Pb Free Plating Product

# MM60F120B

60 Ampere,1200 Volt SwitchMode Single Fast Recovery Epitaxial Diode

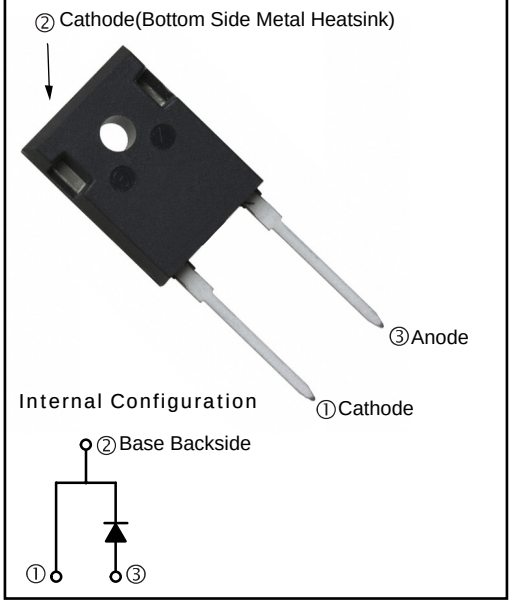
## APPLICATION

- 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-247-2L




## GENERAL DESCRIPTION

MM60F120B using the lastest FRED FAB process(planar passivation chip) with ultrafast and soft recovery characteristic.

## ABSOLUTE MAXIMUM RATINGS

$T_C$=25°C unless otherwise specified

| Symbol | Parameter | Test Conditions | Values | Unit |
|---|---|---|---|---|
| $V_R$ | Maximum D.C. Reverse Voltage | | 1200 | V |
| $V_{RRM}$ | Maximum Repetitive Reverse Voltage | | 1200 | V |
| $I_{F(AV)}$ | Average Forward Current | $T_C$=110°C | 60 | A |
| $I_{F(RMS)}$ | RMS Forward Current | $T_C$=110°C | 84 | A |
| $I_{FSM}$ | Non-Repetitive Surge Forward Current | $T_J$=45°C, t=10ms, 50Hz, Sine | 500 | A |
| $P_D$ | Power Dissipation | | 312 | W |
| $T_J$ | Junction Temperature | | -40 to +150 | °C |
| $T_{STG}$ | Storage Temperature Range | | -40 to +150 | °C |
| Torque | Module-to-Sink | Recommended（M3） | 1.1 | N·m |
| $R_{\theta JC}$ | Thermal Resistance | Junction-to-Case | 0.4 | °C /W |
| Weight | | | 6.0 | g |

## ELECTRICAL CHARACTERISTICS

$T_C$=25°C unless otherwise specified

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{RM}$ | Reverse Leakage Current | $V_R$=1200V | -- | -- | 500 | μA |
| | | $V_R$=1200V, $T_J$=125°C | -- | -- | 5 | mA |
| $V_F$ | Forward Voltage | $I_F$=60A | -- | 2.10 | -- | V |
| | | $I_F$=60A, $T_J$=125°C | -- | 1.75 | | V |
| $t_{rr}$ | Reverse Recovery Time | $I_F$=1A, $V_R$=30V, $di_F/dt$=-200A/μs | -- | 40 | -- | ns |
| $t_{rr}$ | Reverse Recovery Time | $V_R$=600V, $I_F$=60A | -- | 90 | -- | ns |
| $I_{RRM}$ | Max. Reverse Recovery Current | $di_F/dt$=-200A/μs, $T_J$=25°C | -- | 7.5 | -- | A |
| $t_{rr}$ | Reverse Recovery Time | $V_R$=600V, $I_F$=60A | -- | 320 | -- | ns |
| $I_{RRM}$ | Max. Reverse Recovery Current | $di_F/dt$=-200A/μs, $T_J$=125°C | -- | 14 | -- | A |



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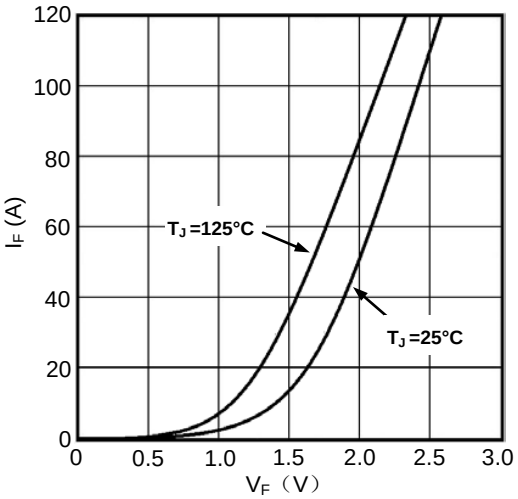



Figure1. Forward Voltage Drop vs Forward Current

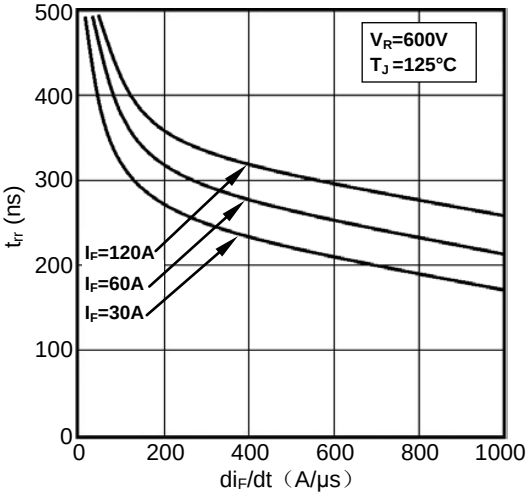



Figure2. Reverse Recovery Time vs $di_F/dt$

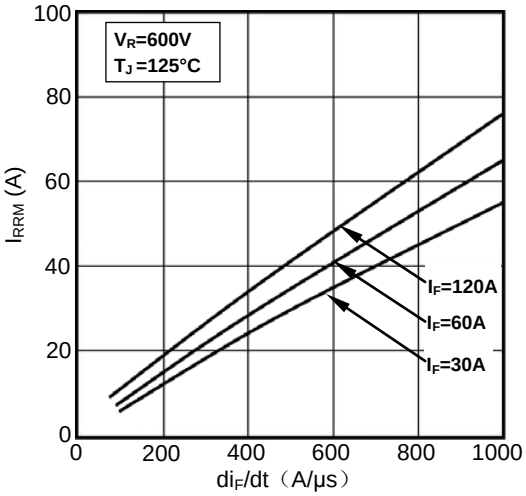



Figure3. Reverse Recovery Current vs $di_F/dt$

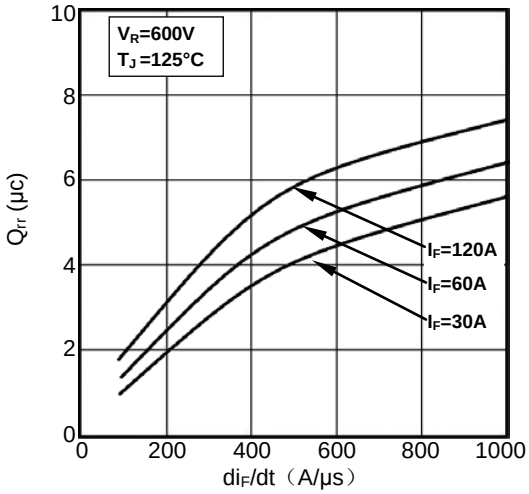



Figure4. Reverse Recovery Charge vs $di_F/dt$

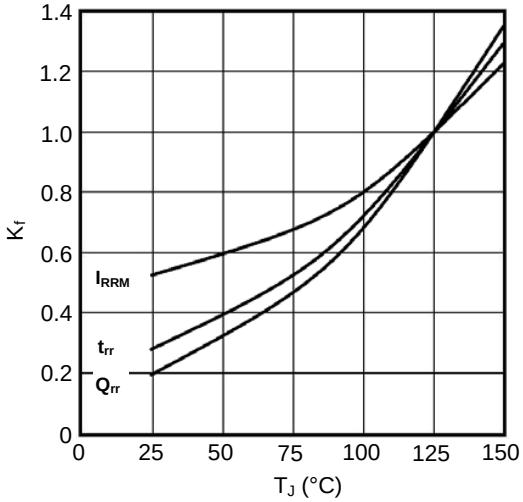



Figure5. Dynamic Parameters vs Junction Temperature

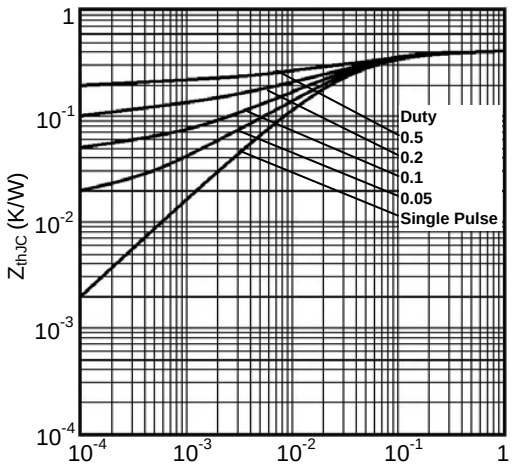



Fig6. Transient Thermal Impedance



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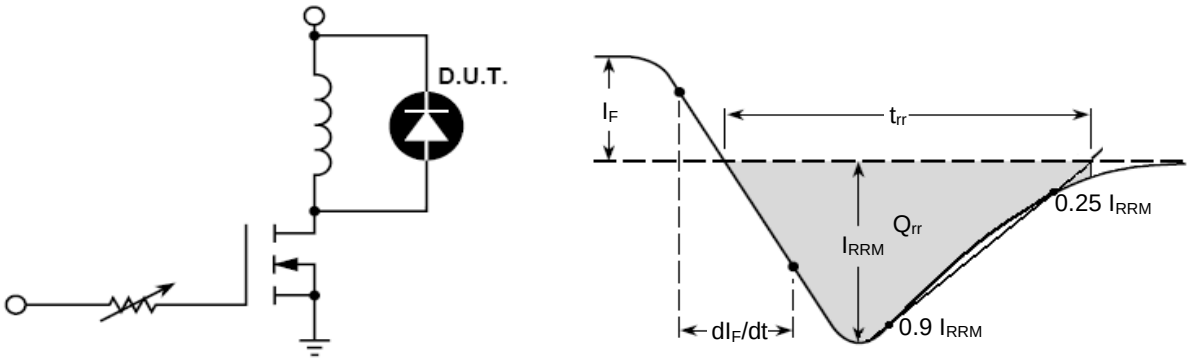
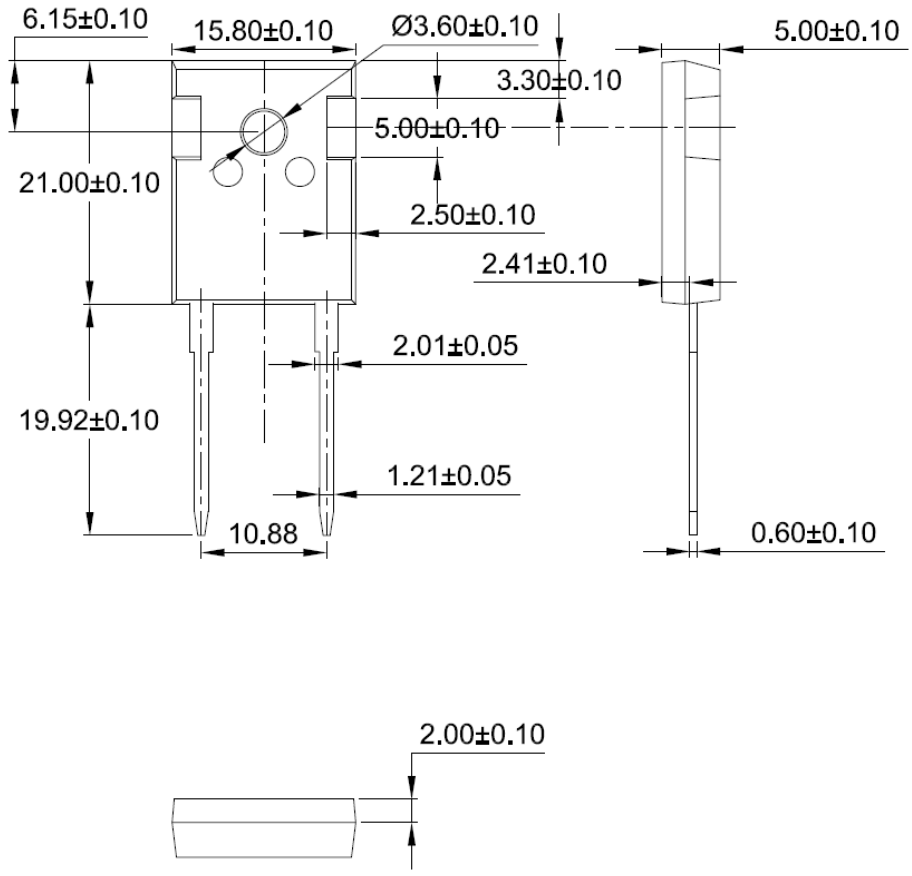



Fig7. Diode Reverse Recovery Test Circuit and Waveform




Dimensions in Millimeters
Fig8. Package Outline



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