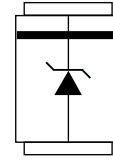


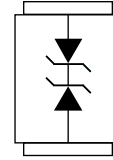
Description

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

Unidirectional



Bidirectional



Feature

- Halogen-Free
- RoHS compliant
- For surface mounted application to optimize board space
- Low profile package
- Built-in strain relief
- Typical maximum temperature coefficient
 $\Delta V_{BR} = 0.1\% \times V_{BR@25^\circ C} \times \Delta T$
- Glass passivated chip junction
- 1500W peak pulse power capability at 10×1000μs waveform, repetition rate(duty cycles):0.01%
- Fast response time: typically less than 1.0ps from 0V to V_R min
- Excellent clamping capability
- Low incremental surge resistance
- High temperature soldering guaranteed:260°C/40 seconds at terminals

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

Maximum Ratings and Thermal Characteristics($T_A=25^\circ C$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------|------|
| Peak Pulse Power Dissipation at $T_A=25^\circ C$ by 10*1000μs waveform(Fig.1) (Note 1),(Note 2) | P_{PPM} | 1500 | W |
| Power Dissipation on infinite heat sink at $T_A=50^\circ C$ | $P_{M(AV)}$ | 6.5 | W |
| Peak Forward Surge Current,8.3ms Single Half Sine Wave (Note 3) | I_{FSM} | 200 | A |
| Maximum Instantaneous Forward Voltage at 100A for Unidirectional only (Note 4) | V_F | 3.5/5.0 | V |
| Operation Junction and Storage Temperature Range | T_J, T_{STG} | -65 to 150 | °C |
| Typical Thermal Resistance Junction to Lead | $R_{\theta JL}$ | 15 | °C/W |
| Typical Thermal Resistance Junction to Ambient | $R_{\theta JA}$ | 75 | °C/W |

Notes:

1. Non-repetitive current pulse , per Fig. 3 and derated above $T_A=50^\circ C$ per Fig. 2.
2. Mounted on copper pad area of 0.31*0.33" (8.0*8.0mm) to each terminal.
3. Measured on 8.3ms single half sine wace or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.
4. $V_F < 3.5V$ for $V_{BR} \leq 200V$ and $V_F < 5.0V$ for $V_{BR} \geq 201V$.

Electrical characteristics

| 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 $V_C @ I_{PP}$ (V) | Maximum Peak Pulse Current I_{PP} (A) | Maximum Reverse Leakage $I_R @ V_R$ (μ A) |
|-------------------|------------------|-------------------------------------|--------------------------------------|-------|-------------------------|---|---|--|
| | | | MIN | MAX | | | | |
| SMCJ5.0A | SMCJ5.0CA | 5.0 | 6.40 | 7.00 | 10 | 9.2 | 163.0 | 800 |
| SMCJ6.0A | SMCJ6.0CA | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 145.7 | 800 |
| SMCJ6.5A | SMCJ6.5CA | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 134.0 | 500 |
| SMCJ7.0A | SMCJ7.0CA | 7.0 | 7.78 | 8.60 | 10 | 12.0 | 125.0 | 200 |
| SMCJ7.5A | SMCJ7.5CA | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 116.3 | 100 |
| SMCJ8.0A | SMCJ8.0CA | 8.0 | 8.89 | 9.83 | 1 | 13.6 | 110.3 | 50 |
| SMCJ8.5A | SMCJ8.5CA | 8.5 | 9.44 | 10.40 | 1 | 14.4 | 104.2 | 20 |
| SMCJ9.0A | SMCJ9.0CA | 9.0 | 10.00 | 11.10 | 1 | 15.4 | 97.4 | 10 |
| SMCJ10A | SMCJ10CA | 10.0 | 11.10 | 12.30 | 1 | 17.0 | 88.3 | 5 |
| SMCJ11A | SMCJ11CA | 11.0 | 12.20 | 13.50 | 1 | 18.2 | 82.5 | 1 |
| SMCJ12A | SMCJ12CA | 12.0 | 13.30 | 14.70 | 1 | 19.9 | 75.4 | 5 |
| SMCJ13A | SMCJ13CA | 13.0 | 14.40 | 15.90 | 1 | 21.5 | 69.8 | 1 |
| SMCJ14A | SMCJ14CA | 14.0 | 15.60 | 17.20 | 1 | 23.2 | 64.7 | 1 |
| SMCJ15A | SMCJ15CA | 15.0 | 16.70 | 18.50 | 1 | 24.4 | 61.5 | 1 |
| SMCJ16A | SMCJ16CA | 16.0 | 17.80 | 19.70 | 1 | 26.0 | 57.7 | 1 |
| SMCJ17A | SMCJ17CA | 17.0 | 18.90 | 20.90 | 1 | 27.6 | 54.4 | 1 |
| SMCJ18A | SMCJ18CA | 18.0 | 20.00 | 22.10 | 1 | 29.2 | 51.4 | 1 |
| SMCJ20A | SMCJ20CA | 20.0 | 22.20 | 24.50 | 1 | 32.4 | 46.3 | 1 |
| SMCJ22A | SMCJ22CA | 22.0 | 24.40 | 26.90 | 1 | 35.5 | 42.3 | 1 |
| SMCJ24A | SMCJ24CA | 24.0 | 26.70 | 29.50 | 1 | 38.9 | 38.6 | 1 |
| SMCJ26A | SMCJ26CA | 26.0 | 28.90 | 31.90 | 1 | 42.1 | 35.7 | 1 |
| SMCJ28A | SMCJ28CA | 28.0 | 31.10 | 34.40 | 1 | 45.4 | 33.1 | 1 |
| SMCJ30A | SMCJ30CA | 30.0 | 33.30 | 36.80 | 1 | 48.4 | 31.0 | 1 |
| SMCJ33A | SMCJ33CA | 33.0 | 36.70 | 40.60 | 1 | 53.3 | 28.2 | 1 |
| SMCJ36A | SMCJ36CA | 36.0 | 40.00 | 44.20 | 1 | 58.1 | 25.9 | 1 |
| SMCJ40A | SMCJ40CA | 40.0 | 44.40 | 49.10 | 1 | 64.5 | 23.3 | 1 |
| SMCJ43A | SMCJ43CA | 43.0 | 47.80 | 52.80 | 1 | 69.40 | 21.7 | 1 |
| SMCJ45A | SMCJ45CA | 45.0 | 50.00 | 55.30 | 1 | 72.7 | 20.6 | 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 $V_C @ I_{PP}$ (V) | Maximum Peak Pulse Current I_{PP} (A) | Maximum Reverse Leakage $I_R @ V_R$ (μ A) |
|-------------------|------------------|-------------------------------------|--------------------------------------|--------|-------------------------|---|---|--|
| | | | MIN | MAX | | | | |
| SMCJ48A | SMCJ48CA | 48.0 | 53.30 | 58.90 | 1 | 77.4 | 19.4 | 1 |
| SMCJ51A | SMCJ51CA | 51.0 | 56.70 | 62.70 | 1 | 82.4 | 18.2 | 1 |
| SMCJ54A | SMCJ54CA | 54.0 | 60.00 | 66.30 | 1 | 87.1 | 17.3 | 1 |
| SMCJ58A | SMCJ58CA | 58.0 | 64.40 | 71.20 | 1 | 93.6 | 16.1 | 1 |
| SMCJ60A | SMCJ60CA | 60.0 | 66.70 | 73.70 | 1 | 96.8 | 15.5 | 1 |
| SMCJ64A | SMCJ64CA | 64.0 | 71.10 | 78.60 | 1 | 103.0 | 14.6 | 1 |
| SMCJ70A | SMCJ70CA | 70.0 | 77.80 | 86.00 | 1 | 113.0 | 13.3 | 1 |
| SMCJ75A | SMCJ75CA | 75.0 | 83.30 | 92.10 | 1 | 121.0 | 12.4 | 1 |
| SMCJ78A | SMCJ78CA | 78.0 | 86.70 | 95.80 | 1 | 126.0 | 11.9 | 1 |
| SMCJ85A | SMCJ85CA | 85.0 | 94.40 | 104.00 | 1 | 137.0 | 11.0 | 1 |
| SMCJ90A | SMCJ90CA | 90.0 | 100.00 | 111.00 | 1 | 146.0 | 10.3 | 1 |
| SMCJ100A | SMCJ100CA | 100.0 | 111.00 | 123.00 | 1 | 162.0 | 9.3 | 1 |
| SMCJ110A | SMCJ110CA | 110.0 | 122.00 | 135.00 | 1 | 177.0 | 8.5 | 1 |
| SMCJ120A | SMCJ120CA | 120.0 | 133.00 | 147.00 | 1 | 193.0 | 7.8 | 1 |
| SMCJ130A | SMCJ130CA | 130.0 | 144.00 | 159.00 | 1 | 209.0 | 7.2 | 1 |
| SMCJ150A | SMCJ150CA | 150.0 | 167.00 | 185.00 | 1 | 243.0 | 6.2 | 1 |
| SMCJ160A | SMCJ160CA | 160.0 | 178.00 | 197.00 | 1 | 259.0 | 5.8 | 1 |
| SMCJ170A | SMCJ170CA | 170.0 | 189.00 | 209.00 | 1 | 275.0 | 5.5 | 1 |
| SMCJ180A | SMCJ180CA | 180.0 | 201.00 | 222.00 | 1 | 292.0 | 5.1 | 1 |
| SMCJ200A | SMCJ200CA | 200.0 | 224.00 | 247.00 | 1 | 324.0 | 4.6 | 1 |
| SMCJ220A | SMCJ220A | 220.0 | 246.00 | 272.00 | 1 | 356.0 | 4.2 | 1 |
| SMCJ250A | SMCJ250CA | 250.0 | 279.00 | 309.00 | 1 | 405.0 | 3.7 | 1 |
| SMCJ300A | SMCJ300CA | 300.0 | 335.00 | 371.00 | 1 | 486.0 | 3.1 | 1 |
| SMCJ350A | SMCJ350CA | 350.0 | 391.00 | 432.00 | 1 | 567.0 | 2.6 | 1 |
| SMCJ400A | SMCJ400CA | 400.0 | 447.00 | 494.00 | 1 | 648.0 | 2.3 | 1 |
| SMCJ440A | SMCJ440CA | 440.0 | 492.00 | 543.00 | 1 | 713.0 | 2.1 | 1 |

For bidirectional type having V_R of 10 volts and less, the I_R limit is double.

For parts without A, the V_{BR} is $\pm 10\%$ and V_C is 5% higher than with A parts.

Ratings and Characteristic Curves $T_A=25^\circ\text{C}$ unless otherwise noted

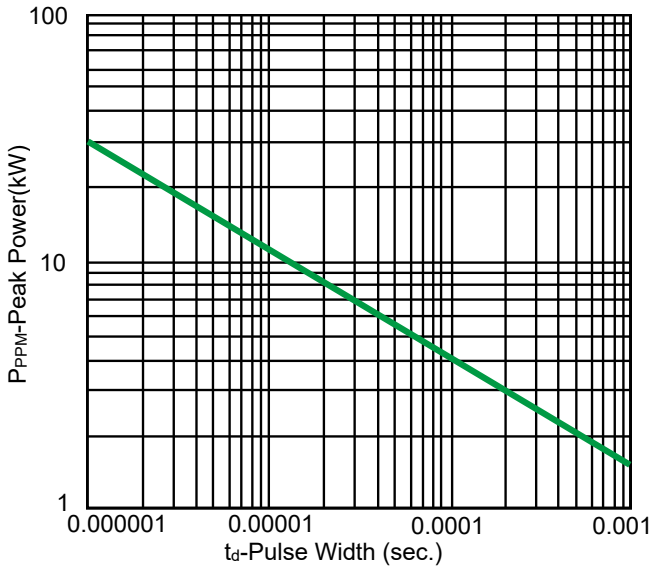


Figure 1-Peak Pulse Power Rating

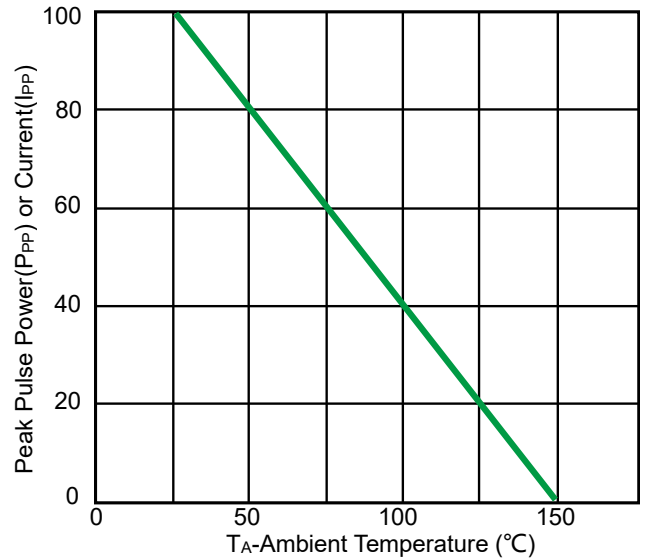


Figure 2-Pulse Derating Curve

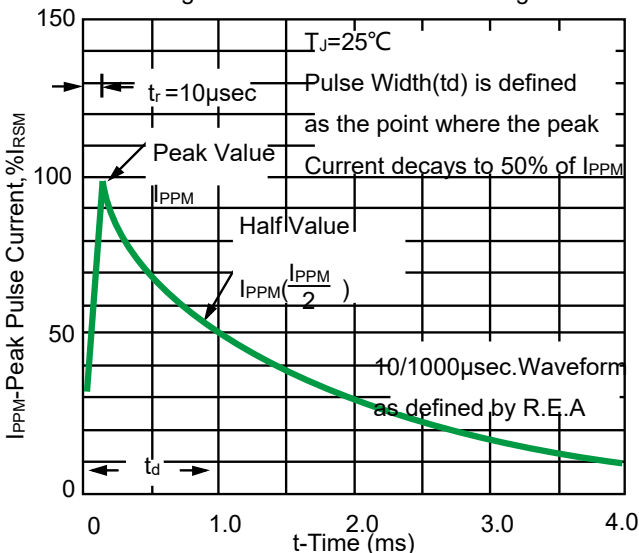


Figure 3-Pulse Waveform

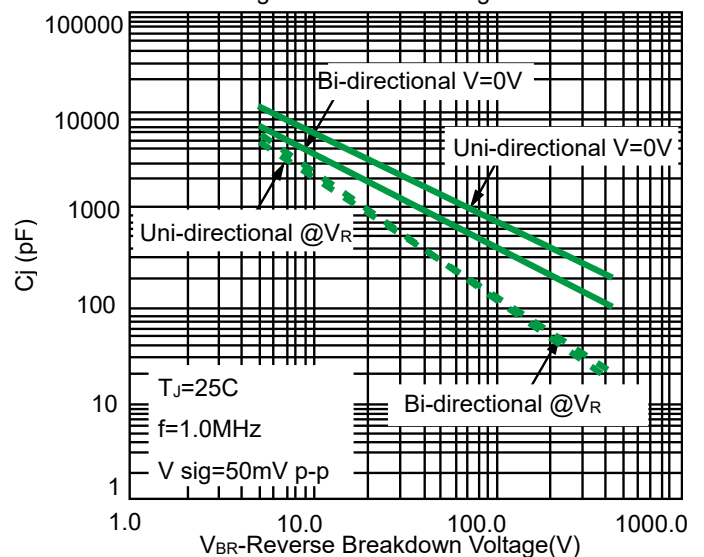


Figure 4-Typical Junction Capacitance

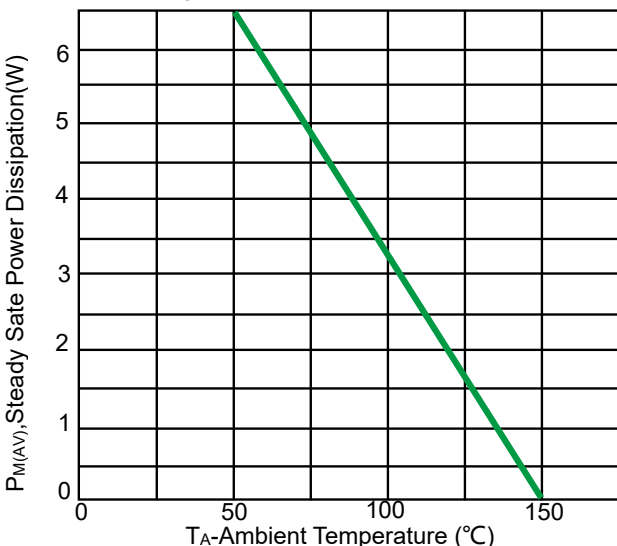


Figure 5-Steady State Power Dissipation Derating Curve

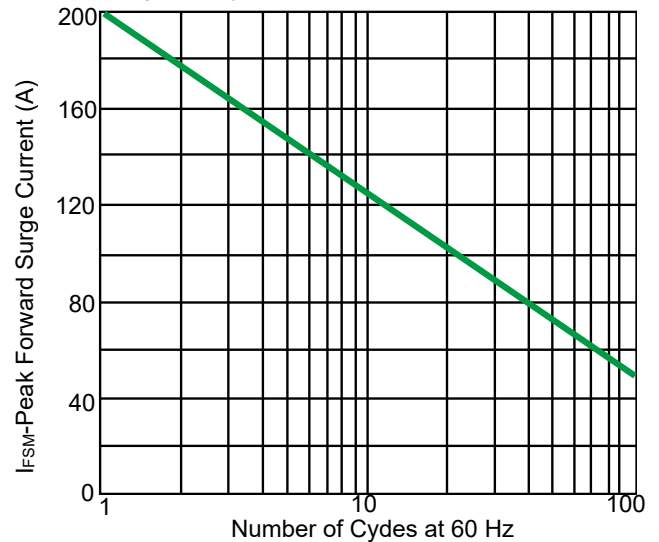
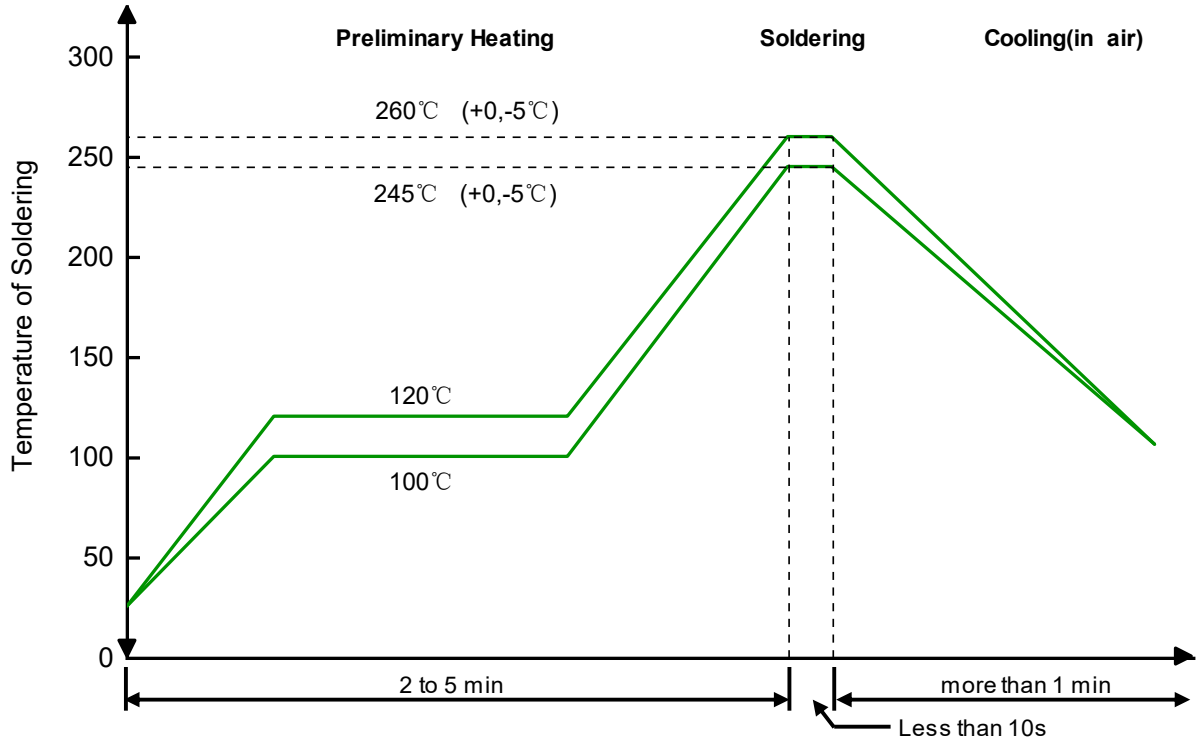


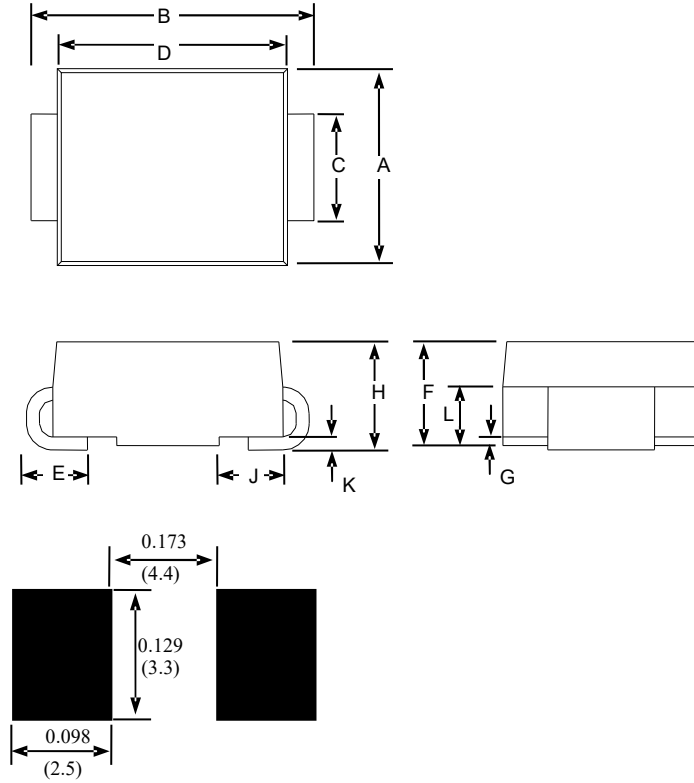
Figure 6-Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only

Solder Reflow Recommendation



Remark: Pb free for 260°C; Pb for 245°C.

Product dimension(SMC)



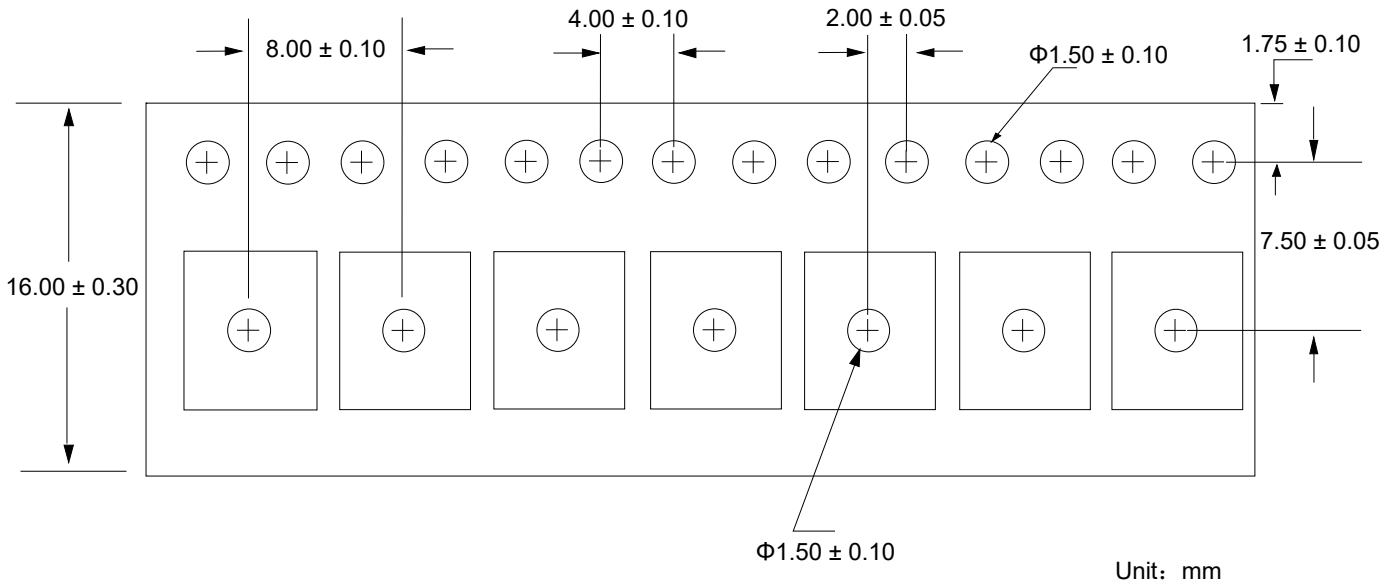
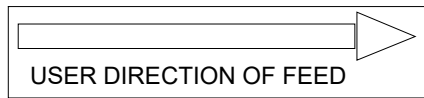
DIMENSIONS ARE : $\frac{\text{INCHES}}{\text{(Millimeters)}}$

| Dimension | Inches | | Millimeters | |
|-----------|--------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.220 | 0.245 | 5.590 | 6.220 |
| B | 0.305 | 0.320 | 7.750 | 8.130 |
| C | 0.114 | 0.126 | 2.900 | 3.200 |
| D | 0.260 | 0.280 | 6.600 | 7.110 |
| E | 0.030 | 0.060 | 0.760 | 1.520 |
| F | 0.079 | 0.103 | 2.060 | 2.620 |
| G | - | 0.008 | - | 0.203 |
| H | 0.079 | 0.103 | 2.060 | 2.620 |
| J | 0.030 | 0.060 | 0.760 | 1.520 |
| K | - | 0.008 | - | 0.203 |


Ordering information

| Device | Package | Reel | Shipping |
|-------------|---------------|------|-------------------|
| SMCJ Series | SMC (Pb-Free) | 7" | 500 / Tape & Reel |

Load with information




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