

## 600W, 10V - 30V Surface Mount Transient Voltage Suppressor

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Excellent clamping capability
- Fast response time: typically less than 1.0ps
- 600W peak pulse power capability with a 10/1000 $\mu$ s waveform
- Meets ISO 7637-2 (Pulse 1/2a/2b/3a/3b)
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

### MECHANICAL DATA

- Case: DO-214AC (SMA)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.060g (approximately)

| KEY PARAMETERS                             |                |             |
|--|----------------|-------------|
| PARAMETER                                  | VALUE          | UNIT        |
| $V_{WM}$                                   | 10 - 30        | V           |
| $V_{BR}$                                   | 11.1 - 36.8    | V           |
| $P_{PPM}$<br>$t_p = 10/1000\mu s$ waveform | 600            | W           |
| $T_{JMAX}$                                 | 175            | $^{\circ}C$ |
| Package                                    | DO-214AC (SMA) |             |
| Configuration                              | Single die     |             |



DO-214AC (SMA)



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^{\circ}C$ unless otherwise noted)

| PARAMETER  | SYMBOL    | VALUE       | UNIT        |
|--|-----------|-------------|-------------|
| Peak power dissipation at $T_A = 25^{\circ}C$ , $t_p = 1ms$ (Note 1)               | $P_{PK}$  | 600         | W           |
| Steady state power dissipation   | $P_D$     | 4           | W           |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load | $I_{FSM}$ | 50          | A           |
| Operating junction temperature range   | $T_J$     | -55 to +175 | $^{\circ}C$ |
| Storage temperature range  | $T_{STG}$ | -55 to +175 | $^{\circ}C$ |

#### Notes:

1. Non-repetitive current pulse per Fig.5

**ELECTRICAL SPECIFICATIONS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| Part number | Marking code | Breakdown voltage<br>$V_{BR}@I_T$<br>(V) |      | Test current<br>$I_T$<br>(mA) | Working stand-off voltage<br>$V_{WM}$<br>(V) | Maximum reverse leakage current<br>$I_R@V_{WM}$<br>( $\mu\text{A}$ ) | Maximum peak impulse current<br>$I_{PPM}$<br>(A) | Maximum clamping voltage<br>$V_C@I_{PPM}$<br>(V) |
|-------------|--------------|--|------|-------------------------------|--|--|--|--|
|             |              | Min                                      | Max  |                               |  |  |  |  |
| SMA6J10A    | 6AX          | 11.1                                     | 12.3 | 1                             | 10   | 5.0  | 38.2   | 15.7   |
| SMA6J11A    | 6AZ          | 12.2                                     | 13.5 | 1                             | 11   | 5.0  | 34.8   | 17.2   |
| SMA6J12A    | 6BE          | 13.3                                     | 14.7 | 1                             | 12   | 1.0  | 31.9   | 18.8   |
| SMA6J13A    | 6BG          | 14.4                                     | 15.9 | 1                             | 13   | 1.0  | 29.4   | 20.4   |
| SMA6J15A    | 6BM          | 16.7                                     | 18.5 | 1                             | 15   | 1.0  | 25.4   | 23.6   |
| SMA6J16A    | 6BP          | 17.8                                     | 19.7 | 1                             | 16   | 1.0  | 23.8   | 25.2   |
| SMA6J17A    | 6BR          | 18.9                                     | 20.9 | 1                             | 17   | 1.0  | 22.5   | 26.7   |
| SMA6J18A    | 6BT          | 20                                       | 22.1 | 1                             | 18   | 1.0  | 21.2   | 28.3   |
| SMA6J20A    | 6BV          | 22.2                                     | 24.5 | 1                             | 20   | 1.0  | 19.1   | 31.4   |
| SMA6J22A    | 6BX          | 24.4                                     | 26.9 | 1                             | 22   | 1.0  | 17.4   | 34.5   |
| SMA6J24A    | 6BZ          | 26.7                                     | 29.5 | 1                             | 24   | 1.0  | 15.9   | 37.8   |
| SMA6J26A    | 6CE          | 28.9                                     | 31.9 | 1                             | 26   | 1.0  | 14.7   | 40.9   |
| SMA6J28A    | 6CG          | 31.1                                     | 34.4 | 1                             | 28   | 1.0  | 13.6   | 44.0   |
| SMA6J30A    | 6CK          | 33.3                                     | 36.8 | 1                             | 30   | 1.0  | 12.3   | 48.4   |

**ORDERING INFORMATION**

| ORDERING CODE <sup>(1)</sup> | PACKAGE        | PACKING             |
|------------------------------|----------------|---------------------|
| SMA6JxA                      | DO-214AC (SMA) | 7,500 / Tape & Reel |

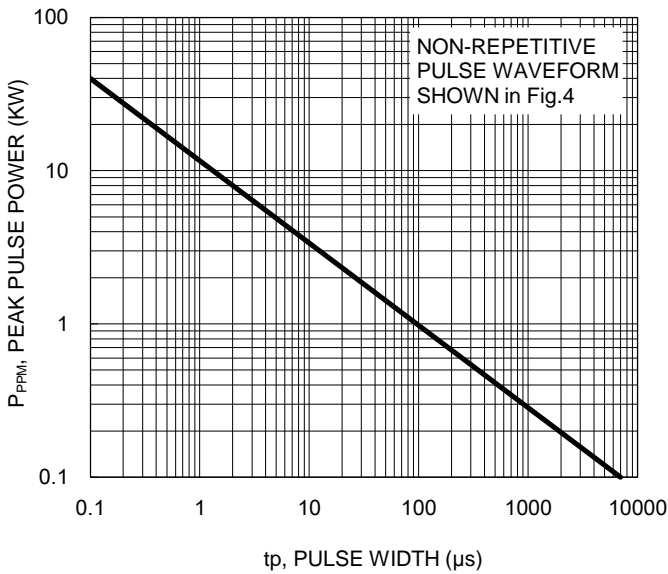
**Notes:**

1. "x" defines voltage from 10V(SMA6J10A) to 30V(SMA6J30A)

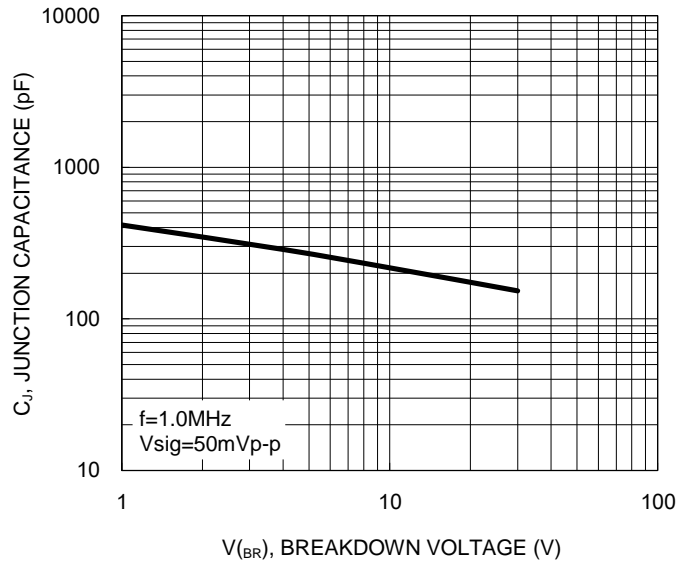
**CHARACTERISTICS CURVES**

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

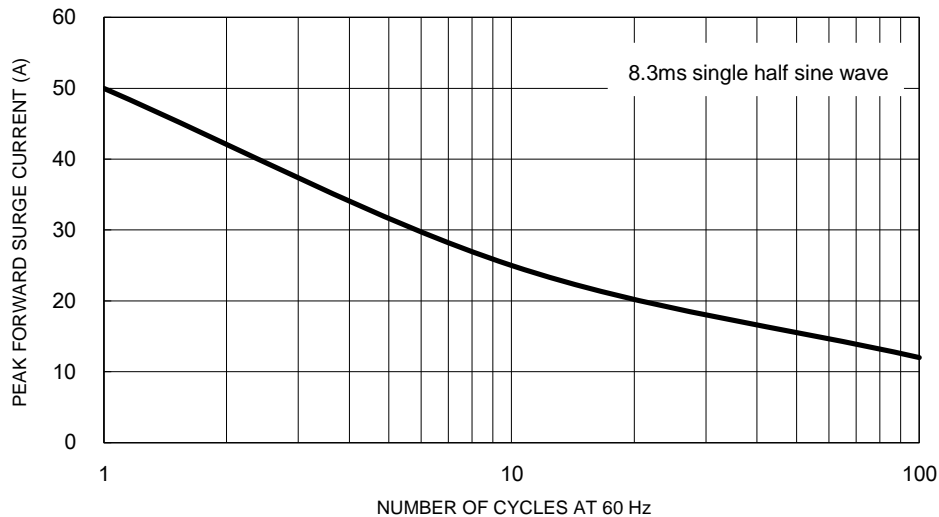
**Fig.1 Peak Pulse Power Rating Curve**



**Fig.2 Pulse Derating Curve**



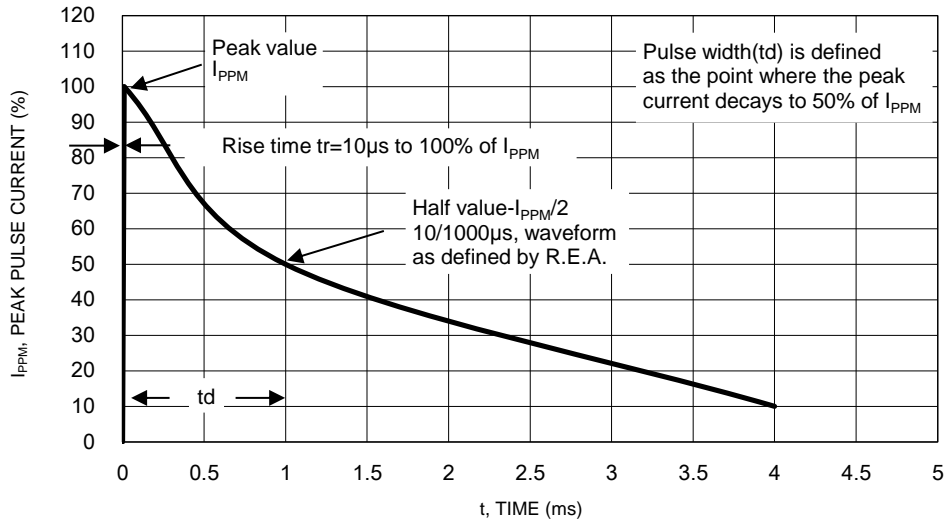
**Fig.3 Maximum Non-Repetitive Forward Surge Current**



**CHARACTERISTICS CURVES**

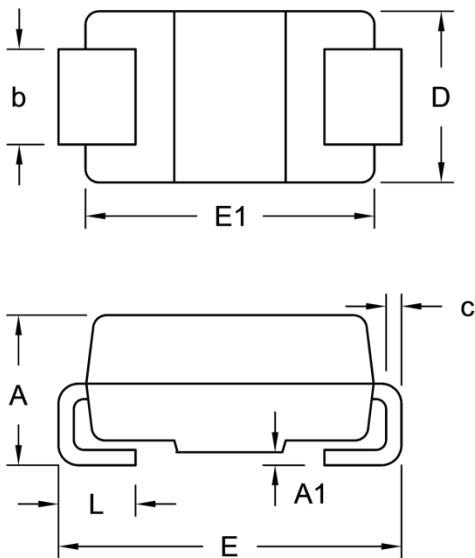
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig.4 Clamping Power Pulse Waveform**



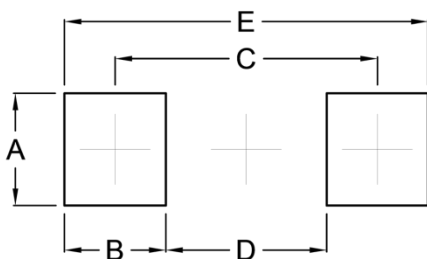
**PACKAGE OUTLINE DIMENSIONS**

DO-214AC (SMA)



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min.      | Max. | Min.        | Max.  |
| A    | 1.99      | 2.50 | 0.078       | 0.098 |
| A1   | 0.10      | 0.20 | 0.004       | 0.008 |
| b    | 1.27      | 1.58 | 0.050       | 0.062 |
| c    | 0.15      | 0.31 | 0.006       | 0.012 |
| D    | 2.29      | 2.83 | 0.090       | 0.111 |
| E    | 4.95      | 5.33 | 0.195       | 0.210 |
| E1   | 4.06      | 4.60 | 0.160       | 0.181 |
| L    | 0.90      | 1.41 | 0.035       | 0.056 |

**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 = Marking Code
- G = Green Compound
- YW = Date Code
- F = Factory Code

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