

# M1GAT thru M7GAT

## SURFACE MOUNT GENERAL PURPOSE SILICON RECTIFIERS

Forward Current-1.0A

Reverse Voltage-50V to 1000V

### FEATURES

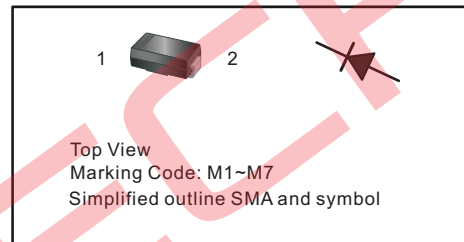
- ◆ For surface mount applications
- ◆ Glass passivated chip junction
- ◆ Low profile package
- ◆ ESD (HBM) > 4KV
- ◆ Lead free in comply with EU RoHS 2011/65/EU directives

### MECHANICAL DATA

- ◆ Case: SMA molded plastic body
- ◆ Terminals: Solderable per MIL-STD-750, Method 2026
- ◆ Weight: Approximated 0.055 grams

### PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | Cathode     |
| 2   | Anode       |



### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

Single phase half-wave 60 Hz, resistive or inductive load, for capacitive load current derating by 20 %.

| PARAMETER  | SYMBOL          | M1GAT       | M2GAT | M3GAT | M4GAT | M5GAT | M6GAT | M7GAT | 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  | $I_{F(AV)}$     | 1.0         |       |       |       |       |       |       | A                  |
| Peak Forward Surge Current (Note1)   | $I_{FSM}$       | 30          |       |       |       |       |       |       | A                  |
| Maximum Forward Voltage at 1.0 A   | $V_F$           | 1.1         |       |       |       |       |       |       | V                  |
| Maximum DC Reverse Current<br>at Rated DC Blocking Voltage $T_A=25^\circ\text{C}$<br>$T_A=125^\circ\text{C}$ | $I_R$           | 5<br>50     |       |       |       |       |       |       | $\mu\text{A}$      |
| Typical Junction Capacitance (Note2)   | $C_J$           | 15          |       |       |       |       |       |       | pF                 |
| Typical Thermal Resistance (Note3)   | $R_{\theta JA}$ | 75          |       |       |       |       |       |       | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range  | $T_J, T_{STG}$  | -55 to +150 |       |       |       |       |       |       | $^\circ\text{C}$   |

Notes: 1. Measured at 8.3 ms single half sine wave superimposed on rated load (JEDEC Method).

2. Measured at 1MHz and applied reverse voltage of 4 V D.C.

3. P.C.B. mounted with 1.0 X 1.0" (2.54 X 2.54 cm) copper pad areas.

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## RATINGS AND CHARACTERISTIC CURVES

Fig.1 Forward Current Derating Curve

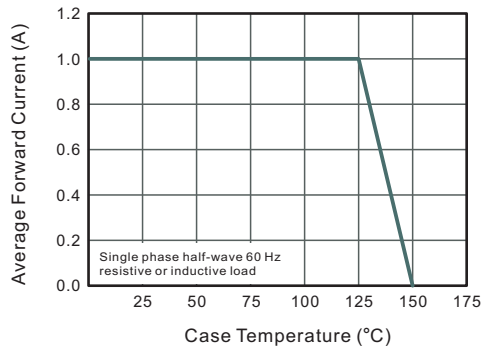


Fig.2 Typical Instantaneous Reverse Characteristics

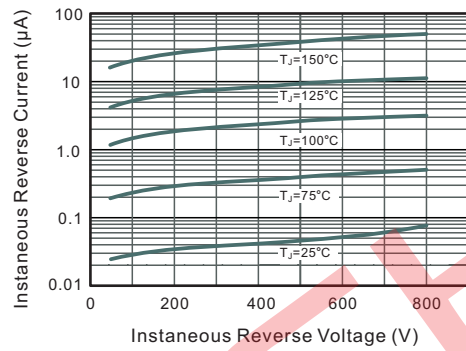


Fig.3 Typical Forward Characteristic

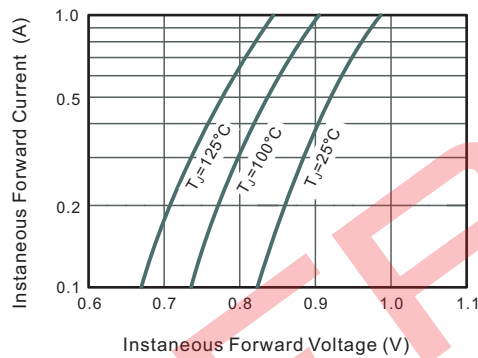


Fig.4 Typical Junction Capacitance

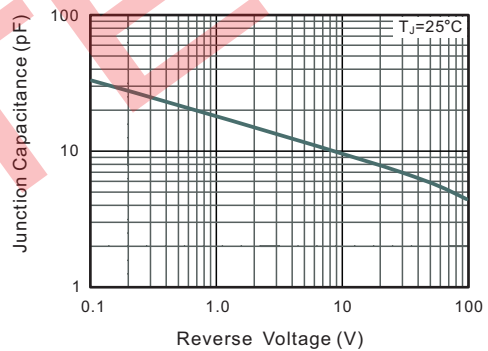
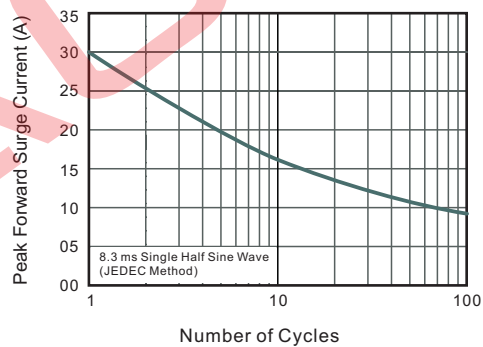


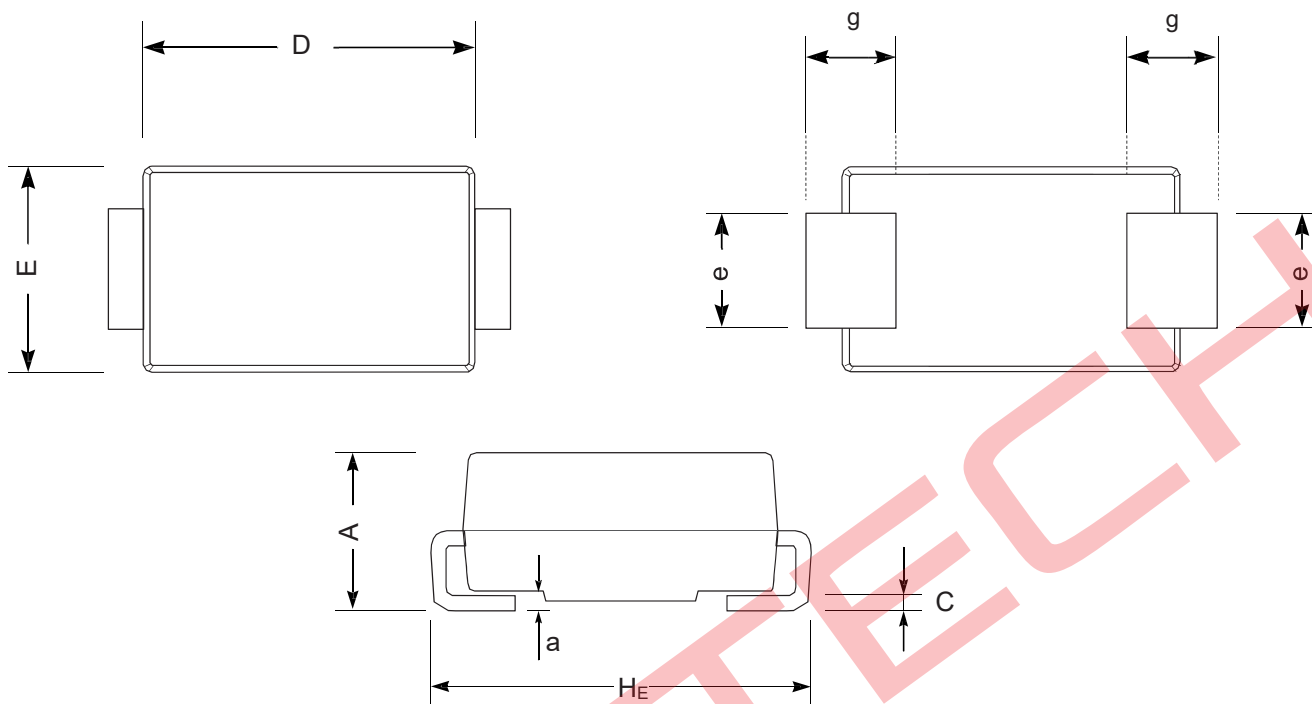
Fig.5 Maximum Non-Repetitive Peak Forward Surge Current



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## PACKAGE OUTLINE

### SMA



| UNIT |     | A   | D   | E   | HE  | C    | e   | g   | a   |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|
| mm   | max | 2.2 | 4.5 | 2.7 | 5.2 | 0.31 | 1.6 | 1.5 | 0.3 |
|      | min | 1.9 | 4.0 | 2.3 | 4.7 | 0.15 | 1.3 | 0.9 |     |
| mil  | max | 87  | 181 | 106 | 205 | 12   | 63  | 59  | 12  |
|      | min | 75  | 157 | 91  | 185 | 6    | 51  | 35  |     |

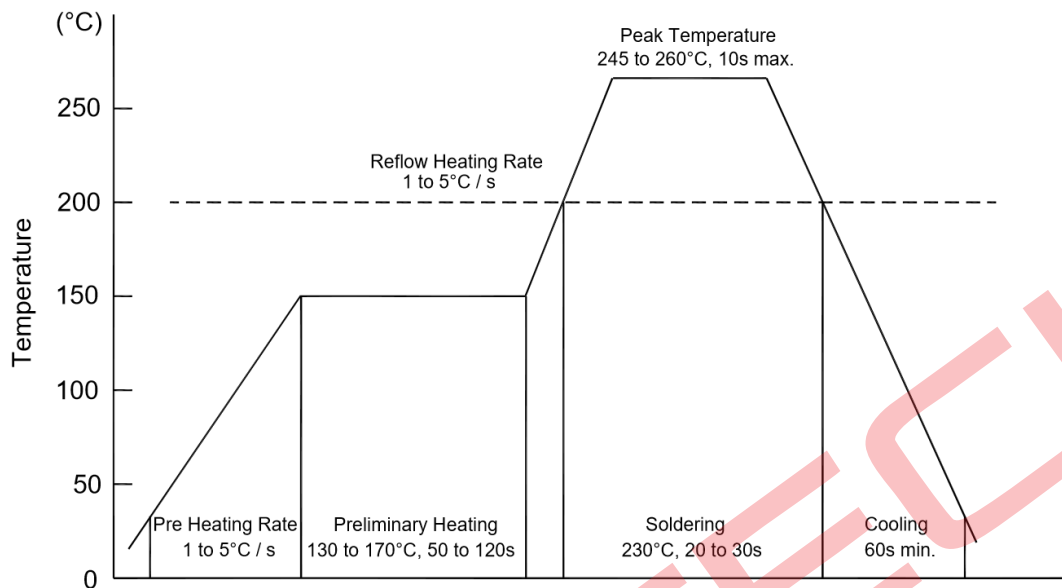
### ORDERING INFORMATION

| Device           | Package | Shipping                      |
|------------------|---------|-------------------------------|
| M1GAT thru M7GAT | SMA     | 5,000/Tape & Reel (13 inches) |

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## CONDITIONS OF SOLDERING AND STORAGE

### RECOMMENDED CONDITIONS OF REFLOW SOLDERING



Recommended peak temperature is over 245 °C. If peak temperature is below 245 °C, you may adjust the following parameters:

- Time length of peak temperature (longer)
- Time length of soldering (longer)
- Thickness of solder paste (thicker)

#### Condition of hand soldering

- Temperature: 370 °C
- Time: 3s max.
- Times: one time

### STORAGE CONDITIONS

#### Temperature

5 to 40 °C

#### Humidity

30 to 80% RH

#### Recommended period One year after manufacturing

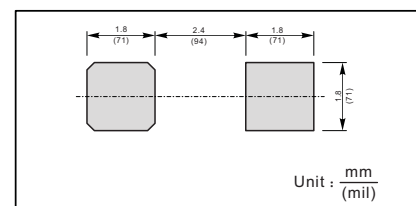
### MSL

- ◆ 1 Level

### Marking

| Type number | Marking code |
|-------------|--------------|
| M1GAT       | M1           |
| M2GAT       | M2           |
| M3GAT       | M3           |
| M4GAT       | M4           |
| M5GAT       | M5           |
| M6GAT       | M6           |
| M7GAT       | M7           |

### Pad size



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