



# THE DATASHEET OF NRVS3BB

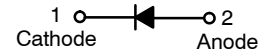


# Rectifiers, Surface Mount, 3 A, 50 V-1000 V

## S3AB-S3MB

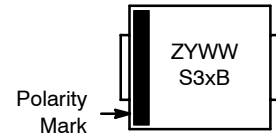
### Features

- 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



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

### ORDERING INFORMATION

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

### 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	$^\circ\text{C}/\text{W}$
$\Psi_{JL}$	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	$\mu\text{A}$
		$T_J = 125^\circ\text{C}$	-	-	250	
$t_{rr}$	Reverse Recovery Time	$I_F = 0.5\text{ A}$ , $I_R = 1\text{ A}$ , $I_{rr} = 0.25\text{ A}$	-	1.5	-	$\mu\text{s}$
$C_J$	Junction Capacitance	$V_R = 4\text{ V}$ , $f = 1\text{ MHz}$	-	40	-	pF

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.

TYPICAL PERFORMANCE CHARACTERISTICS

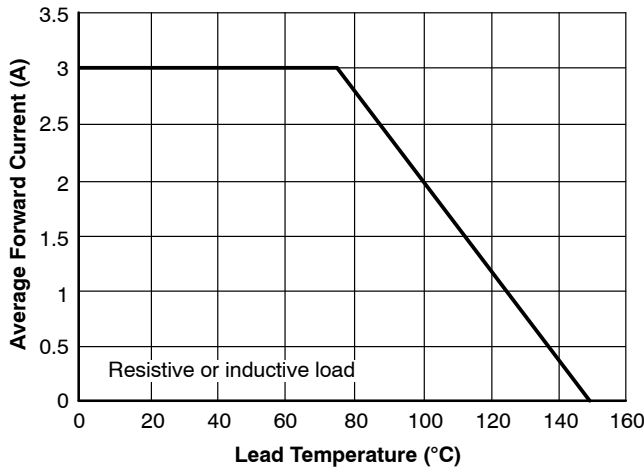


Figure 1. Forward Current Derating Curve

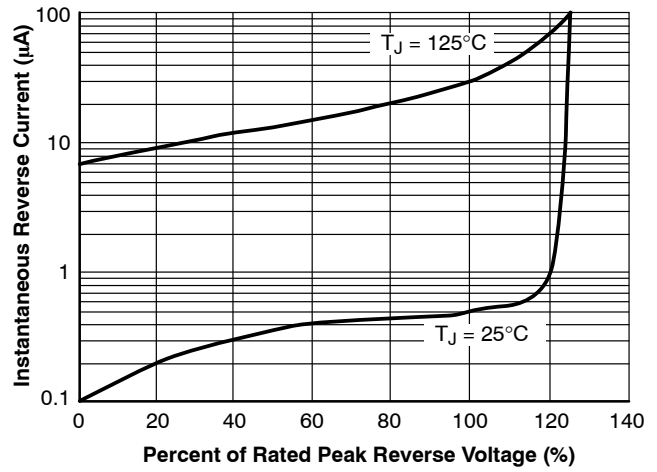


Figure 2. Typical Reverse Characteristics

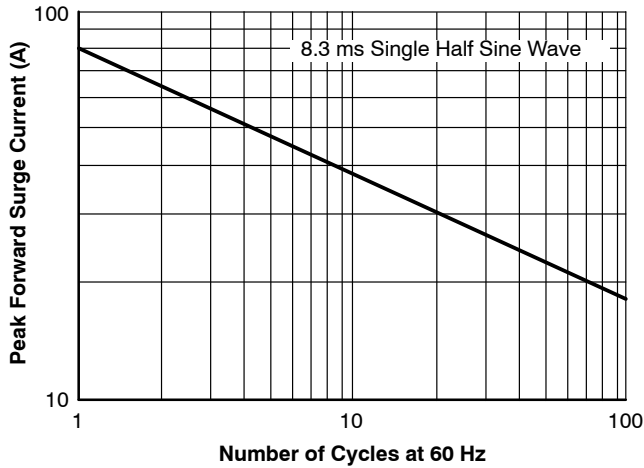


Figure 3. Maximum Non-Repetitive Forward Surge Current

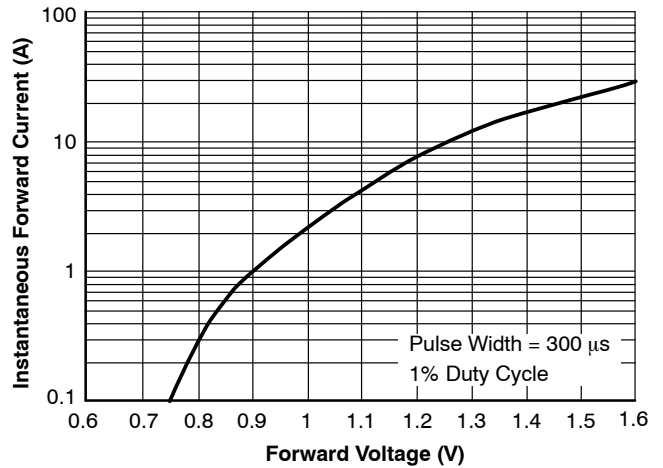


Figure 4. Typical Forward Characteristics

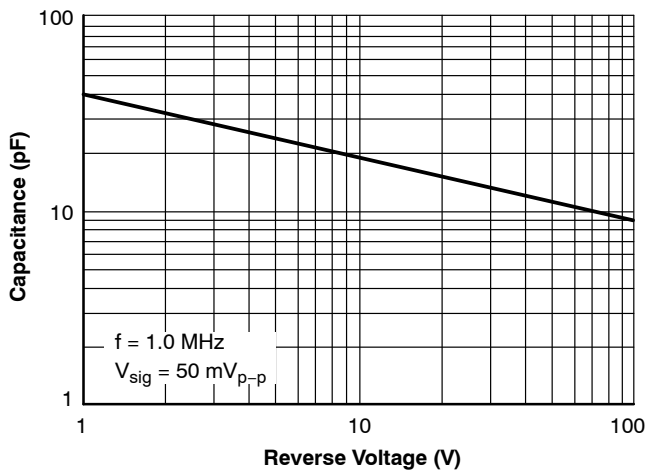
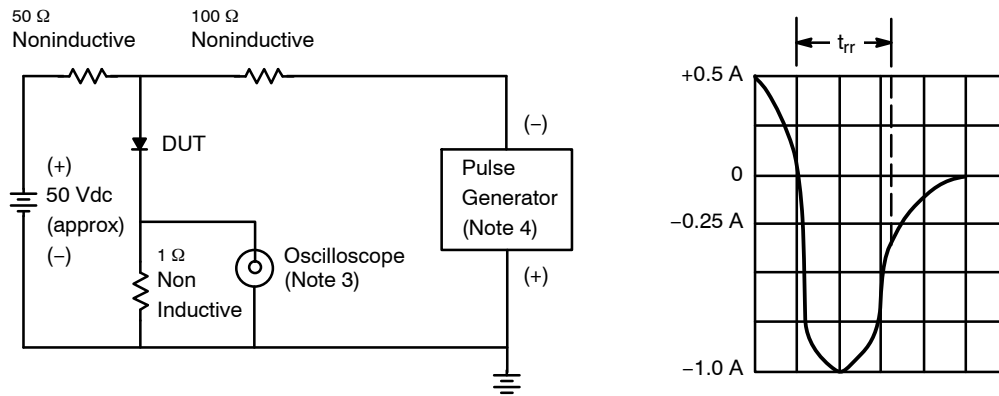


Figure 5. Typical Junction Capacitance

# 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 M $\Omega$ , 22 pF
4. Rise Time = 10 ns max. Source Impedance = 50  $\Omega$ , 22 pF

### ORDERING INFORMATION

Part Number	Device Code Marking	Package	Shipping <sup>†</sup>
S3AB, NRVS3AB*	S3AB	SMB (Pb-Free, Halide-Free)	3000 / Tape & Reel
S3BB, NRVS3BB*	S3BB		
S3DB, NRVS3DB*	S3DB		
S3GB, NRVS3GB*	S3GB		
S3JB, NRVS3JB*	S3JB		
S3KB, NRVS3KB*	S3KB		
S3MB, NRVS3MB*	S3MB		

<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

# MECHANICAL CASE OUTLINE

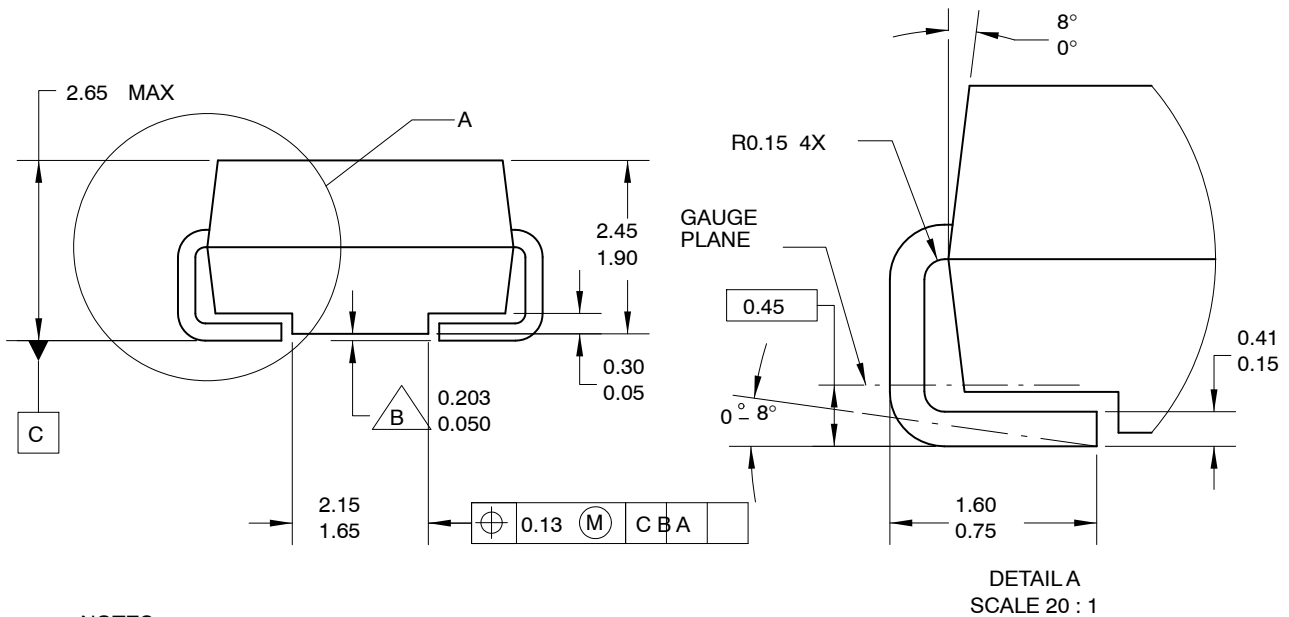
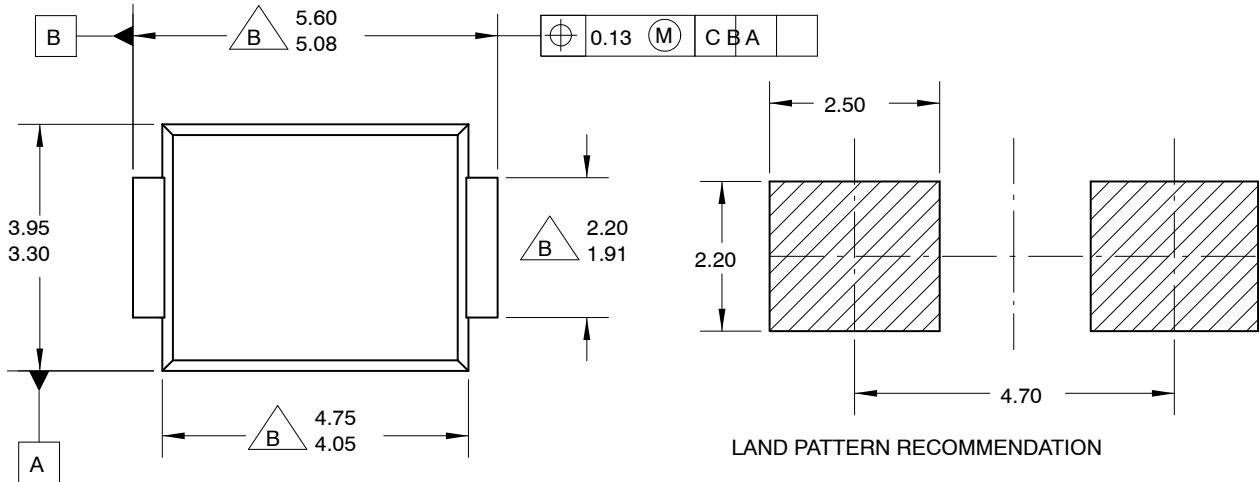
## PACKAGE DIMENSIONS

ON Semiconductor®



### SMB CASE 403AF 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.
- E. DIMENSION AND TOLERANCE AS PER ASME Y14.5-1994.
- F. LAND PATTERN STD. DIOM5336X240M.

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