

Pb Free Plating Product

RHRP3060



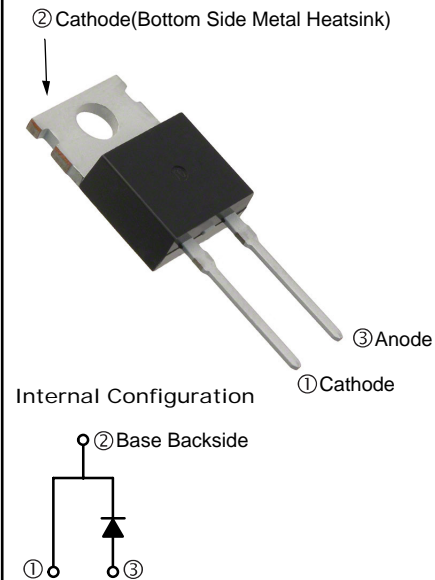
30.0 Ampere SwitchMode Single Fast Recovery Epitaxial Diode

APPLICATION

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS

PRODUCT FEATURE

- Ultrafast Recovery Time
- Soft Recovery Characteristics
- Low Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Leakage Current

TO-220AC**GENERAL DESCRIPTION**

RHRP3060 using latest FRED FAB process(planar passivation pellet) with ultrafast and soft recovery characteristics.

ABSOLUTE MAXIMUM RATINGS

$T_C=25^{\circ}\text{C}$ unless otherwise specified

| Symbol | Parameter | Test Conditions | Values | Unit |
|-----------------|--------------------------------------|---------------------------------------------------------|-------------|----------------------|
| V_R | Maximum D.C. Reverse Voltage | | 600 | V |
| V_{RRM} | Maximum Repetitive Reverse Voltage | | 600 | V |
| $I_{F(AV)}$ | Average Forward Current | $T_C=110^{\circ}\text{C}$, Per Diode | 30 | A |
| $I_{F(RMS)}$ | RMS Forward Current | $T_C=110^{\circ}\text{C}$, Per Diode | 42 | A |
| I_{FSM} | Non-Repetitive Surge Forward Current | $T_J=45^{\circ}\text{C}$, $t=10\text{ms}$, 50Hz, Sine | 300 | A |
| P_D | Power Dissipation | | 156 | W |
| T_J | Junction Temperature | | -40 to +150 | $^{\circ}\text{C}$ |
| T_{STG} | Storage Temperature Range | | -40 to +150 | $^{\circ}\text{C}$ |
| Torque | Module-to-Sink | Recommended (M3) | 1.1 | N-m |
| $R_{\theta JC}$ | Thermal Resistance | Junction-to-Case | 0.8 | $^{\circ}\text{C/W}$ |
| Weight | | | 2.2 | g |

ELECTRICAL CHARACTERISTICS

$T_C=25^{\circ}\text{C}$ unless otherwise specified

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------|-------------------------------|-------------------------------------------------------------------------|------|------|------|---------------|
| I_{RM} | Reverse Leakage Current | $V_R=600\text{V}$ | -- | -- | 15 | μA |
| | | $V_R=600\text{V}$, $T_J=125^{\circ}\text{C}$ | -- | -- | 250 | μA |
| V_F | Forward Voltage | $I_F=30\text{A}$ | -- | 1.5 | 1.8 | V |
| | | $I_F=30\text{A}$, $T_J=125^{\circ}\text{C}$ | -- | 1.3 | | V |
| t_{rr} | Reverse Recovery Time | $I_F=1\text{A}$, $V_R=30\text{V}$, $di_F/dt=-200\text{A}/\mu\text{s}$ | -- | 30 | -- | ns |
| t_{rr} | Reverse Recovery Time | $V_R=300\text{V}$, $I_F=30\text{A}$ | -- | 51 | -- | ns |
| I_{RRM} | Max. Reverse Recovery Current | $di_F/dt=-200\text{A}/\mu\text{s}$, $T_J=25^{\circ}\text{C}$ | -- | 4.2 | -- | A |
| t_{rr} | Reverse Recovery Time | $V_R=300\text{V}$, $I_F=30\text{A}$ | -- | 130 | -- | ns |
| I_{RRM} | Max. Reverse Recovery Current | $di_F/dt=-200\text{A}/\mu\text{s}$, $T_J=125^{\circ}\text{C}$ | -- | 9 | -- | A |

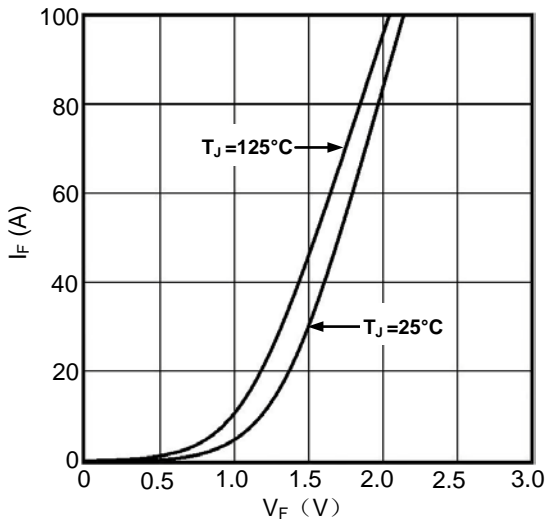


Fig1. Forward Voltage Drop vs Forward Current

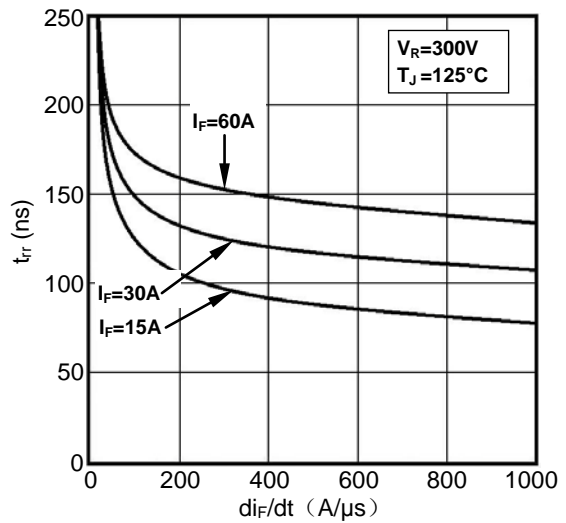


Fig2. Reverse Recovery Time vs di_F/dt

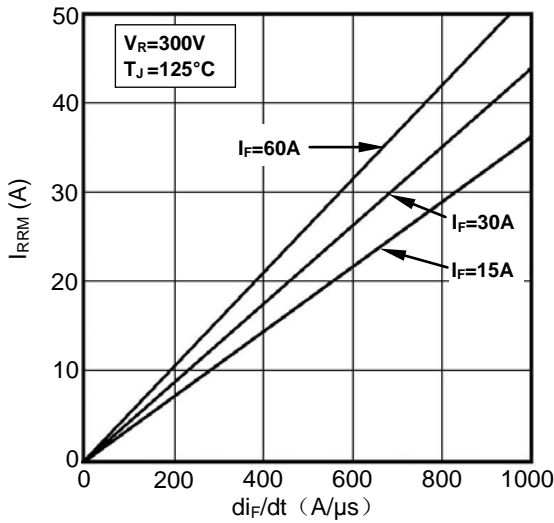


Fig3. Reverse Recovery Current vs di_F/dt

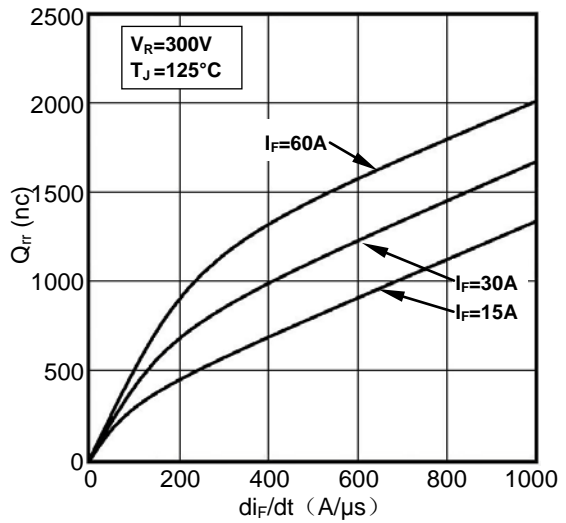


Fig4. Reverse Recovery Charge vs di_F/dt

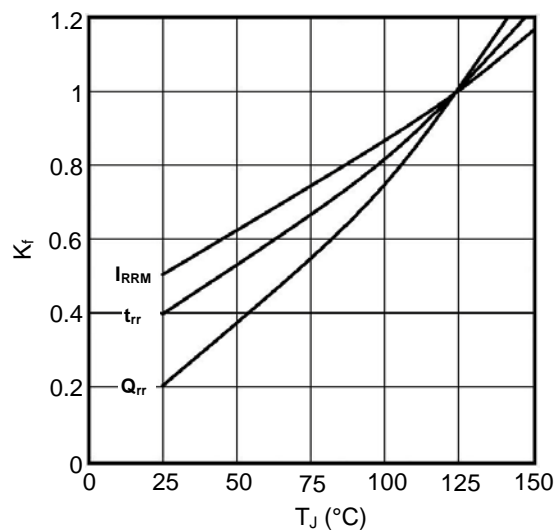


Fig5. Dynamic Parameters vs Junction Temperature

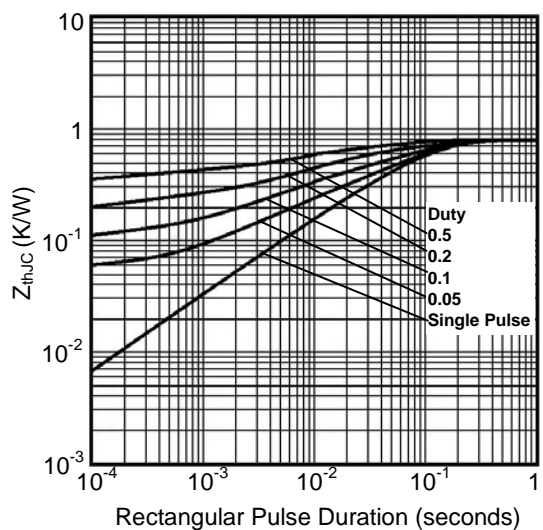


Fig6. Transient Thermal Impedance

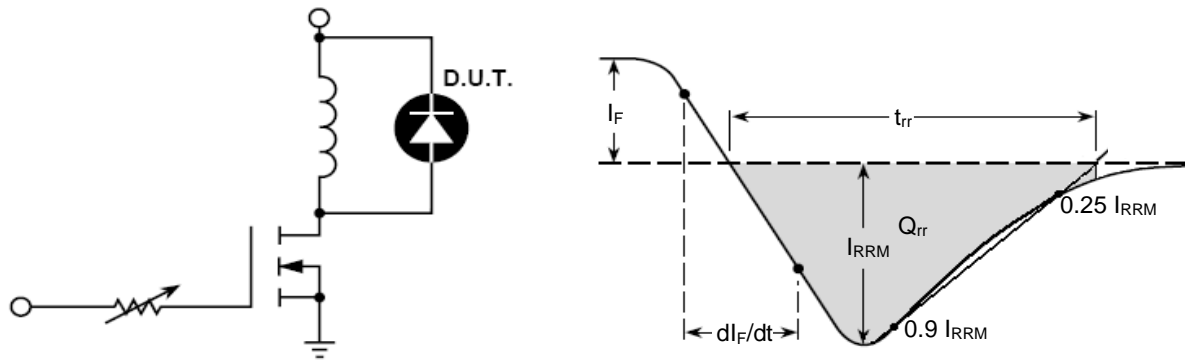
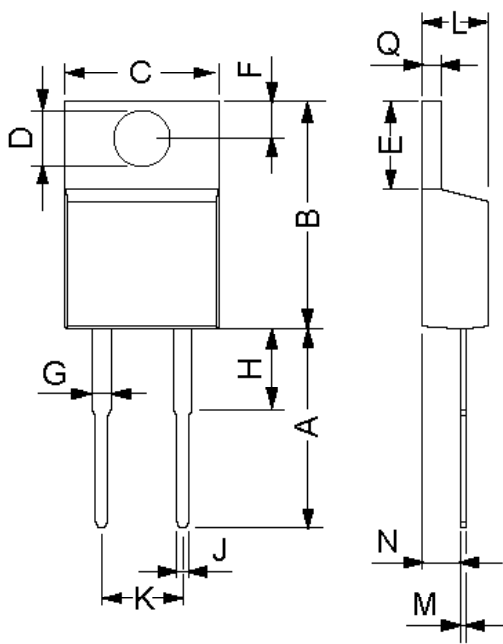


Fig7. Diode Reverse Recovery Test Circuit and Waveform

Dimensions TO-220AC



| Dim. | Millimeter | | Inches | |
|------|------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 12.7 | 14.73 | 0.5 | 0.58 |
| B | 14.23 | 16.51 | 0.56 | 0.65 |
| C | 9.66 | 10.66 | 0.38 | 0.42 |
| D | 3.54 | 4.08 | 0.139 | 0.161 |
| E | 5.85 | 6.85 | 2.3 | 0.42 |
| F | 2.54 | 3.42 | 0.1 | 0.135 |
| G | 1.15 | 1.77 | 0.045 | 0.07 |
| H | - | 6.35 | - | 0.25 |
| J | 0.64 | 0.89 | 0.025 | 0.035 |
| K | 4.83 | 5.33 | 0.19 | 0.21 |
| L | 3.56 | 4.82 | 0.14 | 0.19 |
| M | 0.51 | 0.76 | 0.02 | 0.03 |
| N | 2.04 | 2.49 | 0.08 | 0.115 |
| Q | 0.64 | 1.39 | 0.025 | 0.055 |