

SS13HE, NRVBSS13HE Series

Surface Mount Schottky Barrier Rectifiers

1 A, 30 V – 60 V

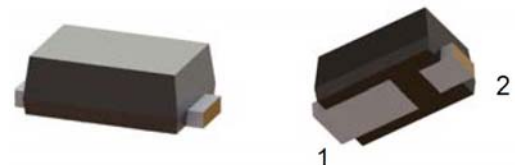
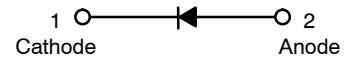
Features

- Very Low Profile – Typical Height of 0.68 mm
- Low Power Loss, High Efficiency
- Moisture Sensitivity Level 1 per J-STD-020
- UL Flammability 94V-0 Classification
- RoHS Compliant / Green Molding Compound
- NRVB Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable



ON Semiconductor®

www.onsemi.com



SOD-323HE
CASE 477AD

ORDERING INFORMATION

Part Number	Top Mark	Package	Packing Method†
SS13HE	1A	SOD-323HE	Tape and Reel
SS14HE	1B	SOD-323HE	Tape and Reel
SS16HE	1C	SOD-323HE	Tape and Reel
NRVBSS13HE	1A	SOD-323HE	Tape and Reel
NRVBSS14HE	1B	SOD-323HE	Tape and Reel
NRVBSS16HE	1C	SOD-323HE	Tape and Reel

†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.

SS13HE, NRVBSS13HE Series

Table 1. ABSOLUTE MAXIMUM RATINGS Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Value			Unit
		SS13HE	SS14HE	SS16HE	
V_{RRM}	Maximum Repetitive Peak Reverse Voltage	30	40	60	V
V_R	Reverse Voltage	30	40	60	V
$I_{F(AV)}$	Maximum Average Forward Rectified Current	1			A
I_{FSM}	Peak Forward Surge Current: 8.3 ms Single Half Sine-Wave Superimposed on Rated Load	25			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.

Table 2. THERMAL CHARACTERISTICS (Note 1) Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Value	Unit
Ψ_{JL}	Junction-to-Lead Thermal Resistance Thermocouple Soldered to Cathode	21	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance (Note 1)	199	$^\circ\text{C}/\text{W}$

1. Per JESD51-3 Recommended Thermal Test Board. Device mounted on FR-4 PCB, board size = 76.2 mm x 114.3 mm

Table 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 (Note 2)	SS13HE, SS14HE	$I_F = 0.5 \text{ A}, T_J = 25^\circ\text{C}$		0.41		V	
			$I_F = 0.5 \text{ A}, T_J = 125^\circ\text{C}$		0.31			
			$I_F = 1.0 \text{ A}, T_J = 25^\circ\text{C}$		0.46	0.55		
			$I_F = 1.0 \text{ A}, T_J = 125^\circ\text{C}$		0.40	0.50		
		SS16HE	$I_F = 0.5 \text{ A}, T_J = 25^\circ\text{C}$		0.51			
			$I_F = 0.5 \text{ A}, T_J = 125^\circ\text{C}$		0.45			
			$I_F = 1.0 \text{ A}, T_J = 25^\circ\text{C}$		0.61	0.68		
			$I_F = 1.0 \text{ A}, T_J = 125^\circ\text{C}$		0.54	0.60		
I_R	Reverse Current at Rated V_R	SS13HE, SS14HE	$T_J = 25^\circ\text{C}$		5.0	50	μA	
			$T_J = 125^\circ\text{C}$		3.0	10	mA	
		SS16HE	$T_J = 25^\circ\text{C}$		2.0	50	μA	
			$T_J = 125^\circ\text{C}$		1.5	10	mA	
T_{rr}	Reverse Recovery Time	SS13HE, SS14HE	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		5.6		ns	
				SS16HE		8.3		
C_J	Junction Capacitance	SS13HE, SS14HE	$V_R = 4.0 \text{ V}, f = 1 \text{ MHz}$		55		pF	
				SS16HE		43		

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

SS13HE, NRVBSS13HE Series

TYPICAL PERFORMANCE CHARACTERISTICS

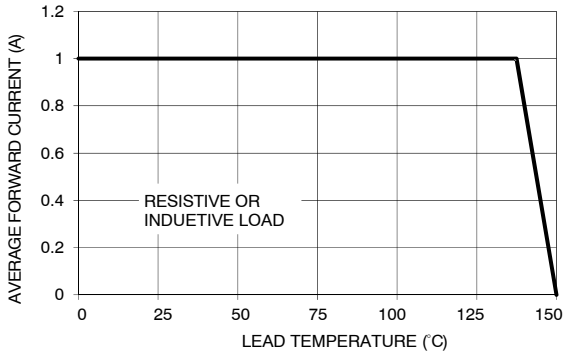


Figure 1. Forward Current Derating Curve

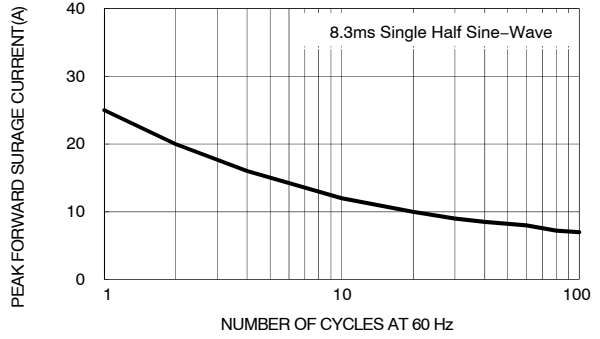


Figure 2. Maximum Non-Repetitive Forward Surge Current

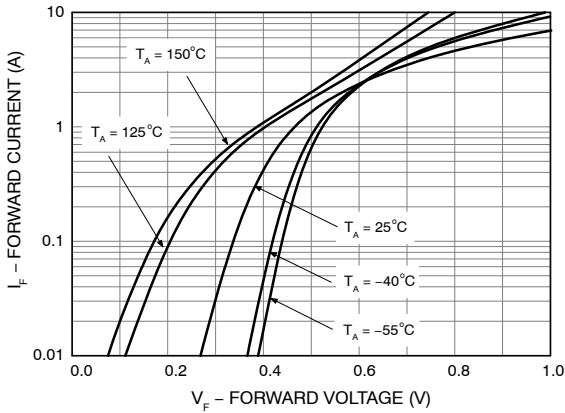


Figure 3. Typical Forward Characteristics - SS13HE / SS14HE

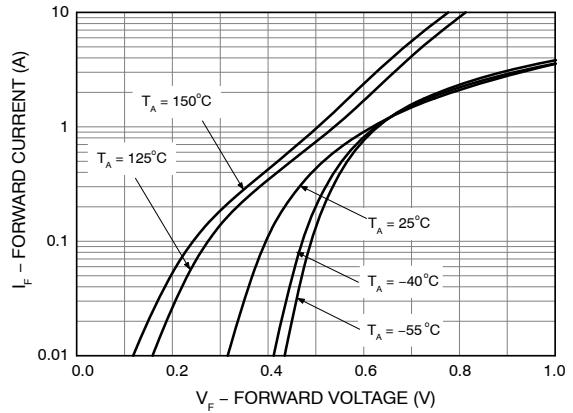


Figure 4. Typical Forward Characteristics - SS16HE

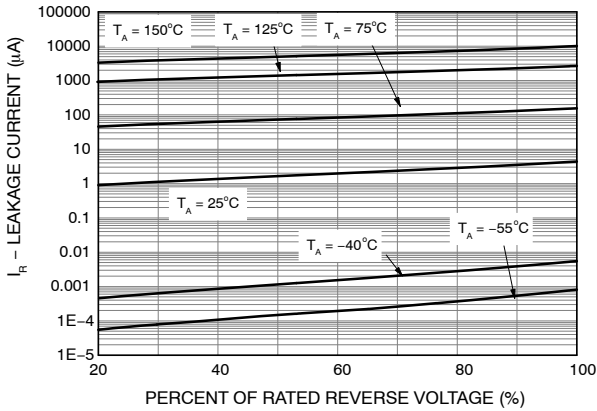


Figure 5. Typical Reverse Characteristics - SS13HE / SS14HE

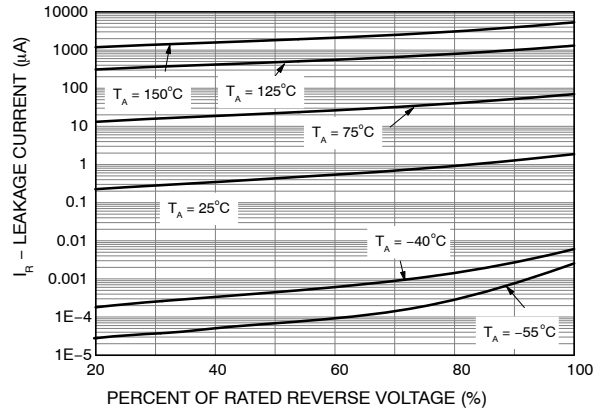


Figure 6. Typical Reverse Characteristics - SS16HE

SS13HE, NRVBSS13HE Series

TYPICAL PERFORMANCE CHARACTERISTICS

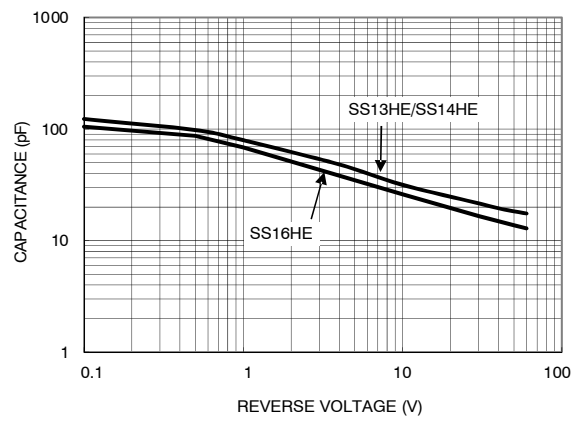
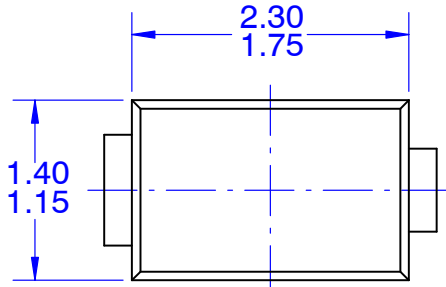


Figure 7. Typical Junction Capacitance

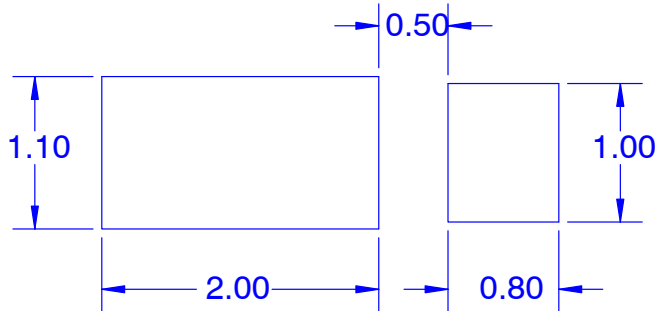
SS13HE, NRVBSS13HE Series

PACKAGE DIMENSIONS

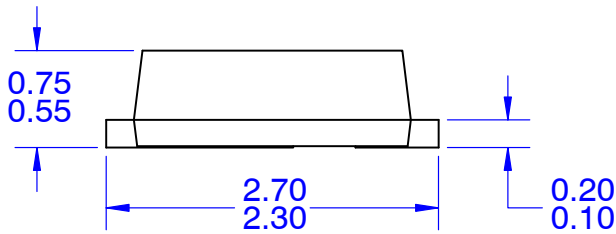
SOD-323EP
CASE 477AD
ISSUE O



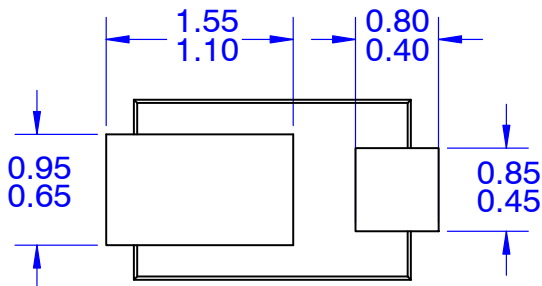
TOP VIEW



LAND PATTERN RECOMMENDATION




FRONT VIEW



BOTTOM VIEW

NOTES:

- A. THIS PACKAGE DOES NOT CONFORM TO ANY STANDARDS.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.

ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative