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Stocking Distributor

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[IXYS Corporation](#)

[VUO125-18NO7](#)

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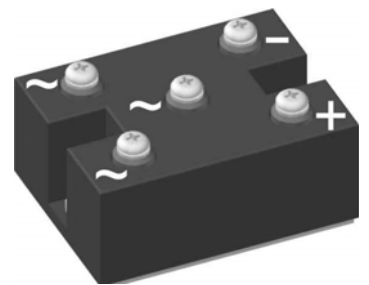
Standard Rectifier Module


3~ Rectifier	
V_{RRM}	= 1800 V
I_{DAV}	= 150 A
I_{FSM}	= 1800 A

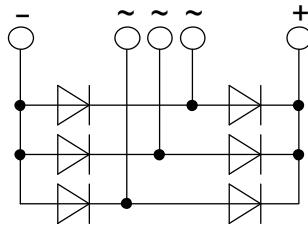
3~ Rectifier Bridge

Part number

VUO125-18N07



 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:

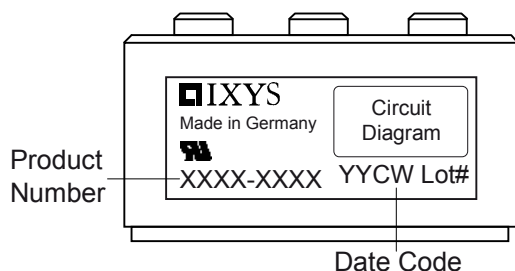
- Diode for main rectification
- For three phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Package: PWS-C

- Industry standard outline
- RoHS compliant
- Easy to mount with two screws
- Base plate: Copper internally DCB isolated
- 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	$V_R = 1800\text{ V}$	$T_{VJ} = 25^\circ\text{C}$		200	μA	
		$V_R = 1800\text{ V}$	$T_{VJ} = 150^\circ\text{C}$		2	mA	
V_F	forward voltage drop	$I_F = 50\text{ A}$	$T_{VJ} = 25^\circ\text{C}$		1.07	V	
					1.34	V	
		$I_F = 150\text{ A}$	$T_{VJ} = 125^\circ\text{C}$		0.97	V	
					1.31	V	
I_{DAV}	bridge output current	$T_C = 110^\circ\text{C}$ rectangular $d = \frac{1}{3}$	$T_{VJ} = 150^\circ\text{C}$		150	A	
V_{F0}	threshold voltage	} for power loss calculation only	$T_{VJ} = 150^\circ\text{C}$		0.76	V	
r_F	slope resistance				3.6	m Ω	
R_{thJC}	thermal resistance junction to case				0.6	K/W	
R_{thCH}	thermal resistance case to heatsink			0.30		K/W	
P_{tot}	total power dissipation		$T_C = 25^\circ\text{C}$		205	W	
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^\circ\text{C}$		1.80	kA	
					1.95	kA	
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$	$T_{VJ} = 150^\circ\text{C}$		1.53	kA
						1.65	kA
I^2t	value for fusing	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^\circ\text{C}$		16.2	kA ² s	
					15.7	kA ² s	
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$	$T_{VJ} = 150^\circ\text{C}$		11.7	kA ² s
						11.3	kA ² s
C_J	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$	58		pF	

Package PWS-C				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal				150	A
T_{stg}	storage temperature			-40		125	°C
T_{vj}	virtual junction temperature			-40		150	°C
Weight					250		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		26.0			mm
$d_{Spb/Apb}$		terminal to backside		14.0			mm
V_{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000			V
		t = 1 minute		2500			V

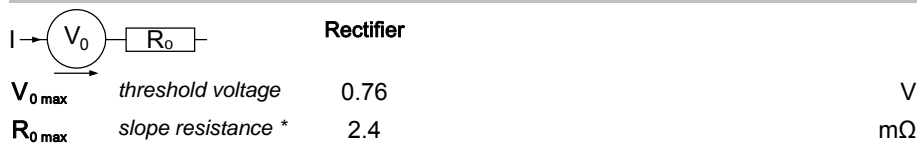


Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO125-18NO7	VUO125-18NO7	Box	10	456799

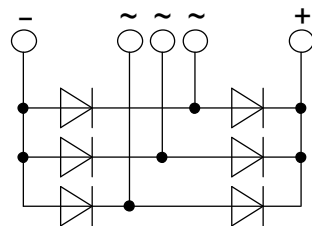
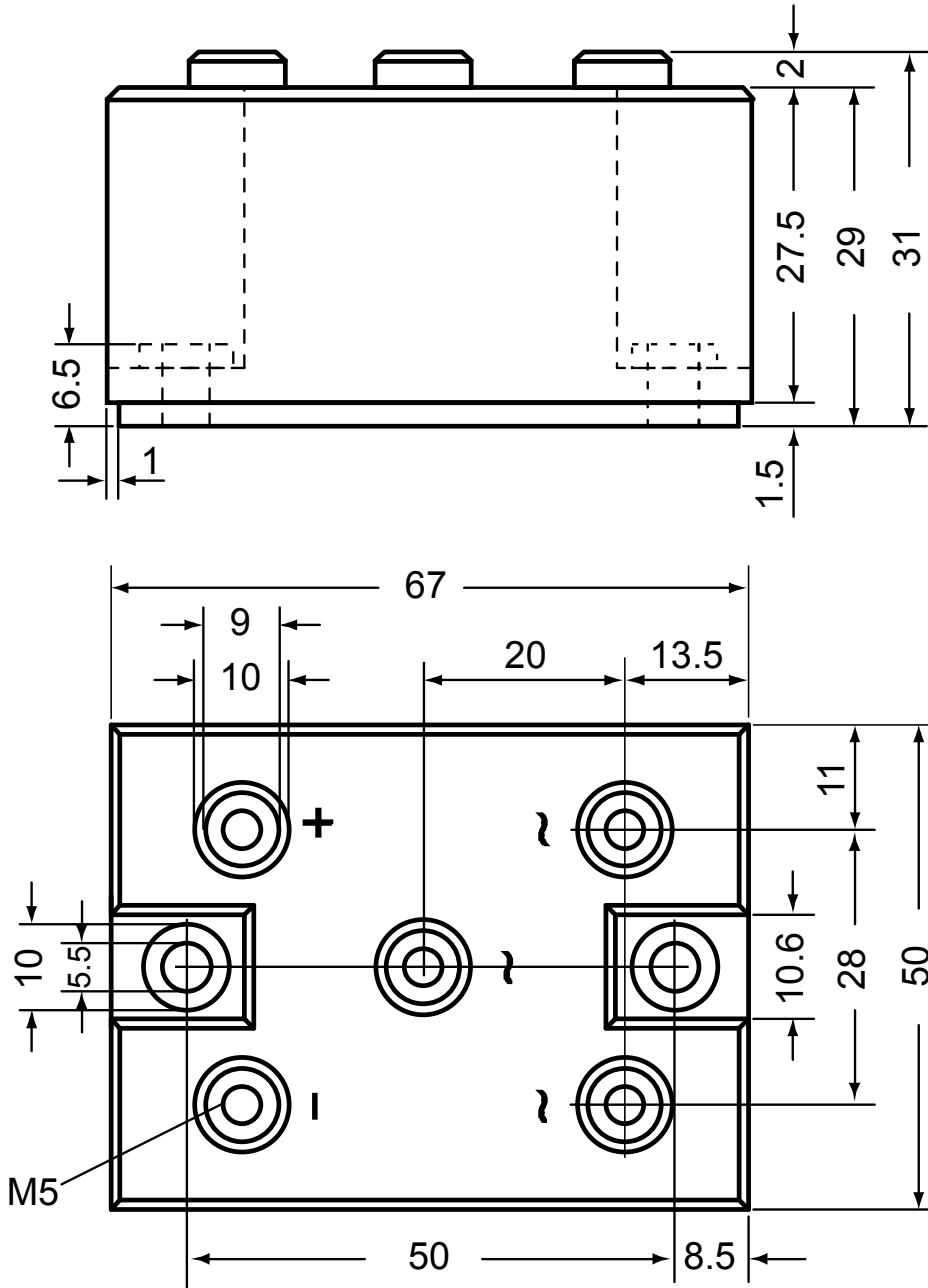
Equivalent Circuits for Simulation

* on die level

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



Outlines PWS-C



Rectifier

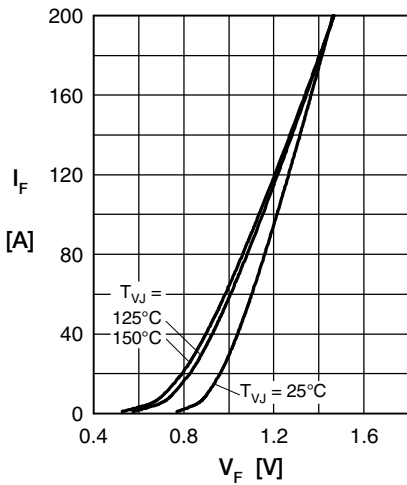


Fig. 1 Forward current versus voltage drop per diode

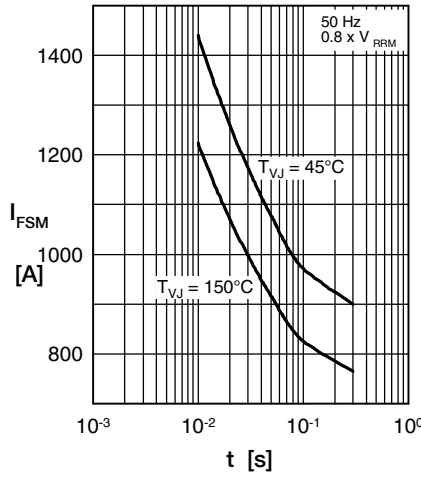


Fig. 2 Surge overload current vs. time per diode

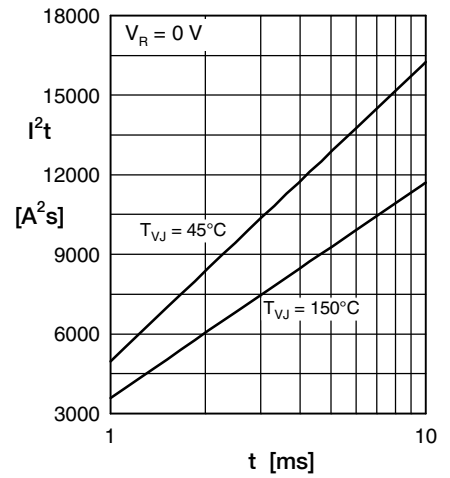


Fig. 3 I²t versus time per diode

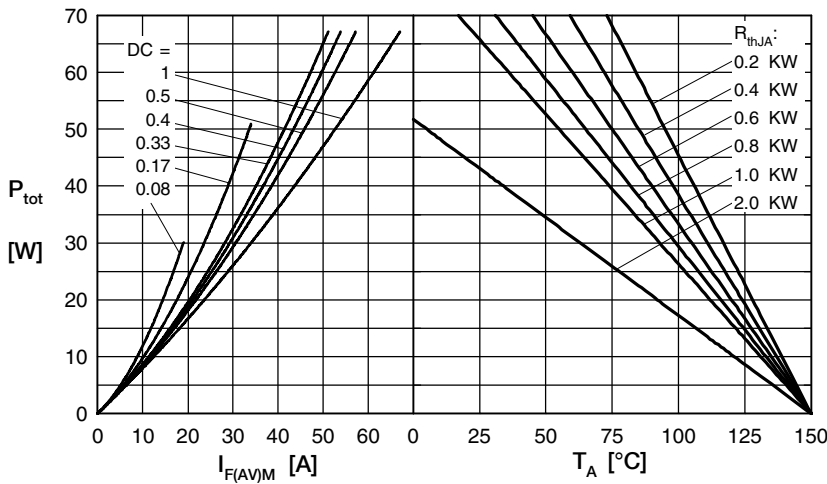


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

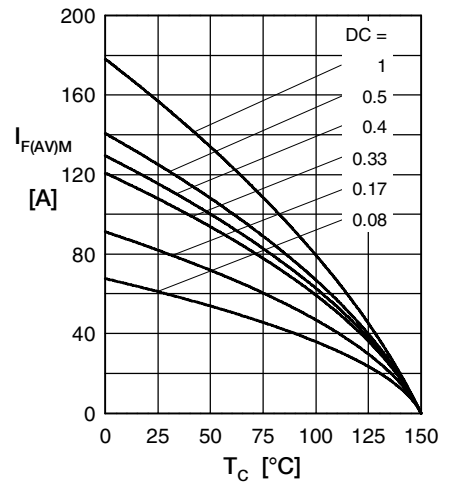


Fig. 5 Max. forward current vs. case temperature per diode

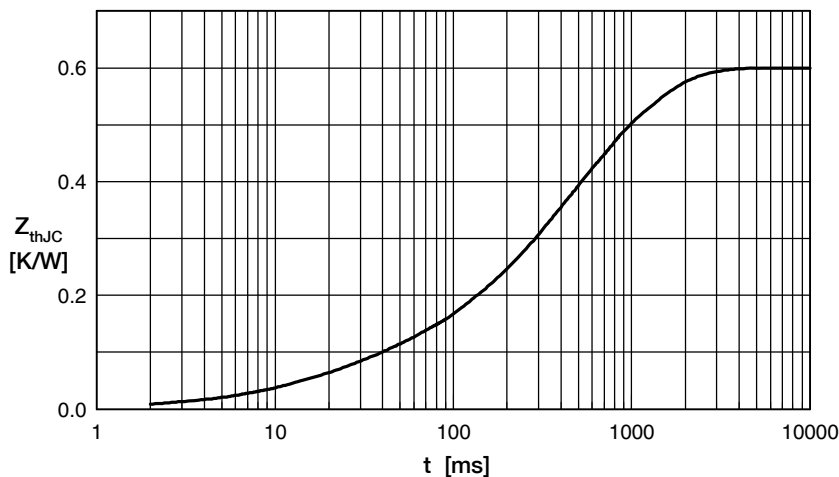


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.060	0.020
2	0.003	0.010
3	0.150	0.225
4	0.243	0.800
5	0.144	0.580