

Pb Free Plating Product

MUR8040PT



80 Ampere, 400 Volt Common Cathode Fast Recovery Epitaxial Diode

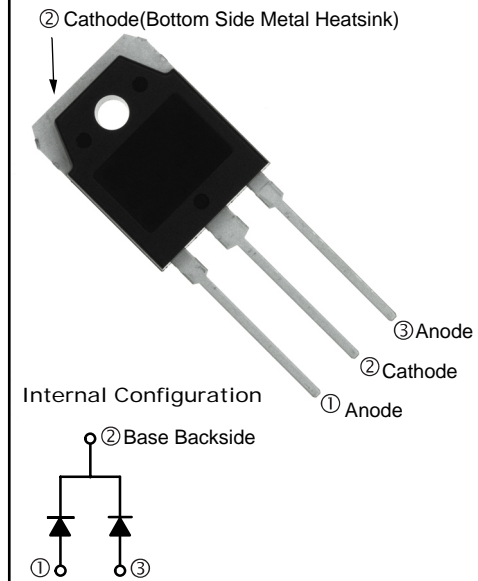
APPLICATION

- 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-3PN/TO-3PB



GENERAL DESCRIPTION

MUR8040PT using the latest FRED FAB process (planar passivation chip) with ultrafast and soft recovery characteristic.

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 | | 400 | V |
| V_{RRM} | Maximum Repetitive Reverse Voltage | | 400 | V |
| $I_{F(AV)}$ | Average Forward Current | $T_C=110^\circ\text{C}$, Per Diode | 40 | A |
| | | $T_C=110^\circ\text{C}$, Per Package | 80 | A |
| $I_{F(RMS)}$ | RMS Forward Current | $T_C=110^\circ\text{C}$, Per Diode | 56 | A |
| I_{FSM} | Non-Repetitive Surge Forward Current | $T_J=45^\circ\text{C}$, $t=10\text{ms}$, 50Hz, Sine | 400 | 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 | $^\circ\text{C}/\text{W}$ |
| Weight | | | 6.0 | 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 | $V_R=400\text{V}$ | -- | -- | 10 | μA |
| | | $V_R=400\text{V}$, $T_J=125^\circ\text{C}$ | -- | -- | 150 | μA |
| V_F | Forward Voltage | $I_F=40\text{A}$ | -- | 1.3 | 1.8 | V |
| | | $I_F=40\text{A}$, $T_J=125^\circ\text{C}$ | -- | 1.1 | | V |
| t_{rr} | Reverse Recovery Time | $I_F=1\text{A}$, $V_R=30\text{V}$, $di_F/dt=-200\text{A}/\mu\text{s}$ | -- | 22 | -- | ns |
| t_{rr} | Reverse Recovery Time | $V_R=200\text{V}$, $I_F=40\text{A}$ | -- | 52 | -- | ns |
| I_{RRM} | Max. Reverse Recovery Current | $di_F/dt=-200\text{A}/\mu\text{s}$, $T_J=25^\circ\text{C}$ | -- | 4.5 | -- | A |
| t_{rr} | Reverse Recovery Time | $V_R=200\text{V}$, $I_F=40\text{A}$ | -- | 71 | -- | ns |
| I_{RRM} | Max. Reverse Recovery Current | $di_F/dt=-200\text{A}/\mu\text{s}$, $T_J=125^\circ\text{C}$ | -- | 9 | -- | A |

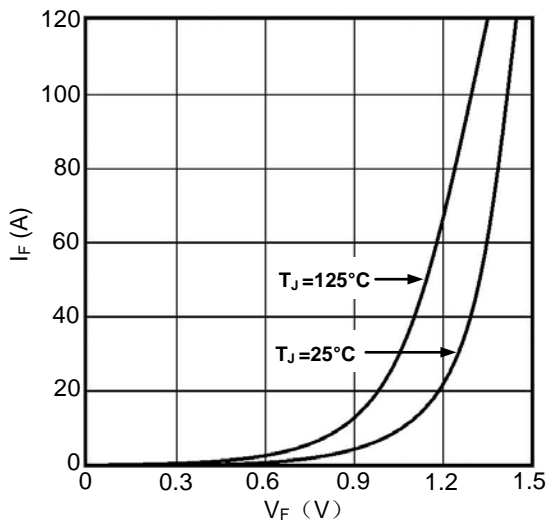


Fig1. Forward Voltage Drop vs Forward Current

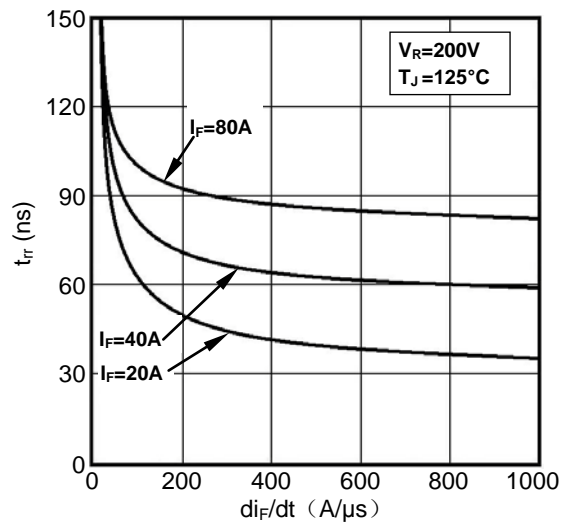


Fig2. Reverse Recovery Time vs di_F/dt

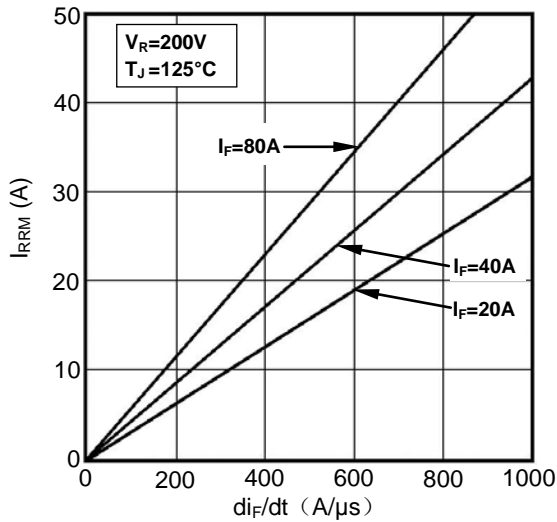


Fig3. Reverse Recovery Current vs di_F/dt

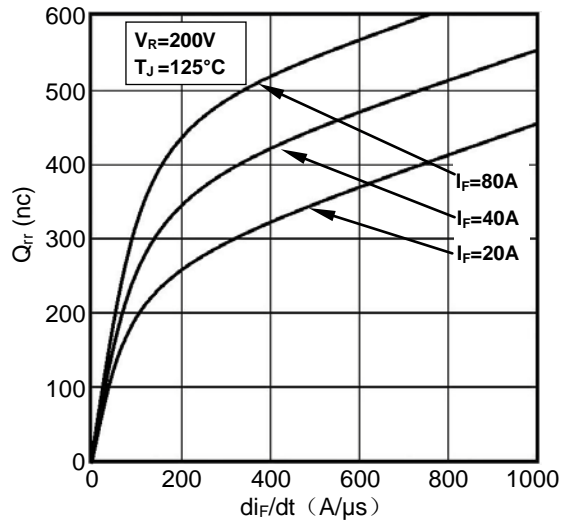


Fig4. Reverse Recovery Charge vs di_F/dt

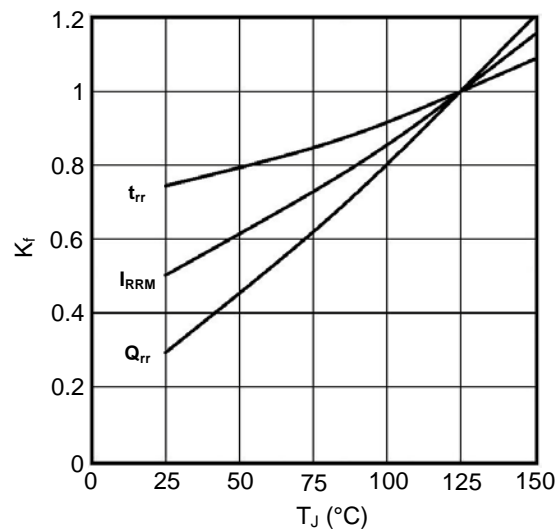


Fig5. Dynamic Parameters vs Junction Temperature

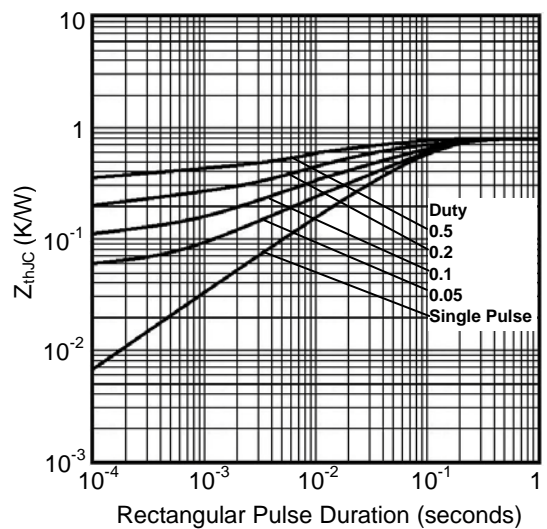


Fig6. Transient Thermal Impedance

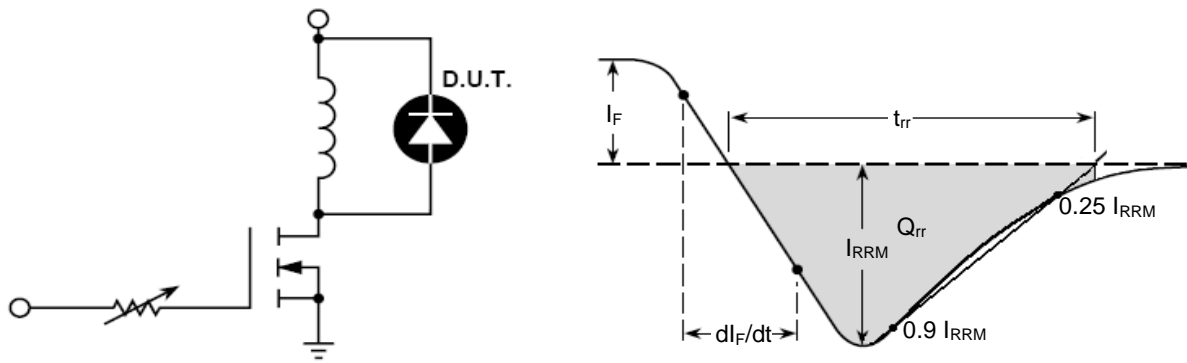
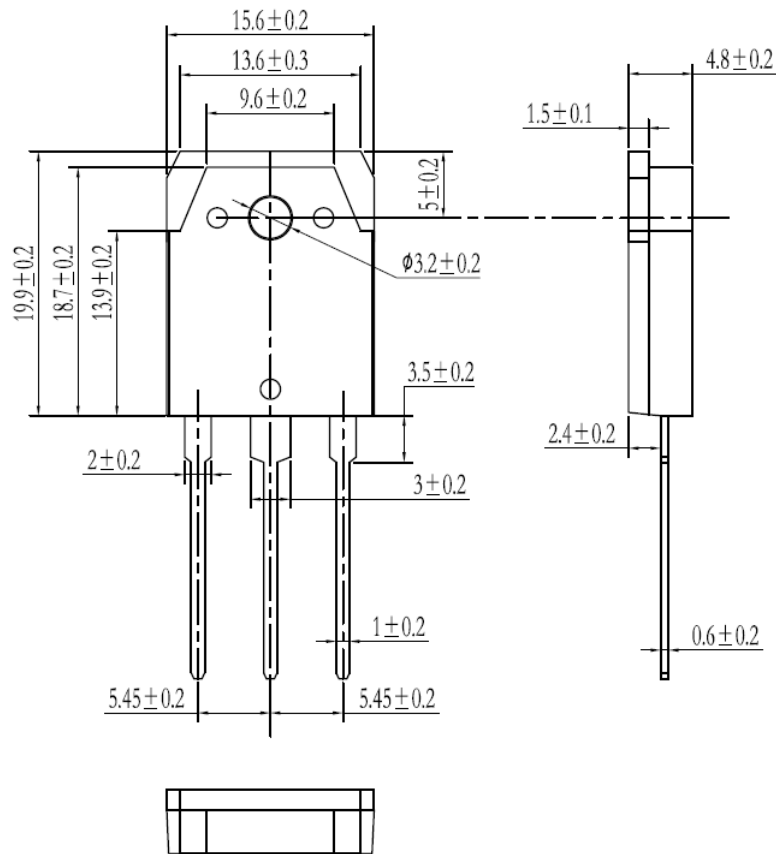


Fig7. Diode Reverse Recovery Test Circuit and Waveform



Dimensions in Millimeters
Fig8. Package Outline