



**THE DATASHEET OF  
SMAJ26CAQ-13-F**



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

| P <sub>PK</sub> | I <sub>FSM</sub> | V <sub>RWM</sub> | PM <sub>(AV)</sub> |
|-----------------|------------------|------------------|--------------------|
| 400W            | 40A              | 5V to 200V       | 5W                 |

**Features and Benefits**

- 400W Peak Pulse Power Dissipation
- 5V to 200V Standoff Voltages
- Glass Passivated Die Construction
- Unidirectional and Bidirectional Versions Available
- Excellent Clamping Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**
- **The SMAJ5.0(C)AQ – SMAJ200(C)AQ 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/>

**Description and Applications**

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

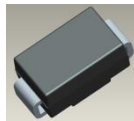
Compliance with following standards:

- ISO10605, C = 150pF, R = 330Ω:  
30kV (Air Discharge)  
30kV (Contact Discharge)
- ISO7637-2 (Note 5)  
Pulse 1: V<sub>S</sub> = -100V  
Pulse 2a: V<sub>S</sub> = +50V  
Pulse 3a: V<sub>S</sub> = -150V  
Pulse 3b: V<sub>S</sub> = +100V

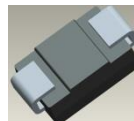
**Mechanical Data**

- 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)
- Polarity Indicator: Cathode Band (Bidirectional Devices Do Not Have a Polarity Indicator)
- Weight: 0.064 grams (Approximate)

SMA



Top View



Bottom View

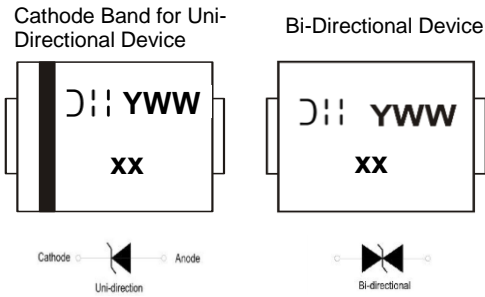
**Ordering Information** (Note 4)

| Part Number       | Package | Packing |             |
|-------------------|---------|---------|-------------|
|                   |         | Qty.    | Carrier     |
| SMAJX.X(C)AQ-13-F | SMA     | 5000    | Tape & Reel |
| SMAJXX(C)AQ-13-F  | SMA     | 5000    | Tape & Reel |
| SMAJXXX(C)AQ-13-F | SMA     | 5000    | Tape & Reel |

\*X = Device Voltage, Example: SMAJ14AQ-13-F

- 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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.
  5. Not applicable to parts with standoff voltage lower than the average battery voltage (13.5V).

## Marking Information



xx = Product Type Marking Code  
 (See *Electrical Characteristics Table*)  
 D|| = Manufacturers' Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 3 for 2023)  
 WW = Week Code (01 to 53)

## 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>    | 400   | W    |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave<br>Superimposed on Rated Load (Notes 6, 7, 8)        | I <sub>FSM</sub>   | 40    | A    |
| Steady-State Power Dissipation @ T <sub>L</sub> = +75°C  | PM <sub>(AV)</sub> | 1.0   | W    |
| Instantaneous Forward Voltage @ I <sub>PP</sub> = 35A (Notes 6, 7, 8)  | V <sub>F</sub>     | 3.5   | V    |

Notes: 6. Valid provided that terminals are kept at ambient temperature.  
 7. Measured with 8.3ms single half sine wave. Duty cycle = 4 pulses per minute maximum.  
 8. Unidirectional units only.

## 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   |

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

| Part Number<br>Add C For<br>Bidirectional<br>(Note 9) | Reverse<br>Standoff<br>Voltage | Breakdown<br>Voltage<br>V <sub>BR</sub> @ I <sub>T</sub><br>(Note 10) |         | Test<br>Current<br>I <sub>T</sub> (mA) | Max Reverse<br>Leakage @ V <sub>RWM</sub><br>(Note 12) | Max Clamping<br>Voltage @ I <sub>PP</sub><br>(Note 11) | Max Peak Pulse<br>Current | Marking Code |                     |
|---|--------------------------------|---|---------|--|--|--|---------------------------|--------------|---------------------|
|   |                                | V <sub>RWM</sub> (V)  | Min (V) |  |  |  |                           | Max (V)      | I <sub>R</sub> (μA) |
| SMAJ5.0(C)AQ  | 5.0                            | 6.40  | 7.25    | 10                                     | 800  | 9.2  | 43.5                      | TE           | HE                  |
| SMAJ6.0(C)AQ  | 6.0                            | 6.67  | 7.37    | 10                                     | 800  | 10.3   | 38.8                      | TG           | HG                  |
| SMAJ7.5(C)AQ  | 7.5                            | 8.33  | 9.21    | 1.0                                    | 100  | 12.9   | 31.0                      | TP           | HP                  |
| SMAJ8.5(C)AQ  | 8.5                            | 9.44  | 10.4    | 1.0                                    | 10   | 14.4   | 27.7                      | TT           | HT                  |
| SMAJ9.0(C)AQ  | 9.0                            | 10.0  | 11.1    | 1.0                                    | 5.0  | 15.4   | 26.0                      | TV           | HV                  |
| SMAJ10(C)AQ   | 10                             | 11.1  | 12.3    | 1.0                                    | 5.0  | 17.0   | 23.5                      | TX           | HX                  |
| SMAJ11(C)AQ   | 11                             | 12.2  | 13.5    | 1.0                                    | 5.0  | 18.2   | 22.0                      | TZ           | HZ                  |
| SMAJ12(C)AQ   | 12                             | 13.3  | 14.7    | 1.0                                    | 5.0  | 19.9   | 20.1                      | UE           | IE                  |
| SMAJ13(C)AQ   | 13                             | 14.4  | 15.9    | 1.0                                    | 5.0  | 21.5   | 18.6                      | UG           | IG                  |
| SMAJ14(C)AQ   | 14                             | 15.6  | 17.2    | 1.0                                    | 5.0  | 23.2   | 17.2                      | UK           | IK                  |
| SMAJ15(C)AQ   | 15                             | 16.7  | 18.5    | 1.0                                    | 5.0  | 24.4   | 16.4                      | UM           | IM                  |
| SMAJ16(C)AQ   | 16                             | 17.8  | 19.7    | 1.0                                    | 5.0  | 26.0   | 15.3                      | UP           | IP                  |
| SMAJ17(C)AQ   | 17                             | 18.9  | 20.9    | 1.0                                    | 5.0  | 27.6   | 14.5                      | UR           | IR                  |
| SMAJ18(C)AQ   | 18                             | 20.0  | 22.1    | 1.0                                    | 5.0  | 29.2   | 13.7                      | UT           | IT                  |
| SMAJ20(C)AQ   | 20                             | 22.2  | 24.5    | 1.0                                    | 5.0  | 32.4   | 12.3                      | UV           | IV                  |
| SMAJ22(C)AQ   | 22                             | 24.4  | 26.9    | 1.0                                    | 5.0  | 35.5   | 11.2                      | UX           | IX                  |
| SMAJ24(C)AQ   | 24                             | 26.7  | 29.5    | 1.0                                    | 5.0  | 38.9   | 10.3                      | UZ           | IZ                  |
| SMAJ26(C)AQ   | 26                             | 28.9  | 31.9    | 1.0                                    | 5.0  | 42.1   | 9.5                       | VE           | JE                  |
| SMAJ28(C)AQ   | 28                             | 31.1  | 34.4    | 1.0                                    | 5.0  | 45.4   | 8.8                       | VG           | JG                  |
| SMAJ30(C)AQ   | 30                             | 33.3  | 36.8    | 1.0                                    | 5.0  | 48.4   | 8.3                       | VK           | JK                  |
| SMAJ33(C)AQ   | 33                             | 36.7  | 40.6    | 1.0                                    | 5.0  | 53.3   | 7.5                       | VM           | JM                  |
| SMAJ36(C)AQ   | 36                             | 40.0  | 44.2    | 1.0                                    | 5.0  | 58.1   | 6.9                       | VP           | JP                  |
| SMAJ40(C)AQ   | 40                             | 44.4  | 49.1    | 1.0                                    | 5.0  | 64.5   | 6.2                       | VR           | JR                  |
| SMAJ43(C)AQ   | 43                             | 47.8  | 52.8    | 1.0                                    | 5.0  | 69.4   | 5.7                       | VT           | JT                  |
| SMAJ48(C)AQ   | 48                             | 53.3  | 58.9    | 1.0                                    | 5.0  | 77.4   | 5.2                       | VX           | JX                  |
| SMAJ51(C)AQ   | 51                             | 56.7  | 62.7    | 1.0                                    | 5.0  | 82.4   | 4.9                       | VZ           | JZ                  |
| SMAJ54(C)AQ   | 54                             | 60.0  | 66.3    | 1.0                                    | 5.0  | 87.1   | 4.6                       | WE           | RE                  |
| SMAJ58(C)AQ   | 58                             | 64.4  | 71.2    | 1.0                                    | 5.0  | 93.6   | 4.3                       | WG           | RG                  |
| SMAJ60(C)AQ   | 60                             | 66.7  | 73.7    | 1.0                                    | 5.0  | 96.8   | 4.1                       | WK           | RK                  |
| SMAJ64(C)AQ   | 64                             | 71.1  | 78.6    | 1.0                                    | 5.0  | 103  | 3.9                       | WM           | RM                  |
| SMAJ70(C)AQ   | 70                             | 77.8  | 86.0    | 1.0                                    | 5.0  | 113  | 3.5                       | WP           | RP                  |
| SMAJ75(C)AQ   | 75                             | 83.3  | 92.1    | 1.0                                    | 5.0  | 121  | 3.3                       | WR           | RR                  |
| SMAJ78(C)AQ   | 78                             | 86.7  | 95.8    | 1.0                                    | 5.0  | 126  | 3.2                       | WT           | RT                  |
| SMAJ85(C)AQ   | 85                             | 94.4  | 104     | 1.0                                    | 5.0  | 137  | 2.9                       | WV           | RV                  |
| SMAJ90(C)AQ   | 90                             | 100   | 111     | 1.0                                    | 5.0  | 146  | 2.7                       | WX           | RX                  |
| SMAJ100(C)AQ  | 100                            | 111   | 123     | 1.0                                    | 5.0  | 162  | 2.5                       | WZ           | RZ                  |
| SMAJ110(C)AQ  | 110                            | 122   | 135     | 1.0                                    | 5.0  | 177  | 2.3                       | XE           | SE                  |
| SMAJ120(C)AQ  | 120                            | 133   | 147     | 1.0                                    | 5.0  | 193  | 2.0                       | XG           | SG                  |
| SMAJ130(C)AQ  | 130                            | 144   | 159     | 1.0                                    | 5.0  | 209  | 1.9                       | XK           | SK                  |
| SMAJ150(C)AQ  | 150                            | 167   | 185     | 1.0                                    | 5.0  | 243  | 1.6                       | XM           | SM                  |
| SMAJ160(C)AQ  | 160                            | 178   | 197     | 1.0                                    | 5.0  | 259  | 1.5                       | XP           | SP                  |
| SMAJ170(C)AQ  | 170                            | 189   | 209     | 1.0                                    | 5.0  | 275  | 1.4                       | XR           | SR                  |
| SMAJ200(C)AQ  | 200                            | 224   | 248     | 1.0                                    | 1.0  | 324  | 1.2                       | YT           | ST                  |

- Notes:
9. Suffix C denotes bidirectional devices.
  10. V<sub>BR</sub> measured with I<sub>T</sub> current pulse = 10ms to 15ms.
  11. Per 10 × 1000μs waveform. See Figure 4.
  12. For bidirectional devices having V<sub>RWM</sub> of 10V and under, the I<sub>R</sub> is doubled.



Figure 1. Pulse Derating Curve

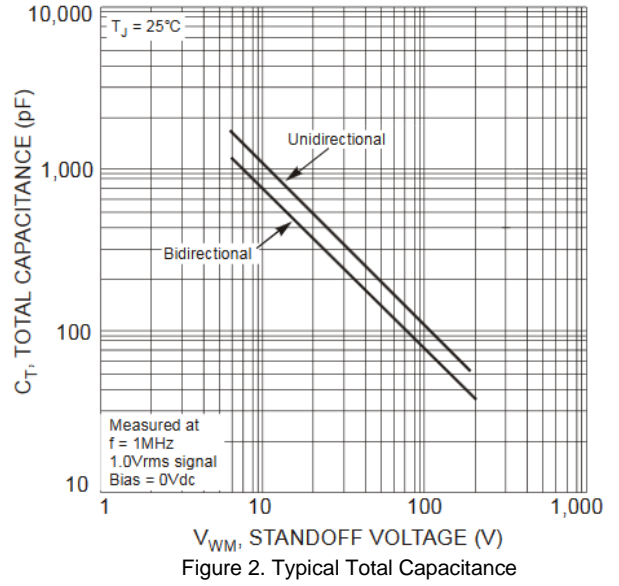


Figure 2. Typical Total Capacitance



Figure 3. Pulse Rating Curve



Figure 4. Pulse Waveform



Figure 5. Maximum Non-Repetitive Surge Current



Figure 6. Steady-State Power Derating Curve

**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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