

## Features

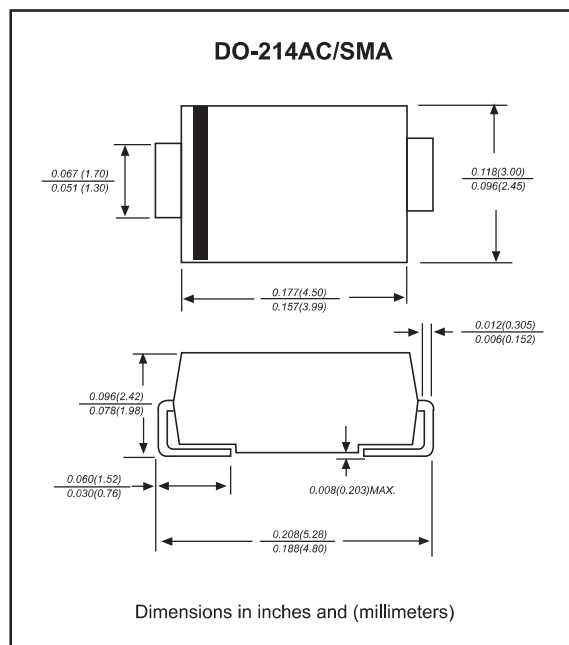


- 400W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetition rate (duty cycle): 0.01%.
- Low profile surface mounted application in order to optimize board space.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time from 0V to VBR, typically less than 1 ps for uni-directional & 5 ns for bi-directional types.
- Glass passivated chip junction.
- Lead-free parts meet RoHS requirements.
- Compliant to Halogen-free

## Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AC / SMA
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any

## Package outline



## Maximum ratings (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter                                                                                  | Symbols        | Value       | Unit               |
|--------------------------------------------------------------------------------------------|----------------|-------------|--------------------|
| Peak power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)</sup>                      | $P_{PP}$       | 400         | W                  |
| Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)</sup>                          | $I_{PP}$       | 50          | A                  |
| Power dissipation on infinite heatsink at $T_L = 75^{\circ}\text{C}$                       | $P_D$          | 1.0         | W                  |
| Peak forward surge current, 8.3 ms single half sinewave unidirectional only <sup>(2)</sup> | $I_{FSM}$      | 40          | A                  |
| Maximum instantaneous forward voltage at 10 A for unidirectional only                      | $V_F$          | 3.5         | V                  |
| Operating junction and storage temperature range                                           | $T_J, T_{STG}$ | -55 to +150 | $^{\circ}\text{C}$ |

Note:

1) Non-repetitive current pulse per Fig.5 and derated above  $T_A = 25^{\circ}\text{C}$  per Fig.1 ;

2) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum ;

| Part Number |           | Device Marking Code |      | Reverse Stand-off Voltage | Breakdown Voltage $V_{BR}$ @ $I_T$ |         | Test Current | Max. Clamping Voltage @ $I_{PP}$ | Max. Peak Pulse Current | Max. Reverse Leakage @ $V_{RWM}$ |
|-------------|-----------|---------------------|------|---------------------------|------------------------------------|---------|--------------|----------------------------------|-------------------------|----------------------------------|
| UNI-POLAR   | BI-POLAR  | UNI                 | BI   | $V_{RWM}(V)$              | Min.(V)                            | Max.(V) | $I_T(mA)$    | $V_{C MAX}(V)$                   | $I_{PP}(A)$             | $I_R(\mu A)$                     |
| SMAJ3.3A    | SMAJ3.3CA | 3V3                 | 3V3C | 3.3                       | 5.00                               | 6.50    | 10           | 8.0                              | 50                      | 600                              |

## Rating and characteristic curves

Fig.1 - Peak Pulse Power Rating Curve

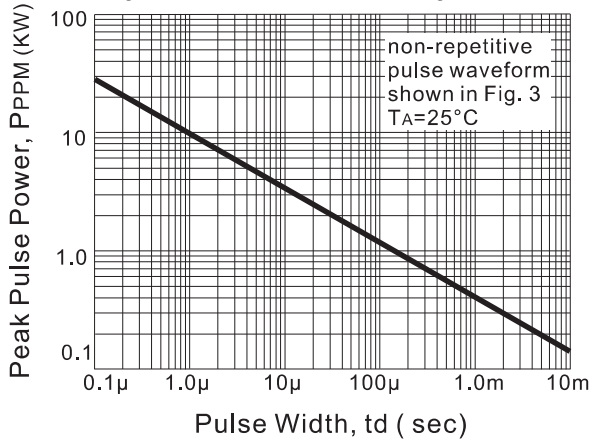


Fig.2 - Pulse Derating Curve

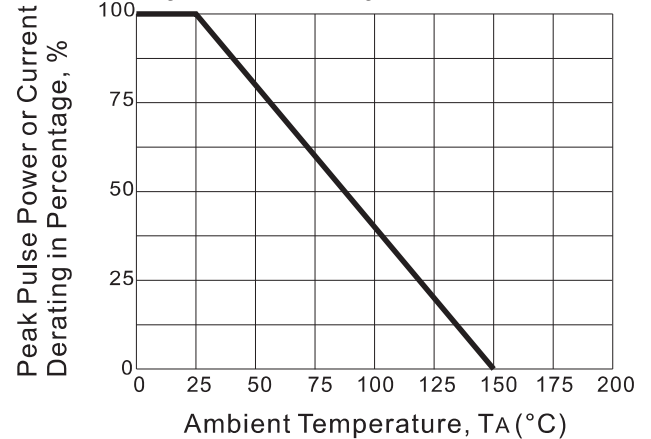


Fig.3 - Pulse Waveform

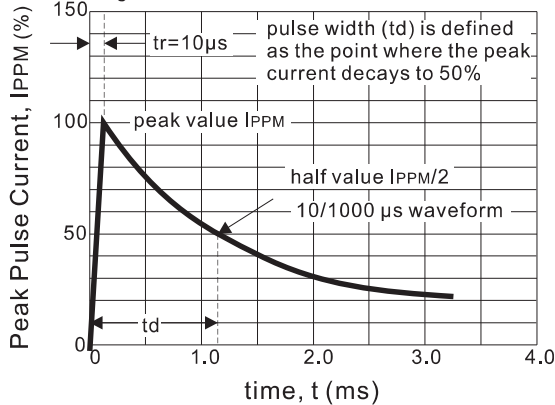


Fig.4 - Typical Junction Capacitance

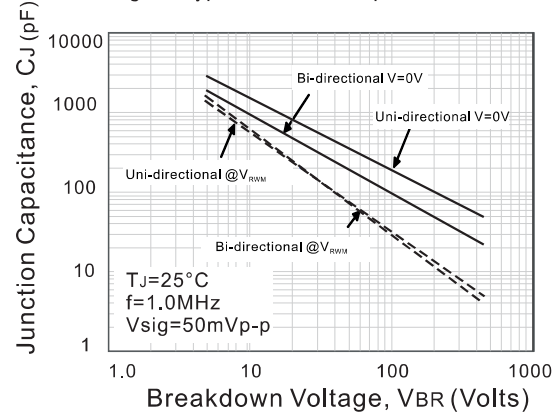


Fig.5 - Steady State Power Derating Curve

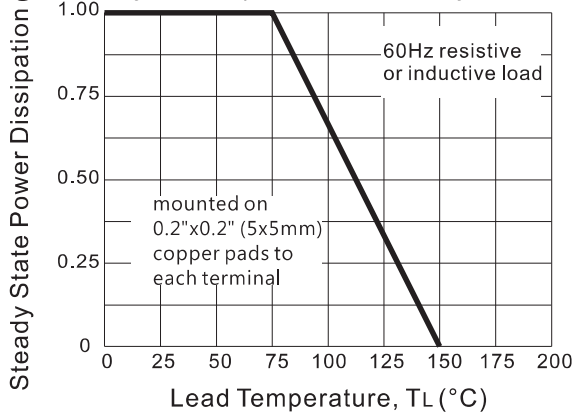
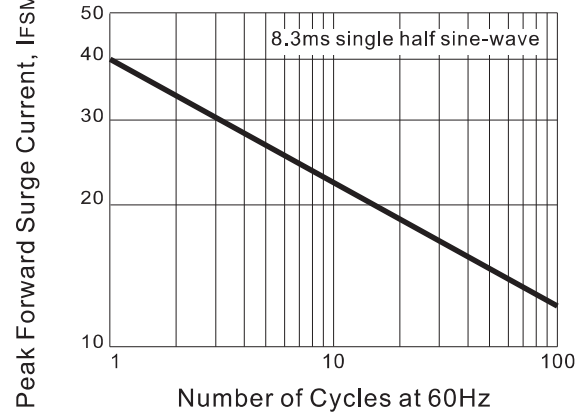


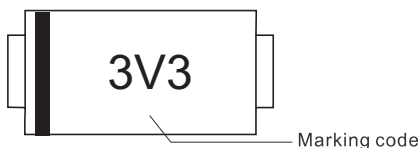
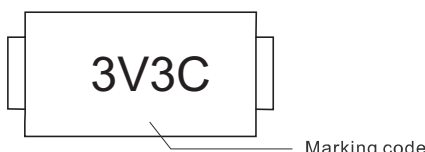
Fig.6 - Maximum Non-Repetitive Forward Surge Current



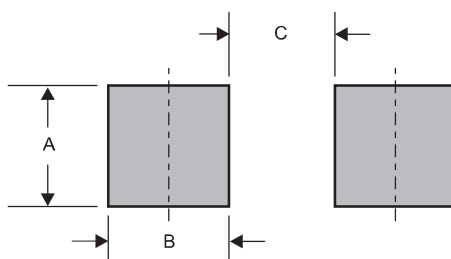
## Pinning information

| Pin                                           | Simplified outline                                                                 | Symbol                                                                              |
|-----------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Uni-Directional<br>Pin1 cathode<br>Pin2 anode |  |  |
| Bi-Directional                                |   |  |

## Marking

| Type number     | Example                                                                              |
|-----------------|--------------------------------------------------------------------------------------|
| Uni-Directional |  |
| Bi-Directional  |  |

## Suggested solder pad layout

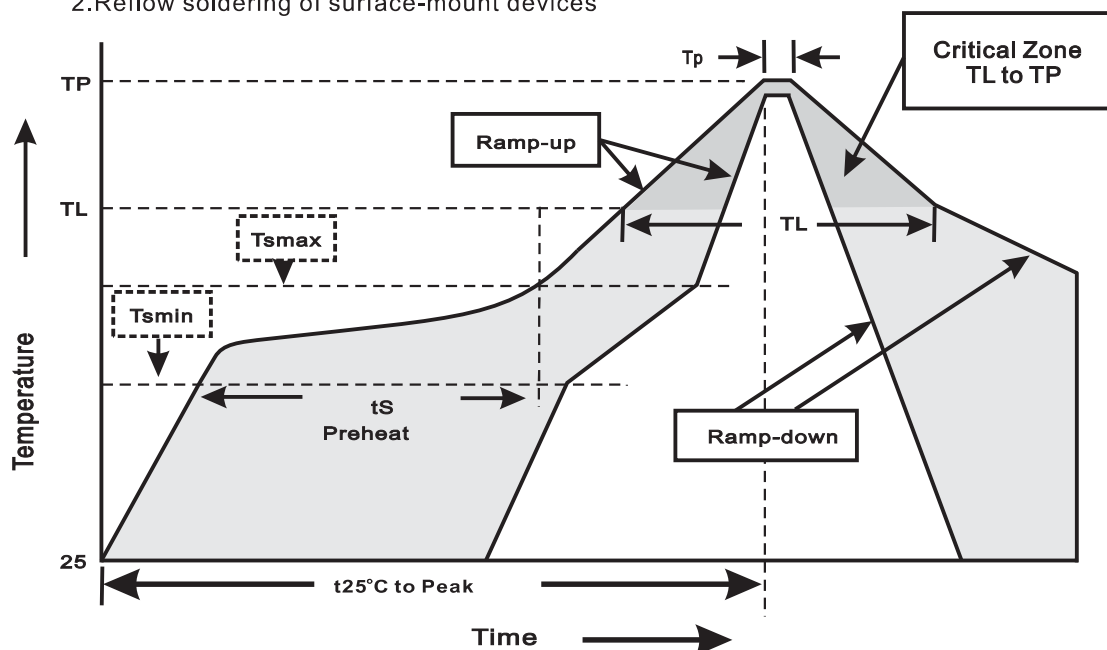


Dimensions in inches and (millimeters)

| PACKAGE | A            | B            | C            |
|---------|--------------|--------------|--------------|
| SMA     | 0.063 (1.60) | 0.059 (1.50) | 0.110 (2.80) |

## Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



### 3.Reflow soldering

| Profile Feature                                                                                                               | Soldering Condition         |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Average ramp-up rate(T <sub>L</sub> to T <sub>P</sub> )                                                                       | <3°C/sec                    |
| Preheat<br>-Temperature Min(T <sub>smin</sub> )<br>-Temperature Max(T <sub>smax</sub> )<br>-Time(min to max)(t <sub>s</sub> ) | 150°C<br>200°C<br>60~120sec |
| T <sub>smax</sub> to T <sub>L</sub><br>-Ramp-upRate                                                                           | <3°C/sec                    |
| Time maintained above:<br>-Temperature(T <sub>L</sub> )<br>-Time(t <sub>L</sub> )                                             | 217°C<br>60~260sec          |
| Peak Temperature(T <sub>P</sub> )                                                                                             | 255°C-0/+5°C                |
| Time within 5°C of actual Peak Temperature(t <sub>P</sub> )                                                                   | 10~30sec                    |
| Ramp-down Rate                                                                                                                | <6°C/sec                    |
| Time 25°C to Peak Temperature                                                                                                 | <6minutes                   |