

### Features

- Peak power dissipation  
600W@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-214AA(SMB) surface mount package

### Dimensions and Pin Configuration



**DO-214AA(SMB)**



**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>                 | 600       | W    |
| Steady state power dissipation at T <sub>A</sub> =50°C | P <sub>M(AV)</sub>               | 5.0       | 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>                 | 100       | °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 |             | V <sub>R</sub> | I <sub>R</sub> @V <sub>R</sub> | V <sub>BR</sub> @I <sub>T</sub> |        | I <sub>T</sub> | V <sub>C</sub> @I <sub>PP</sub> | I <sub>PP</sub> |
|-------------|-------------|----------------|--------------------------------|---------------------------------|--------|----------------|---------------------------------|-----------------|
| Uni-Polar   | Bi-Polar    | V              | μA                             | min(V)                          | max(V) | mA             | max(V)                          | A               |
| TPSMBJ5.0A  | TPSMBJ5.0CA | 5.0            | 120                            | 6.40                            | 7.00   | 10             | 9.2                             | 65.2            |
| TPSMBJ6.0A  | TPSMBJ6.0CA | 6.0            | 120                            | 6.67                            | 7.37   | 10             | 10.3                            | 58.3            |
| TPSMBJ6.5A  | TPSMBJ6.5CA | 6.5            | 120                            | 7.22                            | 7.98   | 10             | 11.2                            | 53.6            |
| TPSMBJ7.0A  | TPSMBJ7.0CA | 7.0            | 50                             | 7.78                            | 8.60   | 10             | 12.0                            | 50.0            |
| TPSMBJ7.5A  | TPSMBJ7.5CA | 7.5            | 50                             | 8.33                            | 9.21   | 1              | 12.9                            | 46.5            |
| TPSMBJ8.0A  | TPSMBJ8.0CA | 8.0            | 20                             | 8.89                            | 9.83   | 1              | 13.6                            | 44.1            |
| TPSMBJ8.5A  | TPSMBJ8.5CA | 8.5            | 10                             | 9.44                            | 10.40  | 1              | 14.4                            | 41.7            |
| TPSMBJ9.0A  | TPSMBJ9.0CA | 9.0            | 5                              | 10.00                           | 11.10  | 1              | 15.4                            | 39.0            |
| TPSMBJ10A   | TPSMBJ10CA  | 10             | 2                              | 11.10                           | 12.30  | 1              | 17.0                            | 35.3            |
| TPSMBJ11A   | TPSMBJ11CA  | 11             | 1                              | 12.20                           | 13.50  | 1              | 18.2                            | 33.0            |
| TPSMBJ12A   | TPSMBJ12CA  | 12             | 1                              | 13.30                           | 14.70  | 1              | 19.9                            | 30.2            |
| TPSMBJ13A   | TPSMBJ13CA  | 13             | 1                              | 14.40                           | 15.90  | 1              | 21.5                            | 27.9            |
| TPSMBJ14A   | TPSMBJ14CA  | 14             | 1                              | 15.60                           | 17.20  | 1              | 23.2                            | 25.9            |
| TPSMBJ15A   | TPSMBJ15CA  | 15             | 1                              | 16.70                           | 18.50  | 1              | 24.4                            | 24.6            |
| TPSMBJ16A   | TPSMBJ16CA  | 16             | 1                              | 17.80                           | 19.70  | 1              | 26.0                            | 23.1            |
| TPSMBJ17A   | TPSMBJ17CA  | 17             | 1                              | 18.90                           | 20.90  | 1              | 27.6                            | 21.8            |
| TPSMBJ18A   | TPSMBJ18CA  | 18             | 1                              | 20.00                           | 22.10  | 1              | 29.2                            | 20.6            |
| TPSMBJ20A   | TPSMBJ20CA  | 20             | 1                              | 22.20                           | 24.50  | 1              | 32.4                            | 18.6            |
| TPSMBJ22A   | TPSMBJ22CA  | 22             | 1                              | 24.40                           | 26.90  | 1              | 35.5                            | 16.9            |
| TPSMBJ24A   | TPSMBJ24CA  | 24             | 1                              | 26.70                           | 29.50  | 1              | 38.9                            | 15.4            |
| TPSMBJ26A   | TPSMBJ26CA  | 26             | 1                              | 28.90                           | 31.90  | 1              | 42.1                            | 14.3            |
| TPSMBJ28A   | TPSMBJ28CA  | 28             | 1                              | 31.10                           | 34.40  | 1              | 45.4                            | 13.2            |
| TPSMBJ30A   | TPSMBJ30CA  | 30             | 1                              | 33.30                           | 36.80  | 1              | 48.4                            | 12.4            |
| TPSMBJ33A   | TPSMBJ33CA  | 33             | 1                              | 36.70                           | 40.60  | 1              | 53.3                            | 11.3            |
| TPSMBJ36A   | TPSMBJ36CA  | 36             | 1                              | 40.00                           | 44.20  | 1              | 58.1                            | 10.4            |
| TPSMBJ40A   | TPSMBJ40CA  | 40             | 1                              | 44.40                           | 49.10  | 1              | 64.5                            | 9.3             |
| TPSMBJ43A   | TPSMBJ43CA  | 43             | 1                              | 47.80                           | 52.80  | 1              | 69.4                            | 8.7             |
| TPSMBJ45A   | TPSMBJ45CA  | 45             | 1                              | 50.00                           | 55.30  | 1              | 72.7                            | 8.3             |
| TPSMBJ48A   | TPSMBJ48CA  | 48             | 1                              | 53.30                           | 58.90  | 1              | 77.4                            | 7.8             |

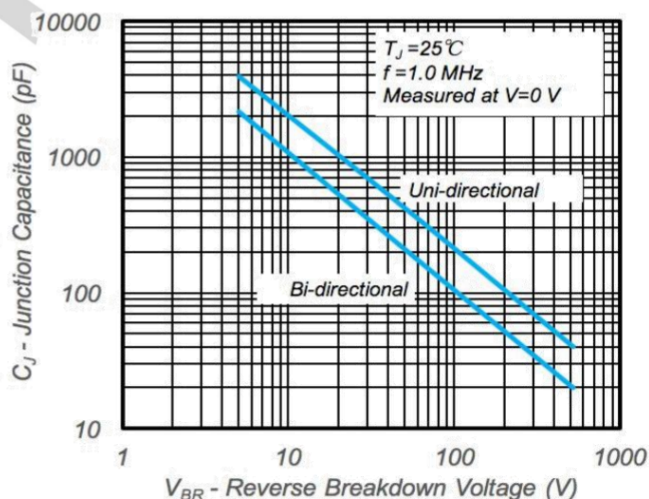
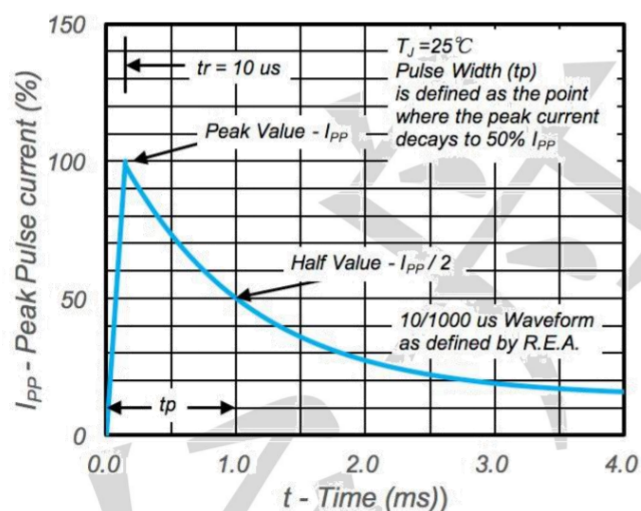
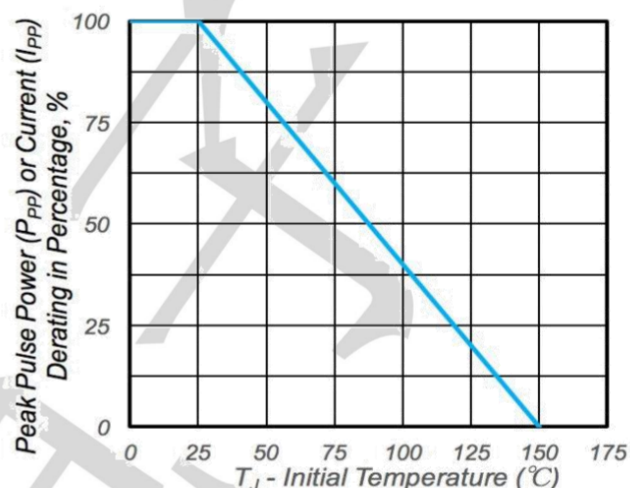
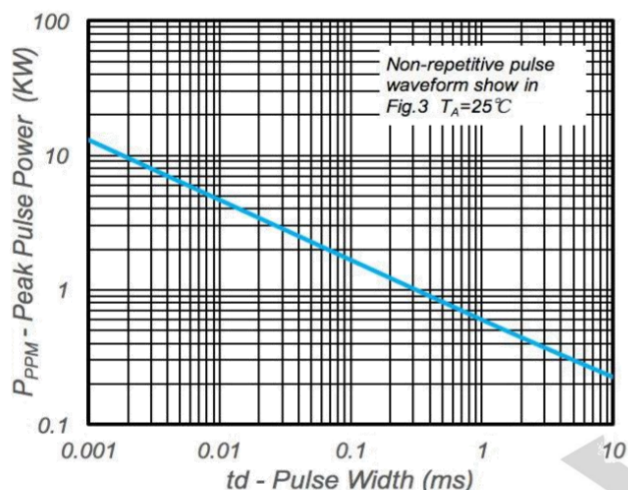
### Electrical Characteristics (TA=25°C unless otherwise specified)

| Part Number |             | V <sub>R</sub> | I <sub>R</sub> @V <sub>R</sub> | V <sub>BR</sub> @I <sub>T</sub> |        | I <sub>T</sub> | V <sub>C</sub> @I <sub>PP</sub> | I <sub>PP</sub> |
|-------------|-------------|----------------|--------------------------------|---------------------------------|--------|----------------|---------------------------------|-----------------|
| Uni-Polar   | Bi-Polar    | V              | μA                             | min(V)                          | max(V) | mA             | max(V)                          | A               |
| TPSMBJ51A   | TPSMBJ51CA  | 51             | 1                              | 56.70                           | 62.70  | 1              | 82.4                            | 7.3             |
| TPSMBJ54A   | TPSMBJ54CA  | 54             | 1                              | 60.00                           | 66.30  | 1              | 87.1                            | 6.9             |
| TPSMBJ58A   | TPSMBJ58CA  | 58             | 1                              | 64.40                           | 71.20  | 1              | 93.6                            | 6.4             |
| TPSMBJ60A   | TPSMBJ60CA  | 60             | 1                              | 66.70                           | 73.70  | 1              | 96.8                            | 6.2             |
| TPSMBJ64A   | TPSMBJ64CA  | 64             | 1                              | 71.10                           | 78.60  | 1              | 103.0                           | 5.8             |
| TPSMBJ70A   | TPSMBJ70CA  | 70             | 1                              | 77.80                           | 86.00  | 1              | 113.0                           | 5.3             |
| TPSMBJ75A   | TPSMBJ75CA  | 75             | 1                              | 83.30                           | 92.10  | 1              | 121.0                           | 5.0             |
| TPSMBJ78A   | TPSMBJ78CA  | 78             | 1                              | 86.70                           | 95.80  | 1              | 126.0                           | 4.8             |
| TPSMBJ85A   | TPSMBJ85CA  | 85             | 1                              | 94.40                           | 104.0  | 1              | 137.0                           | 4.4             |
| TPSMBJ90A   | TPSMBJ90CA  | 90             | 1                              | 100.0                           | 111.0  | 1              | 146.0                           | 4.1             |
| TPSMBJ100A  | TPSMBJ100CA | 100            | 1                              | 111.0                           | 123.0  | 1              | 162.0                           | 3.7             |
| TPSMBJ110A  | TPSMBJ110CA | 110            | 1                              | 122.0                           | 135.0  | 1              | 177.0                           | 3.4             |
| TPSMBJ120A  | TPSMBJ120CA | 120            | 1                              | 133.0                           | 147.0  | 1              | 193.0                           | 3.1             |
| TPSMBJ130A  | TPSMBJ130CA | 130            | 1                              | 144.0                           | 159.0  | 1              | 209.0                           | 2.9             |
| TPSMBJ150A  | TPSMBJ150CA | 150            | 1                              | 167.0                           | 185.0  | 1              | 243.0                           | 2.5             |
| TPSMBJ160A  | TPSMBJ160CA | 160            | 1                              | 178.0                           | 197.0  | 1              | 259.0                           | 2.3             |
| TPSMBJ170A  | TPSMBJ170CA | 170            | 1                              | 189.0                           | 209.0  | 1              | 275.0                           | 2.2             |
| TPSMBJ180A  | TPSMBJ180CA | 180            | 1                              | 201.0                           | 222.0  | 1              | 292.0                           | 2.1             |
| TPSMBJ190A  | TPSMBJ190CA | 190            | 1                              | 211.0                           | 234.0  | 1              | 307.0                           | 2.0             |
| TPSMBJ200A  | TPSMBJ200CA | 200            | 1                              | 224.0                           | 247.0  | 1              | 324.0                           | 1.9             |
| TPSMBJ210A  | TPSMBJ210CA | 210            | 1                              | 233.0                           | 258.0  | 1              | 337.0                           | 1.8             |
| TPSMBJ220A  | TPSMBJ220CA | 220            | 1                              | 246.0                           | 272.0  | 1              | 356.0                           | 1.7             |
| TPSMBJ250A  | TPSMBJ250CA | 250            | 1                              | 279.0                           | 309.0  | 1              | 405.0                           | 1.5             |
| TPSMBJ300A  | TPSMBJ300CA | 300            | 1                              | 335.0                           | 371.0  | 1              | 486.0                           | 1.3             |
| TPSMBJ350A  | TPSMBJ350CA | 350            | 1                              | 391.0                           | 432.0  | 1              | 567.0                           | 1.1             |
| TPSMBJ400A  | TPSMBJ400CA | 400            | 1                              | 447.0                           | 494.0  | 1              | 648.0                           | 0.9             |
| TPSMBJ440A  | TPSMBJ440CA | 440            | 1                              | 492.0                           | 543.0  | 1              | 713.0                           | 0.8             |

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

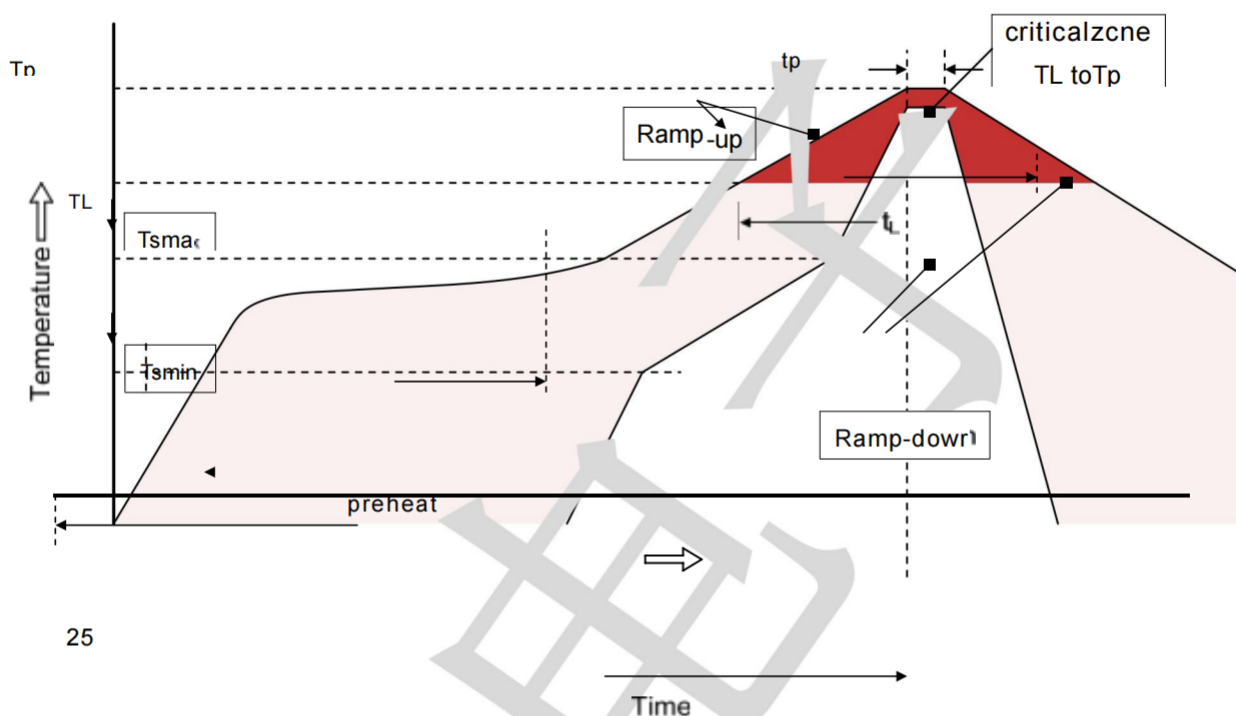
For parts without A, the V<sub>BR</sub> is +10%.

### Typical Characteristics Curves



### Recommended Soldering Conditions

#### Reflow Soldering

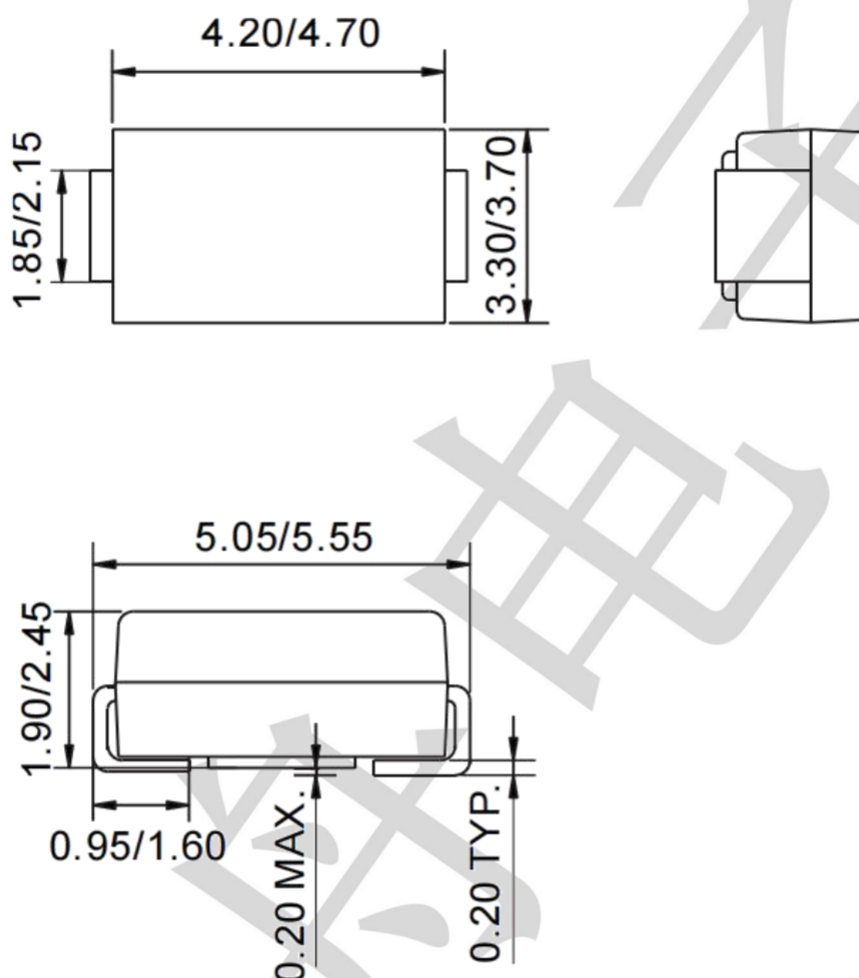


#### Recommended Conditions

| 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)

#### SMB



### Mounting Pad Layout (unit: mm)

