Standard Rectifier Module

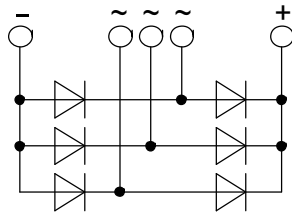| 3~ Rectifier		
V_{RRM}	=	1400 V
I_{DAV}	=	150 A
I_{FSM}	=	1800 A

3~ Rectifier Bridge

Part number

VUO125-14NO7
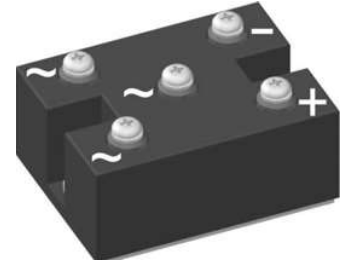
UL E72873

Features / Advantages:
- Package with DCB ceramic
- Improved temperature and power cycling
- Planar passivated chips
- Very low forward voltage drop
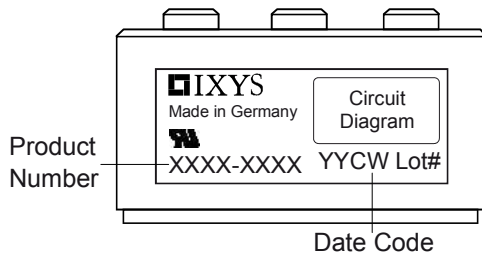- Very low leakage current

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

Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage		$T_{VJ} = 25°C$			1500	V
V_{RRM}	max. repetitive reverse blocking voltage		$T_{VJ} = 25°C$			1400	V
I_R	reverse current	$V_R = 1400$ V	$T_{VJ} = 25°C$			200	µA
		$V_R = 1400$ V	$T_{VJ} = 150°C$			2	mA
V_F	forward voltage drop	$I_F = 50$ A	$T_{VJ} = 25°C$			1.07	V
		$I_F = 150$ A				1.34	V
		$I_F = 50$ A	$T_{VJ} = 125°C$			0.97	V
		$I_F = 150$ A				1.31	V
I_{DAV}	bridge output current	$T_C = 110°C$ rectangular $d = \frac{1}{3}$	$T_{VJ} = 150°C$			150	A
V_{F0}	threshold voltage	} for power loss calculation only	$T_{VJ} = 150°C$			0.76	V
r_F	slope resistance					3.6	mΩ
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		$T_C = 25°C$			205	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			1.80	kA
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			1.95	kA
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			1.53	kA
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			1.65	kA
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			16.2	kA²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			15.7	kA²s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			11.7	kA²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			11.3	kA²s
C_J	junction capacitance	$V_R = 400$ V; f = 1 MHz	$T_{VJ} = 25°C$		58		pF

Package   PWS-C

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$_{ISOL}$ ≤ 1 mA	3000			V
		t = 1 minute		2500			V

Product Number — XXXX-XXXX

IXYS
Made in Germany

Circuit Diagram

YYCW Lot#

Date Code

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO125-14NO7	VUO125-14NO7	Box	10	456772

Equivalent Circuits for Simulation   *on die level*   T$_{VJ}$ = 150 °C

I → V$_0$ → R$_0$
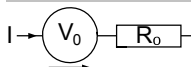
Rectifier

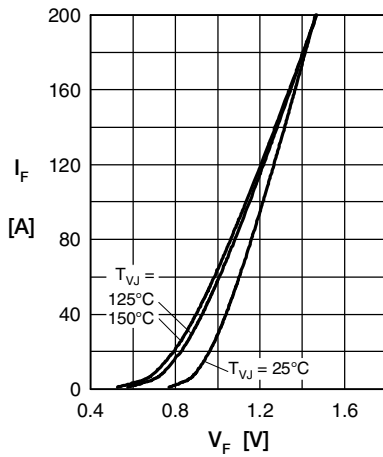|			
V$_{0\,max}$	threshold voltage	0.76	V
R$_{0\,max}$	slope resistance *	2.4	mΩ

Outlines   PWS-C
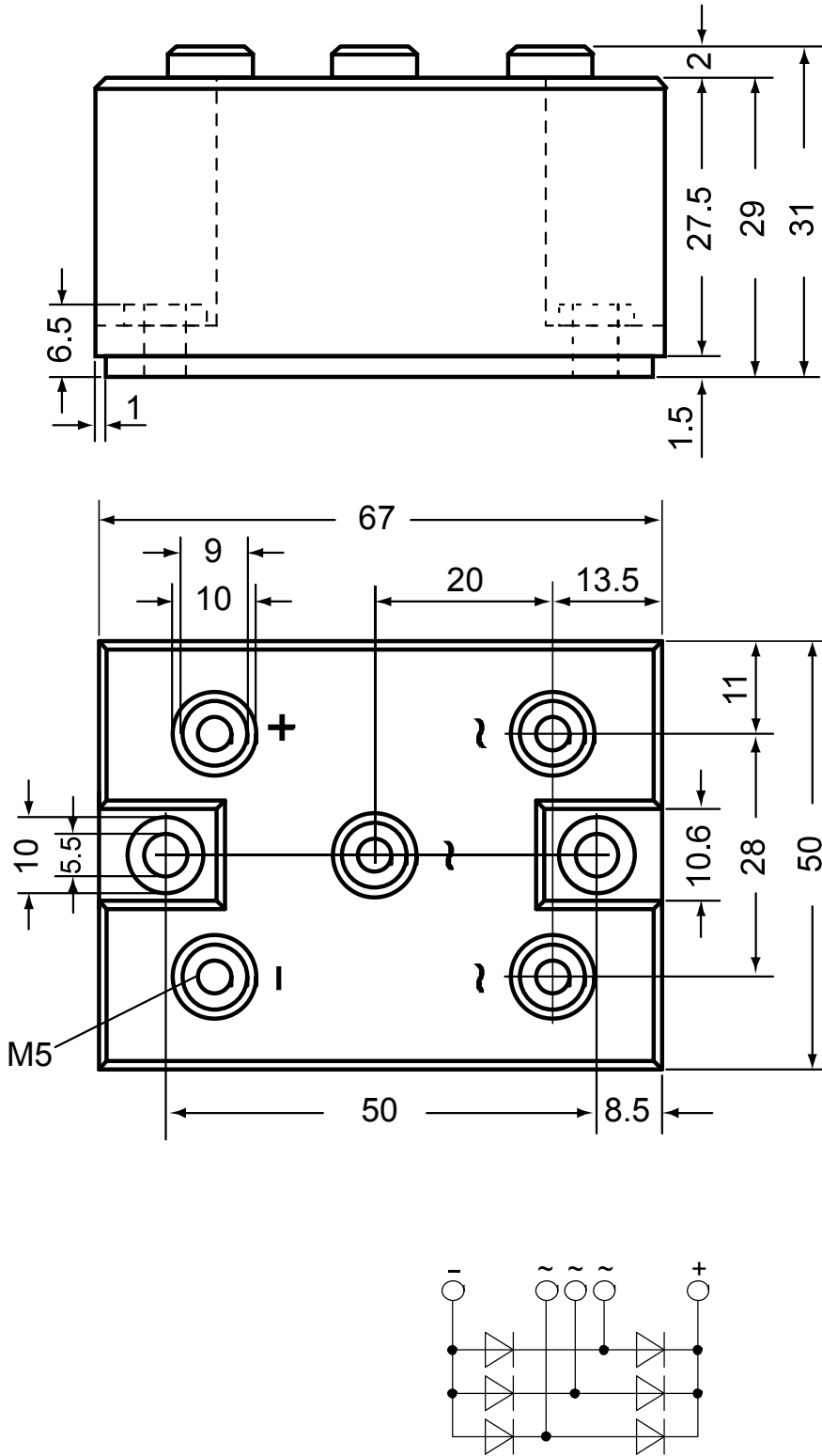
Rectifier

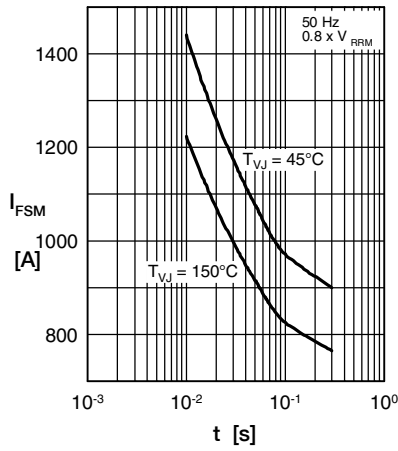Fig. 1 Forward current versus voltage drop per diode

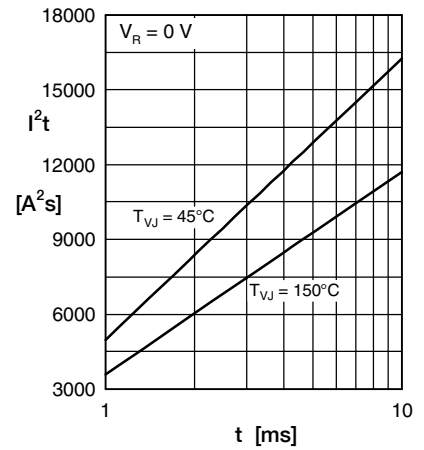Fig. 2 Surge overload current vs. time per diode
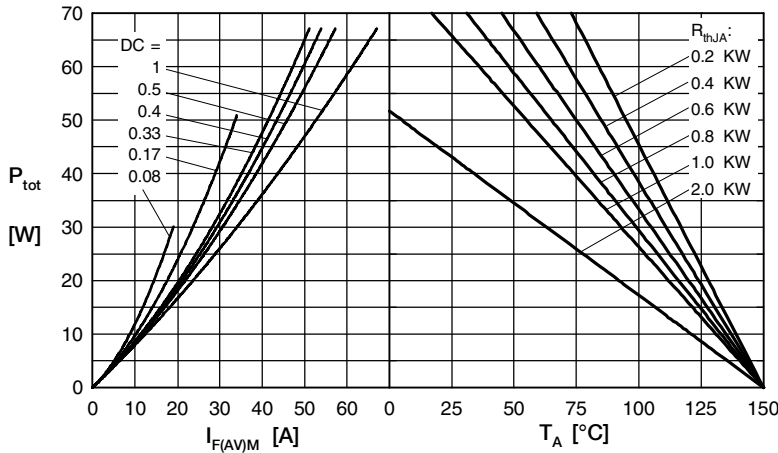

Fig. 3 I^2t versus time per diode

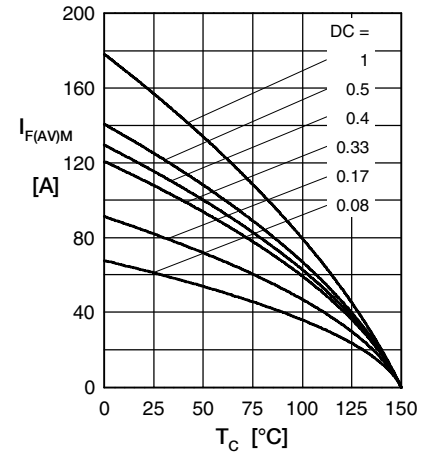Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

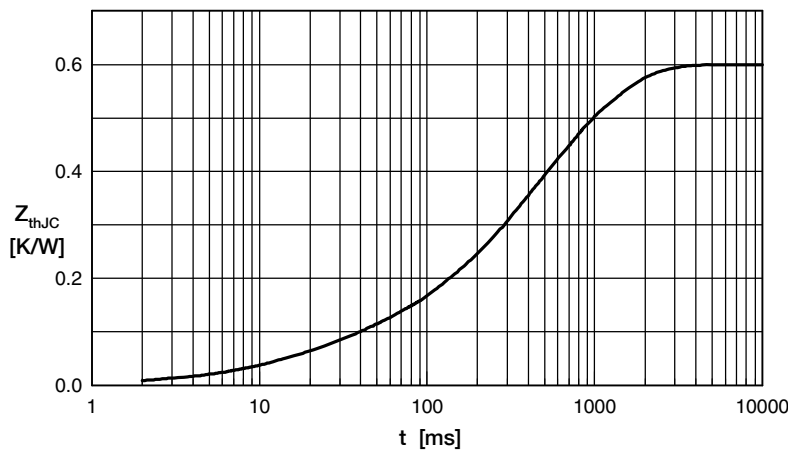Fig. 5 Max. forward current vs. case temperature per diode

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