Standard Rectifier Module

| 3~ Rectifier		
V_{RRM}	=	1200 V
I_{DAV}	=	120 A
I_{FSM}	=	1500 A

3~ Rectifier Bridge

Part number

VUO105-12NO7
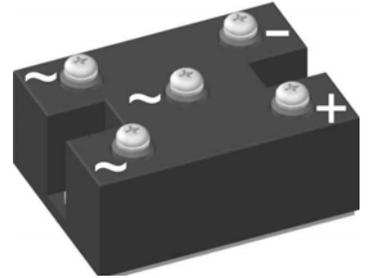
E72873
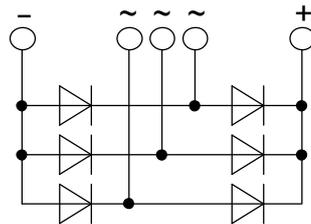
Features / Advantages:
● Package with DCB ceramic
● Improved temperature and power cycling
● Planar passivated chips
● Very low forward voltage drop
● Very low leakage current

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-C
● Industry standard outline
● RoHS compliant
● Easy to mount with two screws
● Base plate: Copper
  internally DCB isolated
● Advanced power cycling

Data according to IEC 60747and per semiconductor unless otherwise specified

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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			1300	V
V_{RRM}	max. repetitive reverse blocking voltage		T_{VJ} = 25°C			1200	V
I_R	reverse current	V_R = 1200 V	T_{VJ} = 25°C			100	µA
		V_R = 1200 V	T_{VJ} = 150°C			2	mA
V_F	forward voltage drop	I_F = 40 A	T_{VJ} = 25°C			1.09	V
		I_F = 120 A				1.38	V
		I_F = 40 A	T_{VJ} = 125 °C			1.00	V
		I_F = 120 A				1.36	V
I_{DAV}	bridge output current	T_C = 105°C	T_{VJ} = 150°C			120	A
		rectangular d = ⅓					
V_{F0}	threshold voltage ⎫		T_{VJ} = 150°C			0.78	V
r_F	slope resistance ⎭ for power loss calculation only					4.8	mΩ
R_{thJC}	thermal resistance junction to case					0.8	K/W
R_{thCH}	thermal resistance case to heatsink				0.30		K/W
P_{tot}	total power dissipation		T_C = 25°C			155	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			1.50	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.62	kA
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			1.28	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.38	kA
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			11.3	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			10.9	kA²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			8.13	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			7.87	kA²s
C_J	junction capacitance	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°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	3000			V
		t = 1 minute 50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	2500			V

IXYS
Made in Germany

XXXX-XXXX   Circuit Diagram   YYCW Lot#

Product Number

Date Code
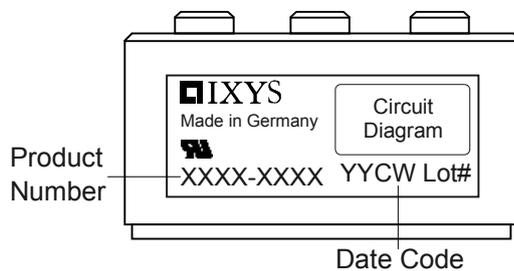
Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO105-12NO7	VUO105-12NO7	Box	10	456713

Equivalent Circuits for Simulation   *on die level* $T_{VJ} = 150\,°C$

I — V_0 — R_0
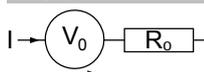
Rectifier

$V_{0\,max}$	threshold voltage	0.78	V
$R_{0\,max}$	slope resistance *	3.6	mΩ

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20130612a

## Outlines   PWS-C
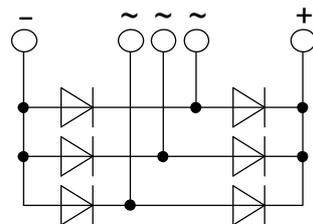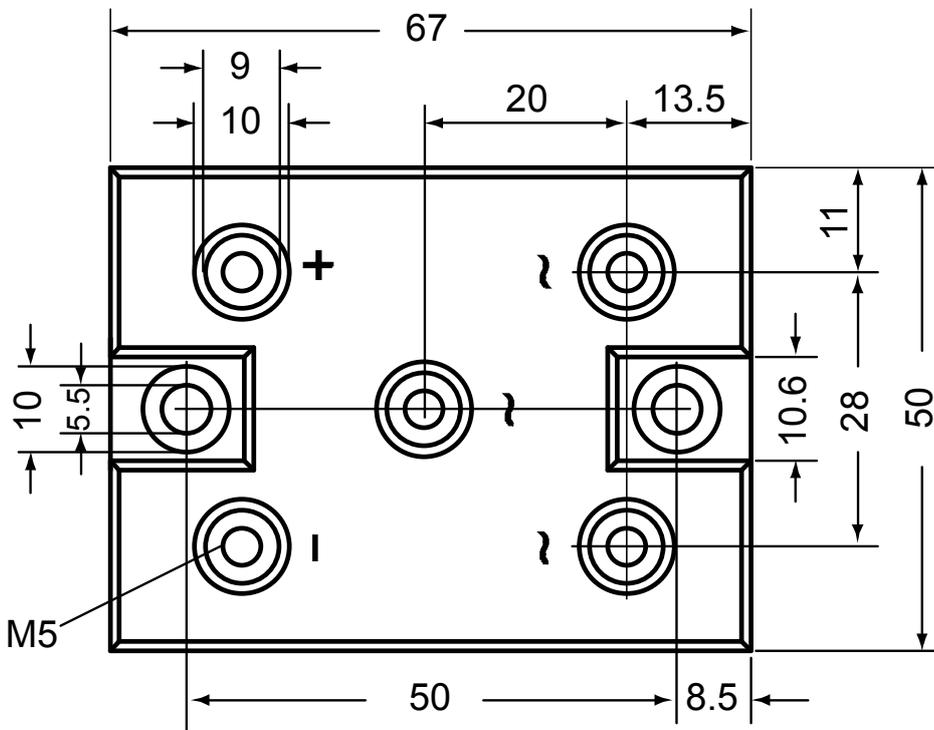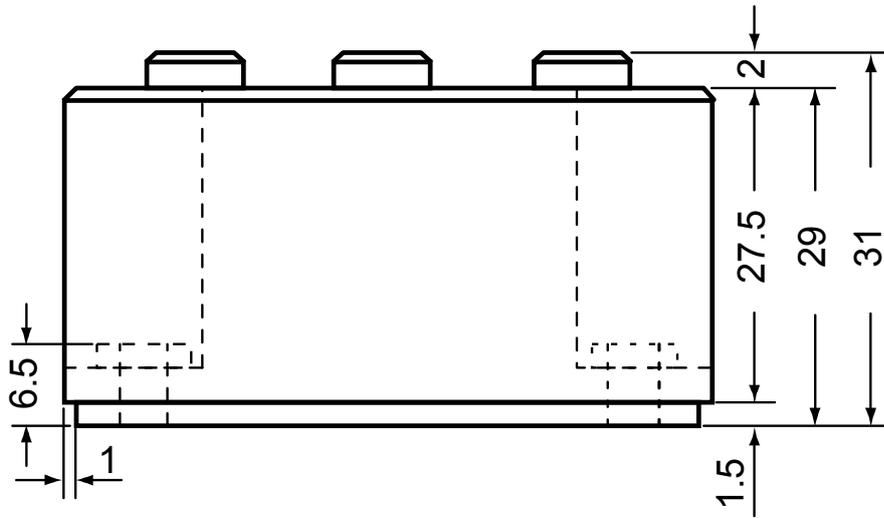
Rectifier
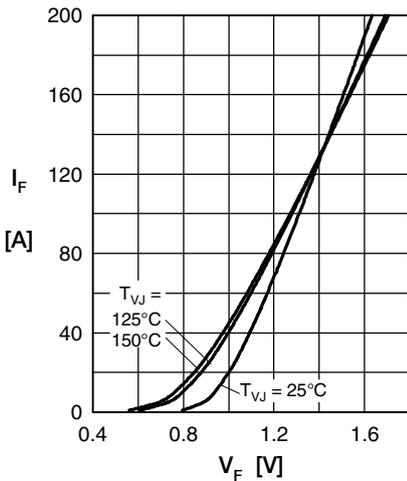
Fig. 1 Forward current versus voltage drop per diode
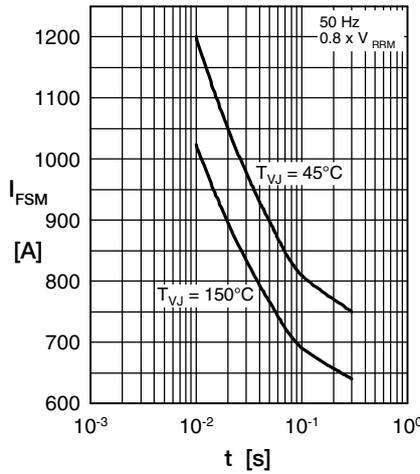

Fig. 2 Surge overload current vs. time per diode
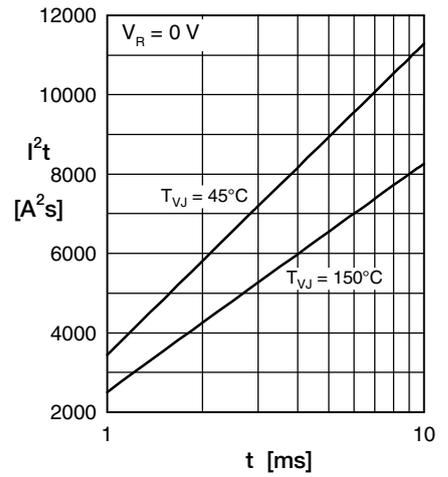
Fig. 3 I^2t versus time per diode
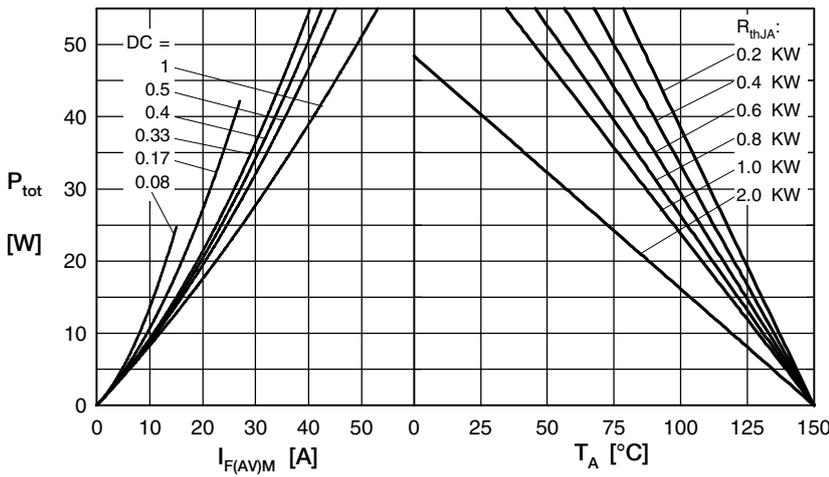
Fig. 4 Power dissipation vs. forward current and ambient temperature per diode
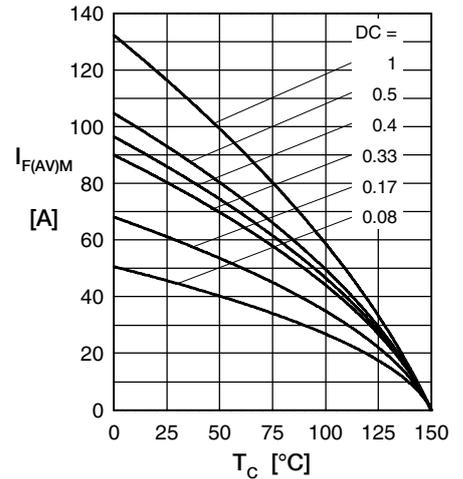
Fig. 5 Max. forward current vs. case temperature per diode
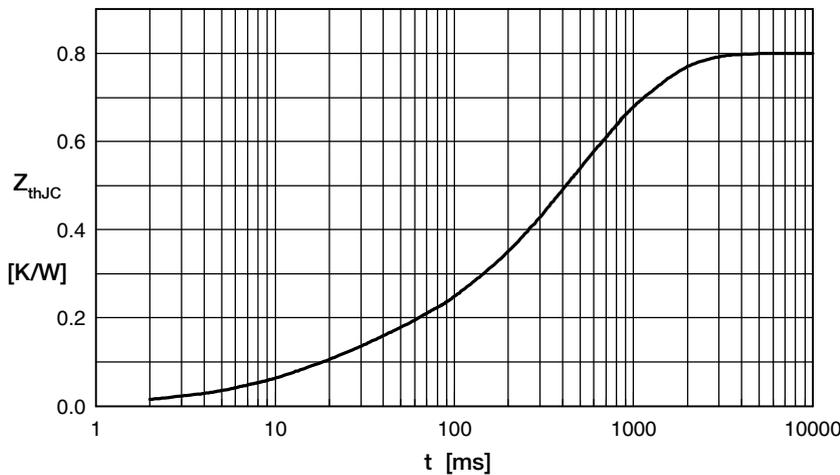
Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.100	0.020
2	0.014	0.010
3	0.192	0.225
4	0.281	0.800
5	0.213	0.580

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