# Standard Rectifier Module

| 1~ Rectifier | | |
|---|---|---|
| $V_{RRM}$ = | 800 | V |
| $I_{DAV}$ = | 130 | A |
| $I_{FSM}$ = | 1800 | A |
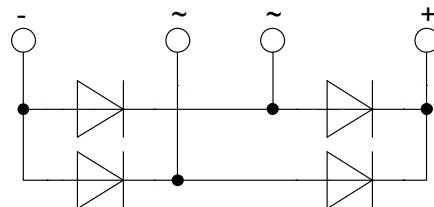
## 1~ Rectifier Bridge

**Part number**

VBO130-08NO7

RU 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 one phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors
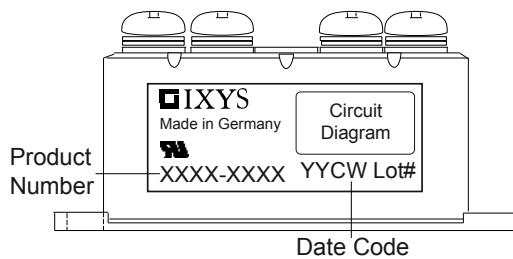
**Package:** PWS-E
- Industry standard outline
- RoHS compliant
- Easy to mount with two screws
- Base plate: Copper internally DCB isolated
- Advanced power cycling

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## Rectifier | Ratings
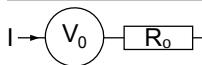
| Symbol | Definition | Conditions | | min. | typ. | max. | Unit |
|---|---|---|---|---|---|---|---|
| $V_{RSM}$ | max. non-repetitive reverse blocking voltage | | $T_{VJ} = 25°C$ | | | 900 | V |
| $V_{RRM}$ | max. repetitive reverse blocking voltage | | $T_{VJ} = 25°C$ | | | 800 | V |
| $I_R$ | reverse current | $V_R = 800$ V | $T_{VJ} = 25°C$ | | | 200 | μA |
| | | $V_R = 800$ V | $T_{VJ} = 150°C$ | | | 2 | mA |
| $V_F$ | forward voltage drop | $I_F = 120$ A | $T_{VJ} = 25°C$ | | | 1.10 | V |
| | | $I_F = 240$ A | | | | 1.26 | V |
| | | $I_F = 120$ A | $T_{VJ} = 125 °C$ | | | 1.00 | V |
| | | $I_F = 240$ A | | | | 1.21 | V |
| $I_{DAV}$ | bridge output current | $T_C = 110°C$ rectangular     d = 0.5 | $T_{VJ} = 150°C$ | | | 130 | A |
| $V_{F0}$ | threshold voltage | | $T_{VJ} = 150°C$ | | | 0.77 | V |
| $r_F$ | slope resistance  } for power loss calculation only | | | | | 3.4 | mΩ |
| $R_{thJC}$ | thermal resistance junction to case | | | | | 0.5 | K/W |
| $R_{thCH}$ | thermal resistance case to heatsink | | | | 0.2 | | K/W |
| $P_{tot}$ | total power dissipation | | $T_C = 25°C$ | | | 250 | 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 |
| I²t | 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 | $T_{VJ} = 25°C$ | | 35 | | pF |

Data according to IEC 60747and per semiconductor unless otherwise specified          20130425a

| 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 | | | | 273 | | 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 | 3000 | | | V |
| | | t = 1 minute    50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA | 2500 | | | V |



Product Number

Date Code

| Ordering | Part Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|---|---|---|---|---|---|
| Standard | VBO130-08NO7 | VBO130-08NO7 | Box | 5 | 472301 |

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



Rectifier

| | | | |
|---|---|---|---|
| $V_{0\,max}$ | threshold voltage | 0.77 | V |
| $R_{0\,max}$ | slope resistance * | 2.2 | mΩ |
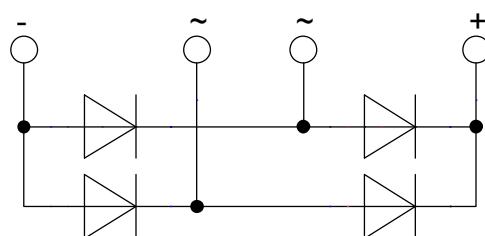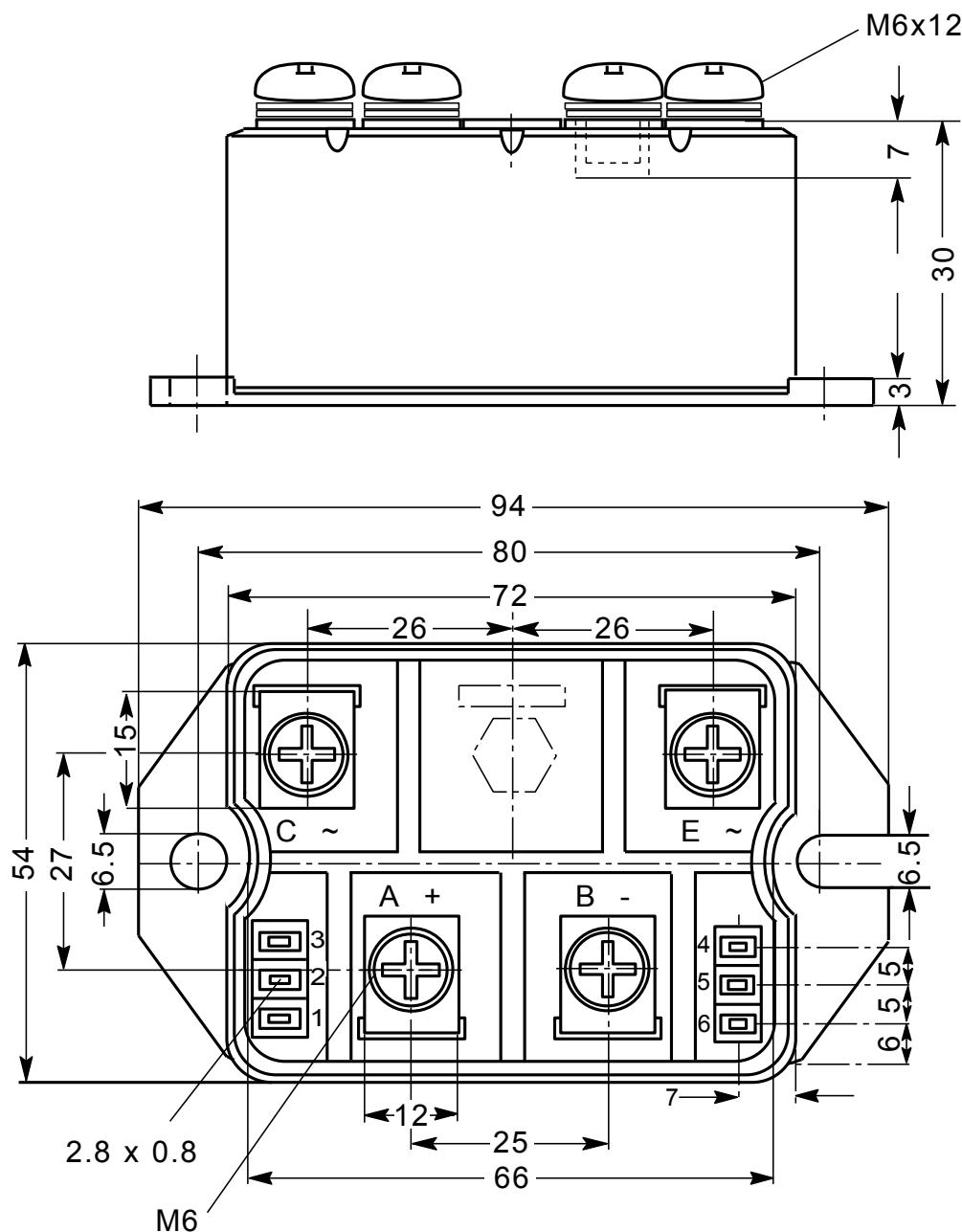
**Outlines   PWS-E**

M6x12

94
80
72
26
26
15
6.5
54
27
6.5
6.5
30
7
3

C ~
E ~

A +
B -

3
2
1

4
5
6

5
6

2.8 x 0.8

M6

12
25
66
7

- ~ ~ +

**Rectifier**
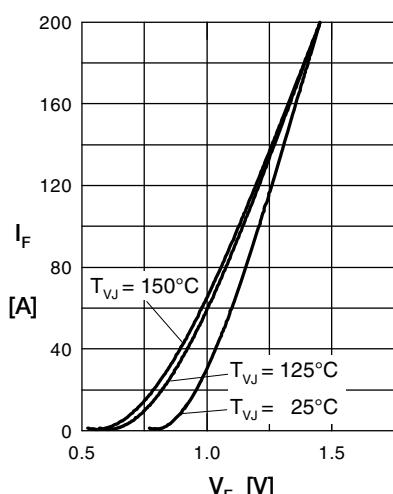


Fig. 1 Forward current vs. voltage drop per diode
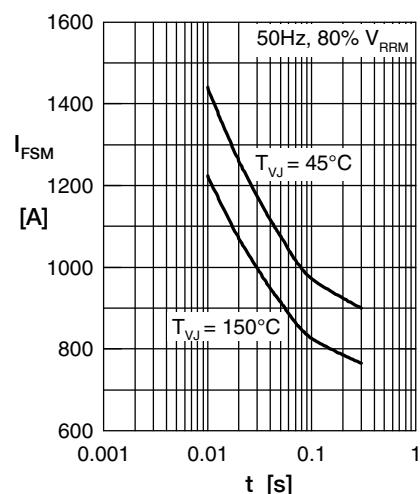


Fig. 2 Surge overload current vs. time per diode
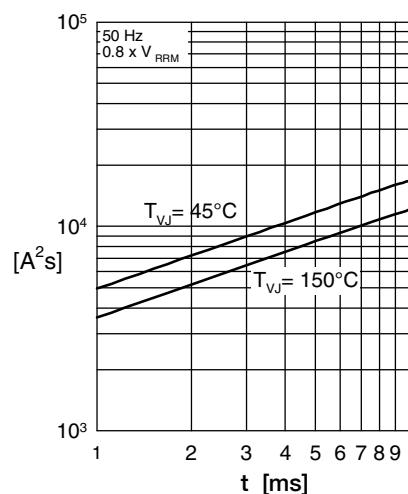


Fig. 3 $I^2t$ vs. time per diode
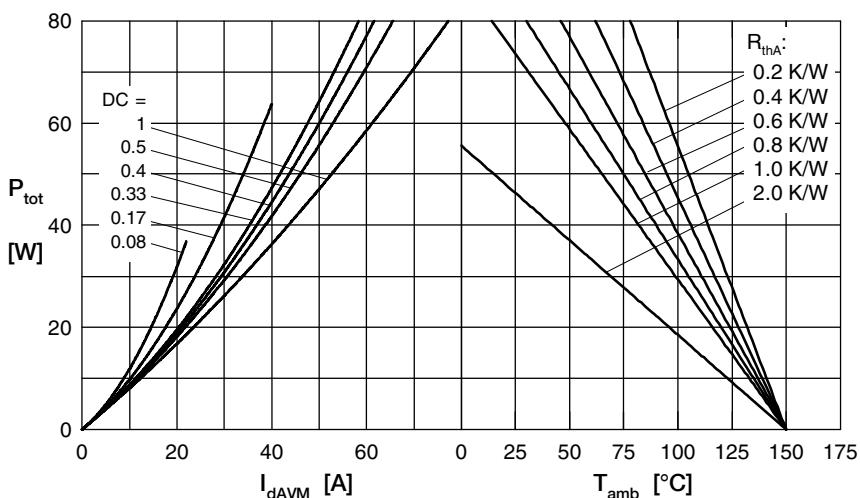


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode
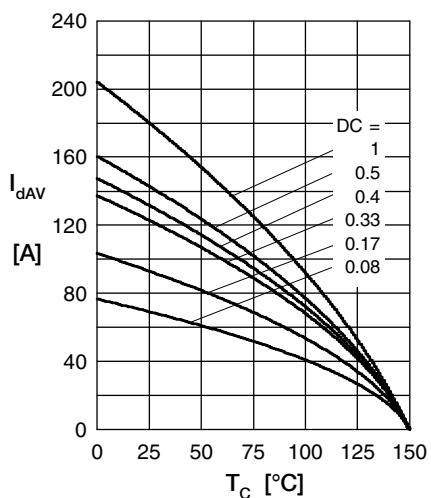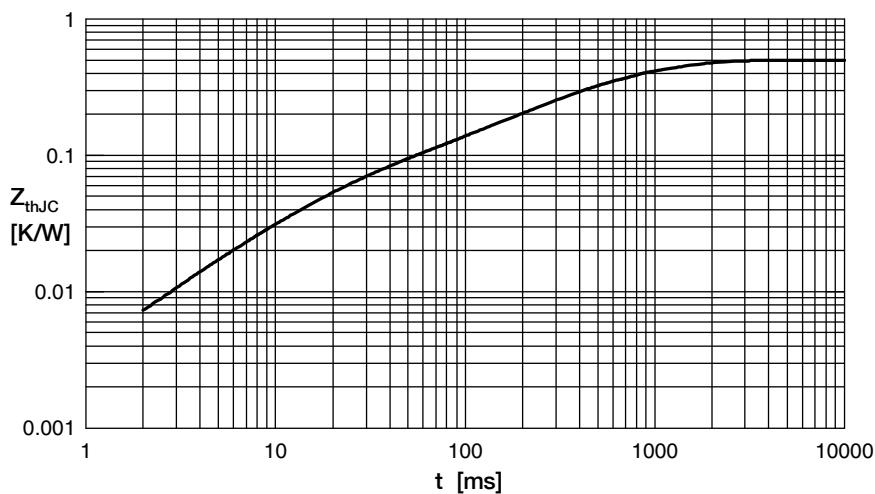


Fig. 5 Max. forward current vs. case temperature per diode



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

| $R_i$ | $t_i$ |
|-------|-------|
| 0.050 | 0.02 |
| 0.003 | 0.01 |
| 0.120 | 0.225 |
| 0.217 | 0.8 |
| 0.110 | 0.58 |

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IXYS reserves the right to change limits, conditions and dimensions.

Data according to IEC 60747and per semiconductor unless otherwise specified

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