

# 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 onsemi representative.

### Features

- High-Current Capability, 2 A Rated
- Fast Response:  $2 \mu\text{s}$   $T_{rr}$
- Low-Forward Voltage Drop, 1.15 V  $V_F$  Max at 2 A
- High-Surge Current Capability, 50 A<sup>2</sup>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

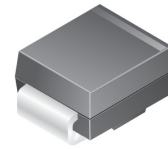
### Applications

- Power Supplies
- AC to DC Rectification
- Bypass Diodes

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

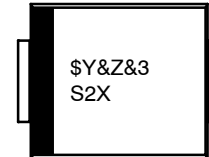
| Symbol      | Parameter                                                              | Value       |     |     |     |     |     |      | Unit             |
|-------------|------------------------------------------------------------------------|-------------|-----|-----|-----|-----|-----|------|------------------|
|             |                                                                        | S2A         | S2B | S2D | S2G | S2J | S2K | S2M  |                  |
| $V_{RRM}$   | Maximum Repetitive Reverse Voltage                                     | 50          | 100 | 200 | 400 | 600 | 800 | 1000 | V                |
| $I_{F(AV)}$ | Average Rectified Forward Current at $T_A = 100^\circ\text{C}$         | 2.0         |     |     |     |     |     |      | A                |
| $I_{FSM}$   | Non-Repetitive Peak Forward Surge Current 8.3 ms Single Half-Sine Wave | 50          |     |     |     |     |     |      | A                |
| $T_{STG}$   | Storage Temperature Range                                              | -65 to +150 |     |     |     |     |     |      | $^\circ\text{C}$ |
| $T_J$       | Operating Junction Temperature Range                                   | -65 to +150 |     |     |     |     |     |      | $^\circ\text{C}$ |

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.



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### MARKING DIAGRAM



|     |                        |
|-----|------------------------|
| \$Y | = onsemi 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.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 2.

## S2A–S2M

### THERMAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Symbol          | Parameter                                        | Value | Unit                      |
|-----------------|--------------------------------------------------|-------|---------------------------|
| $P_D$           | Power Dissipation                                | 2.35  | W                         |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient (Note 1) | 53    | $^\circ\text{C}/\text{W}$ |

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

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Symbol          | Parameter                                          | Conditions                                                                  | Value |     |     |     |     |     | Unit |
|-----------------|----------------------------------------------------|-----------------------------------------------------------------------------|-------|-----|-----|-----|-----|-----|------|
|                 |                                                    |                                                                             | S2A   | S2B | S2D | S2G | S2J | S2K |      |
| V <sub>F</sub>  | Maximum Forward Voltage                            | I <sub>F</sub> = 2.0 A                                                      | 1.15  |     |     |     |     |     | V    |
| t <sub>rr</sub> | Typical Reverse–Recovery Time                      | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A,<br>I <sub>rr</sub> = 0.25 A | 2.0   |     |     |     |     |     | μs   |
| I <sub>R</sub>  | Maximum Reverse Current at<br>Rated V <sub>R</sub> | T <sub>A</sub> = 25°C                                                       | 1.0   |     |     |     |     |     | μA   |
|                 |                                                    | T <sub>A</sub> = 125°C                                                      | 125   |     |     |     |     |     |      |
| C <sub>T</sub>  | Typical Total Capacitance                          | V <sub>R</sub> = 4.0 V, f = 1.0 MHz                                         | 30    |     |     |     |     |     | pF   |

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

| Part Number  | Marking | Package          | Shipping <sup>†</sup> |
|--------------|---------|------------------|-----------------------|
| S2B, NRVS2B* | S2B     | SMB<br>(Pb–Free) | 3000 / Tape & Reel    |
| S2D, NRVS2D* | S2D     |                  |                       |
| S2M, NRVS2M* | S2M     |                  |                       |

### DISCONTINUED (Note 2)

| Part Number  | Marking | Package          | Shipping <sup>†</sup> |
|--------------|---------|------------------|-----------------------|
| S2A, NRVS2A* | S2A     | SMB<br>(Pb–Free) | 3000 / Tape & Reel    |
| S2G, NRVS2G* | S2G     |                  |                       |
| S2J, NRVS2J* | S2J     |                  |                       |
| S2K, NRVS2K* | S2K     |                  |                       |

<sup>†</sup>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.

2. **DISCONTINUED:** These devices are not recommended for new design. Please contact your **onsemi** representative for information. The most current information on these devices may be available on [www.onsemi.com](http://www.onsemi.com).



## TYPICAL PERFORMANCE CHARACTERISTICS

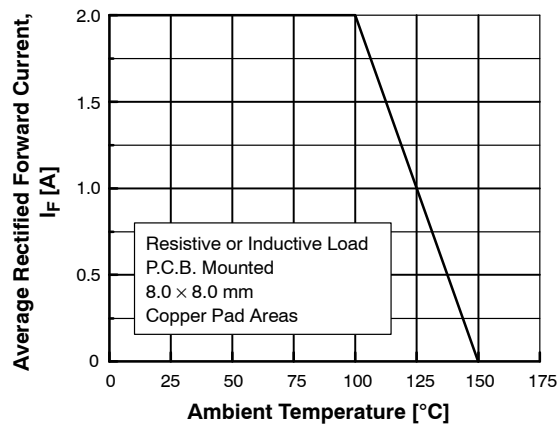


Figure 1. Forward Current Derating Curve

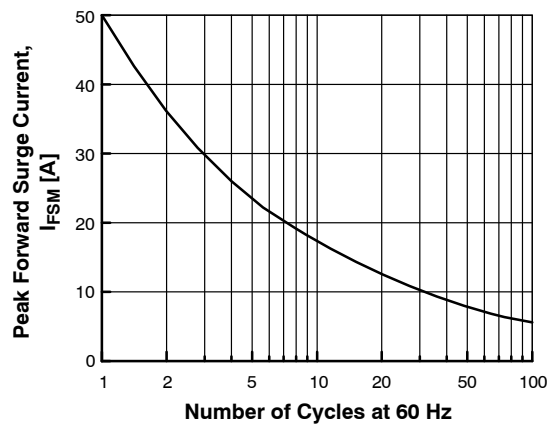


Figure 2. Non-Repetitive Surge Current

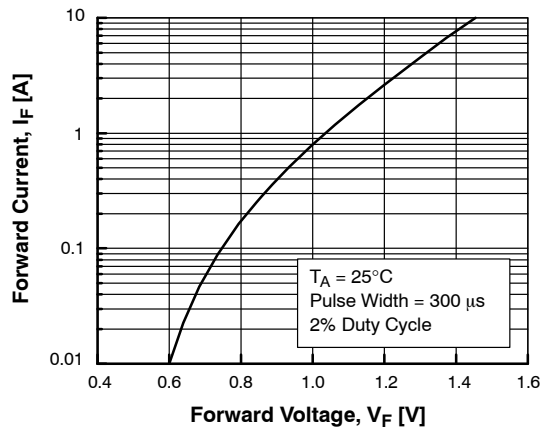


Figure 3. Forward Voltage Characteristics

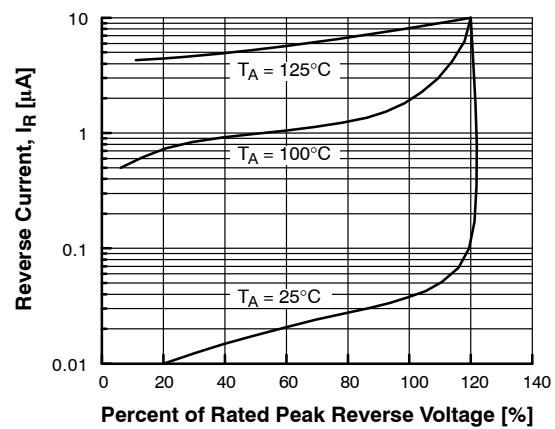


Figure 4. Reverse Current vs. Reverse Voltage

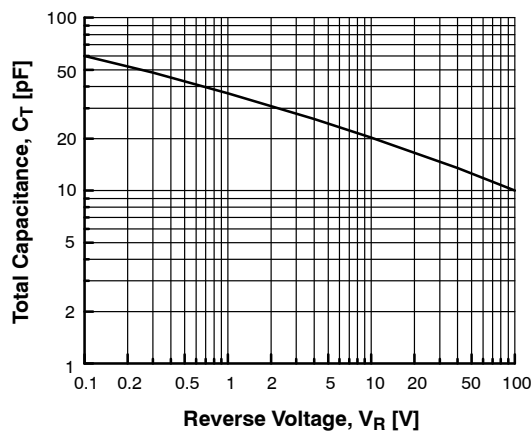
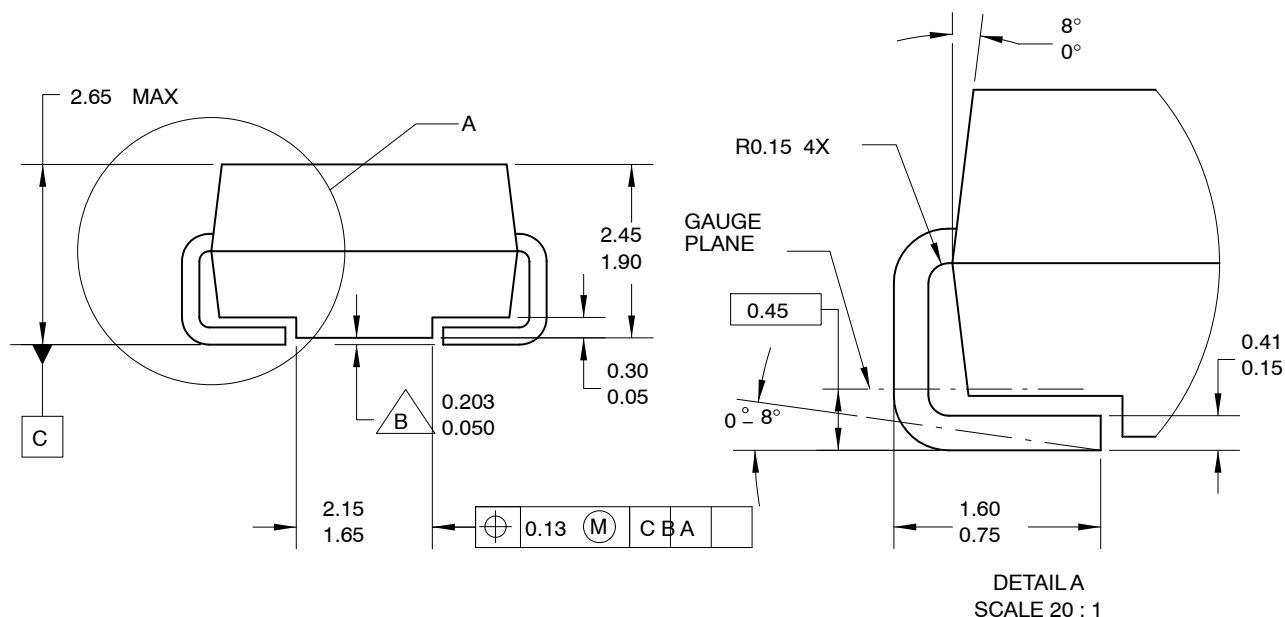
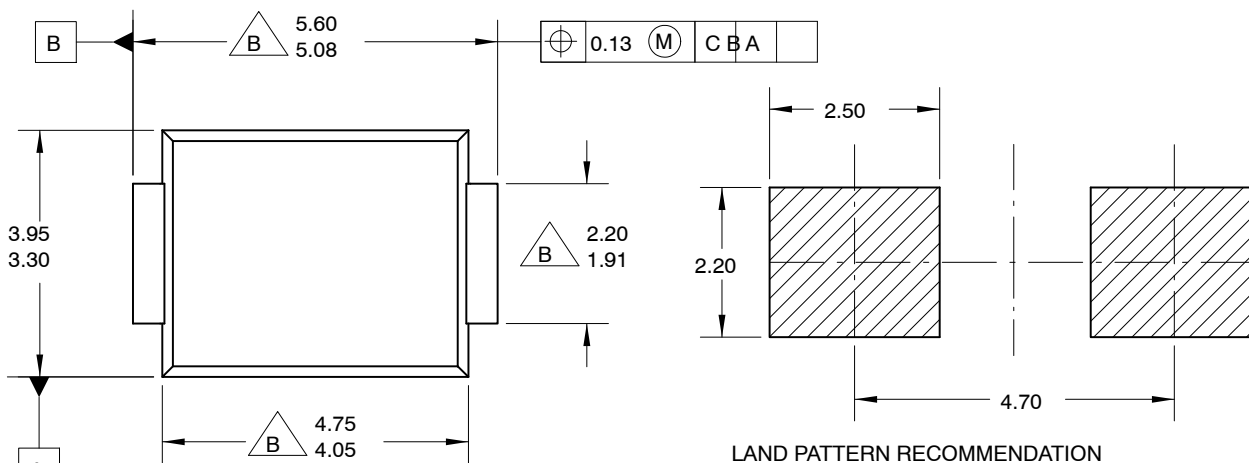


Figure 5. Total Capacitance

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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.
- E. DIMENSION AND TOLERANCE AS PER ASME Y14.5-1994.
- F. LAND PATTERN STD. DIOM5336X240M.

|                  |             |                                                                                                                                                                                     |
|------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| DESCRIPTION:     | SMB         | PAGE 1 OF 1                                                                                                                                                                         |

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