General-Purpose Rectifiers (Glass Passivated)

S2A-S2M

Description
The S2 family of devices are general-purpose 2 A rated rectifiers with voltage ratings ranging from 50 to 1000 V. They are implemented in traditional SMB packages and are well known to the industry. For advanced or special requirements, please contact an ON Semiconductor representative.

Features
• High–Current Capability, 2 A Rated
• Fast Response: 2 μs \( T_{rr} \)
• Low–Forward Voltage Drop, 1.15 V \( V_F \) Max at 2 A
• High–Surge Current Capability, 50 A\(^2\)s \( I_{FSM} \)
• Glass Passivated Junction
• UL Certified, UL #E258596
• NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC–Q101 Qualified and PPAP Capable
• These Devices are Pb–Free and are RoHS Compliant

Applications
• Power Supplies
• AC to DC Rectification
• Bypass Diodes

ABSOLUTE MAXIMUM RATINGS (\( T_J = 25^\circ C \) unless otherwise noted)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_{RRM} )</td>
<td>Maximum Repetitive Reverse Voltage</td>
<td>S2A 50 A, S2B 100 A, S2D 200 A, S2G 400 A, S2J 600 A, S2K 800 A, S2M 1000 A</td>
<td>V</td>
</tr>
<tr>
<td>( I_{F(AV)} )</td>
<td>Average Rectified Forward Current at ( T_J = 100^\circ C )</td>
<td>2.0 A</td>
<td></td>
</tr>
<tr>
<td>( I_{FSM} )</td>
<td>Non–Repetitive Peak Forward Surge Current 8.3 ms Single Half–Sine Wave</td>
<td>50 A</td>
<td></td>
</tr>
<tr>
<td>( T_{STG} )</td>
<td>Storage Temperature Range</td>
<td>–65 to +150 °C</td>
<td></td>
</tr>
<tr>
<td>( T_J )</td>
<td>Operating Junction Temperature Range</td>
<td>–65 to +150 °C</td>
<td></td>
</tr>
</tbody>
</table>

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

www.onsemi.com

SMB
CASE 403AF

MARKING DIAGRAM

$Y&Z&3$ $S2X$

$Y$ = ON Semiconductor Logo
$&Z$ = Assembly Plant Code
$&3$ = Numeric Date Code
$S2X$ = Specific Device Code
$X$ = A–M

ORDERING INFORMATION
See detailed ordering and shipping information on page 2 of this data sheet.
# THERMAL CHARACTERISTICS (TA = 25°C unless otherwise noted)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>Power Dissipation</td>
<td>2.35</td>
<td>W</td>
</tr>
<tr>
<td>RθJA</td>
<td>Thermal Resistance, Junction to Ambient (Note 1)</td>
<td>53</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

1. Device is mounted on FR-4 PCB 0.013 mm.

# ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF</td>
<td>Maximum Forward Voltage</td>
<td>IF = 2.0 A</td>
<td>1.15</td>
<td>V</td>
</tr>
<tr>
<td>ttr</td>
<td>Typical Reverse–Recovery Time</td>
<td>IF = 0.5 A, IR = 1.0 A, ITR = 0.25 A</td>
<td>2.0</td>
<td>μs</td>
</tr>
<tr>
<td>IR</td>
<td>Maximum Reverse Current at Rated VR</td>
<td>TA = 25°C</td>
<td>1.0</td>
<td>μA</td>
</tr>
<tr>
<td>CT</td>
<td>Typical Total Capacitance</td>
<td>VR = 4.0 V, f = 1.0 MHz</td>
<td>30</td>
<td>pF</td>
</tr>
</tbody>
</table>

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

# ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Marking</th>
<th>Package</th>
<th>Shipping†</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2A, NRVS2A*</td>
<td>S2A</td>
<td>SMB (Pb–Free)</td>
<td>3000 / Tape &amp; Reel</td>
</tr>
<tr>
<td>S2B, NRVS2B*</td>
<td>S2B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S2D, NRVS2D*</td>
<td>S2D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S2G, NRVS2G*</td>
<td>S2G</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S2J, NRVS2J*</td>
<td>S2J</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S2K, NRVS2K*</td>
<td>S2K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S2M, NRVS2M*</td>
<td>S2M</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.
*NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC–Q101 Qualified and PPAP Capable.
TYPICAL PERFORMANCE CHARACTERISTICS

Figure 1. Forward Current Derating Curve

Figure 2. Non-Repetitive Surge Current

Figure 3. Forward Voltage Characteristics

Figure 4. Reverse Current vs. Reverse Voltage

Figure 5. Total Capacitance
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

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ISSUE O

DATE 31 AUG 2016

NOTES:
A. EXCEPT WHERE NOTED CONFORMS TO JEDEC DO214 VARIATION AA.
B. DOES NOT COMPLY JEDEC STD. VALUE.
C. ALL DIMENSIONS ARE IN MILLIMETERS.
D. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
F. LAND PATTERN STD. DIAM5336X240M.

DOCUMENT NUMBER: 98AON13441G
DESCRIPTION: SMB

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