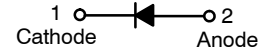


Rectifiers, Surface Mount

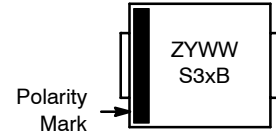
3 A, 50 V-1000 V

S3AB-S3MB



SMB
CASE 403AF

MARKING DIAGRAM



Z = Assembly Plant Code
Y = Year
WW = Work Week
S3xB = Specific Device Code
x = A, B, D, G, J, K, M

Features

- Glass Passivated Chip Junction
- High Surge Current Capacity
- Low Forward Voltage: 1.15 V Maximum
- UL Flammability 94V-0 Classification
- MSL 1 per J-STD-020
- RoHS Compliant / Green Molding Compound
- NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These are Pb-Free and Halide Free Devices

ORDERING INFORMATION

See detailed ordering and shipping information on page 3 of this data sheet.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 3.

ABSOLUTE MAXIMUM RATINGS Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Value | | | | | | | Unit |
|-------------|---|------------|------|------|------|------|------|------|------------------|
| | | S3AB | S3BB | S3DB | S3GB | S3JB | S3KB | S3MB | |
| V_{RRM} | Repetitive Peak Reverse Voltage | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| V_{RMS} | RMS Reverse Voltage | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V |
| V_R | DC Blocking Voltage | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | A |
| $I_{F(AV)}$ | Average Forward Rectified Current | 3 | | | | | | | A |
| I_{FSM} | Peak Forward Surge Current: 8.3 ms Single Half Sine-Wave Superimposed on Rated Load | 80 | | | | | | | A |
| T_J | Operating Junction Temperature Range | -55 to 150 | | | | | | | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature Range | -55 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.

THERMAL CHARACTERISTICS Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted. (Note 1)

| Symbol | Parameter | Value | Unit |
|-----------------|---|-------|---------------------------|
| $R_{\theta JA}$ | Typical Thermal Resistance, Junction-to-Ambient | 148 | $^\circ\text{C}/\text{W}$ |
| Ψ_{JL} | Typical Thermal Characteristics, Junction-to-Lead | 14 | $^\circ\text{C}/\text{W}$ |

1. Device mounted on FR-4 PCB, board size = 76.2 mm x 114.3 mm per JESD51-3.

ELECTRICAL CHARACTERISTICS Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Unit |
|----------|--|--|-----|-----|------|---------------|
| V_F | Instantaneous Forward Voltage (Note 2) | $I_F = 3\text{ A}$ | - | - | 1.15 | V |
| I_R | Reverse Current at Rated V_R | $T_J = 25^\circ\text{C}$ | - | - | 10 | μA |
| | | $T_J = 125^\circ\text{C}$ | - | - | 250 | |
| t_{rr} | Reverse Recovery Time | $I_F = 0.5\text{ A}$, $I_R = 1\text{ A}$, $I_{rr} = 0.25\text{ A}$ | - | 1.5 | - | μs |
| C_J | Junction Capacitance | $V_R = 4\text{ V}$, $f = 1\text{ MHz}$ | - | 40 | - | 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.

2. Pulse test with $PW = 300\ \mu\text{s}$, 1% duty cycle.

S3AB-S3MB

TYPICAL PERFORMANCE CHARACTERISTICS

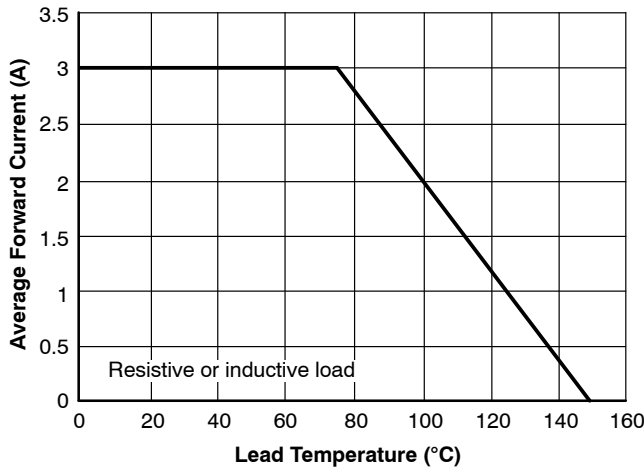


Figure 1. Forward Current Derating Curve

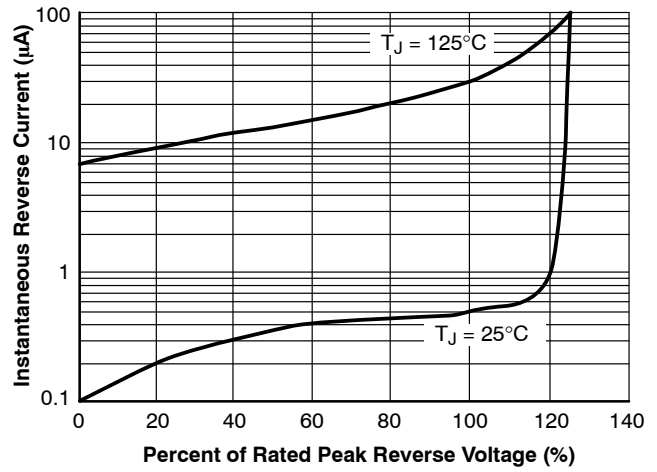


Figure 2. Typical Reverse Characteristics

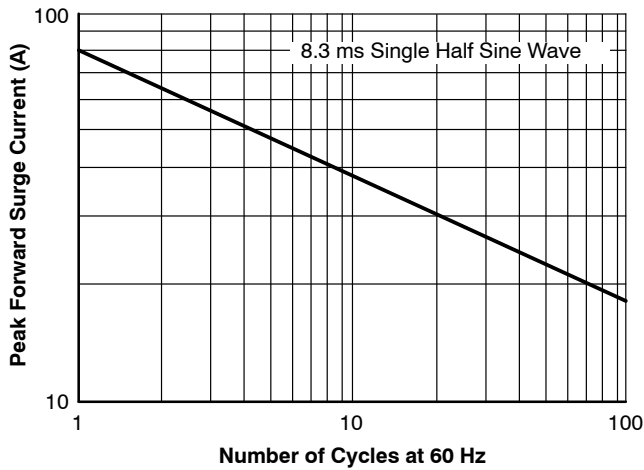


Figure 3. Maximum Non-Repetitive Forward Surge Current

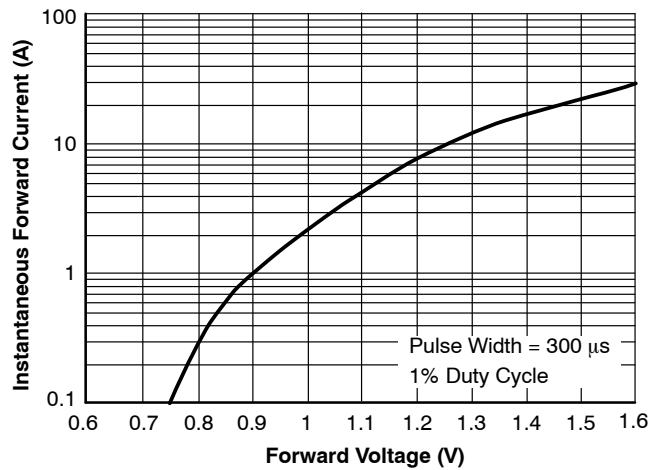


Figure 4. Typical Forward Characteristics

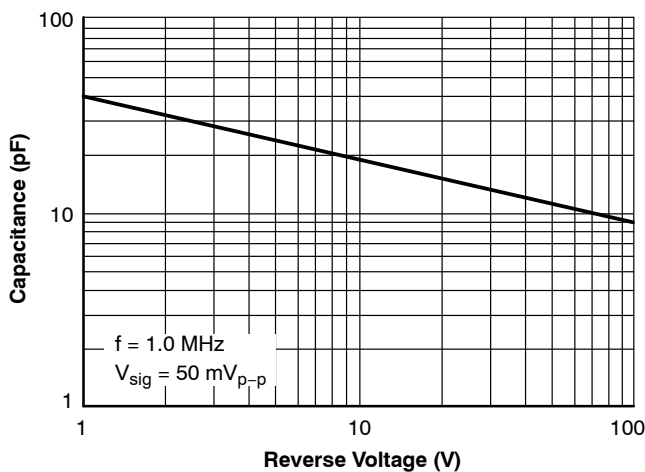


Figure 5. Typical Junction Capacitance

S3AB-S3MB

TEST CIRCUIT DIAGRAM

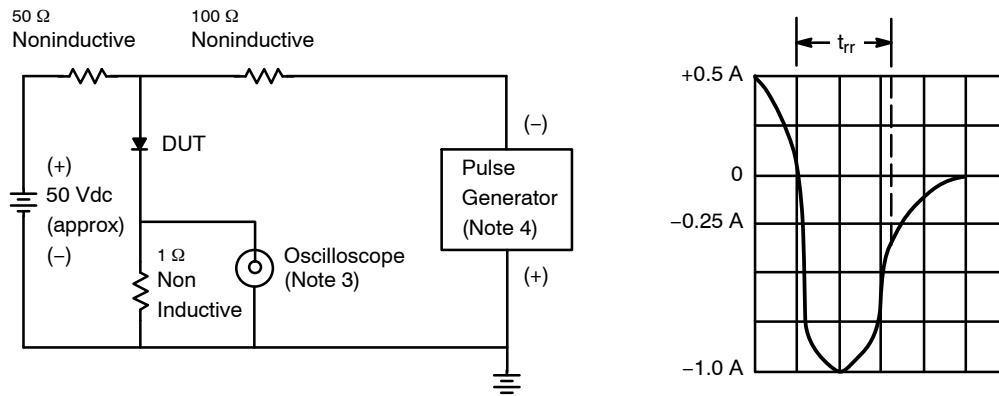


Figure 6. Reverse Recovery Time Characteristic and Test Circuit Diagram

NOTES:

- 3. Rise Time = 7 ns max. Input Impedance = 1 MΩ, 22 pF
- 4. Rise Time = 10 ns max. Source Impedance = 50 Ω, 22 pF

ORDERING INFORMATION

| Part Number | Device Code Marking | Package | Shipping [†] |
|----------------|---------------------|-------------------------------|-----------------------|
| NRVS3BB* | S3BB | SMB (Pb-Free, Halide-Free) | 3000 / Tape & Reel |
| S3DB | S3DB | | |
| S3GB, NRVS3GB* | S3GB | | |
| S3JB, NRVS3JB* | S3JB | | |
| S3KB | S3KB | | |
| S3MB, NRVS3MB* | S3MB | | |

DISCONTINUED (Note 5)

| | | | |
|----------------|------|-------------------------------|--------------------|
| S3AB, NRVS3AB* | S3AB | SMB (Pb-Free, Halide-Free) | 3000 / Tape & Reel |
| S3BB | S3BB | | |
| NRVS3DB* | S3DB | | |
| NRVS3KB* | S3KB | | |

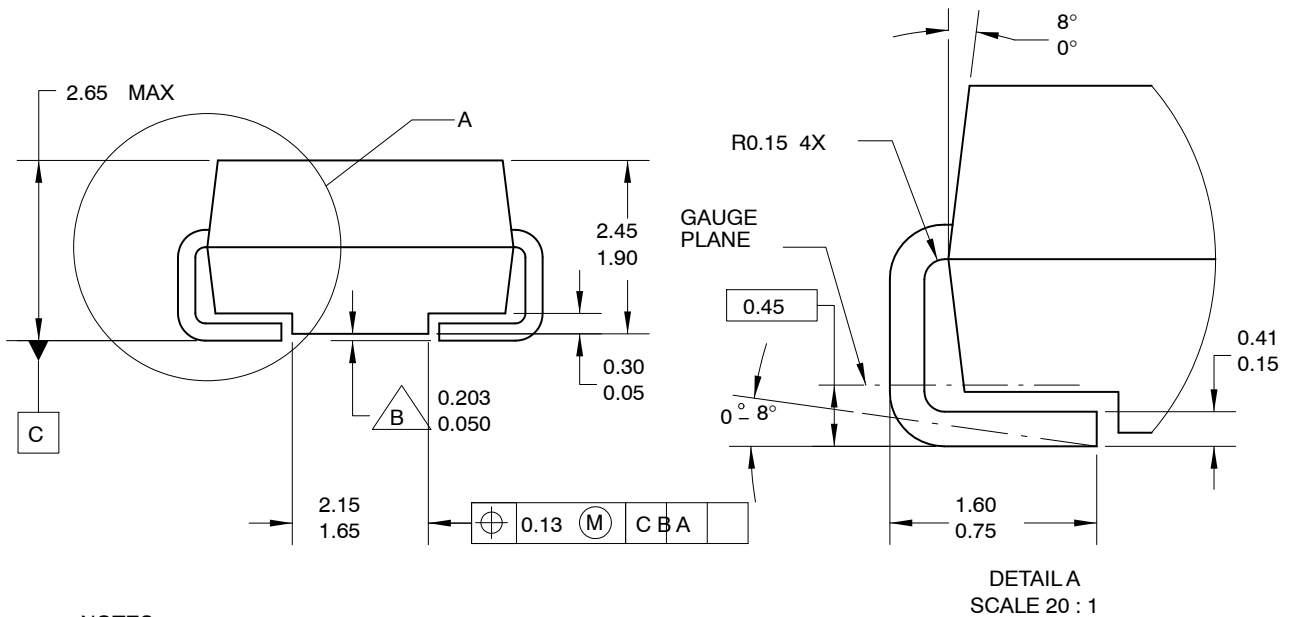
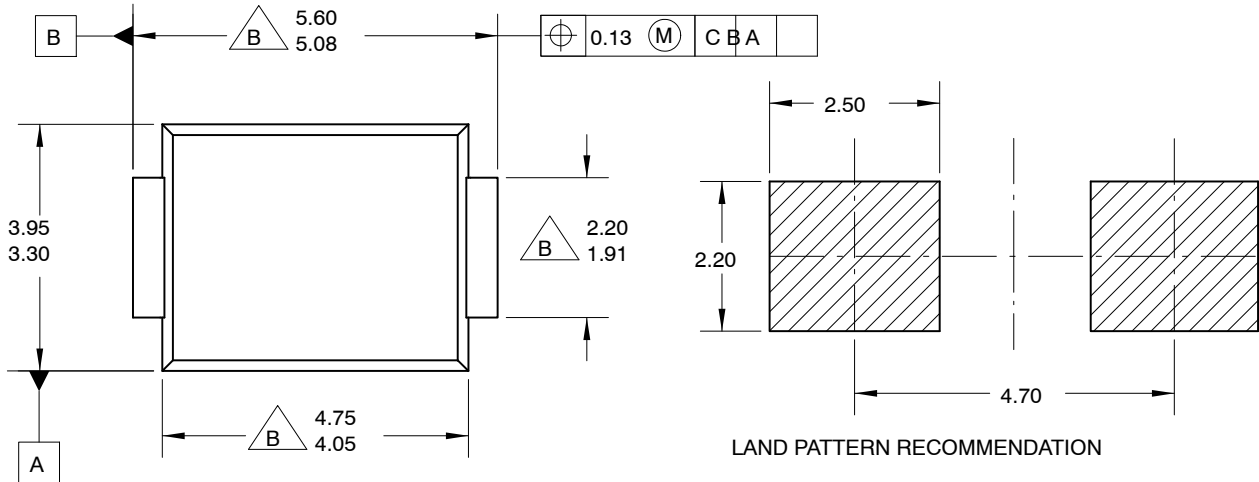
[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

*NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable

5. **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.

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ISSUE O

DATE 31 AUG 2016



NOTES:

- A. EXCEPT WHERE NOTED CONFORMS TO JEDEC DO214 VARIATION AA.
- \triangle 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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