

Description

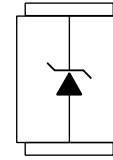
The SMAJ Series are designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Notes;

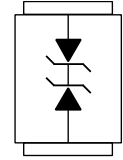
Unidirectional:SMAJxxA

Bidirectional:SMAJxxCA

Unidirectional



Bidirectional


Feature

- Halogen-Free
- RoHS compliant
- For surface mounted application to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Plastic material has UL flammability classification 94 V-0
- Low inductance
- Excellent clamping capability
- Fast response time: typical less than 1.0 ps from 0V to V_{BR} min
- 400W peak pulse power capability at $10^*1000\mu s$ waveform, repetition rate (duty cycle): 0.01%

Applications

TVS device are ideal for the protection of I/O interfaces, V_{CC} bus and other vulnerable circuits used in telecom, computer industrial and consumer electronic application

Absolute maximum rating@25°C

| Rating | Symbol | Value | Units |
|--|----------------|-------------|-------|
| Peak Pulse Power ($t_p=10/1000\mu s$) | P_{PP} | 400 | W |
| Peak Forward Surge Current,8.3ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) | I_{FSM} | 40 | A |
| Instantaneous Forward Voltage @ $I_{PP}=35A$ $V_{BR}<100V$ $V_{BR}\geq 100V$ | V_F | 3.5 5.0 | V |
| Operating and Storage Temperature | T_J, T_{STG} | -55 to +150 | °C |

Electrical characteristics per line@25°C (unless otherwise specified)

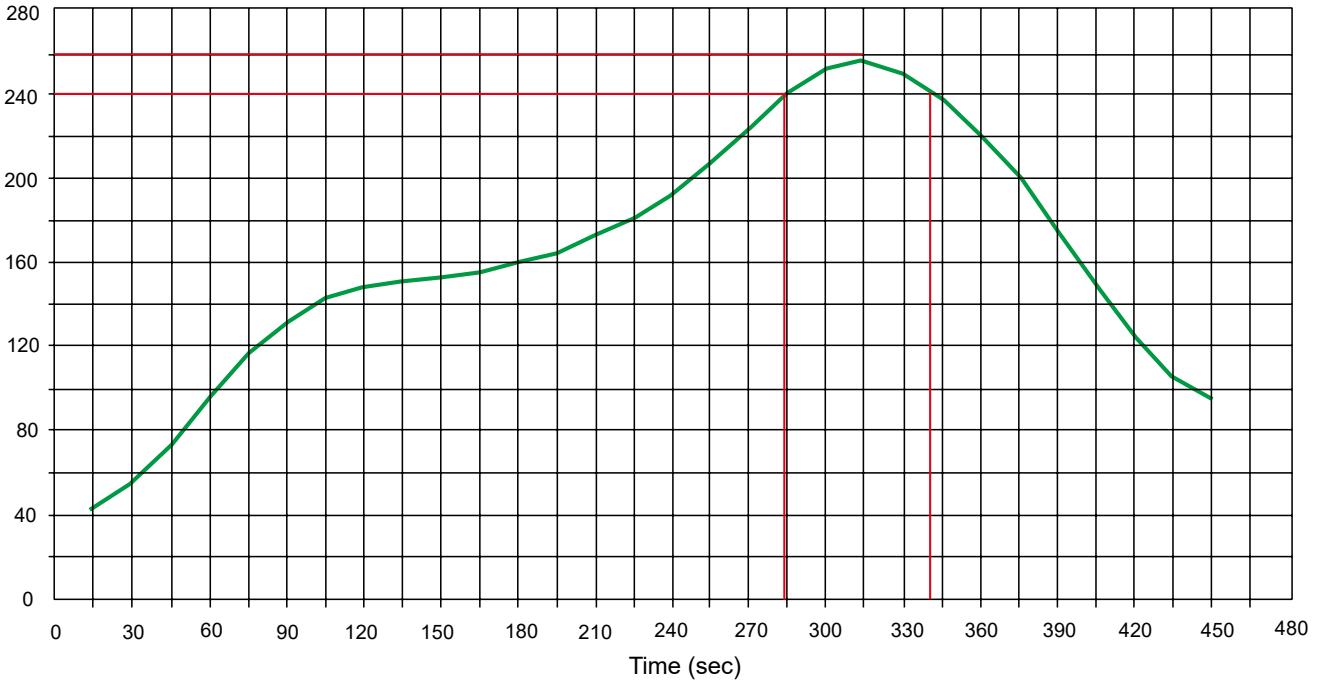
| Part Number (Uni) | Part Number (Bi) | Reverse Stand off Voltage V_R (V) | Breakdown Voltage $V_{BR}@I_T$ (V) | | Test Current I_T (mA) | Maximum Clamping Voltage $V_C @I_{PP}$ | Maximum Peak Pulse Current I_{PP} | Maximum Reverse Leakage $I_R @ V_R$ (μA) |
|-------------------|------------------|-------------------------------------|------------------------------------|-------|-------------------------|--|-------------------------------------|---|
| | | | MIN | MAX | | | | |
| SMAJ5.0A | SMAJ5.0CA | 5.0 | 6.40 | 7.00 | 10 | 9.2 | 43.5 | 800 |
| SMAJ6.0A | SMAJ6.0CA | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 38.8 | 800 |
| SMAJ6.5A | SMAJ6.5CA | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 35.7 | 500 |
| SMAJ7.0A | SMAJ7.0CA | 7.0 | 7.78 | 8.60 | 10 | 12.0 | 33.3 | 200 |
| SMAJ7.5A | SMAJ7.5CA | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 31.0 | 100 |
| SMAJ8.0A | SMAJ8.0CA | 8.0 | 8.89 | 9.83 | 1 | 13.6 | 29.4 | 50 |
| SMAJ8.5A | SMAJ8.5CA | 8.5 | 9.44 | 10.40 | 1 | 14.4 | 27.8 | 20 |
| SMAJ9.0A | SMAJ9.0CA | 9.0 | 10.00 | 11.10 | 1 | 15.4 | 26.0 | 10 |
| SMAJ10A | SMAJ10CA | 10.0 | 11.10 | 12.30 | 1 | 17.0 | 23.5 | 5 |
| SMAJ11A | SMAJ11CA | 11.0 | 12.20 | 13.50 | 1 | 18.2 | 22.0 | 1 |
| SMAJ12A | SMAJ12CA | 12.0 | 13.30 | 14.70 | 1 | 19.9 | 20.1 | 1 |
| SMAJ13A | SMAJ13CA | 13.0 | 14.40 | 15.90 | 1 | 21.5 | 18.6 | 1 |
| SMAJ14A | SMAJ14CA | 14.0 | 15.60 | 17.20 | 1 | 23.2 | 17.2 | 1 |
| SMAJ15A | SMAJ15CA | 15.0 | 16.70 | 18.50 | 1 | 24.4 | 16.4 | 1 |
| SMAJ16A | SMAJ16CA | 16.0 | 17.80 | 19.70 | 1 | 26.0 | 15.4 | 1 |
| SMAJ17A | SMAJ17CA | 17.0 | 18.90 | 20.90 | 1 | 27.6 | 14.5 | 1 |
| SMAJ18A | SMAJ18CA | 18.0 | 20.00 | 22.10 | 1 | 29.2 | 13.7 | 1 |
| SMAJ20A | SMAJ20CA | 20.0 | 22.20 | 24.50 | 1 | 32.4 | 12.3 | 1 |
| SMAJ22A | SMAJ22CA | 22.0 | 24.40 | 26.90 | 1 | 35.5 | 11.3 | 1 |
| SMAJ24A | SMAJ24CA | 24.0 | 26.70 | 29.50 | 1 | 38.9 | 10.3 | 1 |
| SMAJ26A | SMAJ26CA | 26.0 | 28.90 | 31.90 | 1 | 42.1 | 9.5 | 1 |
| SMAJ28A | SMAJ28CA | 28.0 | 31.10 | 34.40 | 1 | 45.4 | 8.8 | 1 |
| SMAJ30A | SMAJ30CA | 30.0 | 33.30 | 36.80 | 1 | 48.4 | 8.3 | 1 |
| SMAJ33A | SMAJ33CA | 33.0 | 36.70 | 40.60 | 1 | 53.3 | 7.5 | 1 |
| SMAJ36A | SMAJ36CA | 36.0 | 40.00 | 44.20 | 1 | 58.1 | 6.9 | 1 |
| SMAJ40A | SMAJ40CA | 40.0 | 44.40 | 49.10 | 1 | 64.5 | 6.2 | 1 |
| SMAJ43A | SMAJ43CA | 43.0 | 47.80 | 52.80 | 1 | 69.4 | 5.8 | 1 |
| SMAJ45A | SMAJ45CA | 45.0 | 50.00 | 55.30 | 1 | 72.7 | 5.5 | 1 |

| Part Number (Uni) | Part Number (Bi) | Reverse Stand off Voltage V_R (V) | Breakdown Voltage $V_{BR}@ I_T$ (V) | | Test Current I_T (mA) | Maximum Clamping Voltage $V_C @ I_{PP}$ | Maximum Peak Pulse Current I_{PP} | Maximum Reverse Leakage $I_R @ V_R$ (μA) |
|-------------------|------------------|-------------------------------------|-------------------------------------|--------|-------------------------|---|-------------------------------------|---|
| | | | MIN | MAX | | | | |
| SMAJ48A | SMAJ48CA | 48.0 | 53.30 | 58.90 | 1 | 77.4 | 5.2 | 1 |
| SMAJ51A | SMAJ51CA | 51.0 | 56.70 | 62.70 | 1 | 82.4 | 4.9 | 1 |
| SMAJ54A | SMAJ54CA | 54.0 | 60.00 | 66.30 | 1 | 87.1 | 4.6 | 1 |
| SMAJ58A | SMAJ58CA | 58.0 | 64.40 | 71.20 | 1 | 93.6 | 4.3 | 1 |
| SMAJ60A | SMAJ60CA | 60.0 | 66.70 | 73.70 | 1 | 96.8 | 4.1 | 1 |
| SMAJ64A | SMAJ64CA | 64.0 | 71.10 | 78.60 | 1 | 103.0 | 3.9 | 1 |
| SMAJ70A | SMAJ70CA | 70.0 | 77.80 | 86.00 | 1 | 113.0 | 3.5 | 1 |
| SMAJ75A | SMAJ75CA | 75.0 | 83.30 | 92.10 | 1 | 121.0 | 3.3 | 1 |
| SMAJ78A | SMAJ78CA | 78.0 | 86.70 | 95.80 | 1 | 126.0 | 3.2 | 1 |
| SMAJ85A | SMAJ85CA | 85.0 | 94.40 | 104.00 | 1 | 137.0 | 2.9 | 1 |
| SMAJ90A | SMAJ90CA | 90.0 | 100.00 | 111.00 | 1 | 146.0 | 2.7 | 1 |
| SMAJ100A | SMAJ100CA | 100.0 | 111.00 | 123.00 | 1 | 162.0 | 2.5 | 1 |
| SMAJ110A | SMAJ110CA | 110.0 | 122.00 | 135.00 | 1 | 177.0 | 2.3 | 1 |
| SMAJ120A | SMAJ120CA | 120.0 | 133.00 | 147.00 | 1 | 193.0 | 2.1 | 1 |
| SMAJ130A | SMAJ130CA | 130.0 | 144.00 | 159.00 | 1 | 209.0 | 1.9 | 1 |
| SMAJ150A | SMAJ150CA | 150.0 | 167.00 | 185.00 | 1 | 243.0 | 1.6 | 1 |
| SMAJ160A | SMAJ160CA | 160.0 | 178.00 | 197.00 | 1 | 259.0 | 1.5 | 1 |
| SMAJ170A | SMAJ170CA | 170.0 | 189.00 | 209.00 | 1 | 275.0 | 1.5 | 1 |
| SMAJ180A | SMAJ180CA | 180.0 | 201.00 | 222.00 | 1 | 292.0 | 1.4 | 1 |
| SMAJ200A | SMAJ200CA | 200.0 | 224.00 | 247.00 | 1 | 324.0 | 1.2 | 1 |
| SMAJ220A | SMAJ220A | 220.0 | 246.00 | 272.00 | 1 | 356.0 | 1.1 | 1 |
| SMAJ250A | SMAJ250CA | 250.0 | 279.00 | 309.00 | 1 | 405.0 | 1.0 | 1 |
| SMAJ300A | SMAJ300CA | 300.0 | 335.00 | 371.00 | 1 | 486.0 | 0.8 | 1 |
| SMAJ350A | SMAJ350CA | 350.0 | 391.00 | 432.00 | 1 | 567.0 | 0.7 | 1 |
| SMAJ400A | SMAJ400CA | 400.0 | 447.00 | 494.00 | 1 | 648.0 | 0.6 | 1 |
| SMAJ440A | SMAJ440CA | 440.0 | 492.00 | 543.00 | 1 | 713.0 | 0.6 | 1 |

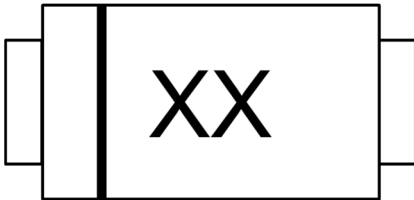
For bidirectional type having V_{RWM} of 10 volts and less, the I_R limit is double.

Solder Reflow Recommendation

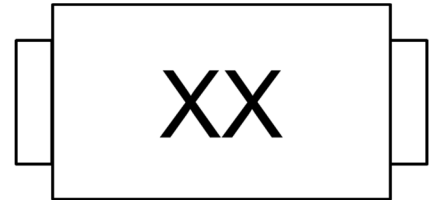
Peak Temp=257°C, Ramp Rate=0.802deg. °C/sec



Marking information



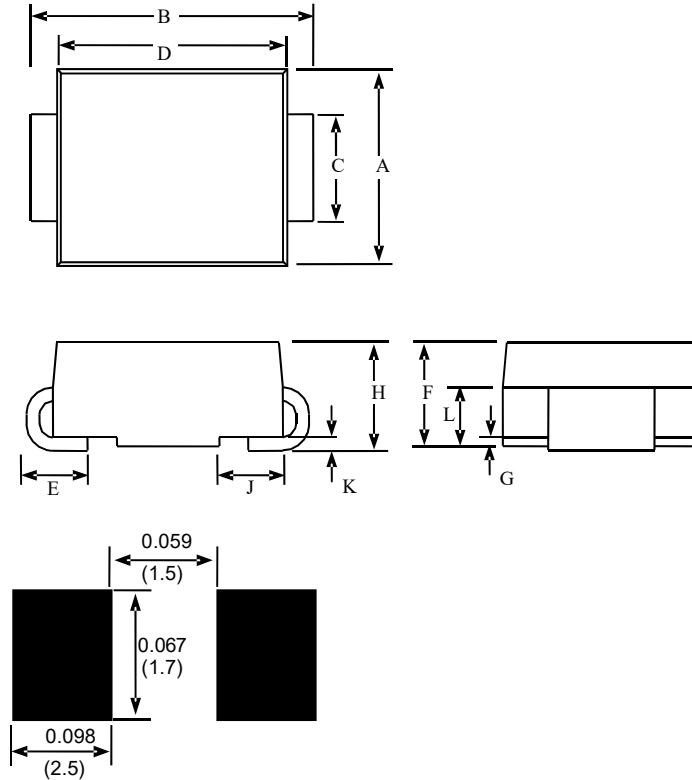
Unidirectional



Bidirection

Notes: X represents 0~9, A~Z any character

Product dimension(SMA)



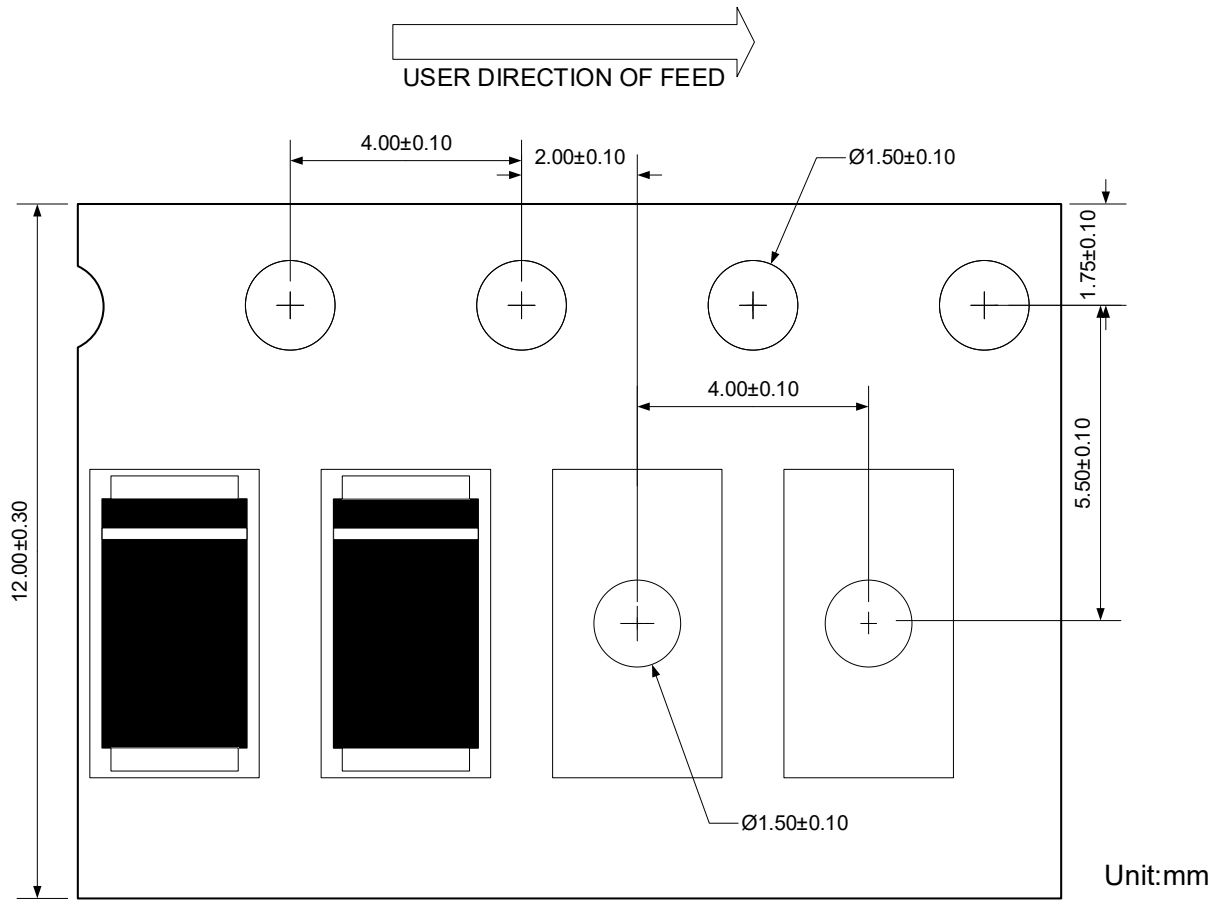
DIMENSIONS ARE : $\frac{\text{INCHES}}{\text{(Millimeters)}}$

| Dimension | Inches | | Millimeters | |
|-----------|--------|------|-------------|-----|
| | MIN | MAX | MIN | MAX |
| A | 0.08 | 0.11 | 2.1 | 2.7 |
| B | 0.18 | 0.20 | 4.7 | 5.3 |
| C | 0.05 | 0.06 | 1.2 | 1.7 |
| D | 0.16 | 0.18 | 4.0 | 4.5 |
| E | 0.03 | 0.05 | 0.9 | 1.4 |
| F | 0.06 | 0.08 | 1.7 | 2.2 |
| G | 0.00 | 0.00 | 0.0 | 0.2 |
| H | 0.06 | 0.09 | 1.7 | 2.3 |
| J | 0.03 | 0.05 | 0.8 | 1.3 |
| K | 0.00 | 0.01 | 0.2 | 0.3 |
| L | 0.03 | 0.04 | 0.9 | 1.2 |


Ordering information

| Device | Package | Shipping |
|-------------|---------------|--------------------|
| SMAJ Series | SMA (Pb-Free) | 2000 / Tape & Reel |

Load with information




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