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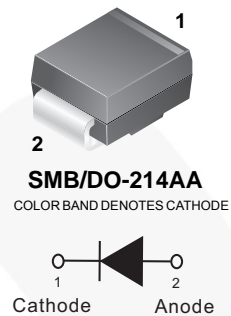


January 2016

## S3AB - S3MB 3 A, 50 V - 1000 V Surface Mount Rectifiers

### 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
  - Industrial Device Qualified per AEC-Q101 Standards
- \* See authorized use policy



### Ordering Information

| Part Number | Top Mark | Package        | Packing Method |
|-------------|----------|----------------|----------------|
| S3AB        | S3AB     | DO-214AA (SMB) | Tape and Reel  |
| S3BB        | S3BB     | DO-214AA (SMB) | Tape and Reel  |
| S3DB        | S3DB     | DO-214AA (SMB) | Tape and Reel  |
| S3GB        | S3GB     | DO-214AA (SMB) | Tape and Reel  |
| S3JB        | S3JB     | DO-214AA (SMB) | Tape and Reel  |
| S3KB        | S3KB     | DO-214AA (SMB) | Tape and Reel  |
| S3MB        | S3MB     | DO-214AA (SMB) | Tape and Reel  |

S3AB - S3MB — 3 A, 50 V - 1000 V Surface Mount Rectifiers

## Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. 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 | V                |
| $I_{F(AV)}$ | 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 |      |      |      |      |      |      | $^\circ\text{C}$ |

## Thermal Characteristics<sup>(1)</sup>

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

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

### Note:

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                                    | Conditions  | Min. | Typ. | Max. | Unit          |
|----------|--|---|------|------|------|---------------|
| $V_F$    | Instantaneous Forward Voltage <sup>(2)</sup> | $I_F = 3\text{ A}$  |      |      | 1.15 | V             |
| $I_R$    | Reverse Current at Rated $V_R$               | $T_J = 25^\circ\text{C}$  |      |      | 10   | $\mu\text{A}$ |
|          |  | $T_J = 125^\circ\text{C}$   |      |      | 250  |               |
| $T_{rr}$ | Reverse Recovery Time                        | $I_F = 0.5\text{ A}$ , $I_R = 1\text{ A}$ ,<br>$I_{rr} = 0.25\text{ A}$ |      | 1.5  |      | $\mu\text{s}$ |
| $C_J$    | Junction Capacitance                         | $V_R = 4\text{ V}$ , $f = 1\text{ MHz}$                                 |      | 40   |      | pF            |

### Note:

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

## Typical Performance Characteristics

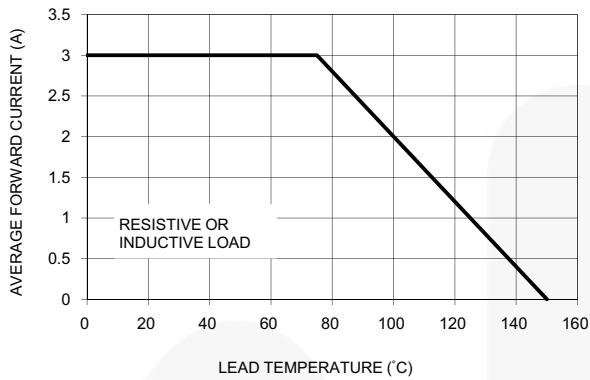


Figure 1. Forward Current Derating Curve

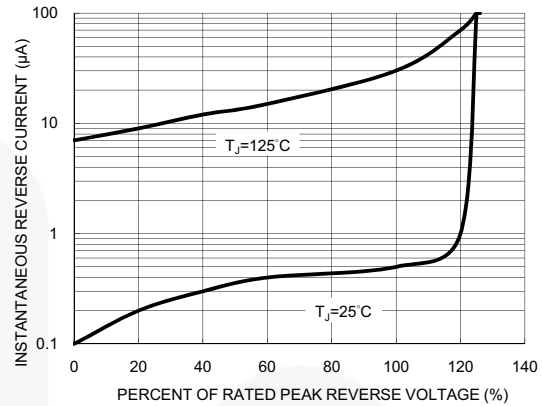


Figure 2. Typical Reverse Characteristics

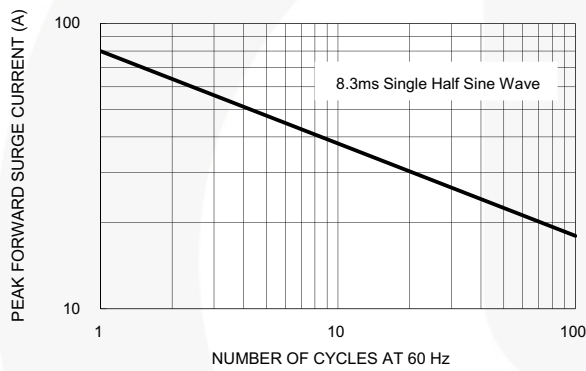


Figure 3. Maximum Non-Repetitive Forward Surge Current

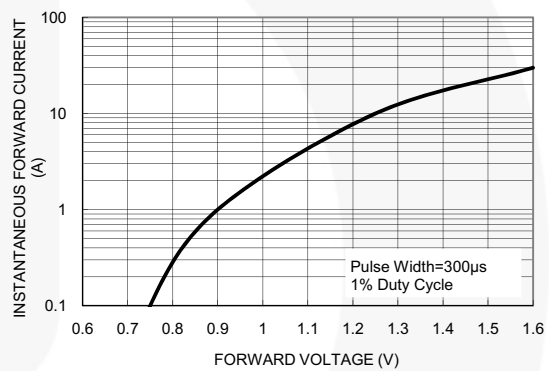


Figure 4. Typical Forward Characteristics

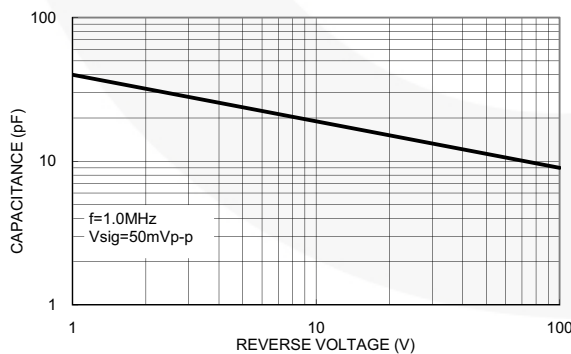


Figure 5. Typical Junction Capacitance

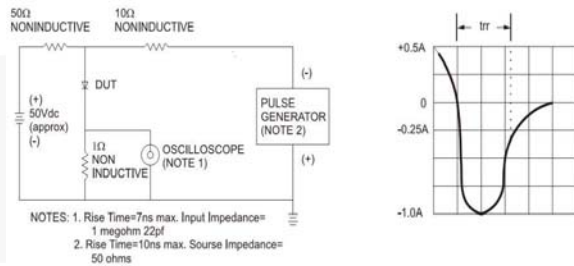
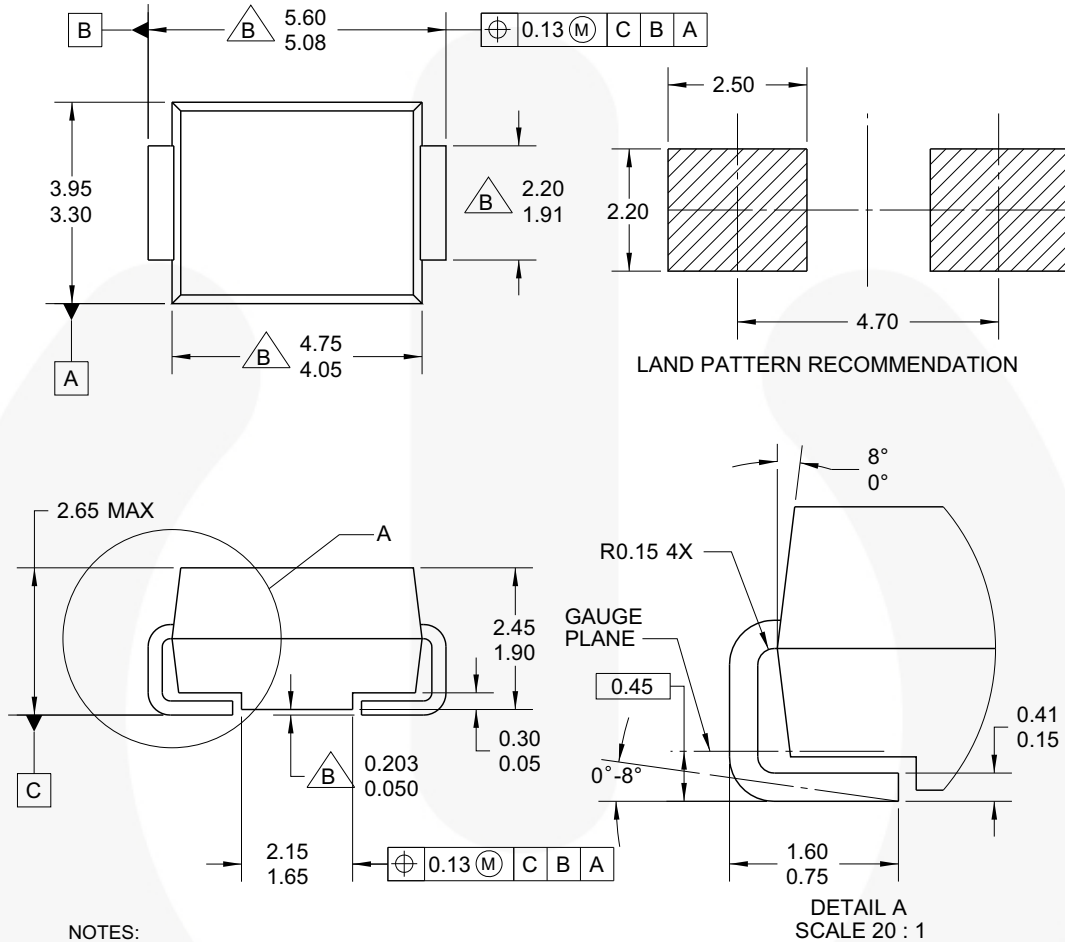


Figure 6. Reverse Recovery Time Characteristic and Test Circuit Diagram

Physical Dimensions



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.
- G. DRAWING FILE NAME: DO214AAREV1

Figure 7. 2-LEAD, SMB, JEDEC DO-214, VARIATION AA



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