

**Product Summary** (@T<sub>A</sub> = +25°C)

|                       |                        |
|-----------------------|------------------------|
| <b>P<sub>PK</sub></b> | <b>V<sub>RWM</sub></b> |
| 600W                  | 5V to 70V              |

**Description and Applications**

Suitable to protect sensitive automotive circuits against surges defined in ISO7637-2 and against electrostatic discharges according to ISO10605.

Compliance with the following standards:

- ISO10605, C = 150pF, R = 330Ω:
  - 30kV (Air Discharge)
  - 30kV (Contact Discharge)
- ISO7637-2 (Note 4)
  - Pulse 1: V<sub>S</sub> = -150V
  - Pulse 2a: V<sub>S</sub> = +112V
  - Pulse 3a: V<sub>S</sub> = -220V
  - Pulse 3b: V<sub>S</sub> = +150V

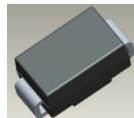
**Features and Benefits**

- 600W Peak Pulse Power Dissipation
- 5V to 70V Standoff Voltages
- Glass Passivated Die Construction
- Bidirectional Versions Available
- Excellent Clamping Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**
- **The DIODES™ SMA6J5.0CAQ – SMA6J70CAQ are suitable for automotive applications requiring specific change control; these parts are AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**  
<https://www.diodes.com/quality/product-definitions/>

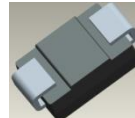
**Mechanical Data**

- Package: SMA
- Package Material: Molded Plastic.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.062 grams (Approximate)

SMA



Top View



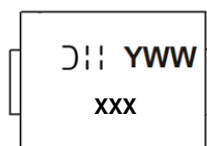
Bottom View

**Ordering Information** (Note 5)

| Part Number    | Package | Packing |             |
|----------------|---------|---------|-------------|
|                |         | Qty.    | Carrier     |
| SMA6JX.XCAQ-13 | SMA     | 5000    | Tape & Reel |
| SMA6JXXCAQ-13  | SMA     | 5000    | Tape & Reel |

\*X = Device Voltage, e.g., SMA6J15CAQ-13.

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. Not applicable to parts with stand-off voltage lower than the average battery voltage (13.5V).
  5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

**Marking Information**


- xxx = Product Type Marking Code (See Page 2)
- ⌋⌋⌋ = Manufacturers' Marking
- YWW = Date Code Marking
- Y = Last Digit of Year (ex: 2 for 2022)
- WW = Week Code (01 to 53)



Bi-directional

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic   | Symbol           | Value | Unit |
|--|------------------|-------|------|
| Peak Pulse Power Dissipation<br>(Non Repetitive Current Pulse Derated above T <sub>A</sub> = +25°C) (Note 6) | P <sub>PK</sub>  | 600   | W    |
| Peak Power Derating Above +25°C  | P <sub>DER</sub> | 4.8   | W/°C |

**Thermal Characteristics**

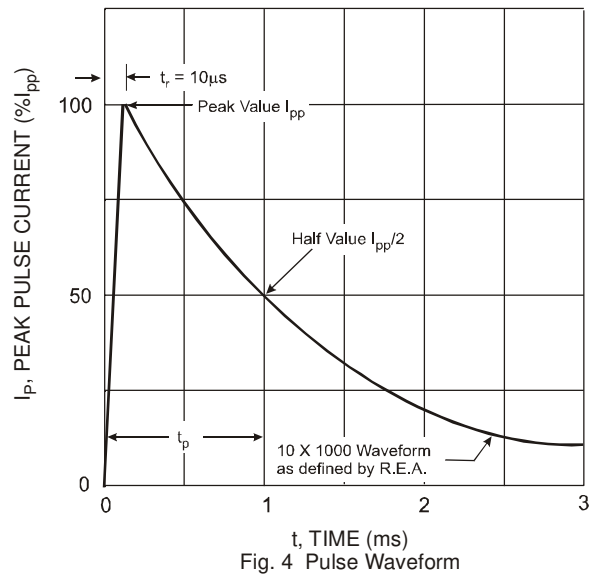
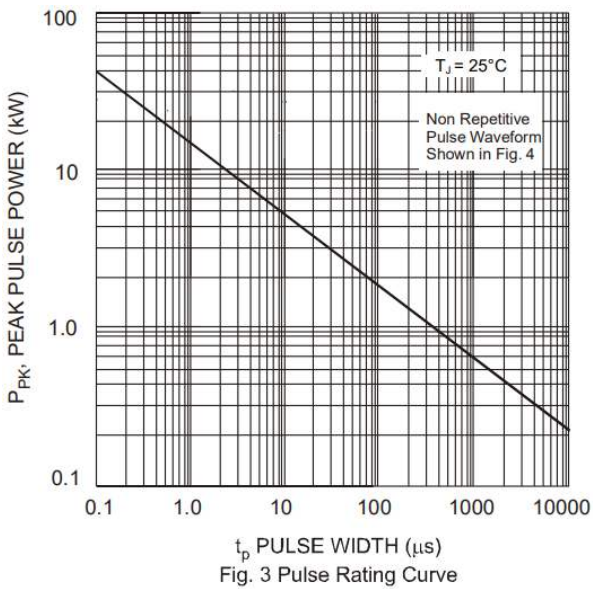
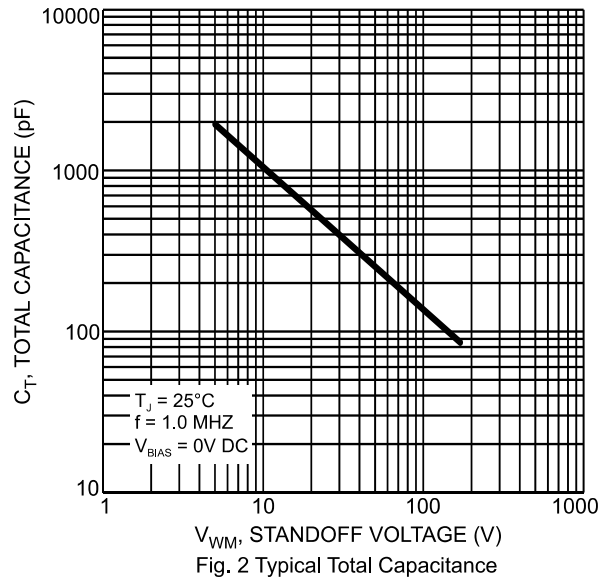
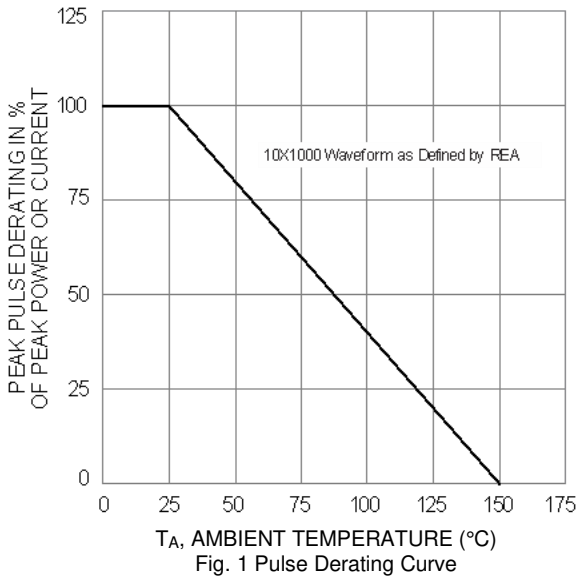
| Characteristic              | Symbol           | Value       | Unit |
|-----------------------------|------------------|-------------|------|
| Operating Temperature Range | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage Temperature Range   | T <sub>STG</sub> | -55 to +175 | °C   |

Notes: 6. Valid provided that terminals are kept at ambient temperature.

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Part Number | Reverse Standoff Voltage | Breakdown Voltage<br>V <sub>BR</sub> @ I <sub>T</sub> (Note 7) |         | Test Current        | Max Reverse Leakage @ V <sub>RWM</sub> | Max Clamping Voltage @ I <sub>PP</sub><br>(Note 8) | Max. Peak Pulse Current | Marking Code |
|-------------|--------------------------|--|---------|---------------------|--|--|-------------------------|--------------|
|             | V <sub>RWM</sub> (V)     | Min (V)  | Max (V) | I <sub>T</sub> (mA) | I <sub>R</sub> (μA)                    | V <sub>C</sub> (V)                                 | I <sub>PP</sub> (A)     |              |
| SMA6J5.0CAQ | 5.0                      | 6.40   | 7.07    | 10                  | 1600                                   | 9.2  | 65.2                    | AET          |
| SMA6J6.5CAQ | 6.5                      | 7.22   | 7.98    | 10                  | 1000                                   | 11.2   | 53.6                    | ATT          |
| SMA6J8.5CAQ | 8.5                      | 9.44   | 10.4    | 1.0                 | 20                                     | 14.4   | 41.7                    | AIT          |
| SMA6J10CAQ  | 10.0                     | 11.10  | 12.3    | 1.0                 | 10                                     | 17.0   | 35.3                    | AXT          |
| SMA6J13CAQ  | 13.0                     | 14.40  | 15.9    | 1.0                 | 5.0                                    | 21.5   | 27.9                    | BGT          |
| SMA6J15CAQ  | 15.0                     | 16.70  | 18.5    | 1.0                 | 5.0                                    | 24.4   | 24.0                    | BMT          |
| SMA6J18CAQ  | 18.0                     | 20.00  | 22.1    | 1.0                 | 5.0                                    | 29.2   | 20.5                    | BTT          |
| SMA6J20CAQ  | 20.0                     | 22.20  | 24.5    | 1.0                 | 5.0                                    | 32.4   | 18.5                    | BVT          |
| SMA6J22CAQ  | 22.0                     | 24.40  | 27.0    | 1.0                 | 5.0                                    | 35.5   | 16.9                    | BXT          |
| SMA6J24CAQ  | 24.0                     | 26.70  | 29.5    | 1.0                 | 5.0                                    | 38.9   | 15.4                    | BZT          |
| SMA6J30CAQ  | 30.0                     | 33.30  | 36.8    | 1.0                 | 5.0                                    | 48.4   | 12.4                    | CKT          |
| SMA6J33CAQ  | 33.0                     | 36.70  | 40.6    | 1.0                 | 5.0                                    | 53.3   | 11.3                    | CMT          |
| SMA6J36CAQ  | 36.0                     | 40.00  | 44.2    | 1.0                 | 5.0                                    | 58.1   | 10.3                    | CPT          |
| SMA6J40CAQ  | 40.0                     | 44.40  | 49.1    | 1.0                 | 5.0                                    | 64.5   | 9.3                     | CRT          |
| SMA6J43CAQ  | 43.0                     | 47.80  | 52.8    | 1.0                 | 5.0                                    | 69.4   | 8.6                     | CTT          |
| SMA6J45CAQ  | 45.0                     | 50.00  | 55.3    | 1.0                 | 5.0                                    | 72.7   | 8.3                     | CVT          |
| SMA6J48CAQ  | 48.0                     | 53.30  | 58.9    | 1.0                 | 5.0                                    | 77.4   | 7.7                     | CXT          |
| SMA6J58CAQ  | 58.0                     | 64.40  | 71.2    | 1.0                 | 5.0                                    | 93.6   | 6.4                     | DGT          |
| SMA6J70CAQ  | 70.0                     | 77.80  | 86.0    | 1.0                 | 5.0                                    | 113.0  | 5.3                     | DPT          |

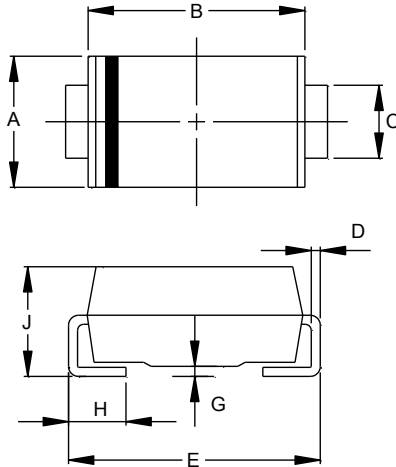
Notes: 7. V<sub>BR</sub> measured with I<sub>T</sub> current pulse = 10ms to 15ms.  
8. Per 10 × 1000μs waveform. See Fig. 4.



**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SMA**

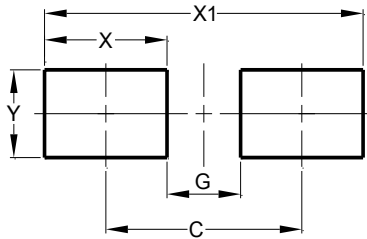


| SMA                  |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 2.29 | 2.92 |
| B                    | 4.00 | 4.60 |
| C                    | 1.27 | 1.63 |
| D                    | 0.15 | 0.31 |
| E                    | 4.80 | 5.59 |
| G                    | 0.05 | 0.20 |
| H                    | 0.76 | 1.52 |
| J                    | 1.96 | 2.40 |
| All Dimensions in mm |      |      |

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SMA**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 4.00          |
| G          | 1.50          |
| X          | 2.50          |
| X1         | 6.50          |
| Y          | 1.70          |

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