Standard Rectifier Module

3~ Rectifier		
V_{RRM} =	1400 V
I_{DAV} =	125 A
I_{FSM} =	1200 A

3~ Rectifier Bridge

Part number

VUO110-14NO7

C~ D~ E~
A+ B-

U E72873

B-   C~ D~ E~   A+
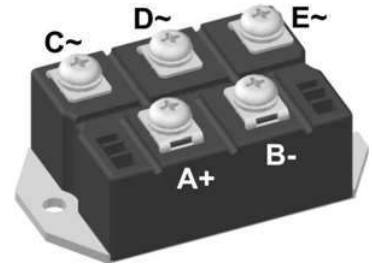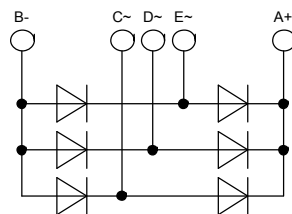
Features / Advantages:
- Package with DCB ceramic
- Improved temperature and power cycling
- Planar passivated chips
- Very low forward voltage drop
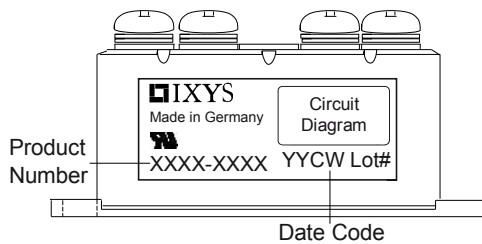- Very low leakage current

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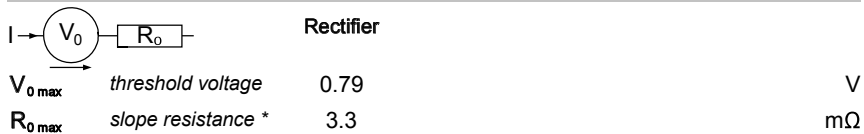- Field supply for DC motors

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

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20130410b

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	$T_{VJ} = 25°C$			100	µA
		$V_R = 1400$ V	$T_{VJ} = 150°C$			2	mA
V_F	forward voltage drop	$I_F = 50$ A	$T_{VJ} = 25°C$			1.13	V
		$I_F = 150$ A				1.46	V
		$I_F = 50$ A	$T_{VJ} = 125°C$			1.04	V
		$I_F = 150$ A				1.47	V
I_{DAV}	bridge output current	$T_C = 110°C$	$T_{VJ} = 150°C$			125	A
		rectangular d = ⅓					
V_{F0}	threshold voltage ⎱		$T_{VJ} = 150°C$			0.79	V
r_F	slope resistance ⎰ for power loss calculation only					4.5	mΩ
R_{thJC}	thermal resistance junction to case					0.7	K/W
R_{thCH}	thermal resistance case to heatsink				0.3		K/W
P_{tot}	total power dissipation		$T_C = 25°C$			175	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			1.20	kA
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			1.30	kA
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			1.02	kA
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			1.10	kA
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			7.20	kA²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			6.98	kA²s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			5.20	kA²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			5.04	kA²s
C_J	junction capacitance	$V_R = 400$ V; f = 1 MHz	$T_{VJ} = 25°C$		37		pF

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Package	PWS-E			Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal				200	A
T_{stg}	storage temperature			-40		125	°C
T_{VJ}	virtual junction temperature			-40		150	°C
Weight					284		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		12.0			mm
$d_{Spb/Apb}$		terminal to backside		26.0			mm
V_{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000			V
		t = 1 minute		2500			V

Product Number — XXXX-XXXX   YYCW Lot#

Circuit Diagram

IXYS Made in Germany

Date Code

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO110-14NO7	VUO110-14NO7	Box	5	462381

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

I → V_0 → R_0

Rectifier

$V_{0\,max}$	threshold voltage	0.79	V
$R_{0\,max}$	slope resistance *	3.3	mΩ

Outlines   PWS-E

M6x12

7

30

3

94

80

72

26   26

15

54   27

6.5   6.5

C ~   D ~   E ~

A +   B -

3
2
1

4
5
6

12

25

7

66

M6

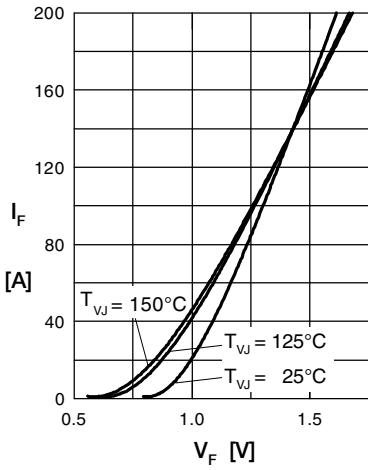B-   C~ D~ E~   A+
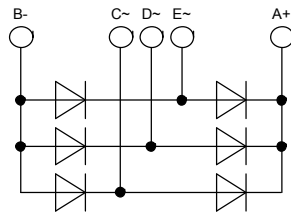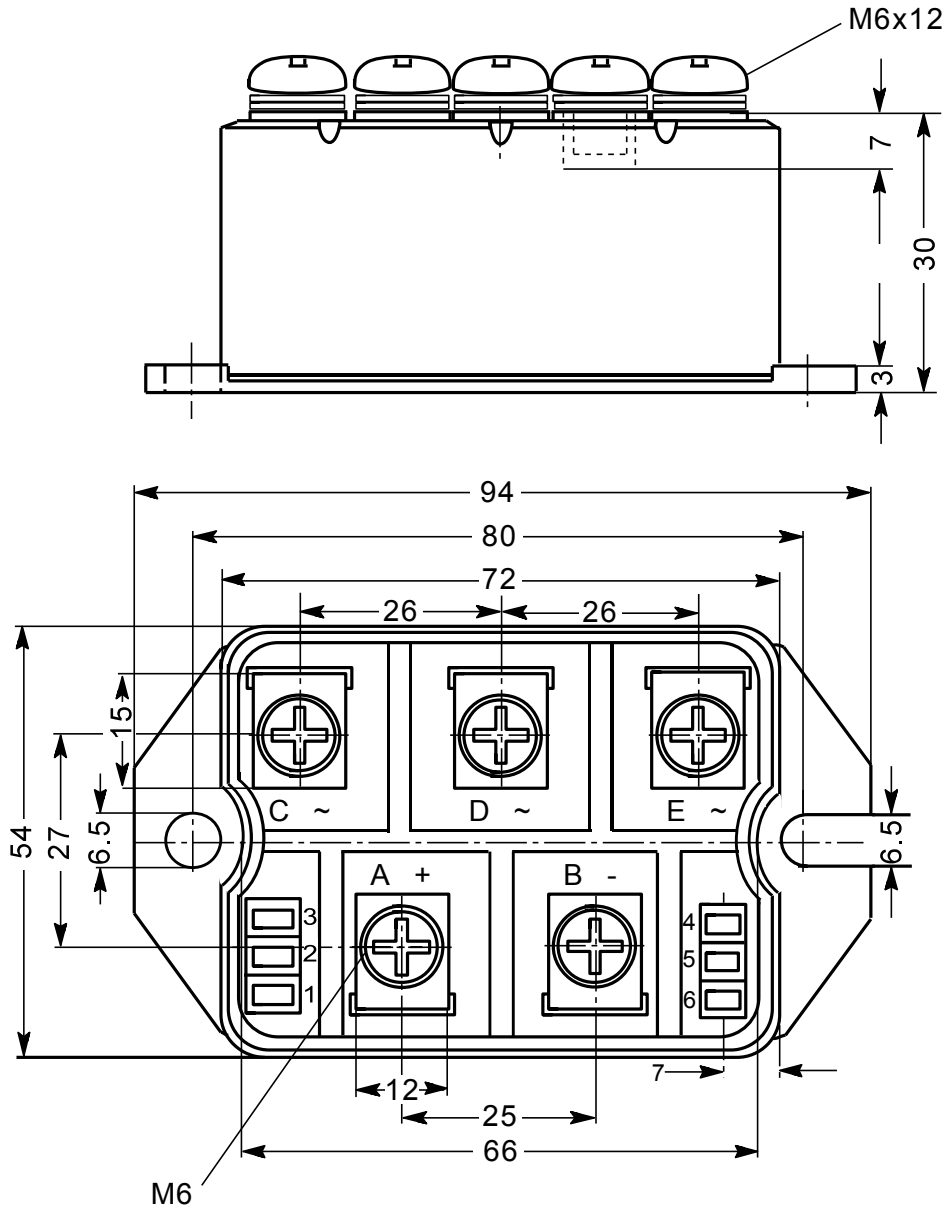
Rectifier

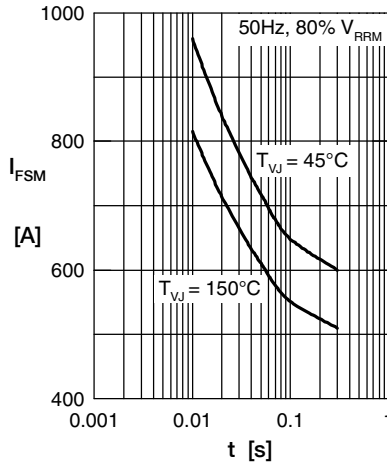Fig. 1 Forward current vs. voltage drop per diode

Fig. 2 Surge overload current vs. time per diode
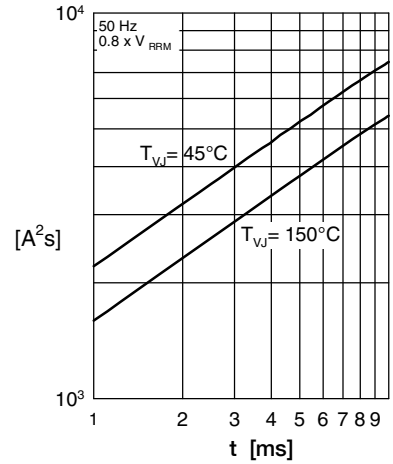
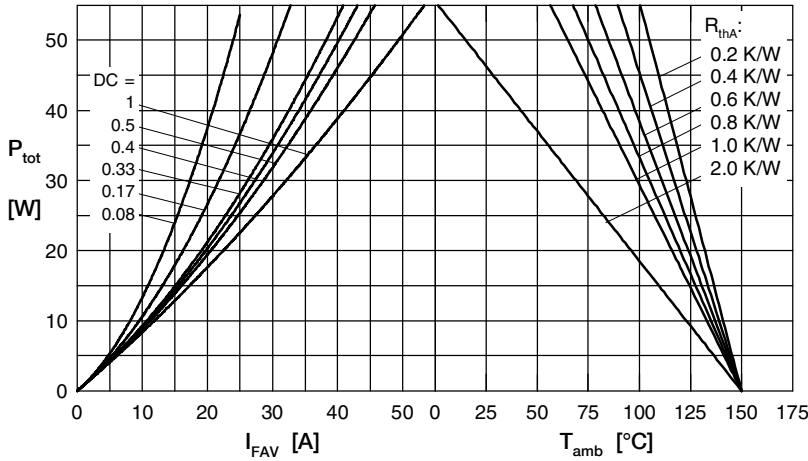Fig. 3 I^2t vs. time per diode

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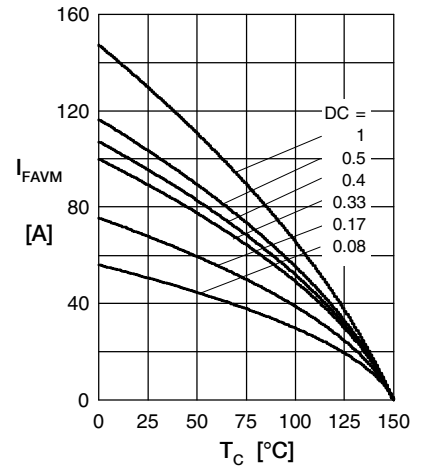

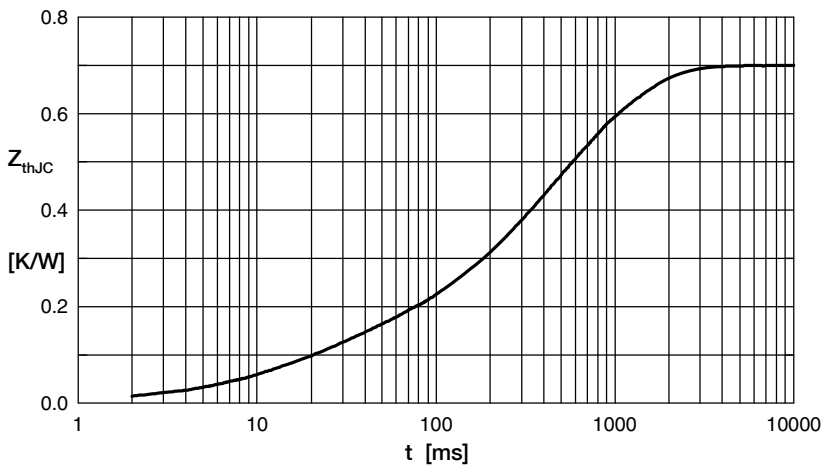Fig. 5 Max. forward current vs. case temperature per diode

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

R_i	t_i
0.100	0.020
0.010	0.010
0.162	0.225
0.258	0.800
0.170	0.580