

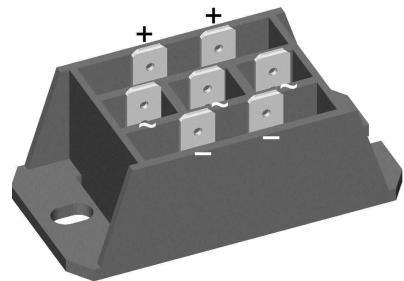
Standard Rectifier Module

3~ Rectifier	
V_{RRM}	= 1800 V
I_{DAV}	= 45 A
I_{FSM}	= 300 A

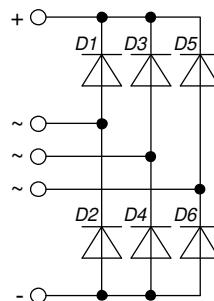
3~ Rectifier Bridge

Part number

VUO30-18NO3



 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: FO-F

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- 1/4" fast-on terminals
- Easy to mount with two screws
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

Terms and Conditions of Usage

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact your local sales office.

Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact your local sales office.

Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend

- to perform joint risk and quality assessments;
- the conclusion of quality agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

Rectifier

Symbol	Definition	Conditions	Ratings			
			min.	typ.	max.	
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	$V_R = 1800 \text{ V}$ $V_R = 1800 \text{ V}$	$T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 150^\circ\text{C}$		40 1.5	μA mA
V_F	forward voltage drop	$I_F = 15 \text{ A}$ $I_F = 45 \text{ A}$ $I_F = 15 \text{ A}$ $I_F = 45 \text{ A}$	$T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		1.10 1.38 1.01 1.38	V V
I_{DAV}	bridge output current	$T_C = 110^\circ\text{C}$ rectangular $d = 1/3$	$T_{VJ} = 150^\circ\text{C}$		45	A
V_{F0} r_F	threshold voltage slope resistance } for power loss calculation only		$T_{VJ} = 150^\circ\text{C}$		0.80 12.9	V $\text{m}\Omega$
R_{thJC}	thermal resistance junction to case				2	K/W
R_{thCH}	thermal resistance case to heatsink			0.4		K/W
P_{tot}	total power dissipation		$T_C = 25^\circ\text{C}$		60	W
I_{FSM}	max. forward surge current	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}$ $t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{sine}$ $t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}$ $t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{sine}$	$T_{VJ} = 45^\circ\text{C}$ $V_R = 0 \text{ V}$ $T_{VJ} = 150^\circ\text{C}$ $V_R = 0 \text{ V}$		300 325 255 275	A
I^2t	value for fusing	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}$ $t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{sine}$ $t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}$ $t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{sine}$	$T_{VJ} = 45^\circ\text{C}$ $V_R = 0 \text{ V}$ $T_{VJ} = 150^\circ\text{C}$ $V_R = 0 \text{ V}$		450 440 325 315	A^2s A^2s A^2s A^2s
C_J	junction capacitance	$V_R = 400 \text{ V}; f = 1 \text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$	10		pF

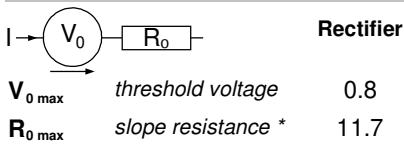
Package FO-F			Ratings		
Symbol	Definition	Conditions	min.	typ.	max.
I_{RMS}	RMS current	per terminal			100
T_{VJ}	virtual junction temperature		-40		150
T_{op}	operation temperature		-40		125
T_{stg}	storage temperature		-40		125
Weight				45	
M_D	mounting torque		2		2.5
$d_{Spp/App}$	creepage distance on surface / striking distance through air		terminal to terminal	18.0	6.0
$d_{Spb/Apb}$			terminal to backside	26.0	20.0
V_{ISOL}	isolation voltage	$t = 1$ second $t = 1$ minute	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3600 3000	
					V
					V



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO30-18NO3	VUO30-18NO3	Box	10	454362

Equivalent Circuits for Simulation

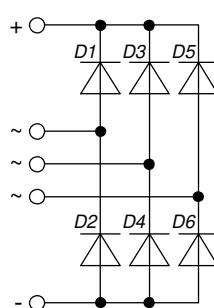
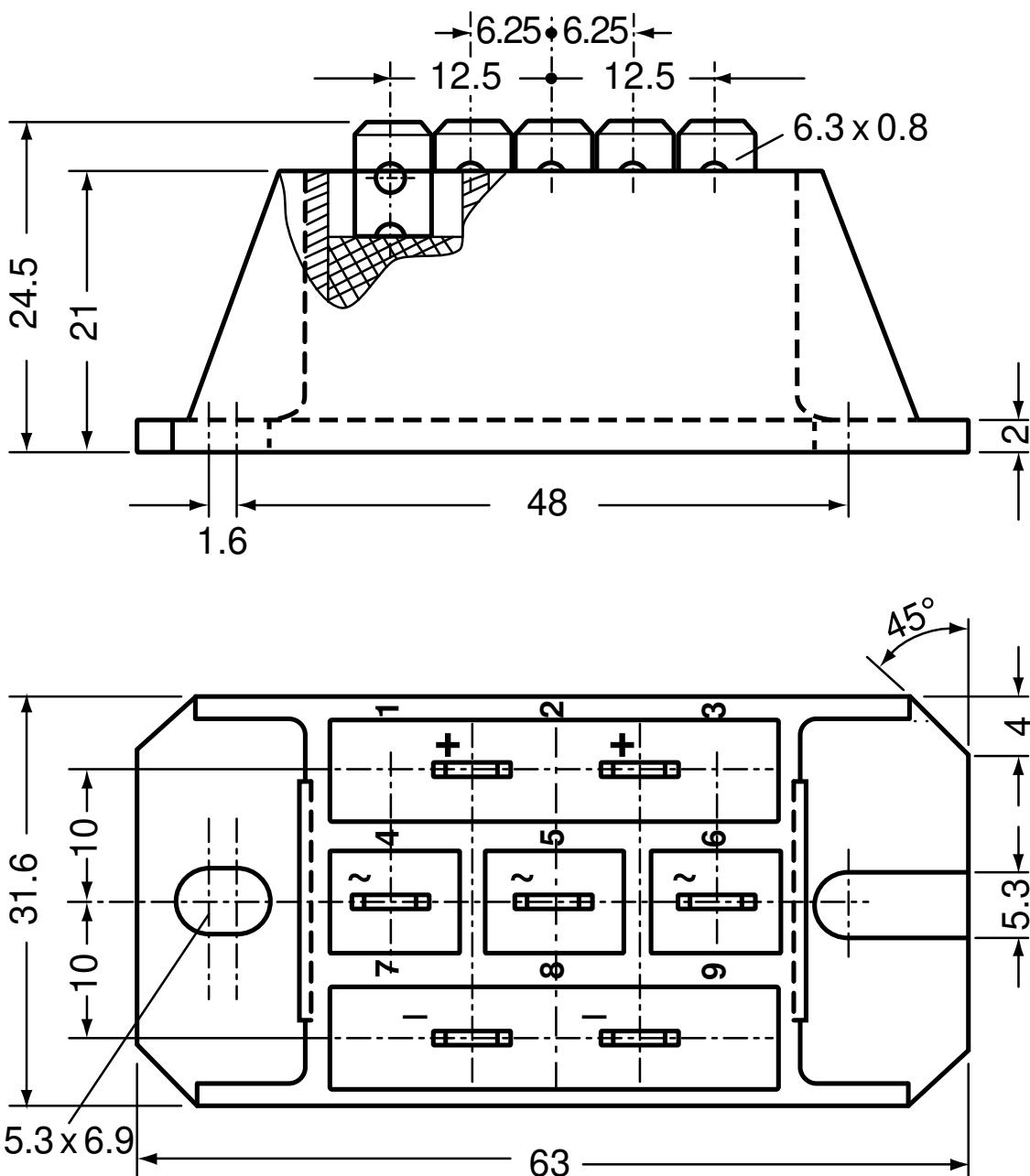
* on die level

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

$V_{0\max}$ threshold voltage 0.8
 $R_{0\max}$ slope resistance * 11.7

V
 mΩ

Outlines FO-F



Rectifier

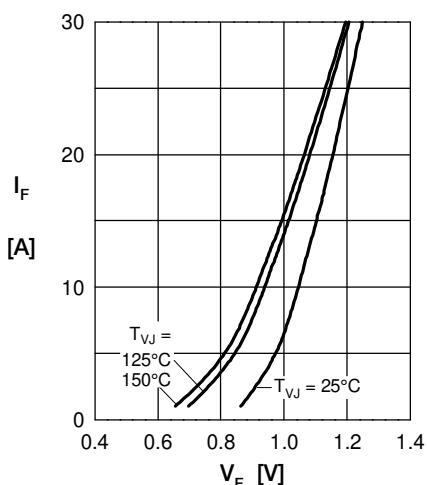


Fig. 1 Forward current vs. voltage drop per diode

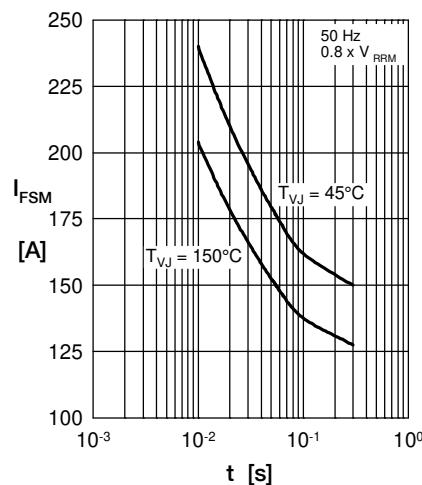


Fig. 2 Surge overload current vs. time per diode

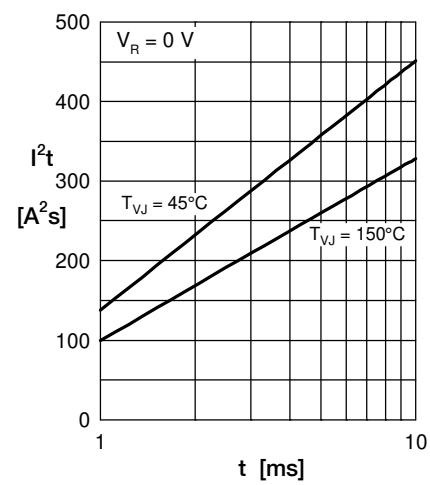
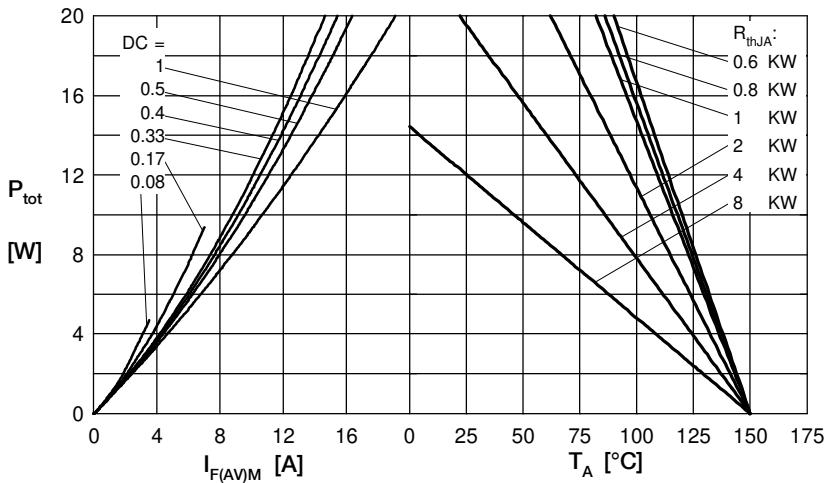
Fig. 3 I^2t vs. time per diode

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

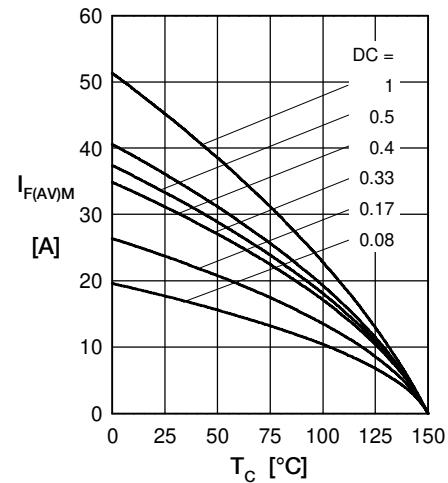


Fig. 5 Max. forward current vs. case temperature per diode

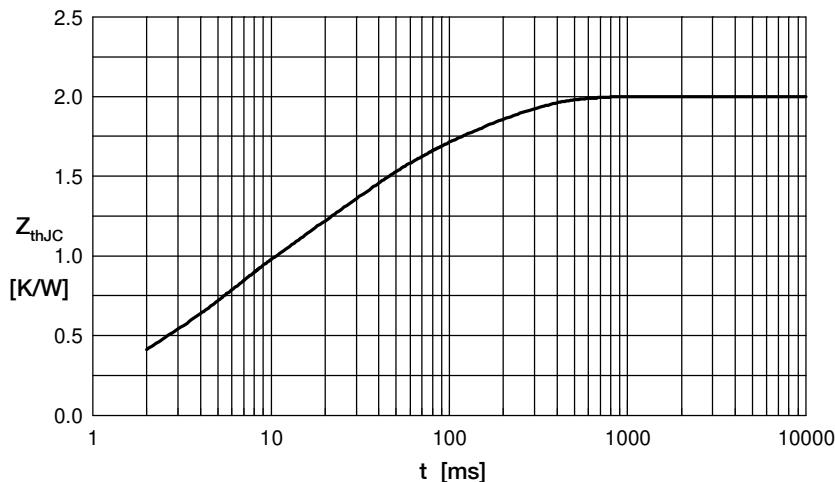


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.0607	0.00040
2	0.2030	0.00256
3	0.5005	0.00450
4	0.7030	0.02420
5	0.5328	0.15000

Mouser Electronics

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