

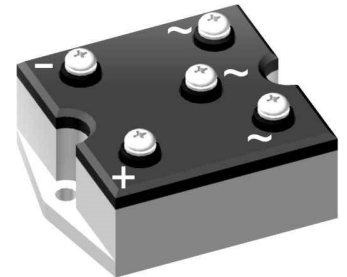
# Standard Rectifier Module

|                         |          |
|-------------------------|----------|
| <b>3~<br/>Rectifier</b> |          |
| $V_{RRM}$               | = 1800 V |
| $I_{DAV}$               | = 35 A   |
| $I_{FSM}$               | = 400 A  |

## 3~ Rectifier Bridge

Part number

**VUO35-18N07**



 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-A

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Easy to mount with two screws
- Base plate: Aluminium internally DCB isolated
- Advanced power cycling

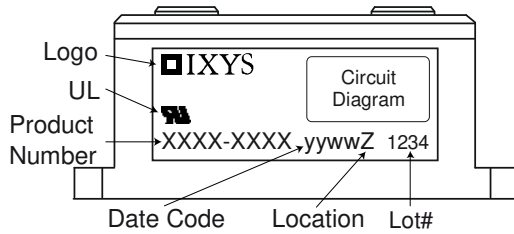
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| Rectifier  |  |                             |                   | Ratings                      |      |                                   |                  |
|------------|--|-----------------------------|-------------------|------------------------------|------|-----------------------------------|------------------|
| Symbol     | Definition                                   | Conditions                  |                   | min.                         | typ. | max.                              | Unit             |
| $V_{RSM}$  | max. non-repetitive reverse blocking voltage |                             |                   |                              |      | 1900                              | V                |
| $V_{RRM}$  | max. repetitive reverse blocking voltage     |                             |                   |                              |      | 1800                              | V                |
| $I_R$      | reverse current                              | $V_R = 1800$ V              |                   | $T_{VJ} = 25^\circ\text{C}$  |      | 40                                | $\mu\text{A}$    |
|            |  | $V_R = 1800$ V              |                   | $T_{VJ} = 150^\circ\text{C}$ |      | 1.5                               | mA               |
| $V_F$      | forward voltage drop                         | $I_F = 15$ A                |                   | $T_{VJ} = 25^\circ\text{C}$  |      | 1.10                              | V                |
|            |  | $I_F = 45$ A                |                   |                              |      | 1.38                              | V                |
|            |  | $I_F = 15$ A                |                   | $T_{VJ} = 125^\circ\text{C}$ |      | 1.01                              | V                |
|            |  | $I_F = 45$ A                |                   |                              |      | 1.38                              | V                |
| $I_{DAV}$  | bridge output current                        | $T_C = 85^\circ\text{C}$    |                   | $T_{VJ} = 150^\circ\text{C}$ |      | 35                                | A                |
|            |  | rectangular                 | $d = \frac{1}{3}$ |                              |      |                                   |                  |
| $V_{FO}$   | threshold voltage                            |                             |                   | $T_{VJ} = 150^\circ\text{C}$ |      | 0.80                              | V                |
| $r_F$      | slope resistance                             |                             |                   |                              |      | 12.9                              | m $\Omega$       |
|            |  |                             |                   |                              |      | } for power loss calculation only |                  |
| $R_{thJC}$ | thermal resistance junction to case          |                             |                   |                              |      | 4.2                               | K/W              |
| $R_{thCH}$ | thermal resistance case to heatsink          |                             |                   |                              | 0.6  |                                   | K/W              |
| $P_{tot}$  | total power dissipation                      |                             |                   | $T_C = 25^\circ\text{C}$     |      | 29                                | W                |
| $I_{FSM}$  | max. forward surge current                   | $t = 10$ ms; (50 Hz), sine  |                   | $T_{VJ} = 45^\circ\text{C}$  |      | 400                               | A                |
|            |  | $t = 8,3$ ms; (60 Hz), sine |                   | $V_R = 0$ V                  |      | 430                               | A                |
|            |  | $t = 10$ ms; (50 Hz), sine  |                   | $T_{VJ} = 150^\circ\text{C}$ |      | 340                               | A                |
|            |  | $t = 8,3$ ms; (60 Hz), sine |                   | $V_R = 0$ V                  |      | 365                               | A                |
| $I^2t$     | value for fusing                             | $t = 10$ ms; (50 Hz), sine  |                   | $T_{VJ} = 45^\circ\text{C}$  |      | 800                               | A <sup>2</sup> s |
|            |  | $t = 8,3$ ms; (60 Hz), sine |                   | $V_R = 0$ V                  |      | 770                               | A <sup>2</sup> s |
|            |  | $t = 10$ ms; (50 Hz), sine  |                   | $T_{VJ} = 150^\circ\text{C}$ |      | 580                               | A <sup>2</sup> s |
|            |  | $t = 8,3$ ms; (60 Hz), sine |                   | $V_R = 0$ V                  |      | 555                               | A <sup>2</sup> s |
| $C_J$      | junction capacitance                         | $V_R = 400$ V; $f = 1$ MHz  |                   | $T_{VJ} = 25^\circ\text{C}$  |      | 10                                | pF               |



| Package PWS-A |  |                      |      | Ratings |      |      |  |
|---------------|--|----------------------|------|---------|------|------|--|
| Symbol        | Definition   | Conditions           | min. | typ.    | max. | Unit |  |
| $I_{RMS}$     | RMS current  | per terminal         |      |         | 100  | A    |  |
| $T_{VJ}$      | virtual junction temperature                                 |                      | -40  |         | 150  | °C   |  |
| $T_{op}$      | operation temperature  |                      | -40  |         | 125  | °C   |  |
| $T_{stg}$     | storage temperature  |                      | -40  |         | 125  | °C   |  |
| <b>Weight</b> |  |                      |      |         | 100  | g    |  |
| $M_D$         | mounting torque  |                      | 1.25 |         | 1.75 | Nm   |  |
| $M_T$         | terminal torque  |                      | 1.25 |         | 1.75 | Nm   |  |
| $d_{Spp/App}$ | creepage distance on surface   striking distance through air | terminal to terminal | 6.5  |         |      | mm   |  |
| $d_{Spb/Apb}$ |  | terminal to backside | 8.5  |         |      | mm   |  |
| $V_{ISOL}$    | isolation voltage  | t = 1 second         | 3000 |         |      | V    |  |
|               |  | t = 1 minute         | 2500 |         |      | V    |  |



| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-----------------|--------------------|---------------|----------|----------|
| Standard | VUO35-18NO7     | VUO35-18NO7        | Box           | 20       | 456667   |

**Equivalent Circuits for Simulation**

\* on die level

$T_{VJ} = 150^{\circ}C$

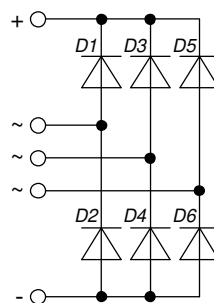
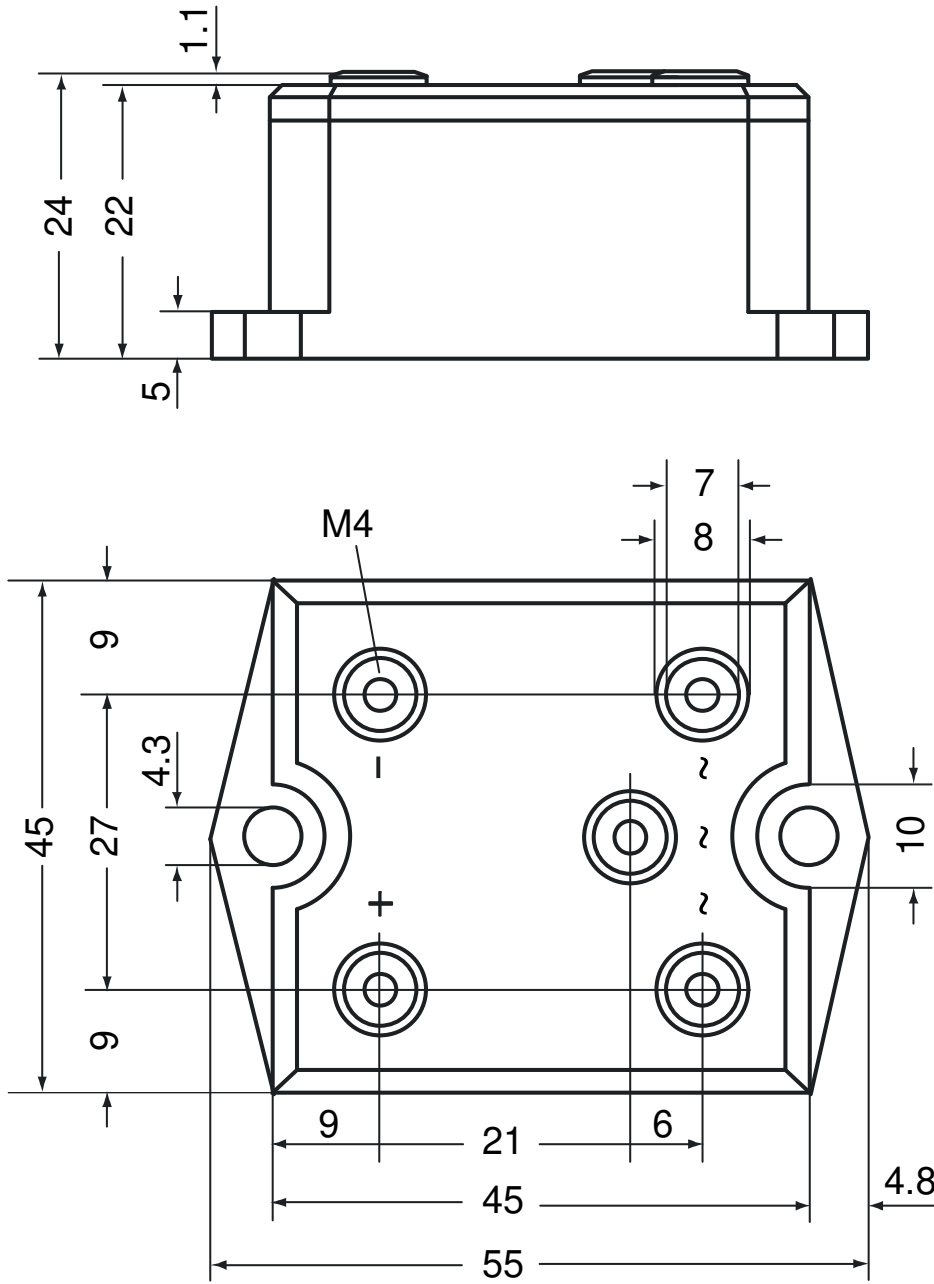


**Rectifier**

|              |                    |      |    |
|--------------|--------------------|------|----|
| $V_{0\ max}$ | threshold voltage  | 0.8  | V  |
| $R_{0\ max}$ | slope resistance * | 11.7 | mΩ |



Outlines PWS-A



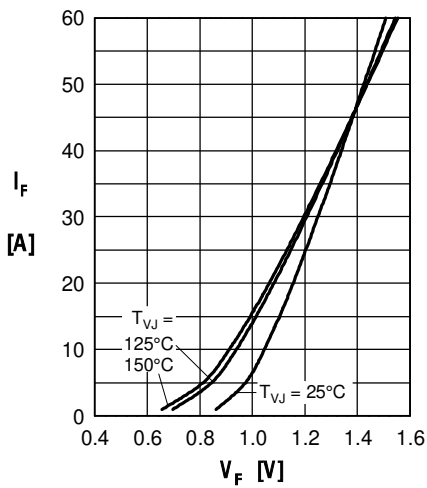
**Rectifier**


Fig. 1 Forward current vs. voltage drop per diode

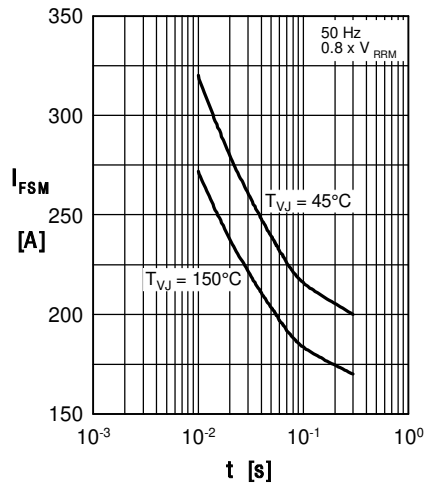


Fig. 2 Surge overload current vs. time per diode

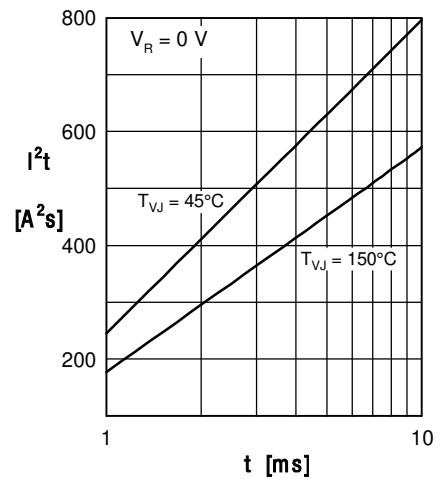
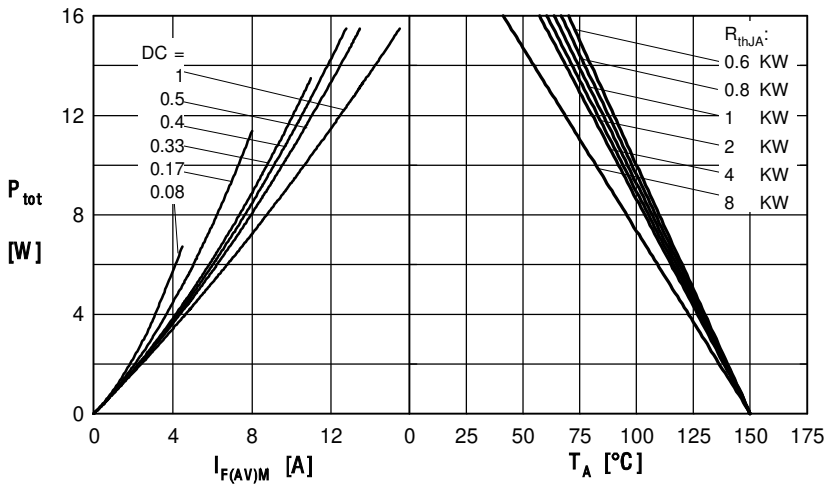

 Fig. 3  $I^2t$  vs. time per diode


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

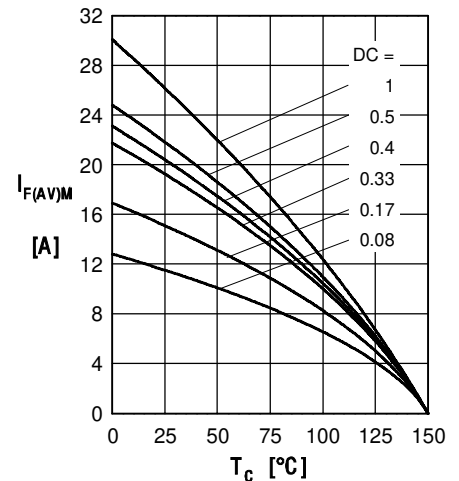


Fig. 5 Max. forward current vs. case temperature per diode

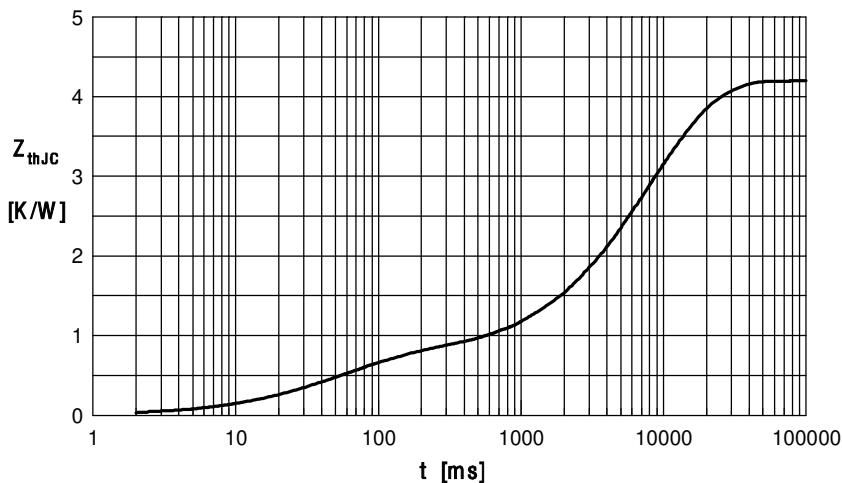


Fig. 6 Transient thermal impedance junction to case vs. time per diode

 Constants for  $Z_{thJC}$  calculation:

| i | $R_{th}$ (K/W) | $t_i$ (s) |
|---|----------------|-----------|
| 1 | 0.194          | 0.024     |
| 2 | 0.556          | 0.070     |
| 3 | 0.450          | 3.250     |
| 4 | 3.000          | 9.300     |



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- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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