resistance					6.9	m Ω	
R_{thJC}	thermal resistance junction to case					2.7	K/W	
R_{thCH}	thermal resistance case to heatsink			0.4			K/W	
P_{tot}	total power dissipation			$T_C = 25^\circ\text{C}$			46	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 ² s	
		$t = 8,3$ ms; (60 Hz), sine	$V_R = 0$ V			2.73	kA ² s	
		$t = 10$ ms; (50 Hz), sine	$T_{VJ} = 150^\circ\text{C}$			2.05	kA ² s	
		$t = 8,3$ ms; (60 Hz), sine	$V_R = 0$ V			1.98	kA ² s	
C_J	junction capacitance	$V_R = 400$ V; $f = 1$ MHz		$T_{VJ} = 25^\circ\text{C}$		10	pF	

PHASE OUT



Package PWS-B				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
I_{RMS}	RMS current	per terminal			100	A	
T_{VJ}	virtual junction temperature		-40		150	°C	
T_{op}	operation temperature		-40		125	°C	
T_{stg}	storage temperature		-40		125	°C	
Weight				203		g	
M_D	mounting torque		4.25		5.75	Nm	
M_T	terminal torque		2.5		3.5	Nm	
$d_{Spp/App}$	creepage distance on surface striking distance through air	terminal to terminal	11.0			mm	
$d_{Spb/Apb}$		terminal to backside	7.5			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	VUO55-12NO7	VUO55-12NO7	Box	10	456675

Equivalent Circuits for Simulation

* on die level

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

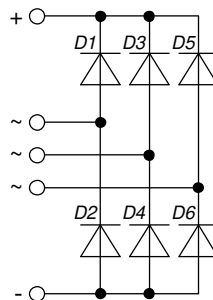
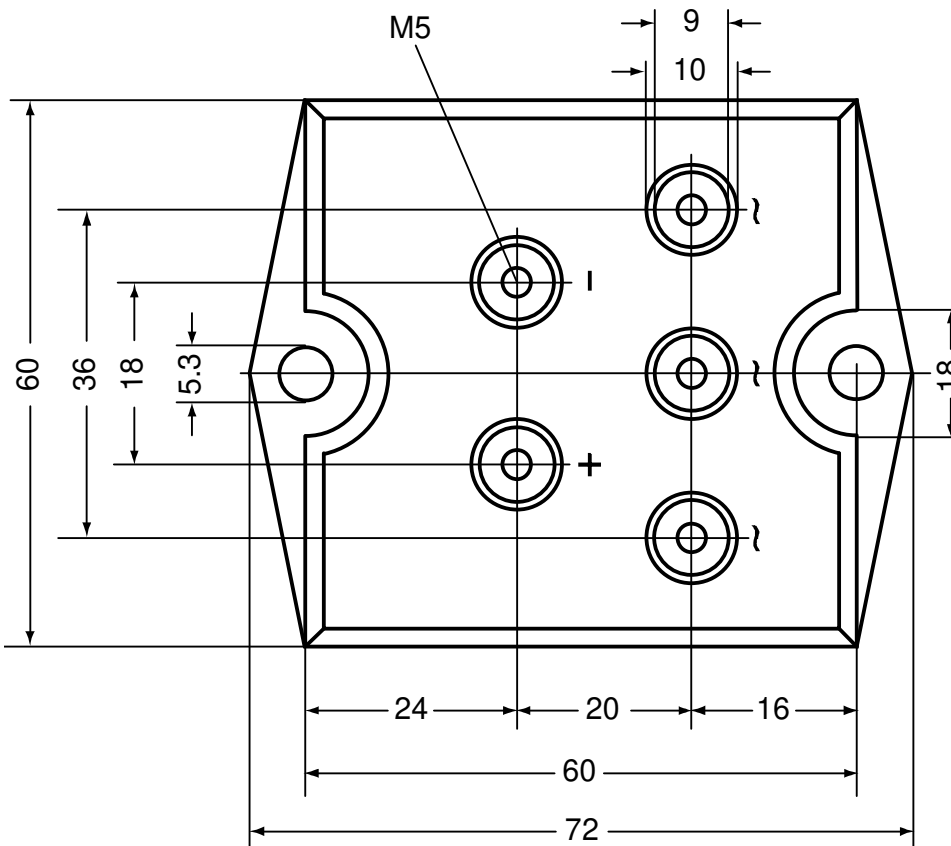
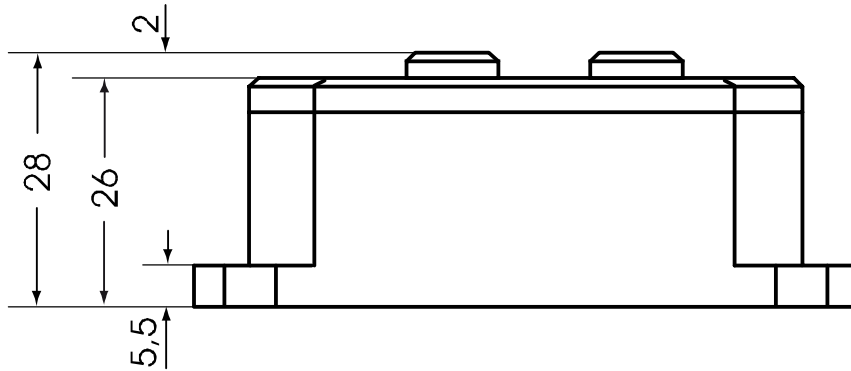


Rectifier

$V_{0\ max}$	threshold voltage	0.76	V
$R_{0\ max}$	slope resistance *	5.7	mΩ



Outlines PWS-B





Rectifier

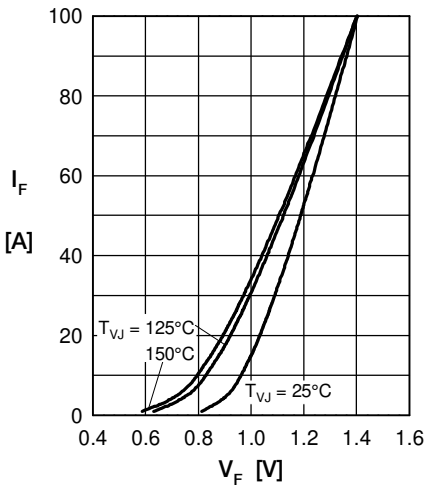


Fig. 1 Forward current vs. voltage drop per diode

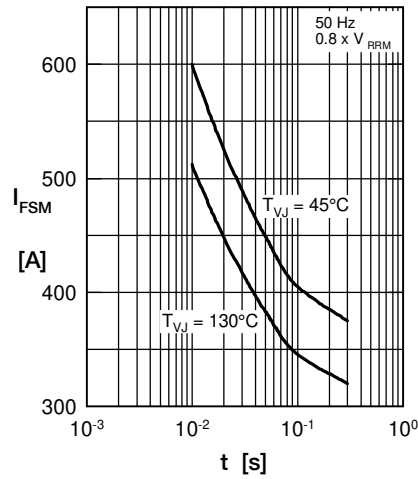


Fig. 2 Surge overload current vs. time per diode

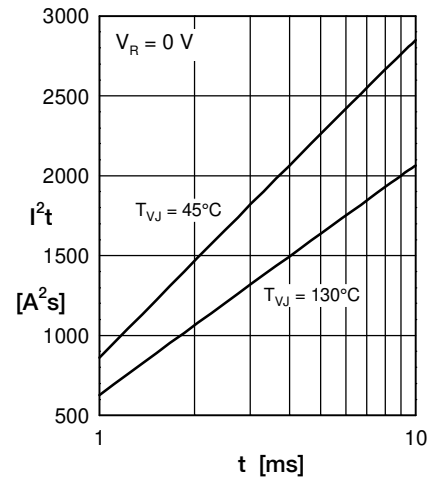


Fig. 3 I^2t vs. time per diode

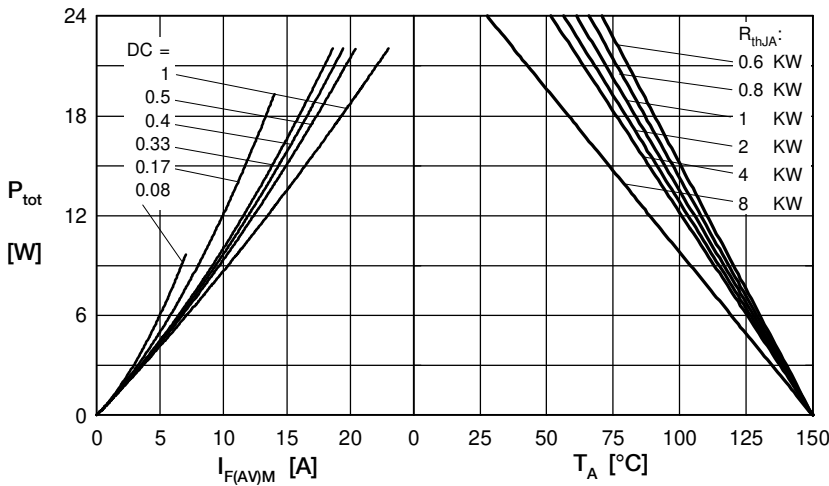


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

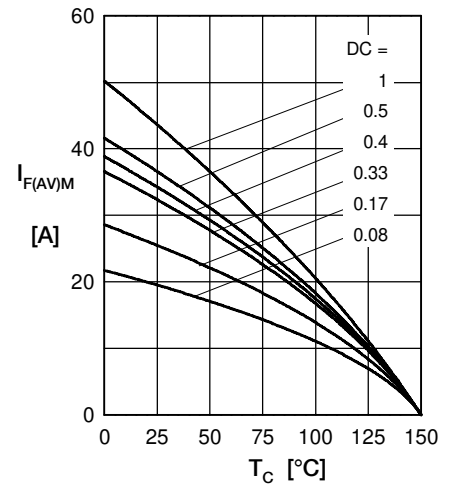


Fig. 5 Max. forward current vs. case temperature per diode

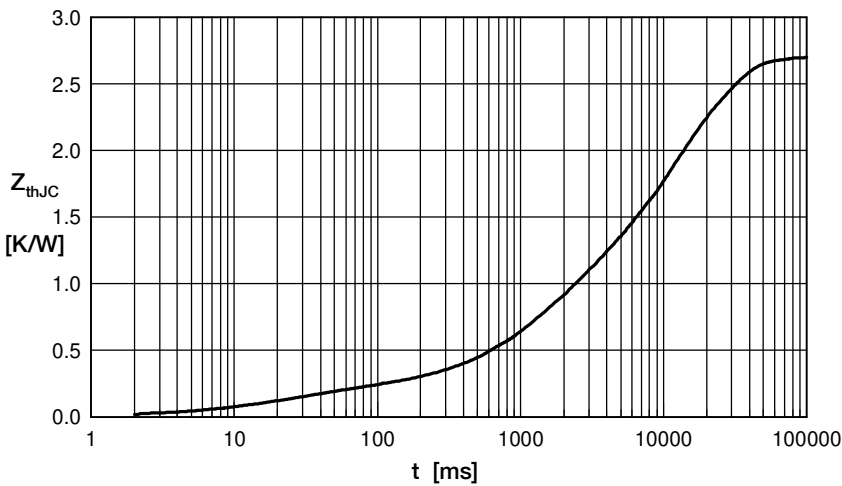


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.040	0.010
2	0.150	0.030
3	0.610	1.350
4	1.900	14.00

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