

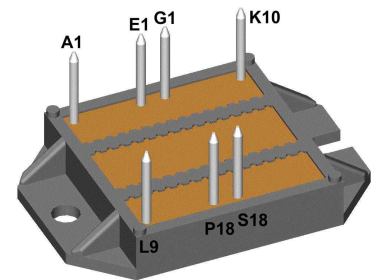
HiPerFRED Module

$V_{RRM} = 1200\text{ V}$
 $I_{DAV} = 130\text{ A}$
 $t_{rr} = 80\text{ ns}$

Fast Recovery Epitaxial Diode
 Low Loss and Soft Recovery
 3~ Rectifier Bridge

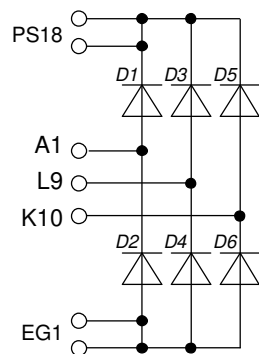
Part number

VUE130-12NO7



Backside: isolated

 E72873



Features / Advantages:

- Package with DCB ceramic base plate
- Improved temperature and power cycling
- Planar passivated chips
- Very low forward voltage drop
- Very low leakage current

Applications:

- Supplies for DC power equipment
- Input and output rectifiers for high frequency
- Battery DC power supplies
- Field supply for DC motors

Package: ECO-PAC2

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Height: 9 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

Disclaimer Notice

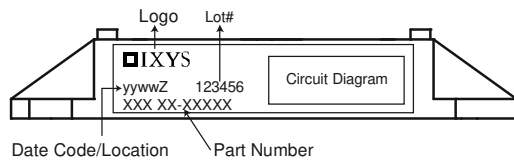
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| Fast Diode | | | | Ratings | | | |
|------------|--|---|-------------------------|---------|------|------------|--|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit | |
| V_{RSM} | max. non-repetitive reverse blocking voltage | $T_{VJ} = 25^{\circ}C$ | | | 1200 | V | |
| V_{RRM} | max. repetitive reverse blocking voltage | $T_{VJ} = 25^{\circ}C$ | | | 1200 | V | |
| I_R | reverse current, drain current | $V_R = 1200 V$ | $T_{VJ} = 25^{\circ}C$ | | 100 | μA | |
| | | $V_R = 1200 V$ | $T_{VJ} = 150^{\circ}C$ | | 2.5 | mA | |
| V_F | forward voltage drop | $I_F = 60 A$ | $T_{VJ} = 25^{\circ}C$ | | 2.70 | V | |
| | | $I_F = 180 A$ | | | 3.85 | V | |
| | | $I_F = 60 A$ | $T_{VJ} = 150^{\circ}C$ | | 1.70 | V | |
| | | $I_F = 180 A$ | | | 2.90 | V | |
| I_{DAV} | bridge output current | $T_C = 70^{\circ}C$ rectangular $d = 1/3$ | $T_{VJ} = 150^{\circ}C$ | | 130 | A | |
| V_{FO} | threshold voltage | } for power loss calculation only | $T_{VJ} = 150^{\circ}C$ | | 1.28 | V | |
| r_F | slope resistance | | | | 8.2 | m Ω | |
| R_{thJC} | thermal resistance junction to case | | | | 0.8 | K/W | |
| R_{thCH} | thermal resistance case to heatsink | | | 0.20 | | K/W | |
| P_{tot} | total power dissipation | | $T_C = 25^{\circ}C$ | | 155 | W | |
| I_{FSM} | max. forward surge current | $t = 10 ms; (50 Hz), sine; V_R = 0 V$ | $T_{VJ} = 45^{\circ}C$ | | 500 | A | |
| C_J | junction capacitance | $V_R = 600 V f = 1 MHz$ | $T_{VJ} = 25^{\circ}C$ | | 30 | pF | |
| I_{RM} | max. reverse recovery current | } $I_F = 60 A; V_R = 600 V$ $-di_F/dt = 200 A/\mu s$ | $T_{VJ} = 25^{\circ}C$ | | 13 | A | |
| | | | $T_{VJ} = 100^{\circ}C$ | | 20 | A | |
| t_{rr} | reverse recovery time | | $T_{VJ} = 25^{\circ}C$ | | 80 | ns | |
| | | | $T_{VJ} = 100^{\circ}C$ | | 220 | ns | |

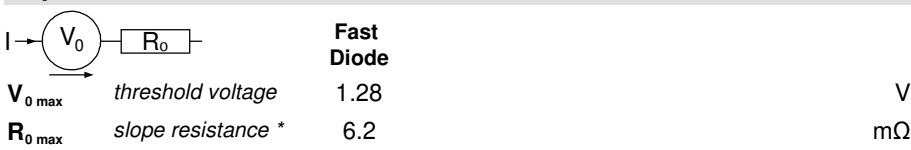


| Package ECO-PAC2 | | Ratings | | | | |
|------------------|--|----------------------|------|------|------|------|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit |
| I_{RMS} | RMS current | per terminal | | | 100 | A |
| T_{VJ} | virtual junction temperature | | -40 | | 150 | °C |
| T_{op} | operation temperature | | -40 | | 125 | °C |
| T_{stg} | storage temperature | | -40 | | 125 | °C |
| Weight | | | | 24 | | g |
| M_D | mounting torque | | 1.4 | | 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 | 3600 | | | V |
| | | t = 1 minute | 3000 | | | V |



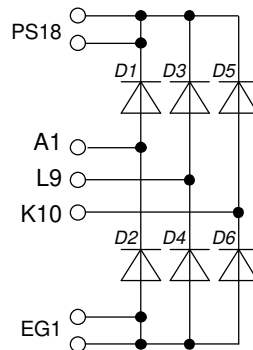
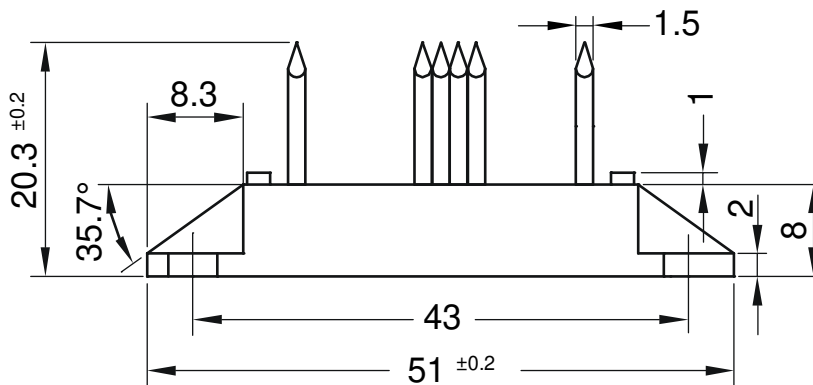
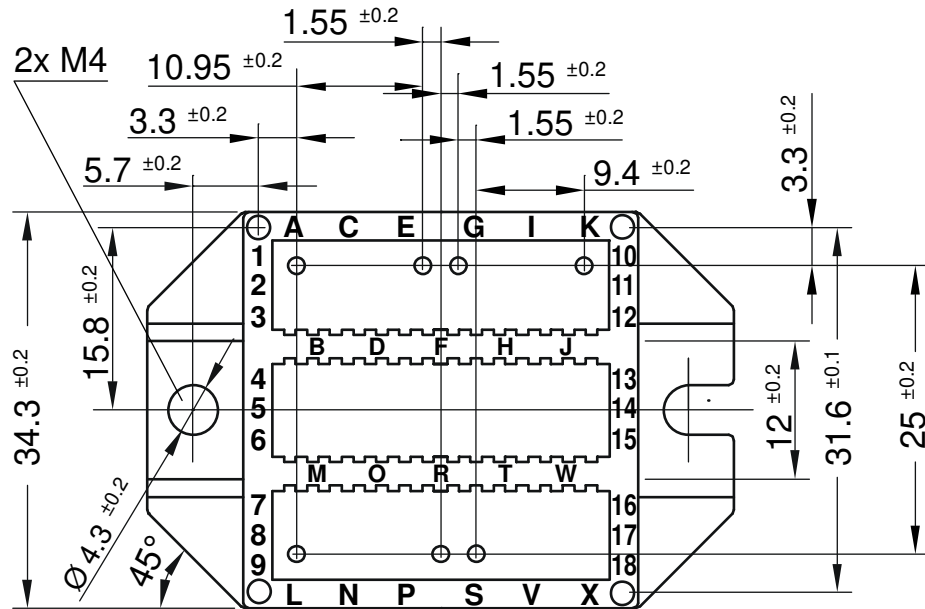
| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-----------------|--------------------|---------------|----------|----------|
| Standard | VUE130-12NO7 | VUE130-12NO7 | Box | 25 | 494305 |

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





Outlines ECO-PAC2



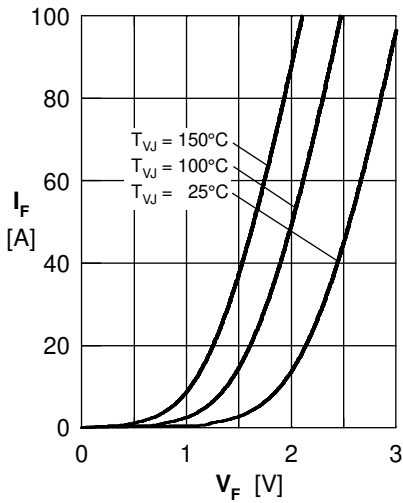
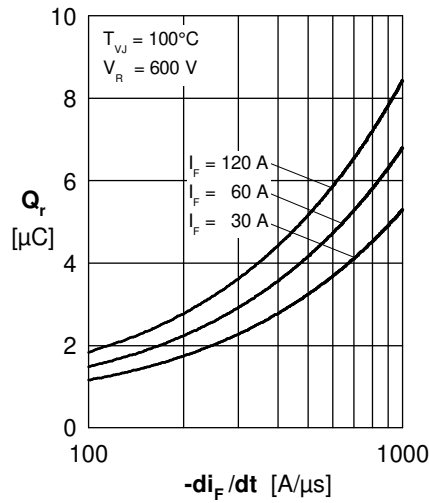
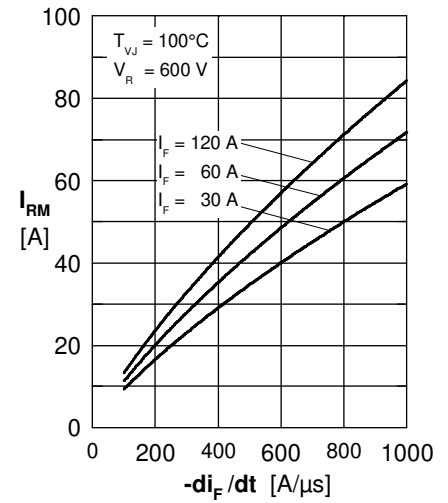
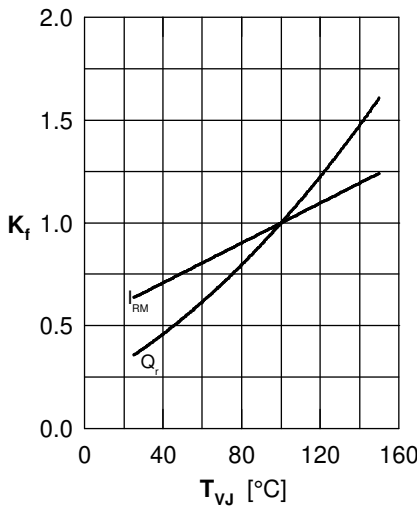
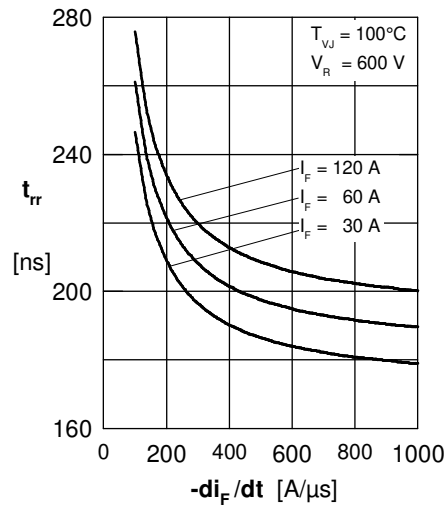
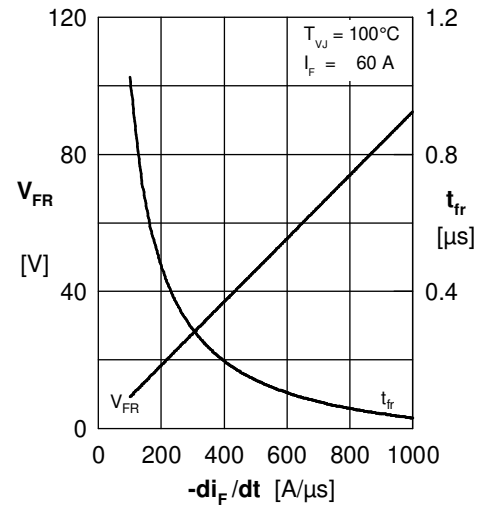
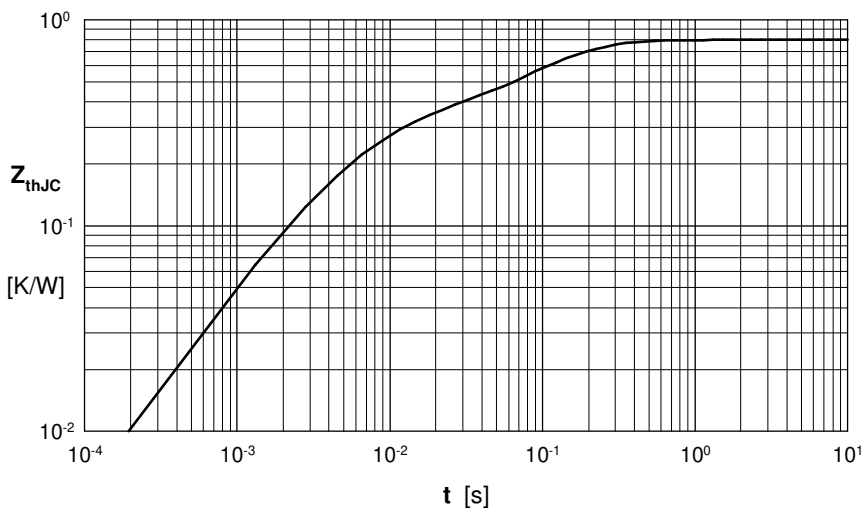
Fast Diode

 Fig. 1 Forward current I_F vs. V_F

 Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

 Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

 Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

 Fig. 5 Recovery time t_{tr} versus $-di_F/dt$

 Fig. 6 Peak forward voltage V_{FR} and t_{fr} vs. $-di_F/dt$


Fig. 7 Transient thermal resistance junction to case

 Constants for Z_{thJC} calculation:

| i | R_{thi} (K/W) | t_i (s) |
|---|-----------------|-----------|
| 1 | 0.0010 | 0.0010 |
| 2 | 0.0790 | 0.0300 |
| 3 | 0.2500 | 0.0050 |
| 4 | 0.4700 | 0.1200 |