



**THE DATASHEET OF  
SMA6J33CAQ-13**



**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

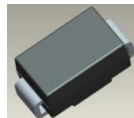
**Features and Benefits**

- 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/>

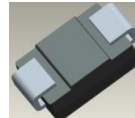
**Mechanical Data**

- 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 (3)
- Weight: 0.062 grams (Approximate)

SMA



Top View



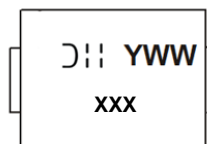
Bottom View

**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)
- 011 = 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 (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**

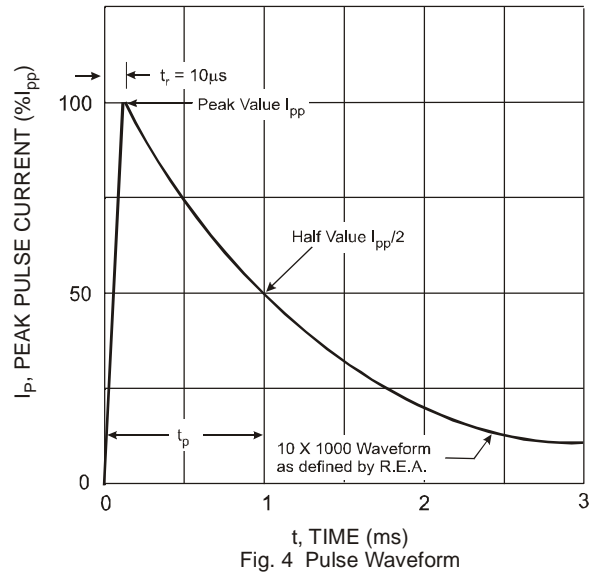
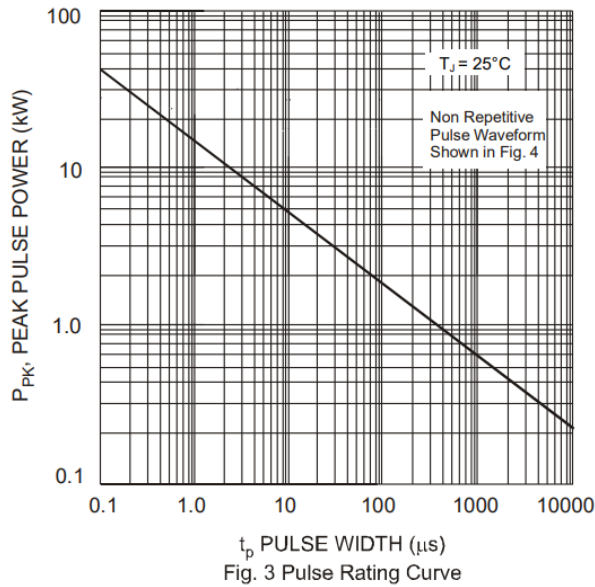
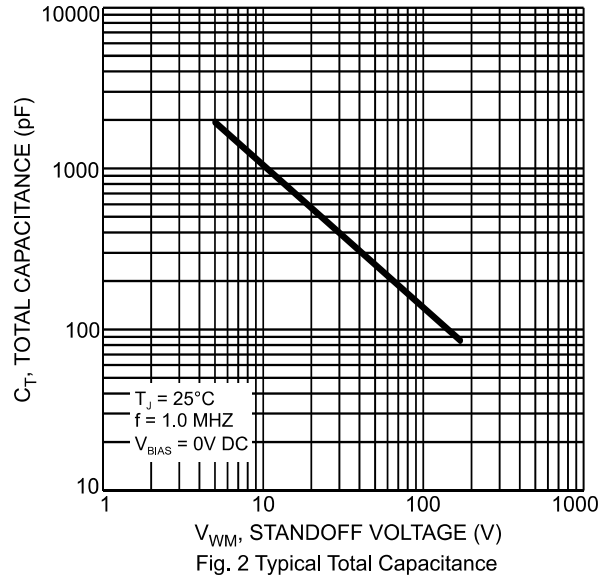
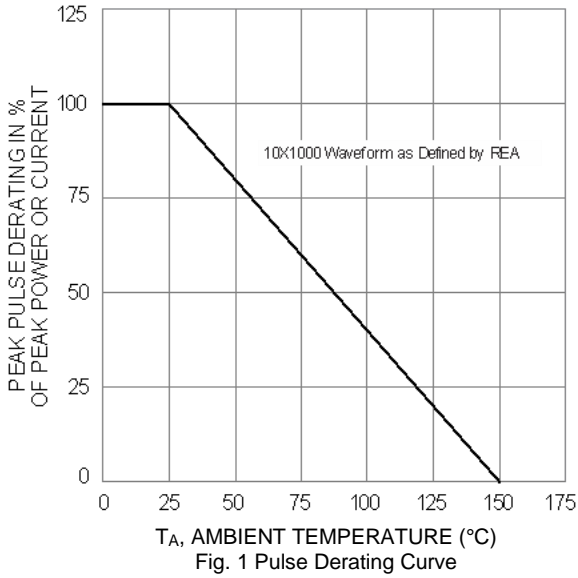
Characteristic	Symbol	Value	Unit
Operating Temperature Range	T <sub>J</sub>	-55 to +150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +175	°C

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		Test Current	Max Reverse Leakage @ V <sub>RWM</sub>	Max Clamping Voltage @ I <sub>PP</sub> (Note 8)	Max. Peak Pulse Current	Marking Code
	V <sub>RWM</sub> (V)	V <sub>BR</sub> @ I <sub>T</sub> (Note 7)	Min (V)					
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

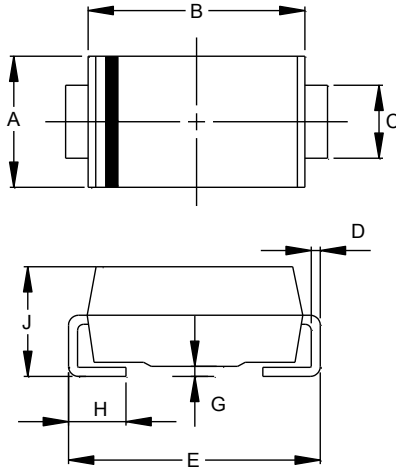
Notes: 7. V<sub>BR</sub> measured with I<sub>T</sub> current pulse = 10ms to 15ms.  
8. Per 10 × 1000µs waveform. See Fig. 4.



**Package Outline Dimensions**

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

**SMA**

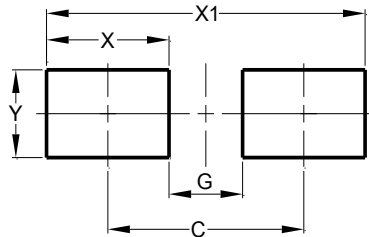


SMA		
Dim	Min	Max
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.05	0.20
H	0.76	1.52
J	1.96	2.40
All Dimensions in mm		

**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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