

### Features

- Peak power dissipation  
1500W@10 x 1000 us Pluse
- Low incremental surge resistance
- Excellent clamping capability
- Fast response time
- Low leakage current
- Halogen free and RoHS compliant

### Applications

- Personal digital assistants (PDA)
- Cellular handsets & Accessories
- Handhelds and notebooks
- Portable instrumentation

### Mechanical Characteristics

- DO-214AB(SMC) surface mount package

### Dimensions and Pin Configuration



**DO-214AB(SMC)**



**Pin Configuration**

### Maximum Ratings& Thermal Characteristics

(Tamb=25°C unless otherwise specified)

| Parameter                                              | Symbol                           | Value     | Unit |
|--------------------------------------------------------|----------------------------------|-----------|------|
| Peak pulse power (tp=10/1000μs waveform)               | P <sub>PPM</sub>                 | 1500      | W    |
| Steady state power dissipation at T <sub>A</sub> =50°C | P <sub>M(AV)</sub>               | 6.0       | W    |
| Peak Pulse Current of on 10/1000us Waveform            | I <sub>PPM</sub>                 | See Table | A    |
| Typical thermal resistance junction to ambient         | R <sub>θJA</sub>                 | 75        | °C/W |
| Storage & operating temperature range                  | T <sub>STG</sub> ,T <sub>J</sub> | -55~+150  | °C   |

### Electrical Characteristics (TA=25°C unless otherwise specified)

| PART NUMBER |           | Working Peak<br>Reverse Voltage<br><br>VRWM<br>(V) | Breakdown Voltage VBR @IT |          |         | Maximum Clamping<br>Voltage Vc (V)<br>@ IPP | Maximum Reverse<br>Surge Current<br>IPP (A)<br>@10 x 1000µs<br>sinewave | Maximum Reverse<br>Leakage IR (µA)<br>@VRWM |
|-------------|-----------|----------------------------------------------------|---------------------------|----------|---------|---------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------|
| UNI- POLAR  | BI-POLAR  |                                                    | Min. (V)                  | Max. (V) | IT (mA) |                                             |                                                                         |                                             |
| SMCJ5.0A    | SMCJ5.0CA | 5.0                                                | 6.40                      | 7.00     | 10      | 9.2                                         | 163.0                                                                   | 1000                                        |
| SMCJ6.0A    | SMCJ6.0CA | 6.0                                                | 6.67                      | 7.37     | 10      | 10.3                                        | 145.6                                                                   | 1000                                        |
| SMCJ6.5A    | SMCJ6.5CA | 6.5                                                | 7.22                      | 7.98     | 10      | 11.2                                        | 133.9                                                                   | 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                                                 | 11.10                     | 12.30    | 1       | 17.0                                        | 88.2                                                                    | 5                                           |
| SMCJ11A     | SMCJ11CA  | 11                                                 | 12.20                     | 13.50    | 1       | 18.2                                        | 82.4                                                                    | 5                                           |
| SMCJ12A     | SMCJ12CA  | 12                                                 | 13.30                     | 14.70    | 1       | 19.9                                        | 75.4                                                                    | 5                                           |
| SMCJ13A     | SMCJ13CA  | 13                                                 | 14.40                     | 15.90    | 1       | 21.5                                        | 69.8                                                                    | 5                                           |
| SMCJ14A     | SMCJ14CA  | 14                                                 | 15.60                     | 17.20    | 1       | 23.2                                        | 64.7                                                                    | 5                                           |
| SMCJ15A     | SMCJ15CA  | 15                                                 | 16.70                     | 18.50    | 1       | 24.4                                        | 61.5                                                                    | 5                                           |
| SMCJ16A     | SMCJ16CA  | 16                                                 | 17.80                     | 19.70    | 1       | 26.0                                        | 57.7                                                                    | 5                                           |
| SMCJ17A     | SMCJ17CA  | 17                                                 | 18.90                     | 20.90    | 1       | 27.6                                        | 54.3                                                                    | 5                                           |
| SMCJ18A     | SMCJ18CA  | 18                                                 | 20.00                     | 22.10    | 1       | 29.2                                        | 51.4                                                                    | 5                                           |
| SMCJ19A     | SMCJ19CA  | 19                                                 | 21.10                     | 23.30    | 1       | 30.8                                        | 48.7                                                                    | 5                                           |
| SMCJ20A     | SMCJ20CA  | 20                                                 | 22.20                     | 24.50    | 1       | 32.4                                        | 46.3                                                                    | 5                                           |
| SMCJ22A     | SMCJ22CA  | 22                                                 | 24.40                     | 26.90    | 1       | 35.5                                        | 42.3                                                                    | 5                                           |
| SMCJ24A     | SMCJ24CA  | 24                                                 | 26.70                     | 29.50    | 1       | 38.9                                        | 38.6                                                                    | 5                                           |
| SMCJ26A     | SMCJ26CA  | 26                                                 | 28.90                     | 31.90    | 1       | 42.1                                        | 35.6                                                                    | 5                                           |
| SMCJ28A     | SMCJ28CA  | 28                                                 | 31.10                     | 34.40    | 1       | 45.4                                        | 33.0                                                                    | 5                                           |
| SMCJ30A     | SMCJ30CA  | 30                                                 | 33.30                     | 36.80    | 1       | 48.4                                        | 31.0                                                                    | 5                                           |
| SMCJ33A     | SMCJ33CA  | 33                                                 | 36.70                     | 40.60    | 1       | 53.3                                        | 28.1                                                                    | 5                                           |
| SMCJ36A     | SMCJ36CA  | 36                                                 | 40.00                     | 44.20    | 1       | 58.1                                        | 25.8                                                                    | 5                                           |
| SMCJ40A     | SMCJ40CA  | 40                                                 | 44.40                     | 49.10    | 1       | 64.5                                        | 23.3                                                                    | 5                                           |
| SMCJ43A     | SMCJ43CA  | 43                                                 | 47.80                     | 52.80    | 1       | 69.4                                        | 21.6                                                                    | 5                                           |
| SMCJ45A     | SMCJ45CA  | 45                                                 | 50.00                     | 55.30    | 1       | 72.7                                        | 20.6                                                                    | 5                                           |
| SMCJ48A     | SMCJ48CA  | 48                                                 | 53.30                     | 58.90    | 1       | 77.4                                        | 19.4                                                                    | 5                                           |
| SMCJ51A     | SMCJ51CA  | 51                                                 | 56.70                     | 62.70    | 1       | 82.4                                        | 18.2                                                                    | 5                                           |
| SMCJ54A     | SMCJ54CA  | 54                                                 | 60.00                     | 66.30    | 1       | 87.1                                        | 17.2                                                                    | 5                                           |

### Electrical Characteristics (TA=25°C unless otherwise specified)

| PART NUMBER |           | Working Peak<br>Reverse<br>Voltage V <sub>RWM</sub><br>(V) | Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub> |          |                     | Maximum<br>Clamping<br>Voltage V <sub>C</sub> (V)<br>@ I <sub>PP</sub> | Maximum Reverse<br>Surge Current<br>I <sub>PP</sub> (A)<br>@ 10 x 1000μs<br>sinewave | Maximum<br>Reverse Leakage<br>I <sub>R</sub> (μA) @ V <sub>RWM</sub> |
|-------------|-----------|------------------------------------------------------------|----------------------------------------------------|----------|---------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| UNI- POLAR  | BI-POLAR  |                                                            | Min. (V)                                           | Max. (V) | I <sub>T</sub> (mA) |                                                                        |                                                                                      |                                                                      |
| SMCJ58A     | SMCJ58CA  | 58                                                         | 64.40                                              | 71.20    | 1                   | 93.6                                                                   | 16.0                                                                                 | 5                                                                    |
| SMCJ60A     | SMCJ60CA  | 60                                                         | 66.70                                              | 73.70    | 1                   | 96.8                                                                   | 15.5                                                                                 | 5                                                                    |
| SMCJ64A     | SMCJ64CA  | 64                                                         | 71.10                                              | 78.60    | 1                   | 103                                                                    | 14.6                                                                                 | 5                                                                    |
| SMCJ70A     | SMCJ70CA  | 70                                                         | 77.80                                              | 86.00    | 1                   | 113                                                                    | 13.3                                                                                 | 5                                                                    |
| SMCJ75A     | SMCJ75CA  | 75                                                         | 83.30                                              | 92.10    | 1                   | 121                                                                    | 12.4                                                                                 | 5                                                                    |
| SMCJ78A     | SMCJ78CA  | 78                                                         | 86.70                                              | 95.80    | 1                   | 126                                                                    | 11.9                                                                                 | 5                                                                    |
| SMCJ80A     | SMCJ80CA  | 80                                                         | 88.80                                              | 97.60    | 1                   | 130                                                                    | 11.6                                                                                 | 5                                                                    |
| SMCJ85A     | SMCJ85CA  | 85                                                         | 94.40                                              | 104      | 1                   | 137                                                                    | 10.9                                                                                 | 5                                                                    |
| SMCJ90A     | SMCJ90CA  | 90                                                         | 100                                                | 111      | 1                   | 146                                                                    | 10.3                                                                                 | 5                                                                    |
| SMCJ120A    | SMCJ120CA | 120                                                        | 133                                                | 147      | 1                   | 193                                                                    | 7.8                                                                                  | 5                                                                    |
| SMCJ130A    | SMCJ130CA | 130                                                        | 144                                                | 159      | 1                   | 209                                                                    | 7.2                                                                                  | 5                                                                    |
| SMCJ140A    | SMCJ140CA | 140                                                        | 155                                                | 171      | 1                   | 227                                                                    | 6.6                                                                                  | 5                                                                    |
| SMCJ150A    | SMCJ150CA | 150                                                        | 167                                                | 185      | 1                   | 243                                                                    | 6.2                                                                                  | 5                                                                    |
| SMCJ160A    | SMCJ160CA | 160                                                        | 178                                                | 197      | 1                   | 259                                                                    | 5.8                                                                                  | 5                                                                    |
| SMCJ170A    | SMCJ170CA | 170                                                        | 189                                                | 209      | 1                   | 275                                                                    | 5.5                                                                                  | 5                                                                    |
| SMCJ180A    | SMCJ180CA | 180                                                        | 200                                                | 220      | 1                   | 291                                                                    | 5.1                                                                                  | 5                                                                    |
| SMCJ190A    | SMCJ190CA | 190                                                        | 211                                                | 232      | 1                   | 308                                                                    | 4.9                                                                                  | 5                                                                    |
| SMCJ200A    | SMCJ200CA | 200                                                        | 224                                                | 247      | 1                   | 324                                                                    | 4.6                                                                                  | 5                                                                    |
| SMCJ220A    | SMCJ220CA | 220                                                        | 246                                                | 272      | 1                   | 356                                                                    | 4.2                                                                                  | 5                                                                    |
| SMCJ250A    | SMCJ250CA | 250                                                        | 279                                                | 309      | 1                   | 405                                                                    | 3.7                                                                                  | 5                                                                    |
| SMCJ300A    | SMCJ300CA | 300                                                        | 335                                                | 371      | 1                   | 486                                                                    | 3.1                                                                                  | 5                                                                    |
| SMCJ350A    | SMCJ350CA | 350                                                        | 391                                                | 432      | 1                   | 567                                                                    | 2.6                                                                                  | 5                                                                    |
| SMCJ400A    | SMCJ400CA | 400                                                        | 447                                                | 494      | 1                   | 648                                                                    | 2.3                                                                                  | 5                                                                    |
| SMCJ440A    | SMCJ440CA | 440                                                        | 492                                                | 543      | 1                   | 713                                                                    | 2.1                                                                                  | 5                                                                    |

For bi-directional type having V<sub>RWM</sub> of 10 Volts and less, the I<sub>R</sub> limit is double.

For parts without A, the V<sub>BR</sub> is +10%.

### Typical Characteristics Curves

FIG. 1 - PULSE DERATING CURVE

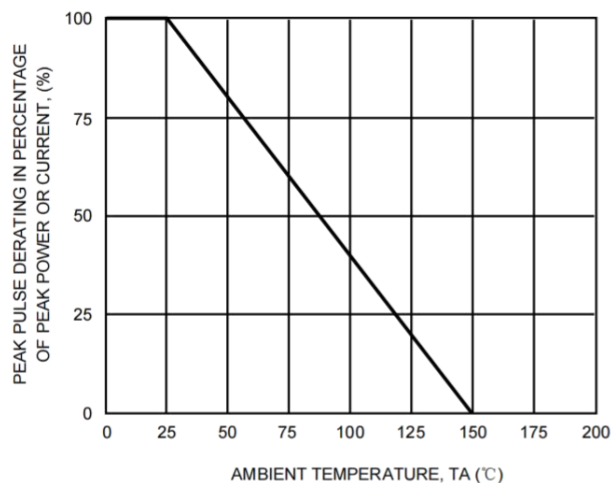


FIG. 2 - MAXIMUM NON-REPETITIVE

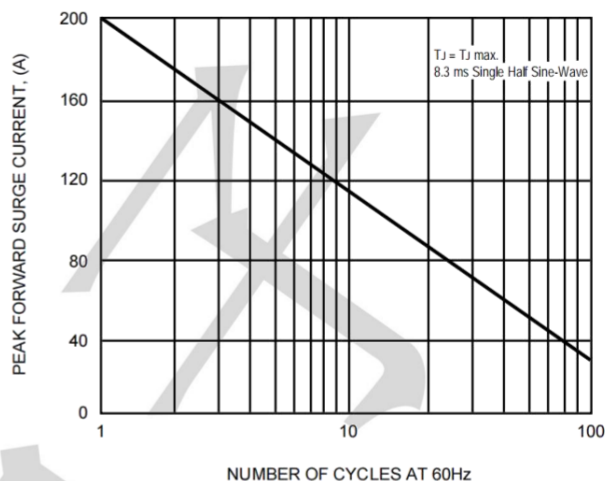


FIG. 3 - STEADY STATE POWER DERATING CURVE

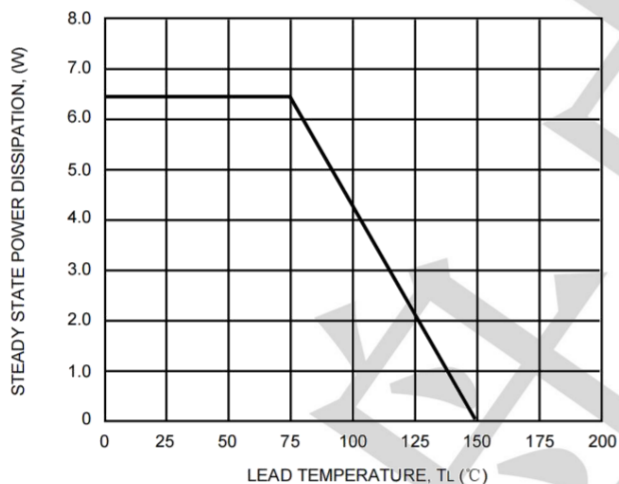


FIG. 4 - PEAK PULSE POWER RATING CURVE

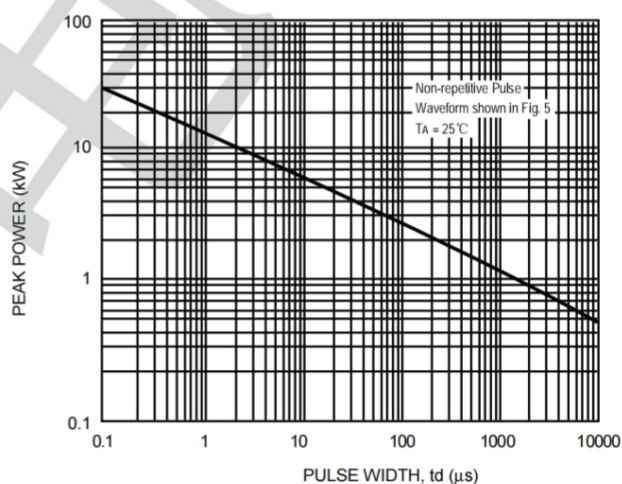
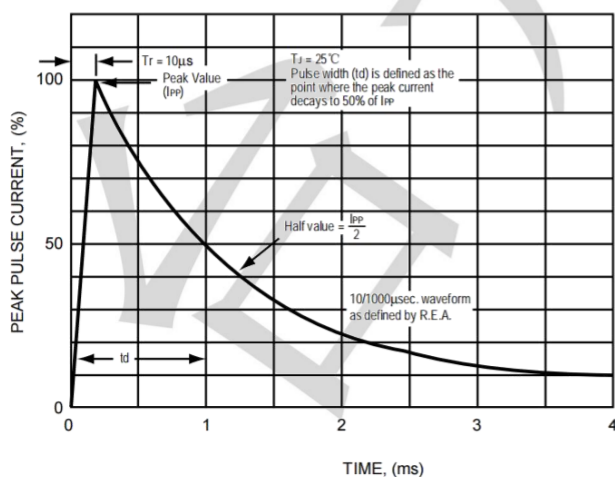
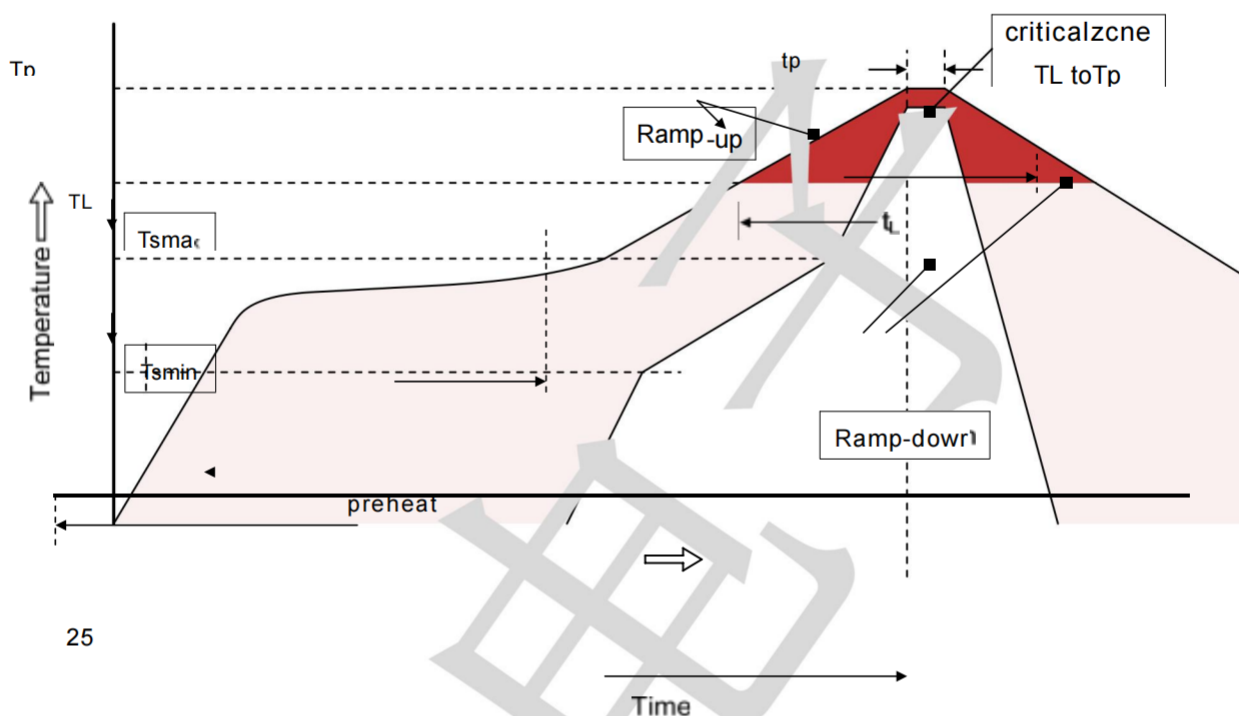


FIG. 5 - PULSE WAVEFORM



### Recommended Soldering Conditions

#### Reflow Soldering

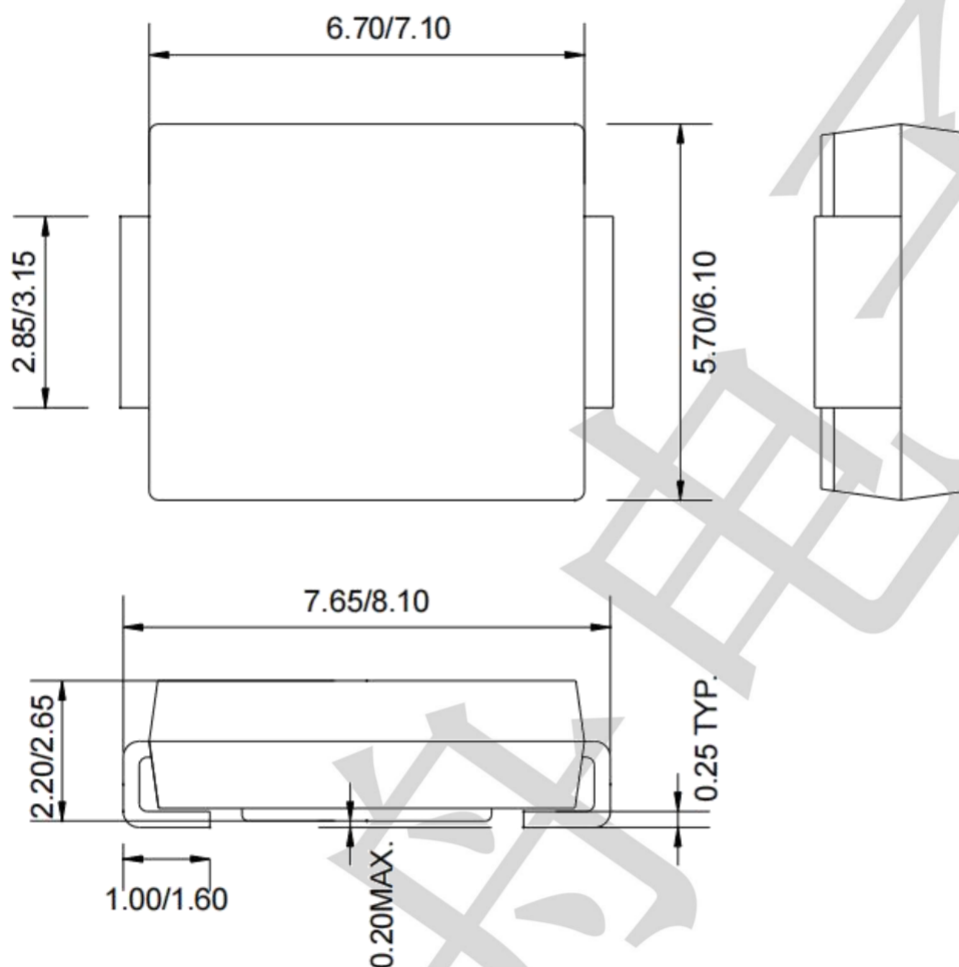


#### Recommended Conditions

| Profile Feature                                                                                                                                                                                     | Pb-Free Assembly                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Average ramp-up rate ( $T_L$ to $T_P$ )                                                                                                                                                             | 3°C/second max.                  |
| Preheat <ul style="list-style-type: none"> <li>-Temperature Min (<math>T_{Smin}</math>)</li> <li>-Temperature Max (<math>T_{Smax}</math>)</li> <li>-Time (min to max) (<math>t_s</math>)</li> </ul> | 150°C<br>200°C<br>60-180 seconds |
| $T_{Smax}$ to $T_L$ <ul style="list-style-type: none"> <li>-Ramp-up Rate</li> </ul>                                                                                                                 | 3°C/second max.                  |
| Time maintained above: <ul style="list-style-type: none"> <li>-Temperature (<math>T_L</math>)</li> <li>-Time (<math>t_L</math>)</li> </ul>                                                          | 217°C<br>60-150 seconds          |
| Peak Temperature ( $T_P$ )                                                                                                                                                                          | 260°C                            |
| Time within 5°C of actual Peak Temperature ( $t_p$ )                                                                                                                                                | 20-40 seconds                    |
| Ramp-down Rate                                                                                                                                                                                      | 6°C/second max.                  |
| Time 25°C to Peak Temperature                                                                                                                                                                       | 8 minutes max.                   |

### Package Outline Dimensions (unit: mm)

#### SMC



### Mounting Pad Layout (unit: mm)

