



MAFR0.5A~MAFR0.5M

Surface Mount Fast Recovery Rectifiers

Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Fast switching for high efficiency
- High forward surge capability
- High temperature soldering:
260°C/10 seconds at terminals
- Component in accordance to
RoHS 2002/95/1 and WEEE 2002/96/EC



Mechanical Data

- **Case:** JEDEC MSMA molded plastic body over glass passivated chip
- **Terminals:** Solder plated, solderable per J-STD-002B and JESD22-B102D
- **Polarity:** Laser band denotes cathode end

Major Ratings and Characteristics

| | |
|--------------------|---------------------|
| $I_{F(AV)}$ | 0.5 A |
| V_{RRM} | 50 V to 1000 V |
| I_{FSM} | 15 A |
| t_{rr} | 150nS, 250nS, 500nS |
| V_F | 1.3 V |
| $T_j \text{ max.}$ | 150 °C |

Maximum Ratings & Thermal Characteristics

($T_A = 25\text{ °C}$ unless otherwise noted)

| Items | Symbol | MAFR 0.5A | MAFR 0.5B | MAFR 0.5D | MAFR 0.5G | MAFR 0.5J | MAFR 0.5K | MAFR 0.5M | UNIT |
|--|-----------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Maximum RMS voltage | V_{RMS} | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V |
| Maximum DC blocking voltage | V_{DC} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Maximum average forward rectified current | $I_{F(AV)}$ | 0.5 | | | | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 15 | | | | | | | A |
| Thermal resistance from junction to lead ⁽¹⁾ | $R_{\theta JL}$ | 35 | | | | | | | °C/W |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +150 | | | | | | | °C |

Note 1: Mounted on P.C.B. with 0.2 x 0.2" (5.0 x 5.0mm) copper pad areas.

Electrical Characteristics ($T_A = 25\text{ °C}$ unless otherwise noted)

| Items | Test conditions | Symbol | MAFR0.5A~MAFR0.5G | MAFR0.5J | MAFR0.5K~MAFR0.5M | UNIT |
|-------------------------------|--|----------|-------------------|----------|-------------------|------|
| Instantaneous forward voltage | $I_F = 0.5A^{(2)}$ | V_F | 1.3 | | | V |
| Reverse current | $V_R = V_{DC}$ $T_J = 25\text{ °C}$ $T_J = 125\text{ °C}$ | I_R | 5 100 | | | μA |
| Reverse recovery time | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{tr} = 0.25\text{ A}$ | t_{rr} | 150 | 250 | 500 | nS |
| Typical junction capacitance | 4.0V, 1.0MHz | C_J | 11 | | 8 | pF |

Note 2: Pulse test: 300μs pulse width, 1% duty cycle.



Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

Fig.1 Forward Current Derating Curve

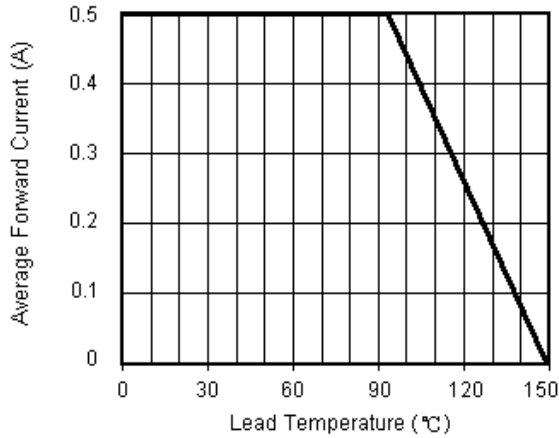


Fig.2 Maximum Non-Repetitive Peak Forward Surge Current

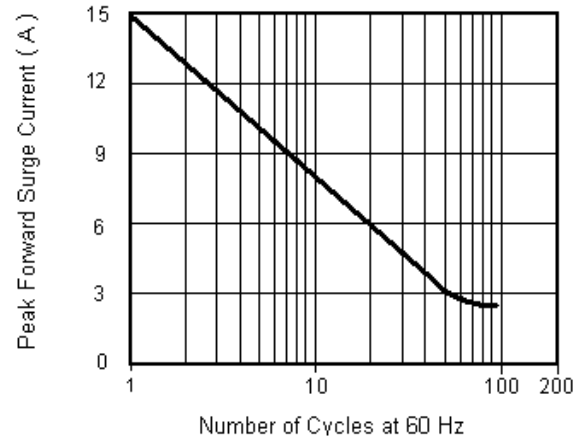


Fig.3 Typical Instantaneous Forward Characteristics

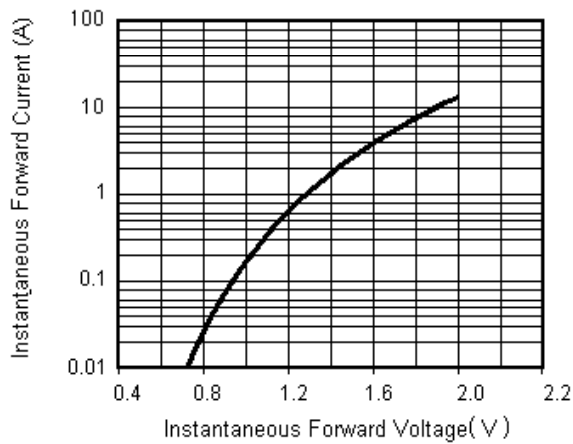


Fig.4 Typical Reverse Leakage Characteristics

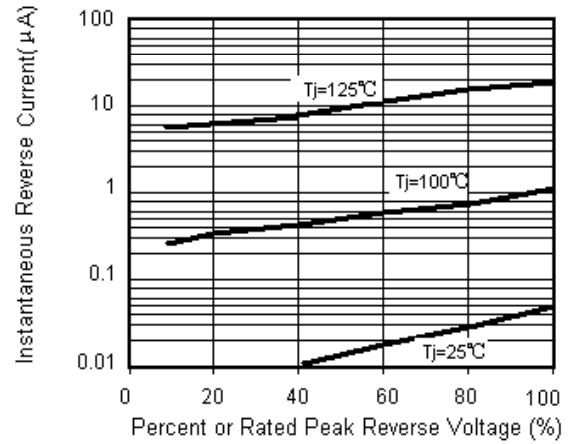


Fig.5 Typical Junction Capacitance

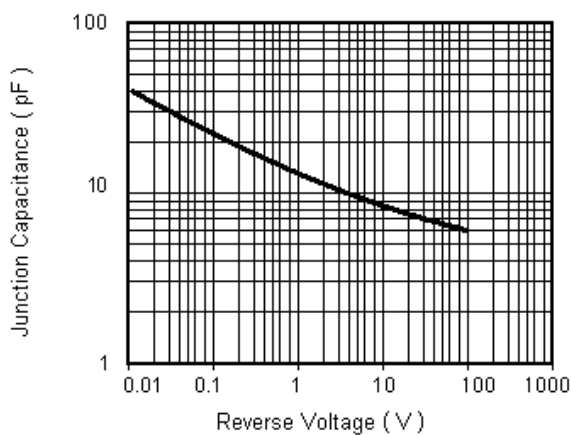
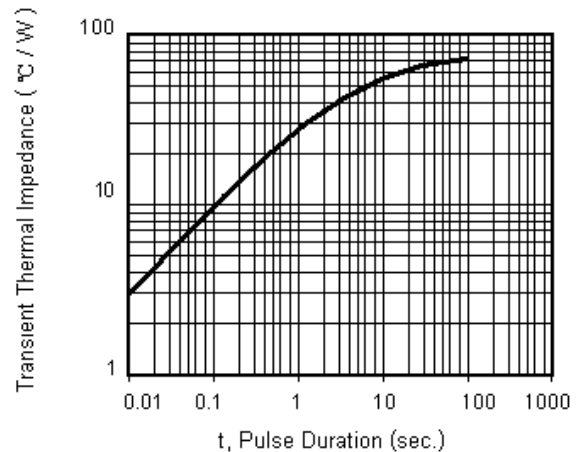
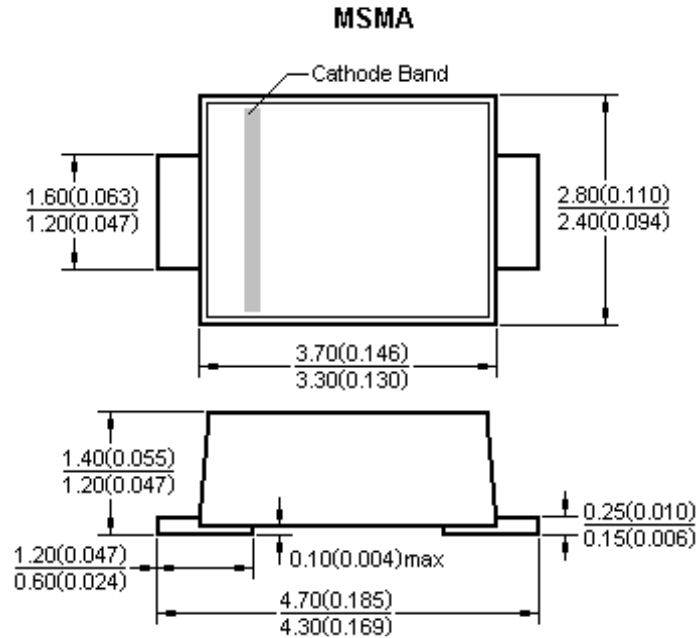


Fig.6 Transient Thermal Impedance





Package Outline



Dimensions in millimeters and (inches)

Notice

- Product is intended for use in general electronics applications.
- Product should be worked less than the ratings; if exceeded, may cause permanent damage or introduce latent failure mechanisms.
- The absolute maximum ratings are rated values and must not be exceeded during operation. The following are the general derating methods you design a circuit with a device.
 $I_{F(AV)}$: We recommend that the worst case current be no greater than 80% .
 I_{FSM} : This rating specifies the non-repetitive peak current. This is only applied for an abnormal operation, which the general during the lifespan of the device.
 T_J : Derate this rating when using a device in order to ensure high reliability. We recommend that the device be used at a T_J of below 125°C.

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