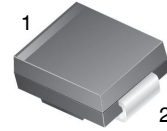


# Fast Rectifiers

## ES3A - ES3J

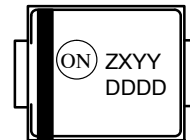
### Features

- 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	$^\circ\text{C/W}$
		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	$^\circ\text{C/W}$
		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

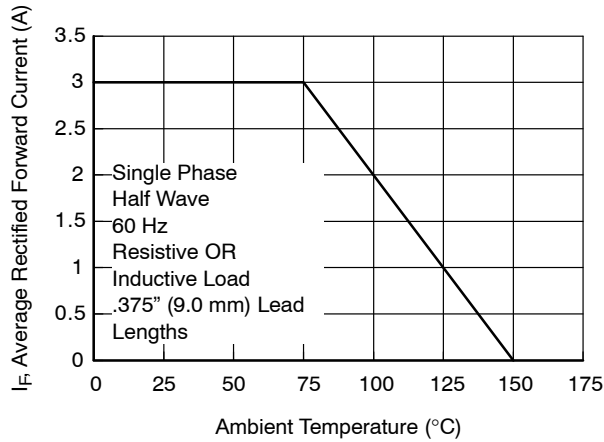


Figure 1. Forward Current Derating Curve

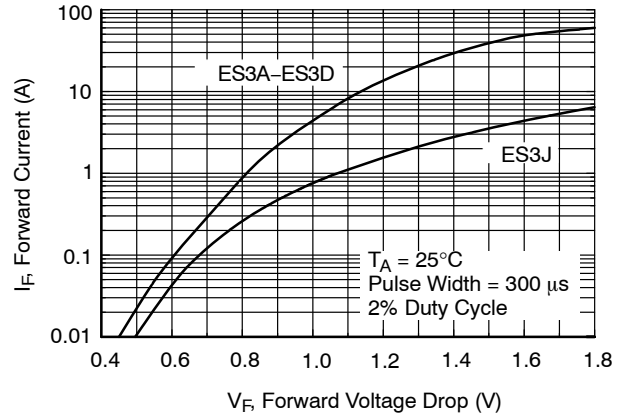


Figure 2. Forward Voltage Characteristics

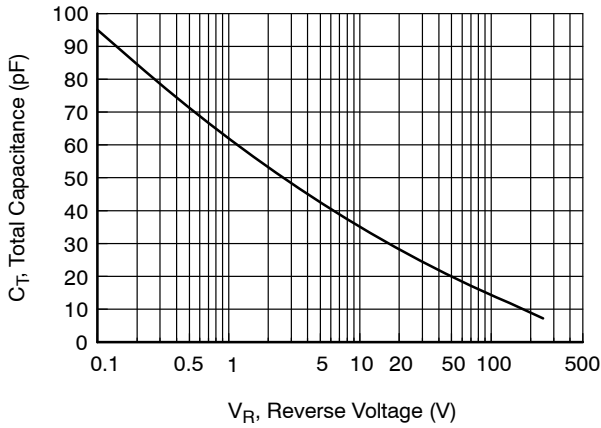


Figure 3. Total Capacitance

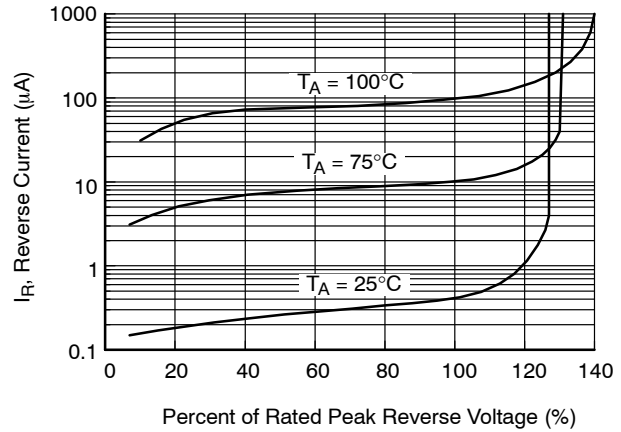
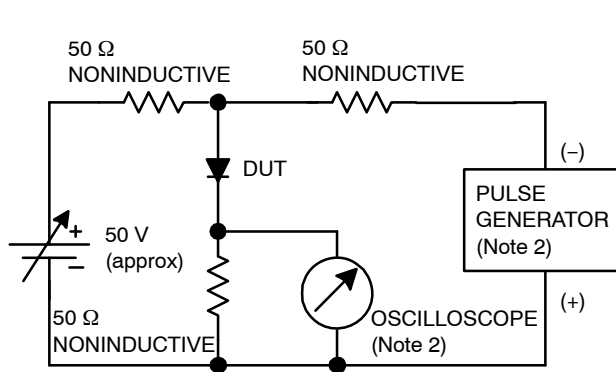


Figure 4. Reverse Current vs. Reverse Voltage



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.

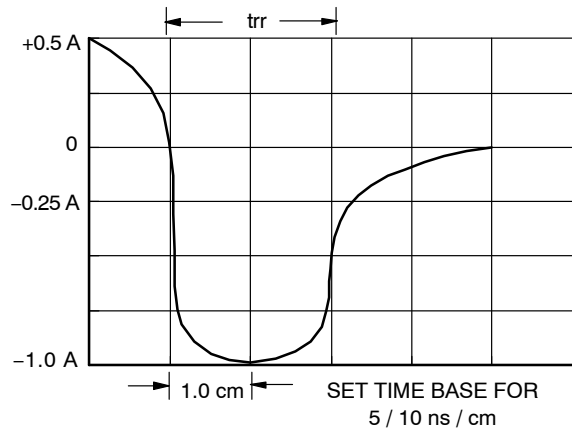


Figure 5. Reverse Recovery Time Characteristics and Test Circuit Diagram

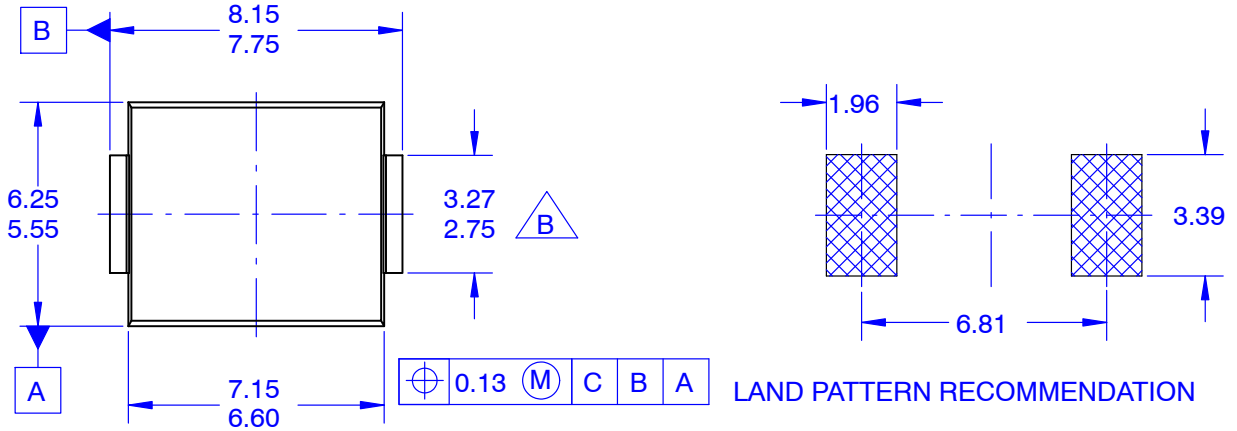
**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

ON Semiconductor®

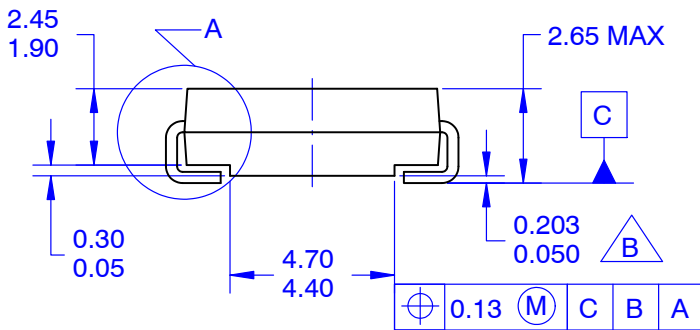


**SMC**  
**CASE 403AG**  
**ISSUE O**

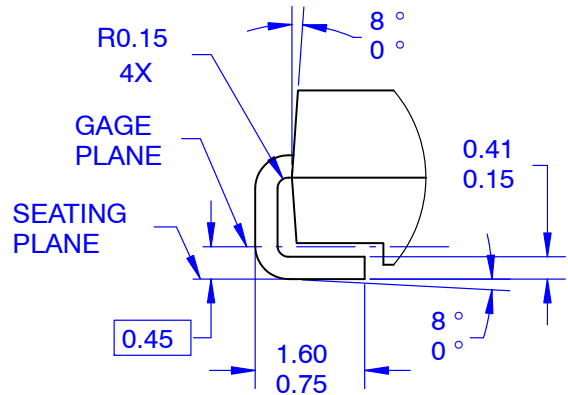
DATE 31 AUG 2016



TOP VIEW



SIDE VIEW



DETAIL A  
 SCALE 2:1

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

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