S1A THRU S1M (DO-214AC)

SURFACE MOUNT RECTIFIERS
Reverse Voltage – 50 to 1000 Volts
Forward Current – 1.0 Ampere

Features
- Plastic package has Underwriters Laboratories
  Flammability Classification 94V-0
- Glass passivated chip junction
- For surface mount application
- Low profile package
- Built-in strain relief, ideal for automated placement

Mechanical Data
- Case: JEDEC DO-214AC, molded plastic over passivated chip
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- High temperature solder: 250° /10 seconds at terminals
- Polarity: Color band denotes cathode end

Absolute Maximum Ratings and Characteristics
Ratings at 25°C ambient temperature unless otherwise specified.

<table>
<thead>
<tr>
<th></th>
<th>Symbols</th>
<th>S1A</th>
<th>S1B</th>
<th>S1D</th>
<th>S1G</th>
<th>S1J</th>
<th>S1K</th>
<th>S1M</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum recurrent peak reverse voltage</td>
<td>V_{RRM}</td>
<td>50</td>
<td>100</td>
<td>200</td>
<td>400</td>
<td>600</td>
<td>800</td>
<td>1000</td>
<td>V</td>
</tr>
<tr>
<td>Maximum RMS voltage</td>
<td>V_{RMS}</td>
<td>35</td>
<td>70</td>
<td>140</td>
<td>280</td>
<td>420</td>
<td>560</td>
<td>700</td>
<td>V</td>
</tr>
<tr>
<td>Maximum DC blocking voltage</td>
<td>V_{DC}</td>
<td>50</td>
<td>100</td>
<td>200</td>
<td>400</td>
<td>600</td>
<td>800</td>
<td>1000</td>
<td>V</td>
</tr>
<tr>
<td>Maximum average forward rectified current</td>
<td>I_{(AV)}</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) T_{J} = 110°C</td>
<td>I_{FSM}</td>
<td>40</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Maximum Instantaneous forward voltage at 1.0A</td>
<td>V_{F}</td>
<td>1.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Maximum DC reverse current at T_{A} = 25°C at T_{A} = 125°C</td>
<td>I_{R}</td>
<td>1.0</td>
<td>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>μA</td>
</tr>
<tr>
<td>Typical Junction Capacitance at V_{R} = 4.0 V, f = 1 MHz</td>
<td>C_{J}</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>Typical Reverse Recovery Time at I_{F} = 0.5A, I_{A} = 1.0A, Irr = 0.25A</td>
<td>t_{rr}</td>
<td>1.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>μs</td>
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<td>Typical thermal resistance (Note 1)</td>
<td>R_{UA}</td>
<td>75</td>
<td>85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>°C/W</td>
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<tr>
<td>Operating junction and storage temperature range</td>
<td>T_{J}, T_{S}</td>
<td>-55 to +150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>°C</td>
</tr>
</tbody>
</table>

Notes:
1. Thermal resistance from junction to ambient from junction to lead mounted on P.C.B. with 0.2 x 0.2" (5.0 x 5.0mm²) copper pad areas
**FIG. 1 - FORWARD DERATING CURVE**

- **AVERAGE FORWARD CURRENT, A**
- **LEAD TEMPERATURE, (°C)**
- **RESISTIVE OR INDUCTIVE LOAD**
- **0.2x0.2(5.0x5.0mm)** Thick copper pad areas

**FIG. 2 - PEAK FORWARD SURGE CURRENT**

- **PEAK FORWARD SURGE CURRENT, A**
- **NUMBER OF CYCLES AT 60Hz**
- **Tj=110°C**
- **8.3ms Single half Sine Wave (JEDEC Method)**

**FIG. 3 - TYPICAL FORWARD CHARACTERISTICS**

- **INSTANTANEOUS FORWARD CURRENT (A)**
- **INSTANTANEOUS FORWARD VOLTAGE (V)**
- **Tj=25°C**
- **PULSE WIDTH=300µs**
- **1% DUTY CYCLE**

**FIG. 4 - TYPICAL REVERSE CHARACTERISTICS**

- **INSTANTANEOUS REVERSE CURRENT (A)**
- **PERCENT OF RATED PEAK REVERSE VOLTS, %**
- **Tj=25°C**
- **Tj=75°C**
- **Tj=125°C**

**FIG. 5 - TYPICAL JUNCTION CAPACITANCE**

- **JUNCTION CAPACITANCE, pF**
- **REVERSE VOLTAGE, V**
- **Tj=25°C**
- **f=1.0MHz**
- **Vsig=50mVp-p**

**FIG. 6 - TRANSIENT THERMAL IMPEDANCE**

- **TRANSIENT THERMAL IMPEDANCE (°C/W)**
- **t, PULSE DURATION**