Standard Rectifier Module

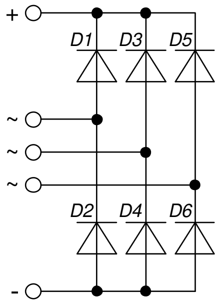
3~ Rectifier		
V_{RRM}	=	1600 V
I_{DAV}	=	90 A
I_{FSM}	=	750 A

3~ Rectifier Bridge

Part number

VUO84-16NO7

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 Flat

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Easy to mount with two screws
- Height: 17 mm
- Base plate: Copper internally DCB isolated
- Advanced power cycling

Disclaimer Notice

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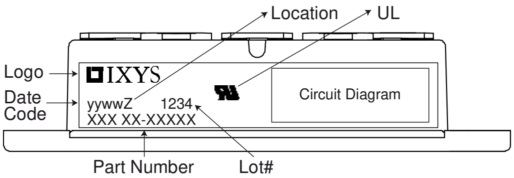
Rectifier						Ratings		
Symbol	Definition	Conditions			min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage			T_{VJ} = 25°C			1700	V
V_{RRM}	max. repetitive reverse blocking voltage			T_{VJ} = 25°C			1600	V
I_R	reverse current	V_R = 1600 V		T_{VJ} = 25°C			100	µA
		V_R = 1600 V		T_{VJ} = 150°C			1.5	mA
V_F	forward voltage drop	I_F = 30 A		T_{VJ} = 25°C			1.08	V
		I_F = 90 A					1.35	V
		I_F = 30 A		T_{VJ} = 125°C			0.99	V
		I_F = 90 A					1.33	V
I_{DAV}	bridge output current	T_C = 115°C		T_{VJ} = 150°C			90	A
		rectangular	d = ⅓					
V_{F0}	threshold voltage	for power loss calculation only		T_{VJ} = 150°C			0.78	V
r_F	slope resistance	for power loss calculation only					6	mΩ
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°C			135	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine		T_{VJ} = 45°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°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°C			2.82	kA²s
		t = 8,3 ms; (60 Hz), sine		V_R = 0 V			2.73	kA²s
		t = 10 ms; (50 Hz), sine		T_{VJ} = 150°C			2.05	kA²s
		t = 8,3 ms; (60 Hz), sine		V_R = 0 V			1.98	kA²s
C_J	junction capacitance	V_R = 400 V; f = 1 MHz		T_{VJ} = 25°C		27		pF

Package PWS-D Flat			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
Weight				118		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*	13.0			mm
V_{ISOL}	*isolation voltage*	t = 1 second; 50/60 Hz, RMS; $I_{ISOL} \le 1$ mA	3000			V
		t = 1 minute	2500			V

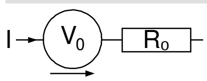


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO84-16NO7	VUO84-16NO7	Box	10	508510

Similar Part	Package	Voltage class
VUO82-16NO7	PWS-D	1600

Equivalent Circuits for Simulation

** on die level* $T_{VJ} = 150°C$

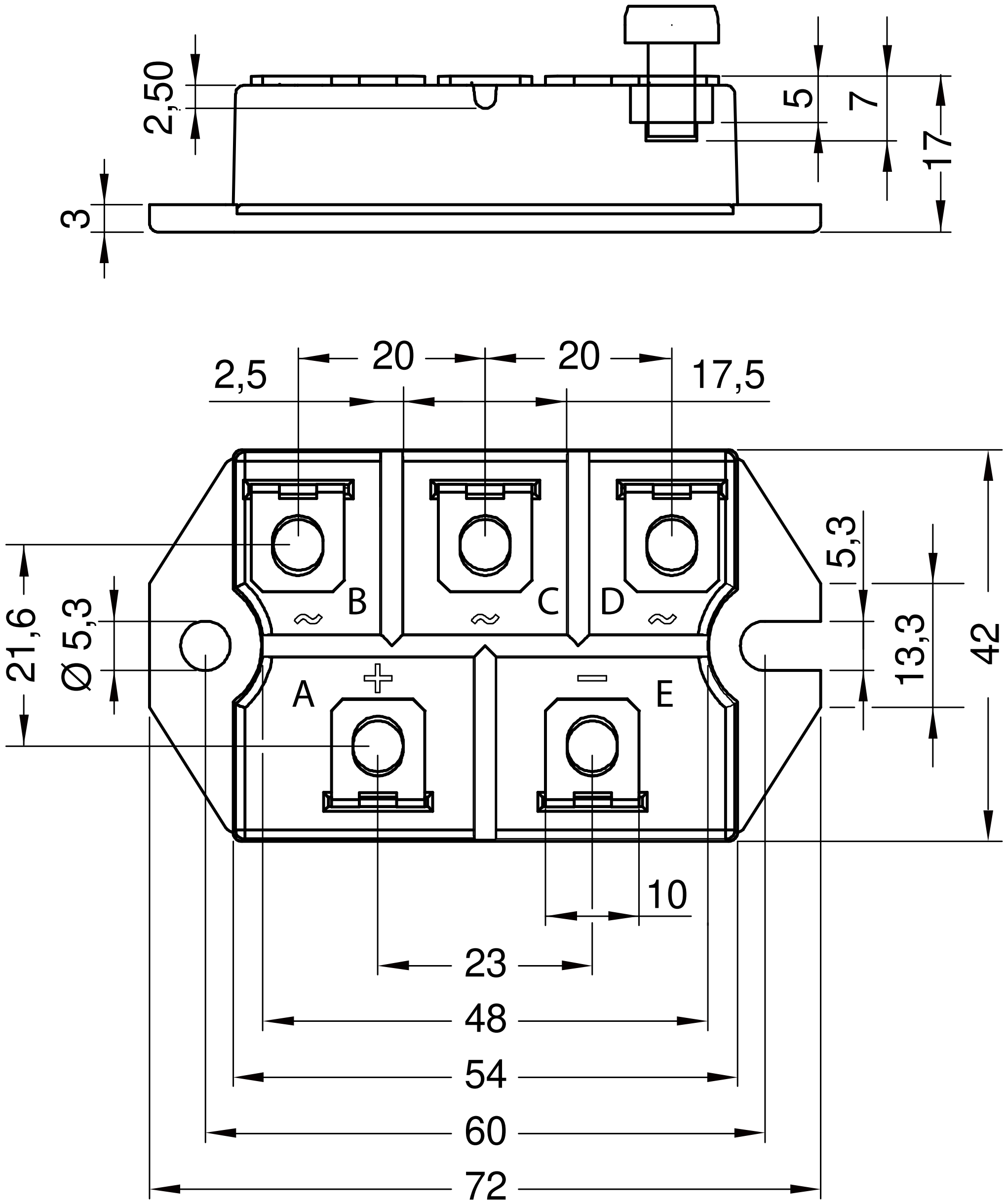


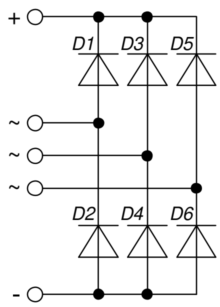
Rectifier

$V_{0\,max}$	*threshold voltage*	0.78	V
$R_{0\,max}$	*slope resistance **	4.8	mΩ

Outlines PWS-D Flat

Max. allowed screw-in depth: 6 mm





Rectifier

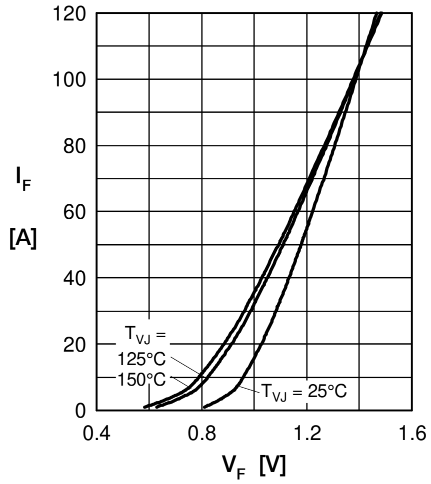


Fig. 1 Forward current versus voltage drop per diode

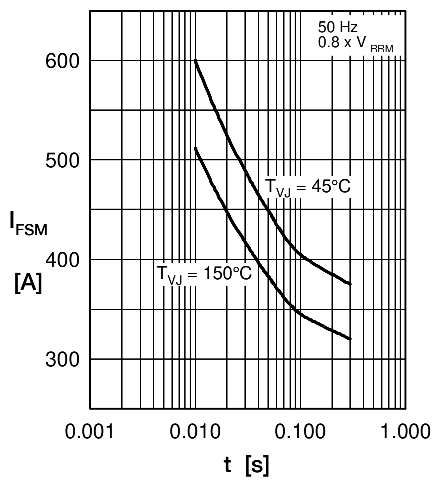


Fig. 2 Surge overload current

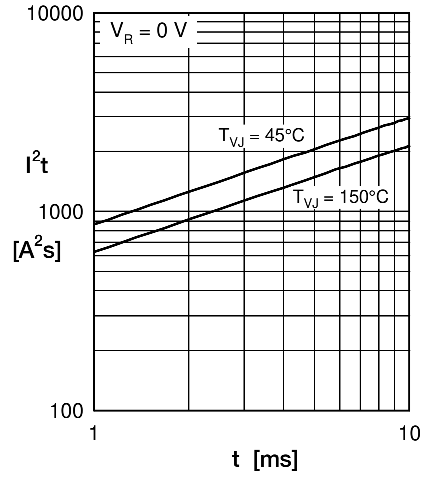


Fig. 3 I^2t versus time per diode

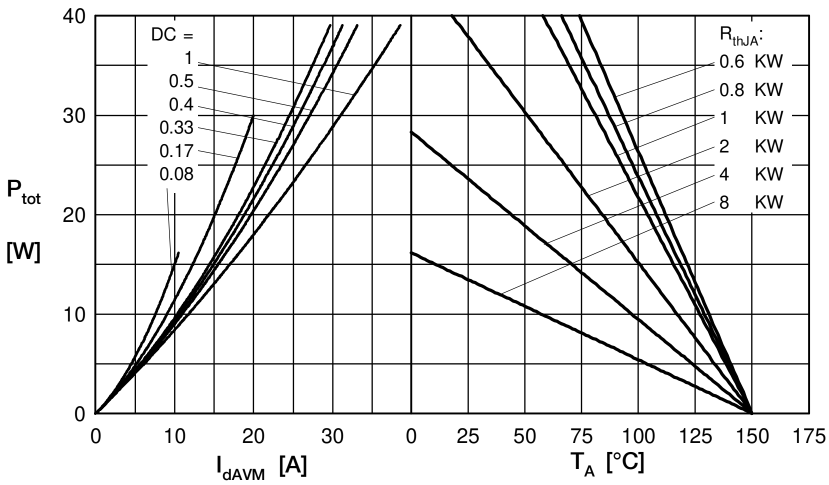


Fig. 4 Power dissipation vs. direct output current & ambient temperature

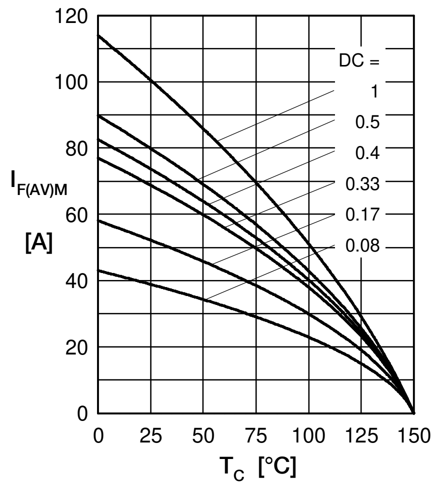


Fig. 5 Max. forward current vs. case temperature

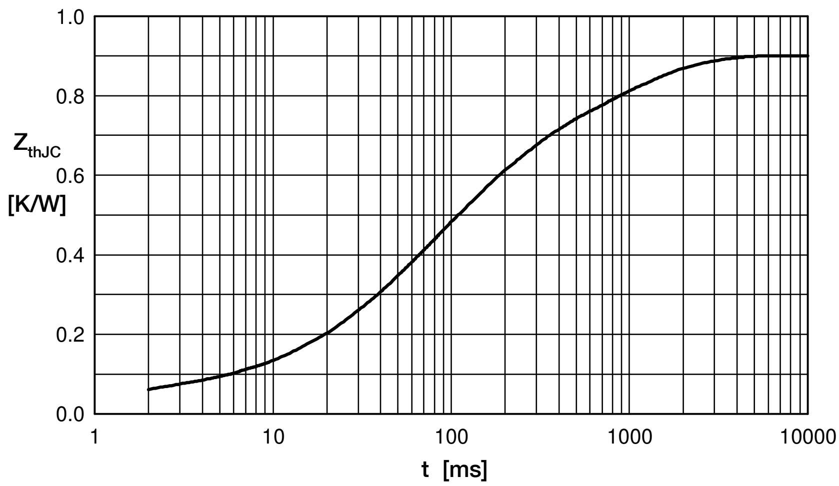


Fig. 6 Transient thermal impedance junction to case

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