DO-214AB (SMC J-Bend)

Dimensions in inches and (millimeters)

Features
- For surface mounted applications in order to optimize board space
- Typical maximum temperature coefficient \( \Delta V_{BR} = 0.1\% \times V_{BR} @ 25°C \times \Delta T \)
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Excellent clamping capability
- Repetition Rate (duty cycle): 0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to \( BV \)
- Meet MSL1 Level, per J-STD-020, LF maximum peak of 260 °C
- Plastic package has Underwriters Laboratory Flammability 94V-0
- Matte Tin Lead-free plated

Mechanical Data
Case: JEDEC DO-214AB. Molded plastic
Terminal: Solderable per MIL-STD-750, Method 2026
Polarity: Color band denoted positive end (cathode) except Bidirectional

Primary Characteristics
- \( V_{RWM} \): 5.0V to 170V
- \( V_{BR} \): 6.4V to 209V
- \( P_{PPM} \): 5000W
- \( T_j \text{ max} \): 150°C
- Polarity: Uni-directional & Bi-directional
- Package: DO-214AB

Maximum Ratings (25°C ambient temperature unless otherwise specified)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Pulse Power Dissipation on 10/1000(\mu)s waveform (Note 1, 2)</td>
<td>( P_{PPM} )</td>
<td>5000</td>
<td>Watts</td>
</tr>
<tr>
<td>Peak Pulse Current of on 10/1000(\mu)s waveform (Note 1)</td>
<td>( I_{PPM} )</td>
<td>See Next Table</td>
<td>Amps</td>
</tr>
<tr>
<td>Peak Forward Surge Current, 8.3ms Single Half Sine-Wave (Note 2, 3)</td>
<td>( I_{FSM} )</td>
<td>300</td>
<td>Amps</td>
</tr>
<tr>
<td>Operating junction and Storage Temperature Range</td>
<td>( T_j \ T_{STG} )</td>
<td>-55 to +150</td>
<td>°C</td>
</tr>
<tr>
<td>Typical Thermal Resistance Junction to Lead</td>
<td>( R_{J,L} )</td>
<td>15</td>
<td>°C/W</td>
</tr>
<tr>
<td>Typical Thermal Resistance Junction to Ambient</td>
<td>( R_{J,A} )</td>
<td>75</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

Note
(1) Non-repetitive current pulse above \( T_a = 25 \) °C
(2) Mounted on 8.0mm x 8.0mm Copper Pads to each terminal
(3) 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

Rev. 2.2 July 2021
## ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>MARKING CODE</th>
<th>TEST CURRENT IT (mA)</th>
<th>BREAKDOWN VOLTAGE VBR(V) @IT</th>
<th>REVERSE STAND-OFF VOLTAGE VRWM(V)</th>
<th>MAXIMUM CLAMPING VOLTAGE @Ip peak Vc(V)</th>
<th>MAXIMUM PEAK PULSE CURRENT Ip (A)</th>
<th>MAXIMUM REVERSE LEAKAGE @ VRWM IR(μA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0SMDJ5.0A</td>
<td>5.0SMDJ5.0CA</td>
<td>10</td>
<td>6.40</td>
<td>7.00</td>
<td>5.0</td>
<td>9.2</td>
<td>543.6</td>
</tr>
<tr>
<td>5.0SMDJ6.0A</td>
<td>5.0SMDJ6.0CA</td>
<td>10</td>
<td>6.67</td>
<td>7.37</td>
<td>6.0</td>
<td>10.3</td>
<td>485.5</td>
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<tr>
<td>5.0SMDJ5.6A</td>
<td>5.0SMDJ5.6CA</td>
<td>10</td>
<td>7.22</td>
<td>7.98</td>
<td>6.5</td>
<td>11.2</td>
<td>446.5</td>
</tr>
<tr>
<td>5.0SMDJ7.0A</td>
<td>5.0SMDJ7.0CA</td>
<td>10</td>
<td>7.78</td>
<td>8.60</td>
<td>7.0</td>
<td>12.0</td>
<td>416.8</td>
</tr>
<tr>
<td>5.0SMDJ7.5A</td>
<td>5.0SMDJ7.5CA</td>
<td>1</td>
<td>8.33</td>
<td>9.21</td>
<td>7.5</td>
<td>12.9</td>
<td>387.7</td>
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<tr>
<td>5.0SMDJ8.0A</td>
<td>5.0SMDJ8.0CA</td>
<td>1</td>
<td>8.89</td>
<td>9.83</td>
<td>8.0</td>
<td>13.6</td>
<td>367.7</td>
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<tr>
<td>5.0SMDJ8.5A</td>
<td>5.0SMDJ8.5CA</td>
<td>1</td>
<td>9.44</td>
<td>10.40</td>
<td>8.5</td>
<td>14.4</td>
<td>347.3</td>
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<tr>
<td>5.0SMDJ9.0A</td>
<td>5.0SMDJ9.0CA</td>
<td>1</td>
<td>10.00</td>
<td>11.10</td>
<td>9.0</td>
<td>15.4</td>
<td>324.8</td>
</tr>
</tbody>
</table>

For bidirectional type having Vrwm of 10 volts and less, the IR limit is double
RATINGS AND CHARACTERISTICS CURVES (TA = 25°C unless otherwise noted)

**Peak Pulse Power Rating**

- Non-repetitive pulse waveform shown in Fig. 3 TA = 25°C
- 0.31 x 0.31 (8.0 x 8.0 mm)
- Copper Pad Areas

**Pulse Waveform**

- TD - Pulse Width (sec.)
- T = 25°C
- Pulse Width(TD) is defined as the point where the peak current decays to 50% of Ippm
- 10/1000μsec. Waveform as defined by R.E.A.

**Steady State Power Derating Curve**

- P - Peak Pulse Power (kW)
- TD - Pulse Width (sec.)
- 0.1 μs to 10 ms

**Typical Junction Capacitance**

- VBR - Reverse Breakdown Voltage (V)
- Cj - Junction Capacitance (pF)
- Vgs = 50 mVp-p

**Pulse Derating Curve**

- P - Peak Pulse Power (Ppm) or Current (Ippm)
- TD - Pulse Width (sec.)
- 0 to 100 μs

**Maximum Non-repetitive Forward Surge current uni-directional only**

- Ippm - Peak Forward Surge Current (A)
- Vgs = 50 mVp-p
- Pulse Waveform shown in Fig. 3 TA = 25°C

**Steady State Power Dissipation (W)**

- TL - Lead Temperature (°C)
- 0 to 175°C

**Peak Pulse Surge Current (A)**

- Ippm - Peak Pulse Surge Current (A)
- 0 to 350 A

**Number of Cycles at 60 Hz**

- 1 to 100 cycles
### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Quantity</th>
<th>Packing Option</th>
<th>Component Package</th>
<th>Packing Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0SMDJxxxA</td>
<td>3000</td>
<td>Tape &amp; Reel - 16mm/13” tape</td>
<td>DO-214AB</td>
<td>EIA STD RS-481</td>
</tr>
</tbody>
</table>

AOS Green Products use reduced levels of Halogens, and are also RoHS compliant. Please visit [www.aosmd.com/media/AOSGreenPolicy.pdf](http://www.aosmd.com/media/AOSGreenPolicy.pdf) for additional information.

Note: Green Product means Pb-free, RoHS and Halogens free compliant.

### Part Number and Part Marking

![Part Marking Diagram](image)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Part Marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0SMDJ XXX C A</td>
<td>Cathode Band, Logo, Marking Code, Date Code</td>
</tr>
</tbody>
</table>

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