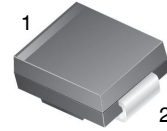


# Fast Rectifiers

## ES3A - ES3J

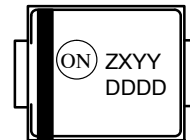
### Features

- For Surface Mount Applications
- Glass-Passivated Junction
- Low-Profile Package
- Easy Pick and Place
- Built-in Strain Relief
- Superfast Recovery Times for High Efficiency
- These Devices are Pb-Free and Halid Free



SMC  
CASE 403AG

### MARKING DIAGRAM



- Z = Assembly Plant Code
- X = Last Digit of Year of Manufacture
- YY = Weekly Code of Manufacture
- DDDD = Specific Device Code

### ORDERING INFORMATION

Part Number	Device Code Marking	Package	Shipping†
ES3A	ES3A	DO-214AB (SMC) (Pb-Free)	3000 / Tape & Reel
ES3B	ES3B		3000 / Tape & Reel
ES3C	ES3C		3000 / Tape & Reel
ES3D	ES3D		3000 / Tape & Reel
ES3J	ES3J		3000 / Tape & 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.

## ES3A – ES3J

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

Symbol	Parameter	Value					Unit
		ES3A	ES3B	ES3C	ES3D	ES3J	
$V_{RRM}$	Maximum Repetitive Reverse Voltage	50	100	150	200	600	V
$I_{F(AV)}$	Average Rectified Forward Current, .375" Lead Length $T_A = 75^\circ\text{C}$	3.0					A
$I_{FSM}$	Non-Repetitive Peak Forward Surge Current 8.3 ms Single Half-Sine Wave	100					A
$T_{STG}$	Storage Temperature Range	-55 to +150					$^\circ\text{C}$
$T_J$	Operating Junction Temperature	-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 ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter		Value	Unit
$P_D$	Power Dissipation		1.66	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (Note 1)	Maximum Land Pattern: 16 x 16 mm	47	$^\circ\text{C}/\text{W}$
		Minimum Land Pattern: 2.6 x 3.2 mm	125	
$R_{\theta JL}$	Thermal Resistance, Junction to Lead (Note 1)	Maximum Land Pattern: 16 x 16 mm	12	$^\circ\text{C}/\text{W}$
		Minimum Land Pattern: 2.6 x 3.2 mm	16	

1. Device mounted on FR-4 PCB 0.013 mm.

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

Symbol	Parameter	Conditions	Value					Unit
			ES3A	ES3B	ES3C	ES3D	ES3J	
$V_F$	Maximum Forward Voltage	$I_F = 3.0\text{ A}$	0.95			1.70	V	
$t_{rr}$	Reverse Recovery Time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ $I_{RR} = 0.25\text{ A}$	Typ.	20			35	ns
			Max.	30			45	
$I_R$	Maximum Reverse Current at Rated $V_R$	$T_A = 25^\circ\text{C}$	10				$\mu\text{A}$	
		$T_A = 100^\circ\text{C}$	500					
$C_T$	Total Capacitance	$V_R = 4.0\text{ V}$ , $f = 1.0\text{ MHz}$	45				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.

# ES3A - ES3J

## TYPICAL PERFORMANCE CHARACTERISTICS

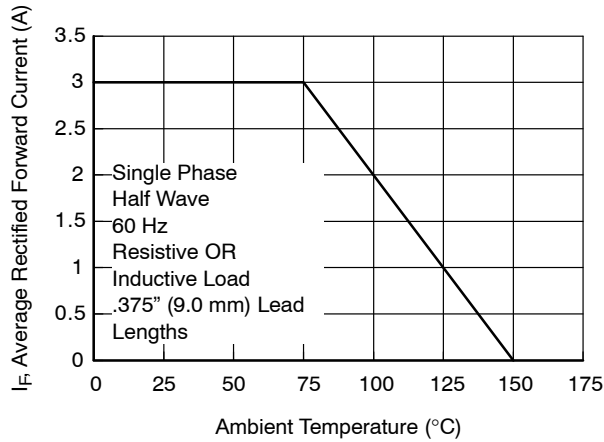


Figure 1. Forward Current Derating Curve

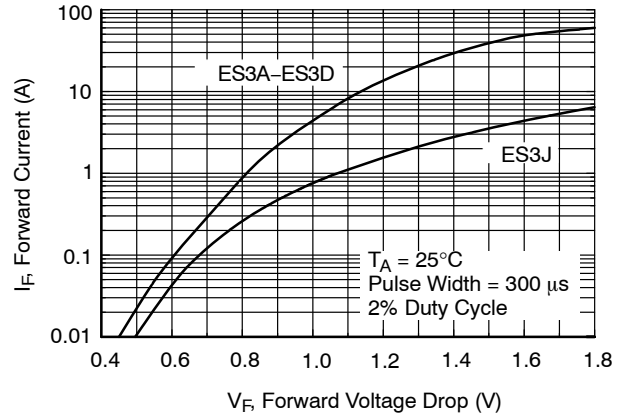


Figure 2. Forward Voltage Characteristics

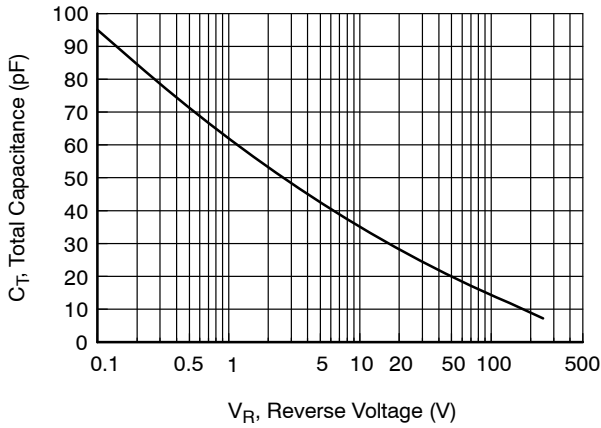


Figure 3. Total Capacitance

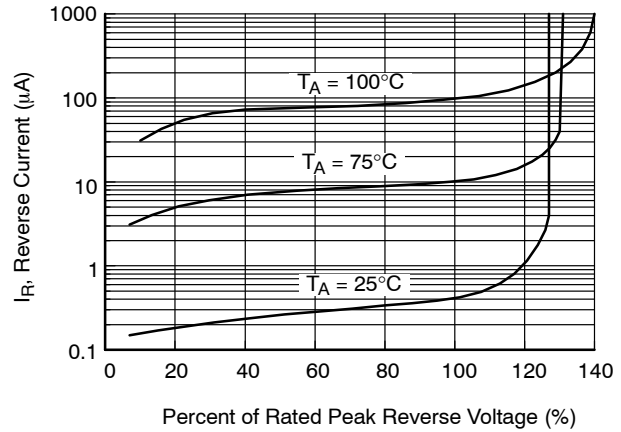
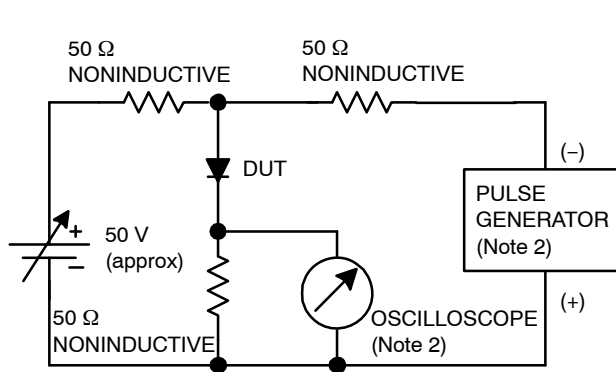


Figure 4. Reverse Current vs. Reverse Voltage



NOTES:

2. Rise time = 7.0 ns max; Input impedance = 1.0 MΩ 22 pF.
3. Rise time = 10 ns max; Source impedance = 50 Ω.

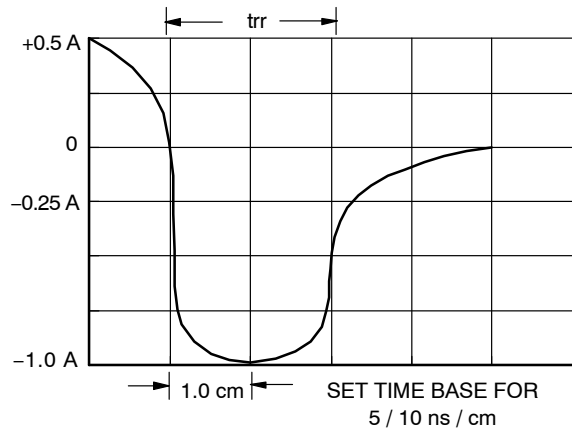
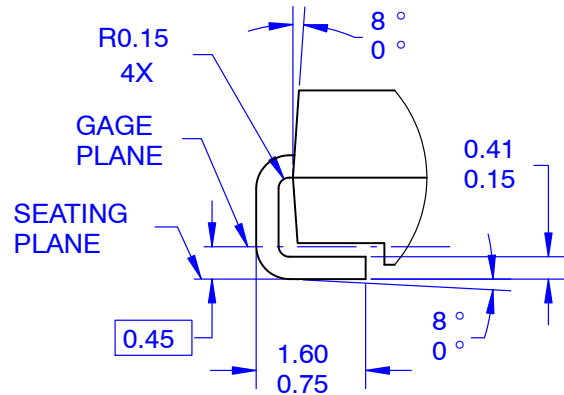
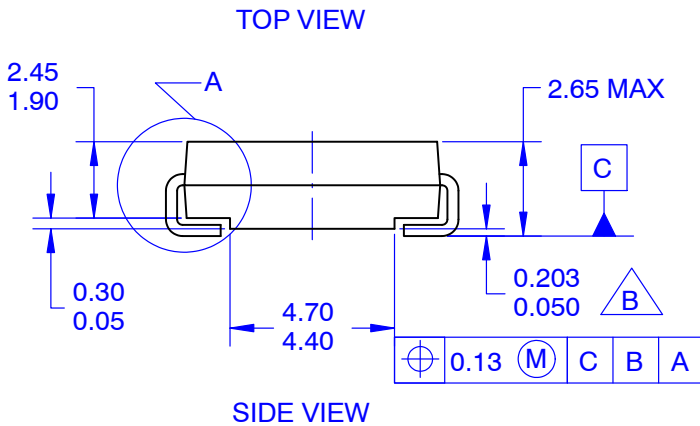
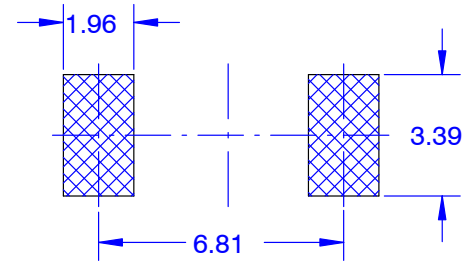
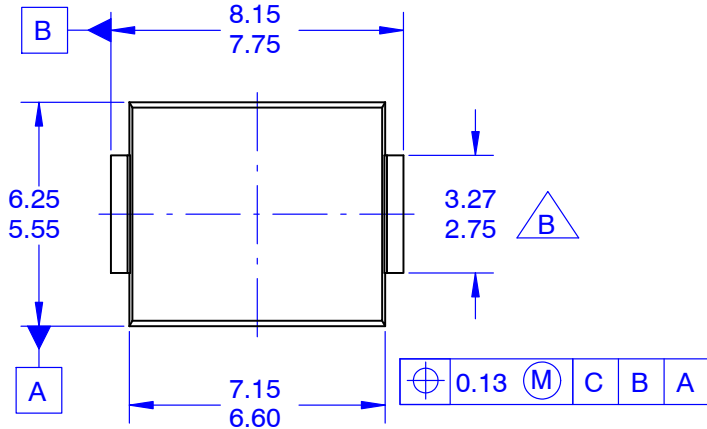


Figure 5. Reverse Recovery Time Characteristics and Test Circuit Diagram

**SMC**  
**CASE 403AG**  
**ISSUE O**

DATE 31 AUG 2016



**NOTES:**

A. EXCEPT WHERE NOTED, CONFORMS TO JEDEC DO-214, VARIATION AB

**B** DOES NOT COMPLY TO JEDEC STD. VALUE

C. ALL DIMENSIONS ARE IN MILLIMETERS

D. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR PROTRUSIONS.

E. DIMENSIONS AND TOLERANCING AS PER ASME Y14.5-2009

F. LAND PATTERN STANDARD: DIOM7957X241M

<b>DOCUMENT NUMBER:</b>	<b>98AON13442G</b>	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
<b>DESCRIPTION:</b>	<b>SMC</b>	<b>PAGE 1 OF 1</b>

onsemi and ONSEMI are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi 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. onsemi does not convey any license under its patent rights nor the rights of others.

**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** 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 **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** 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. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** 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 **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** 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 **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

---

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

### ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at [www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)

