

# 1.0 A Ultra Fast Recovery Rectifier

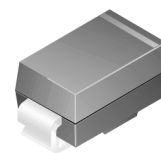
## ES1A-ES1D

### 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
- This Device is Pb-Free and is RoHS Compliant

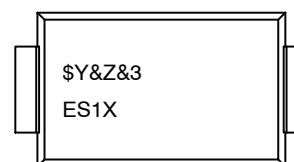
### Applications

- This Product is General Usage and Suitable for Many Different Applications



**SMA**  
**CASE 403AE**  
(COLOR BAND DENOTES CATHODE)

### MARKING DIAGRAM



|      |                           |
|------|---------------------------|
| \$Y  | = ON Semiconductor Logo   |
| &Z   | = Assembly Plant Code     |
| &3   | = Data Code (Year & Week) |
| ES1X | = Specific Device Code    |
| X    | = A/B/C/D                 |

### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

# ES1A–ES1D

## ABSOLUTE MAXIMUM RATINGS $T_A = 25^\circ\text{C}$ Unless Otherwise Noted

| Symbol      | Parameter                                                                 | Value       |     |     |     | Units            |
|-------------|---------------------------------------------------------------------------|-------------|-----|-----|-----|------------------|
|             |                                                                           | 1A          | 1B  | 1C  | 1D  |                  |
| $V_{RRM}$   | Maximum Repetitive Reverse Voltage                                        | 50          | 100 | 150 | 200 | V                |
| $I_{F(AV)}$ | Average Rectified Forward Current, @ $T_A = 120^\circ\text{C}$            | 1.0         |     |     |     | A                |
| $I_{FSM}$   | Non-repetitive Peak Forward Surge Current<br>8.3 ms Single Half-Sine-Wave | 30          |     |     |     | A                |
| $T_{stg}$   | Storage Temperature Range                                                 | -50 to +150 |     |     |     | $^\circ\text{C}$ |
| $T_{Jm}$    | Operating Junction Temperature                                            | -50 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

| Symbol          | Parameter                                | Value | Units                     |
|-----------------|------------------------------------------|-------|---------------------------|
| $P_D$           | Power Dissipation                        | 1.47  | W                         |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient* | 85    | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JL}$ | Thermal Resistance, Junction to Lead*    | 35    | $^\circ\text{C}/\text{W}$ |

\*Device mounted on FR-4 PCB 0.013 mm.

## ELECTRICAL CHARACTERISTICS $T_J = 25^\circ\text{C}$ Unless Otherwise Noted

| Symbol   | Parameter                                                                                       | Device     |    |    |    | Units         |
|----------|-------------------------------------------------------------------------------------------------|------------|----|----|----|---------------|
|          |                                                                                                 | 1A         | 1B | 1C | 1D |               |
| $V_F$    | Forward Voltage @ 1.0 A                                                                         | 0.92       |    |    |    | V             |
| $t_{rr}$ | Reverse Recovery Time<br>$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{RR} = 0.25\text{ A}$ | 15         |    |    |    | ns            |
| $I_R$    | Reverse Current @ rated $V_R$<br>$T_A = 25^\circ\text{C}$<br>$T_A = 100^\circ\text{C}$          | 5.0<br>100 |    |    |    | $\mu\text{A}$ |
| $C_T$    | Total Capacitance<br>$V_R = 4.0\text{ V}$ , $f = 1.0\text{ MHz}$                                | 7.0        |    |    |    | 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.

## PACKAGE MARKING AND ORDERING INFORMATION TBD

| Device Marking | Device | Package | Quantity <sup>†</sup> |
|----------------|--------|---------|-----------------------|
| ES1A           | ES1A   | SMA     | 7500 / Tape & Reel    |
| ES1B           | ES1B   | SMA     | 7500 / Tape & Reel    |
| ES1C           | ES1C   | SMA     | 7500 / Tape & Reel    |
| ES1D           | ES1D   | SMA     | 7500 / Tape & Reel    |

<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.

# ES1A-ES1D

## TYPICAL CHARACTERISTICS

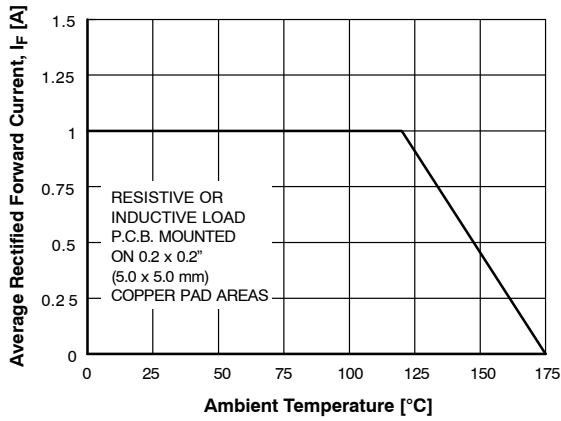


Figure 1. Forward Current Derating Curve

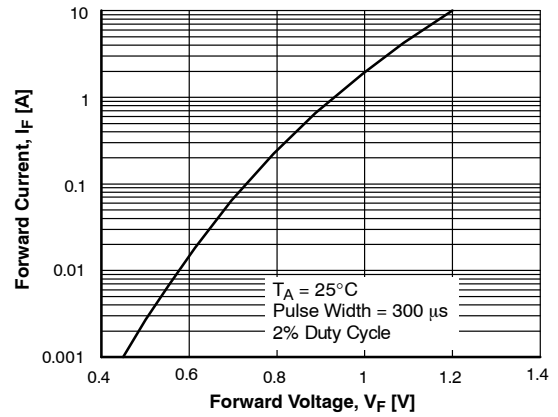


Figure 2. Forward Voltage Characteristics

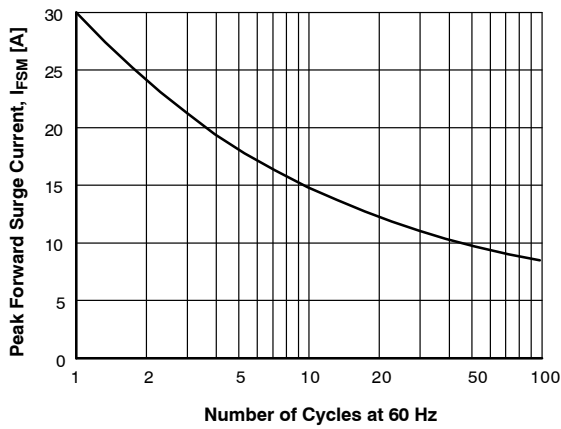


Figure 3. Non-Repetitive Surge Current

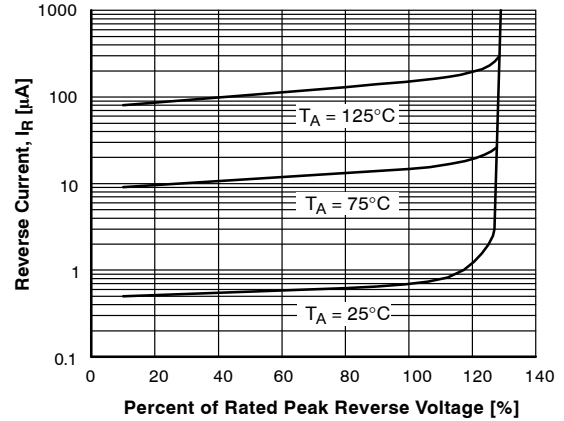


Figure 4. Reverse Current vs Reverse Voltage

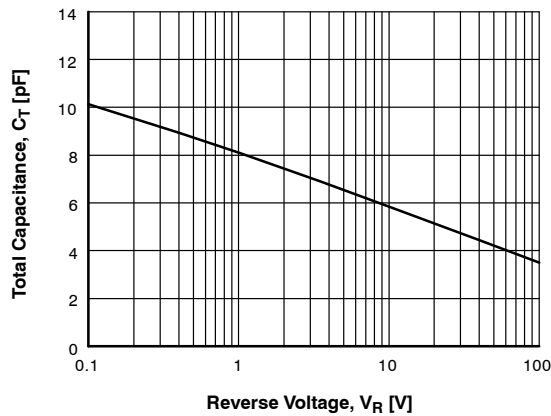
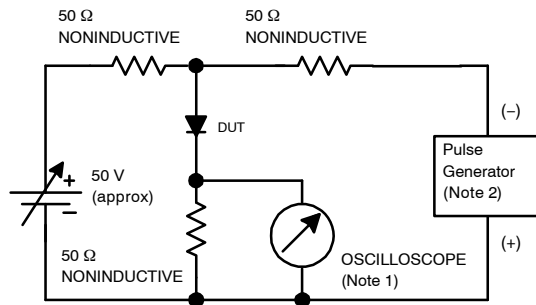


Figure 5. Total Capacitance

TYPICAL CHARACTERISTICS (continued)



NOTES:

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

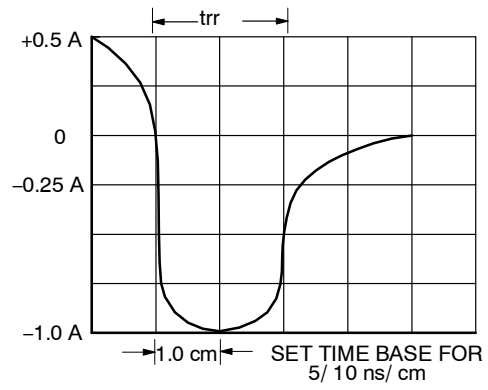
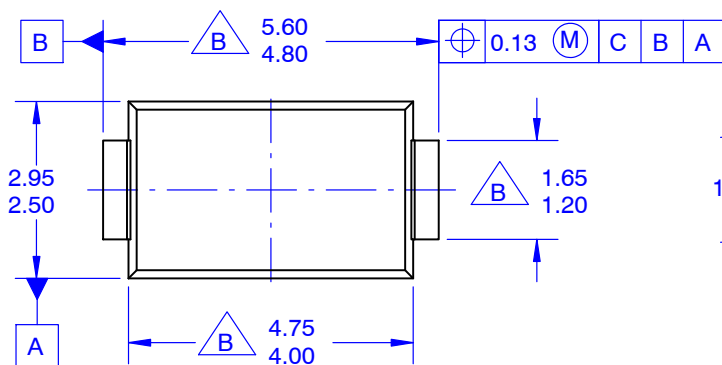


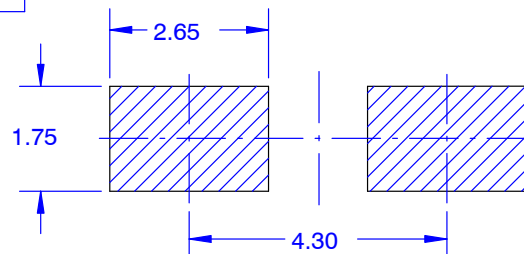
Figure 6. Reverse Recovery Time Characteristic and Test Circuit Diagram

**SMA**  
**CASE 403AE**  
**ISSUE O**

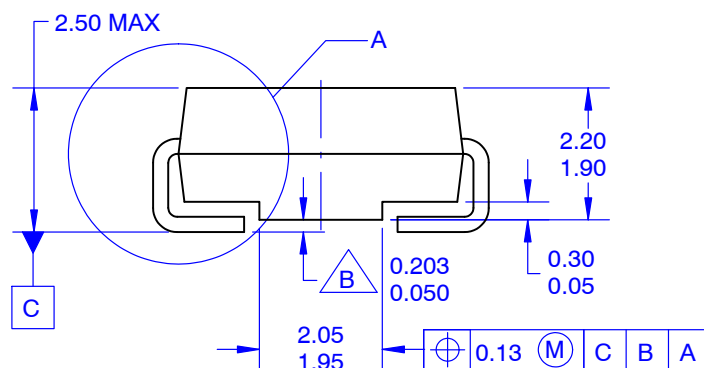
DATE 31 AUG 2016



TOP VIEW



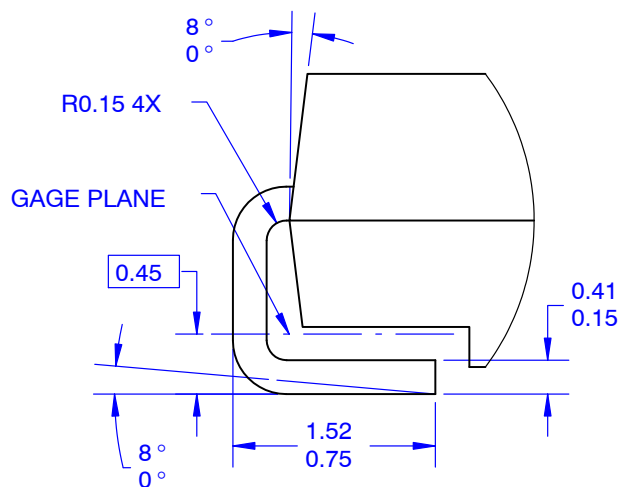
## LAND PATTERN RECOMMENDATION



### SIDE VIEW

NOTES:

- A. EXCEPT WHERE NOTED, CONFORMS TO JEDEC DO214 VARIATION AC.
-  B. DOES NOT COMPLY JEDEC STANDARD VALUE.
- C. ALL DIMENSIONS ARE IN MILLIMETERS.
- D. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
- E. DIMENSIONS AND TOLERANCE AS PER ASME Y14.5-2009.
- F. LAND PATTERN STD. DIOM5025X231M



DETAIL A  
SCALE 20 : 1

|                         |                    |                                                                                                                                                                                     |
|-------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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