# Standard Rectifier Module

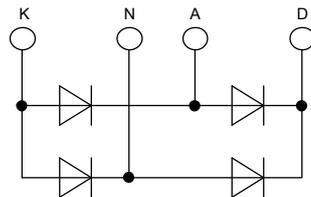| 1~ Rectifier | | |
|---|---|---|
| $V_{RRM}$ | = | 800 V |
| $I_{DAV}$ | = | 70 A |
| $I_{FSM}$ | = | 550 A |

## 1~ Rectifier Bridge

**Part number**

VBO68-08NO7
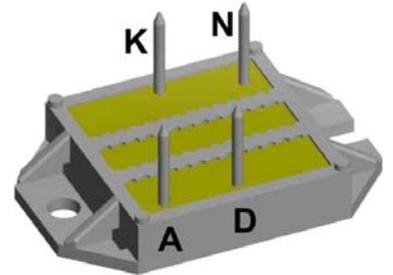
🇺🇱 E72873

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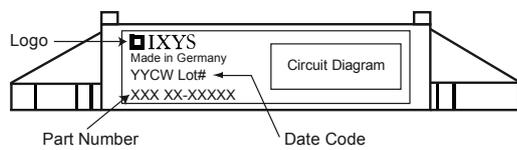- Very low leakage current

**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:** ECO-PAC1
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Height: 9 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

## Rectifier

| 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 | | | 40 | µA |
| | | $V_R$ = 800 V | $T_{VJ}$ = 150°C | | | 1.5 | mA |
| $V_F$ | forward voltage drop | $I_F$ = 30 A | $T_{VJ}$ = 25°C | | | 1.14 | V |
| | | $I_F$ = 60 A | | | | 1.32 | V |
| | | $I_F$ = 30 A | $T_{VJ}$ = 125 °C | | | 1.06 | V |
| | | $I_F$ = 60 A | | | | 1.30 | V |
| $I_{DAV}$ | bridge output current | $T_C$ = 105°C | $T_{VJ}$ = 150°C | | | 70 | A |
| | | rectangular     d = 0.5 | | | | | |
| $V_{F0}$ | threshold voltage | } for power loss calculation only | $T_{VJ}$ = 150°C | | | 0.81 | V |
| $r_F$ | slope resistance | | | | | 7.8 | 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 | | | 550 | A |
| | | t = 8,3 ms; (60 Hz), sine | $V_R$ = 0 V | | | 595 | A |
| | | t = 10 ms; (50 Hz), sine | $T_{VJ}$ = 150°C | | | 470 | A |
| | | t = 8,3 ms; (60 Hz), sine | $V_R$ = 0 V | | | 505 | A |
| $I^2t$ | value for fusing | t = 10 ms; (50 Hz), sine | $T_{VJ}$ = 45°C | | | 1.52 | kA²s |
| | | t = 8,3 ms; (60 Hz), sine | $V_R$ = 0 V | | | 1.48 | kA²s |
| | | t = 10 ms; (50 Hz), sine | $T_{VJ}$ = 150°C | | | 1.11 | kA²s |
| | | t = 8,3 ms; (60 Hz), sine | $V_R$ = 0 V | | | 1.06 | kA²s |
| $C_J$ | junction capacitance | $V_R$ = 400 V; f = 1 MHz | $T_{VJ}$ = 25°C | | 18 | | pF |

## Package     ECO-PAC1

| Symbol | Definition | Conditions | | min. | typ. | max. | Unit |
|---|---|---|---|---|---|---|---|
| I$_{RMS}$ | RMS current | per terminal | | | | 100 | A |
| T$_{stg}$ | storage temperature | | | -40 | | 125 | °C |
| T$_{VJ}$ | virtual junction temperature | | | -40 | | 150 | °C |
| Weight | | | | | 19 | | g |
| M$_D$ | mounting torque | | | 1.5 | | 2 | Nm |
| d$_{Spp/App}$ | creepage distance on surface \| striking distance through air | terminal to terminal | | 6.0 | | | mm |
| d$_{Spb/Apb}$ | | terminal to backside | | 10.0 | | | mm |
| V$_{ISOL}$ | isolation voltage | t = 1 second | 50/60 Hz, RMS; I$_{ISOL}$ ≤ 1 mA | 3000 | | | V |
| | | t = 1 minute | | 2500 | | | V |

*Ratings*



Logo
IXYS
Made in Germany
YYCW Lot#
XXX XX-XXXXX
Circuit Diagram
Part Number
Date Code

| Ordering | Part Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|---|---|---|---|---|---|
| Standard | VBO68-08NO7 | VBO68-08NO7 | Box | 25 | 485098 |

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



Rectifier

| | | | |
|---|---|---|---|
| V$_{0\,max}$ | threshold voltage | 0.81 | V |
| R$_{0\,max}$ | slope resistance * | 6.6 | mΩ |

**Outlines   ECO-PAC1**
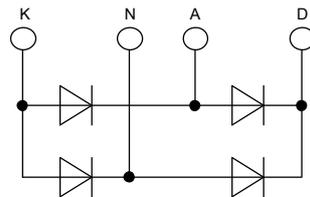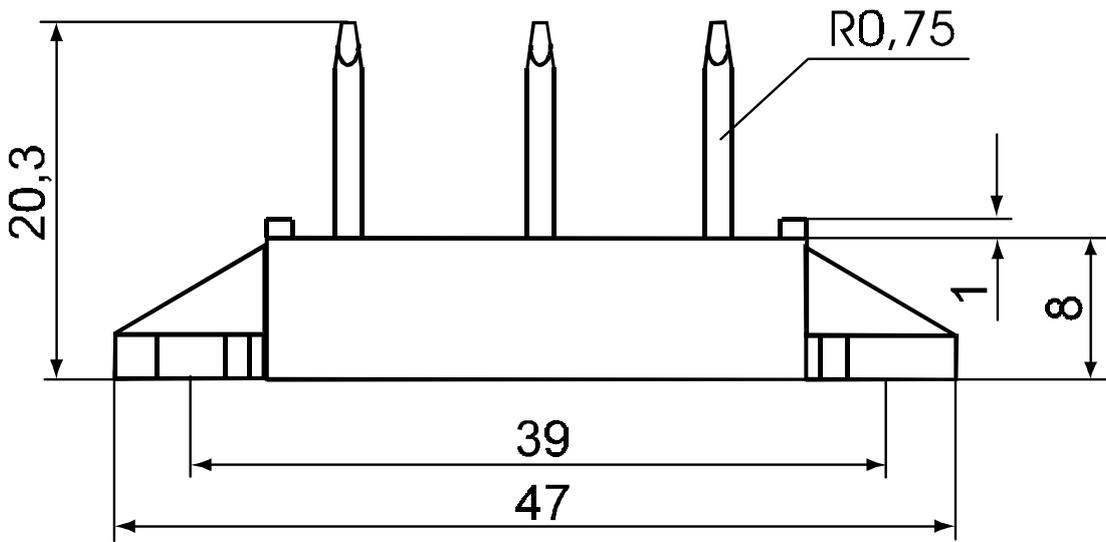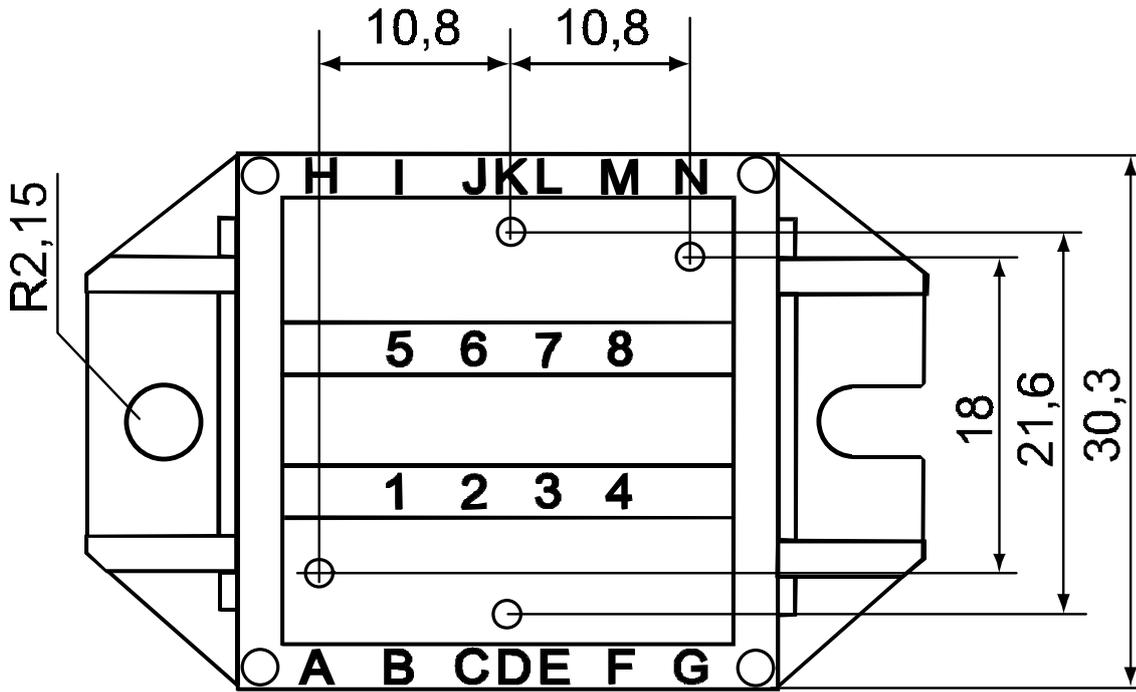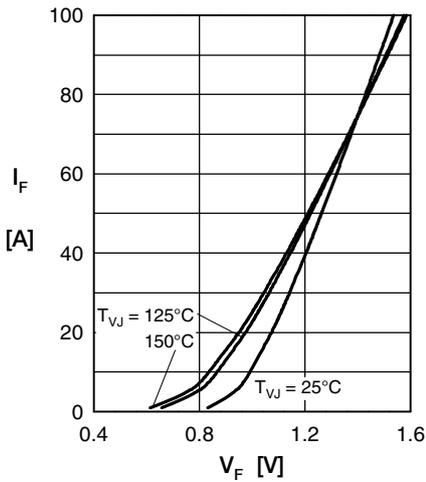
## Rectifier



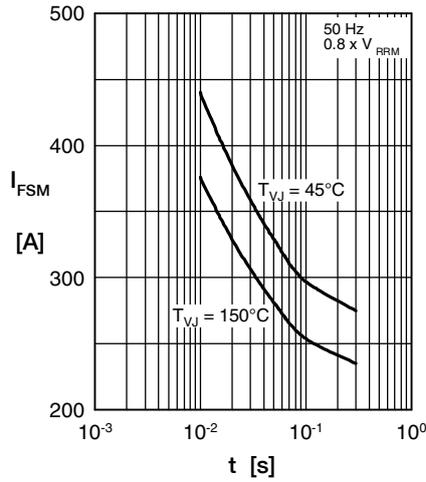Fig. 1 Forward current versus voltage drop per diode



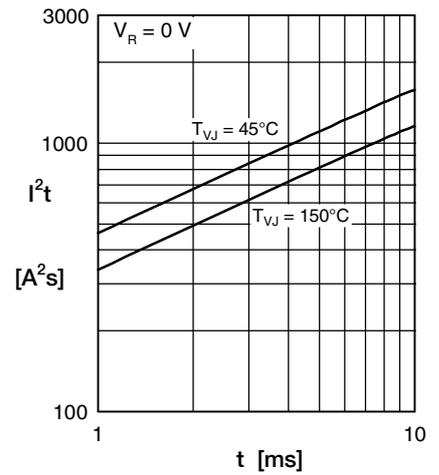Fig. 2 Surge overload current



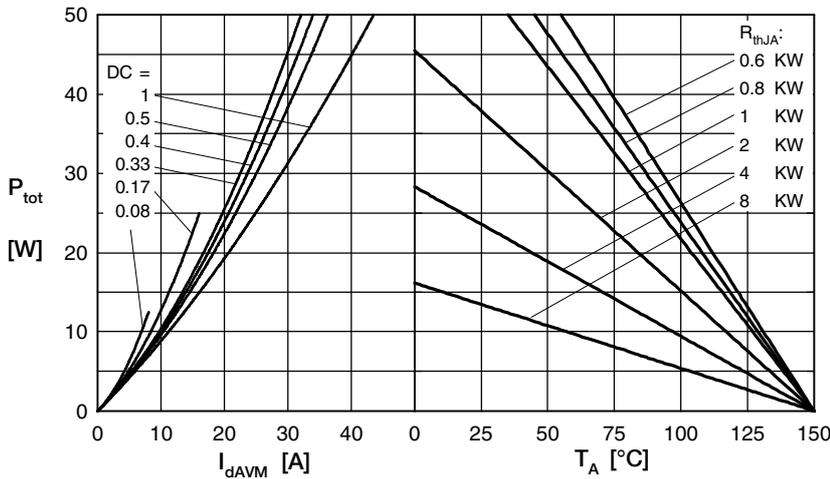Fig. 3 $I^2t$ versus time per diode



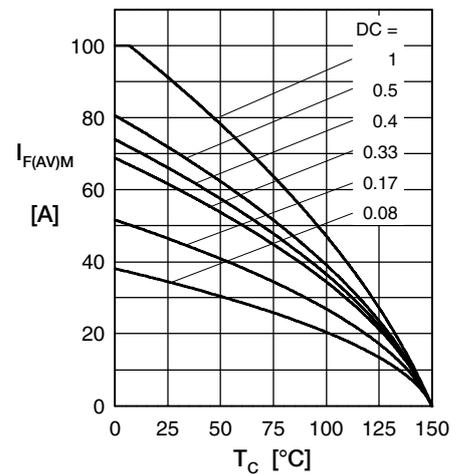Fig. 4 Power dissipation vs. direct output current & ambient temperature
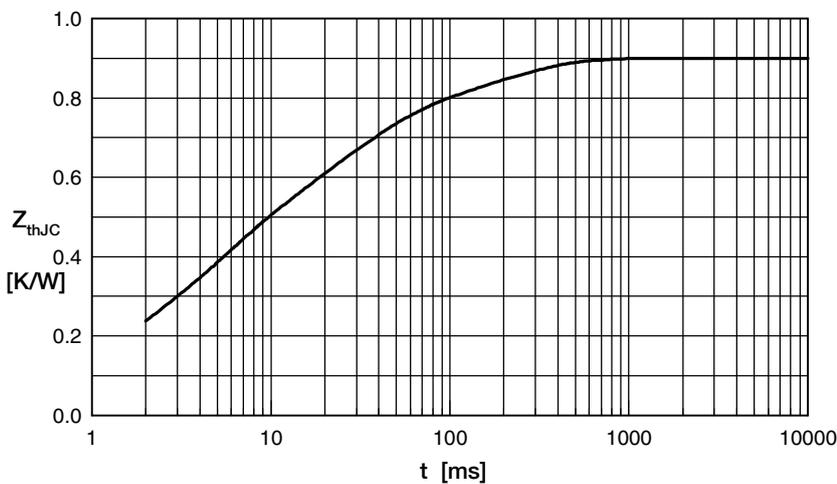


Fig. 5 Max. forward current vs. case temperature



Fig. 6 Transient thermal impedance junction to case

Constants for $Z_{thJC}$ calculation:

| i | $R_{th}$ (K/W) | $t_i$ (s) |
|---|---|---|
| 1 | 0.0607 | 0.000 |
| 2 | 0.1230 | 0.00256 |
| 3 | 0.2330 | 0.0045 |
| 4 | 0.3230 | 0.0242 |
| 5 | 0.1628 | 0.18 |

IXYS reserves the right to change limits, conditions and dimensions.　　Data according to IEC 60747and per semiconductor unless otherwise specified　　20130327a