

## 400W, 220V - 550V Surface Mount Transient Voltage Suppressor

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated junction
- Excellent clamping capability
- Fast response time: typically less than 1.0ps
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21



**DO-214AC (SMA)**

### MECHANICAL DATA

**Case:** DO-214AC (SMA)

Molding compound: UL flammability classification rating 94V-0

Moisture sensitivity level: level 1, per J-STD-020

Packing code with suffix "G" means green compound (halogen-free)

**Terminal:** Matte tin plated leads, solderable per JESD22-B102

Meet JESD 201 class 1A whisker test

**Polarity:** Indicated by cathode band

**Weight:** 0.06 g (approximately)

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted) |                  |              |      |
|--|------------------|--------------|------|
| PARAMETER  | SYMBOL           | VALUE        | UNIT |
| Peak Power Dissipation at T <sub>A</sub> =25°C, tp=1ms (Note 1)                              | P <sub>PK</sub>  | 400          | W    |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load          | I <sub>FSM</sub> | 40           | A    |
| Maximum Instantaneous Forward Voltage at 25 A for Unidirectional Only                        | V <sub>F</sub>   | 5            | V    |
| Operating junction temperature range   | T <sub>J</sub>   | - 55 to +150 | °C   |
| Storage temperature range  | T <sub>STG</sub> | - 55 to +150 | °C   |

Note 1: Non-repetitive current pulse per fig. 3 and derated above T<sub>A</sub>=25°C per fig. 2

### Devices for bipolar applications

1. For bidirectional use CA suffix
2. Electrical characteristics apply in both directions

| ORDERING INFORMATION     |              |                     |         |                          |
|--------------------------|--------------|---------------------|---------|--------------------------|
| PART NO.                 | PACKING CODE | PACKING CODE SUFFIX | PACKAGE | PACKING                  |
| P4SMAxxxx<br>(Note 1, 2) | R3           | G                   | SMA     | 1,800 / 7" Plastic reel  |
|                          | R2           |                     | SMA     | 7,500 / 13" Paper reel   |
|                          | M2           |                     | SMA     | 7,500 / 13" Plastic reel |

Note 1: "xxxx" defines voltage from 220V (P4SMA220) to 550V (P4SMA550A)

Note 2: Whole series with green compound

| EXAMPLE       |           |              |                     |                |
|---------------|-----------|--------------|---------------------|----------------|
| EXAMPLE P/N   | PART NO.  | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION    |
| P4SMA400A R3G | P4SMA400A | R3           | G                   | Green compound |

RATINGS AND CHARACTERISTICS CURVES ( $T_A=25^\circ\text{C}$  unless otherwise noted)

FIG. 1 PEAK PULSE POWER RATING CURVE

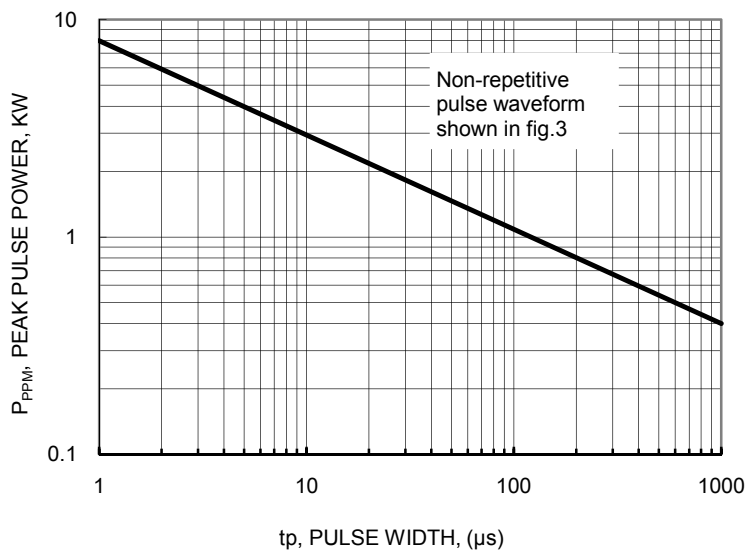


FIG.2 PULSE DERATING CURVE

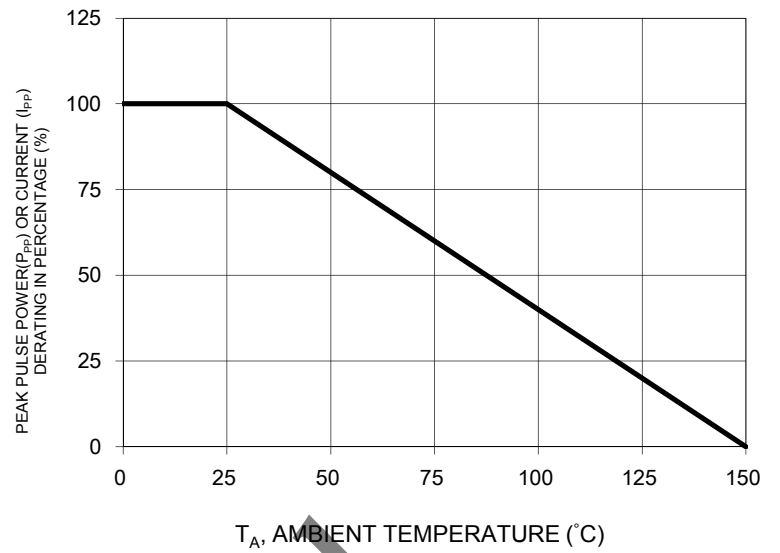


FIG. 3 CLAMPING POWER PULSE WAVEFORM

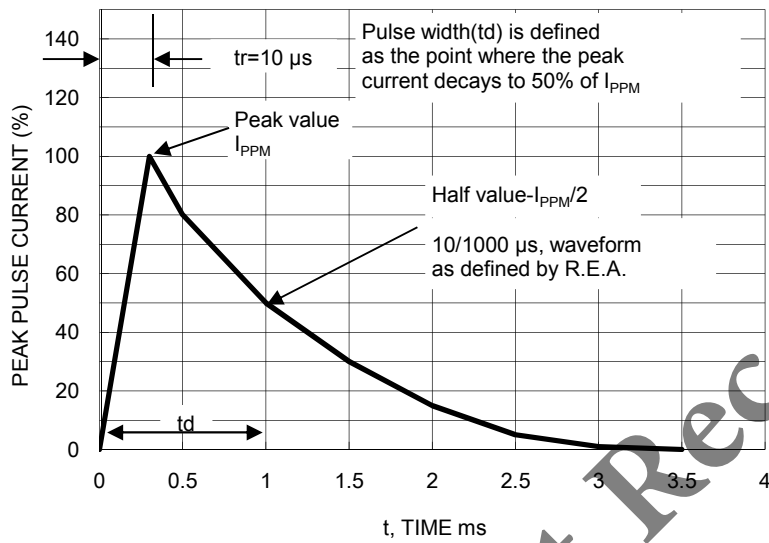


FIG. 4 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY

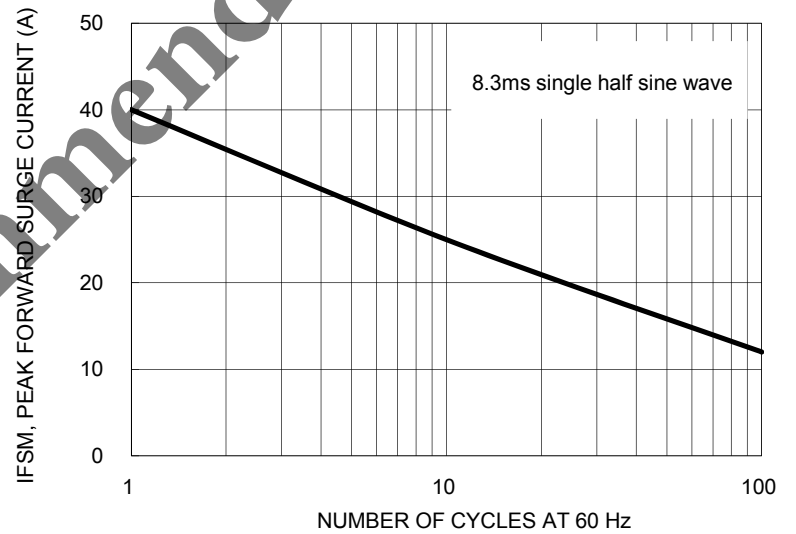
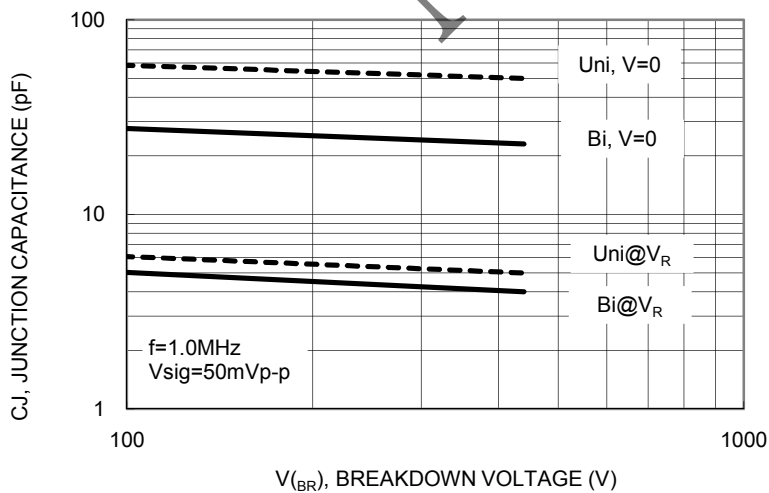


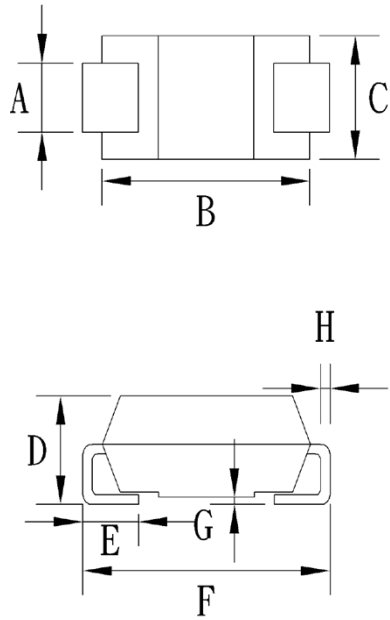
FIG. 5 TYPICAL JUNCTION CAPACITANCE



| Device    |            | Device Marking Code |     | Breakdown Voltage $V_{BR}$ (V) |       | Test Current $I_T$ (mA) | Stand-Off Voltage $V_{WM}$ (V) | Maximum Reverse Leakage @ $V_{WM}$ $I_D$ ( $\mu$ A) | Maximum Peak Pulse Current $I_{PPM}$ (A) | Maximum Clamping Voltage @ $I_{PPM}$ $V_C$ (V) |
|-----------|------------|---------------------|-----|--------------------------------|-------|-------------------------|--------------------------------|---|--|--|
| UNI       | BI         | UNI                 | BI  | Min                            | Max   |                         |                                |   |  |  |
| P4SMA220A | P4SMA220CA | SEJ                 | SEC | 209                            | 231   | 1                       | 185                            | 1   | 1.3                                      | 328  |
| P4SMA250A | P4SMA250CA | SGJ                 | SGC | 237                            | 263   | 1                       | 214                            | 1   | 1.2                                      | 344  |
| P4SMA300A | P4SMA300CA | SKJ                 | SKC | 285                            | 315   | 1                       | 256                            | 1   | 1.0                                      | 414  |
| P4SMA350A | P4SMA350CA | SMJ                 | SMC | 332                            | 368   | 1                       | 300                            | 1   | 0.9                                      | 482  |
| P4SMA400A | P4SMA400CA | SPJ                 | SPC | 380                            | 420   | 1                       | 342                            | 1   | 0.8                                      | 548  |
| P4SMA440A | P4SMA440CA | SQJ                 | SQC | 418                            | 462   | 1                       | 376                            | 1   | 0.7                                      | 602  |
| P4SMA480A | P4SMA480CA | SRJ                 | SRC | 456                            | 504   | 1                       | 408                            | 1   | 0.6                                      | 658  |
| P4SMA510A | P4SMA510CA | STJ                 | STC | 485                            | 535   | 1                       | 434                            | 1   | 0.6                                      | 698  |
| P4SMA530A | P4SMA530CA | SSJ                 | SSC | 503.5                          | 556.5 | 1                       | 451                            | 1   | 0.6                                      | 725  |
| P4SMA540A | P4SMA540CA | SVJ                 | SVC | 513                            | 567   | 1                       | 460                            | 1   | 0.5                                      | 740  |
| P4SMA550A | P4SMA550CA | SXJ                 | SXC | 522.5                          | 577.5 | 1                       | 468                            | 1   | 0.5                                      | 760  |

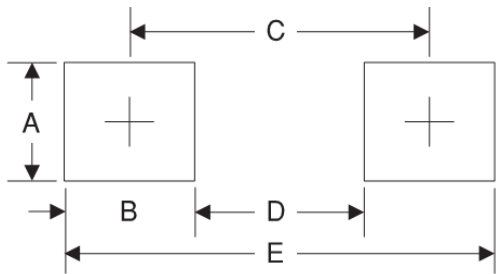
*Not Recommended*

PACKAGE OUTLINE DIMENSIONS  
**DO-214AC (SMA)**



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| A    | 1.27      | 1.58 | 0.050       | 0.062 |
| B    | 4.06      | 4.60 | 0.160       | 0.181 |
| C    | 2.29      | 2.83 | 0.090       | 0.111 |
| D    | 1.99      | 2.50 | 0.078       | 0.098 |
| E    | 0.90      | 1.41 | 0.035       | 0.056 |
| F    | 4.95      | 5.33 | 0.195       | 0.210 |
| G    | 0.00      | 0.20 | 0.000       | 0.008 |
| H    | 0.15      | 0.31 | 0.006       | 0.012 |

SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 1.68      | 0.066       |
| B      | 1.52      | 0.060       |
| C      | 3.93      | 0.155       |
| D      | 2.41      | 0.095       |
| E      | 5.45      | 0.215       |

MARKING DIAGRAM



P/N = Device Marking Code  
G = Green Compound  
YW = Date Code  
F = Factory Code

Note: Cathode band for unidirectional products only

**Not Recommended**

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