

# Surface Mount Ultrafast Rectifier

## ES1JFL

### Features

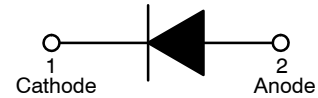
- Fast Switching Speed – Maximum  $T_{rr}$  35 ns
- Ultra Thin Profile – Maximum Height of 1.08 mm
- Glass Passivated Junction
- UL Flammability 94V-0 Classification
- MSL 1
- Green Mold Compound
- These Devices are Pb-Free, Halogen Free and are RoHS Compliant

### Specifications

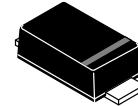
#### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Symbol         | Parameter                                                                            | Value       | Unit             |
|----------------|--------------------------------------------------------------------------------------|-------------|------------------|
| $V_{RRM}$      | Repetitive Peak Reverse Voltage                                                      | 600         | V                |
| $V_{RMS}$      | RMS Voltage                                                                          | 420         | V                |
| $V_{DC}$       | DC Blocking Voltage                                                                  | 600         | V                |
| $I_{F(AV)}$    | Average Forward Current at $T_L = 120^\circ\text{C}$                                 | 1           | A                |
| $I_{FSM}$      | Peak Forward Surge Current, 8.3 ms Single Half Sine-Wave at $T_L = 25^\circ\text{C}$ | 30          | A                |
| $T_J, T_{STG}$ | Operating and 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.



Ultrafast Rectifier



SOD-123F  
CASE 425AD

### MARKING DIAGRAMS



Band Indicates Cathode

- &Y = Binary Calendar Year Coding Scheme  
 &Z = Assembly Plant Code  
 E1J = Specific Device Code  
 &G = Single Digit Weekly Data Code

### ORDERING INFORMATION

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

## ES1JFL

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

| Symbol          | Characteristic                                           | Value | Unit               |
|-----------------|----------------------------------------------------------|-------|--------------------|
| $R_{\theta JA}$ | Typical Thermal Resistance, Junction-to-Ambient (Note 1) | 200   | $^\circ\text{C/W}$ |
| $R_{\theta JC}$ | Typical Thermal Resistance, Junction-to-Case (Note 2)    | 30    | $^\circ\text{C/W}$ |

1. Mounted on an FR4 PCB, single-sided copper, mini pad.
2. Mounted on an FR4 PCB, single-sided copper, with 10 cm x 10 cm copper pad area.

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

| Symbol   | Parameter             | Conditions                                                     | Min | Typ   | Max   | Unit          |
|----------|-----------------------|----------------------------------------------------------------|-----|-------|-------|---------------|
| $V_F$    | Forward Voltage       | $I_F = 1\text{ A}$                                             | –   | –     | 1.7   | V             |
| $I_R$    | Reverse Current       | $V_R = 600\text{ V}$                                           | –   | –     | 0.5   | $\mu\text{A}$ |
|          |                       | $V_R = 600\text{ V}, T_A = 100^\circ\text{C}$                  | –   | –     | 10    |               |
| $C_J$    | Capacitance           | $V_R = 4\text{ V}, f = 1.0\text{ MHz}$                         | –   | 7     | –     | pF            |
| $T_{rr}$ | Reverse Recovery Time | $I_F = 0.5\text{ A}, I_R = 1\text{ A}, I_{rr} = 0.25\text{ A}$ | –   | 22.55 | 35.00 | ns            |

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.

### ORDERING INFORMATION

| Part Number | Top Mark | Package                            | Shipping <sup>†</sup> |
|-------------|----------|------------------------------------|-----------------------|
| ES1JFL      | E1J      | SOD-123F<br>(Pb-Free/Halogen Free) | 3000 / 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.

### TYPICAL PERFORMANCE CHARACTERISTICS

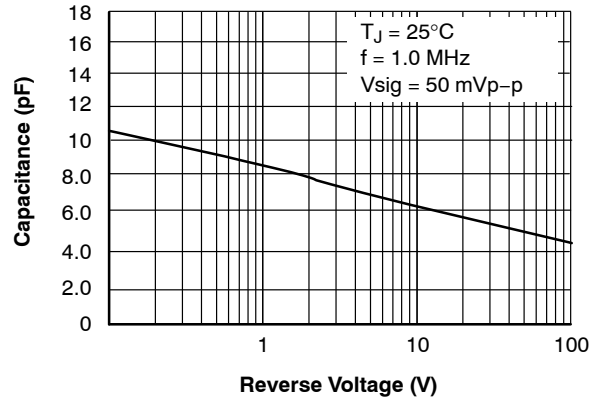


Figure 1. Typical Junction Capacitance

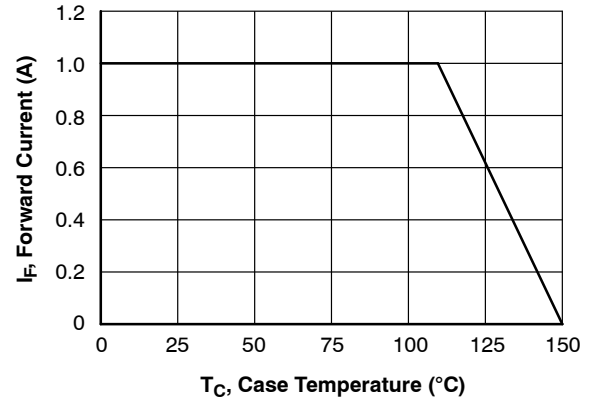


Figure 2. Forward Current Derating Curve

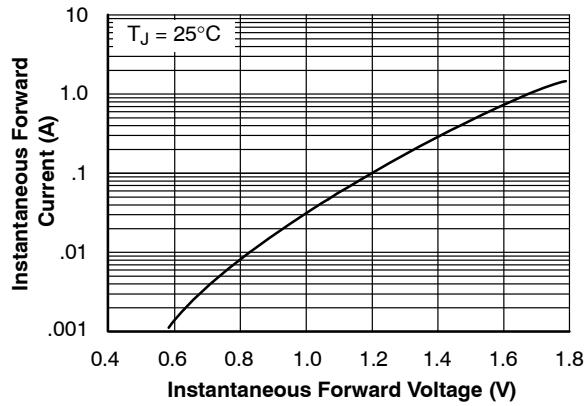


Figure 3. Typical Forward Characteristics

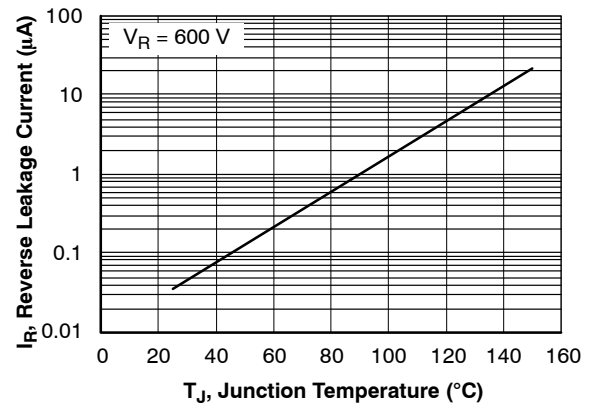
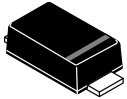


Figure 4. Typical Leakage Current vs. Junction Temperature



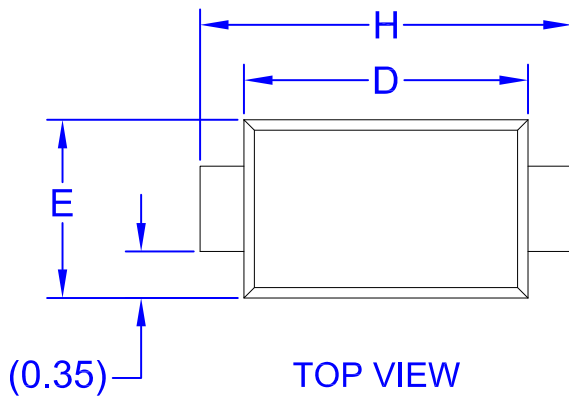
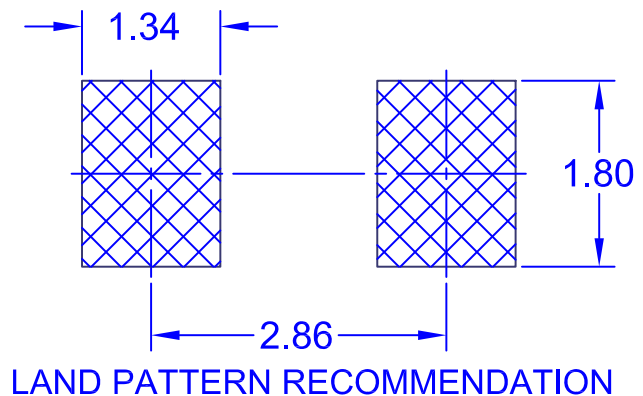
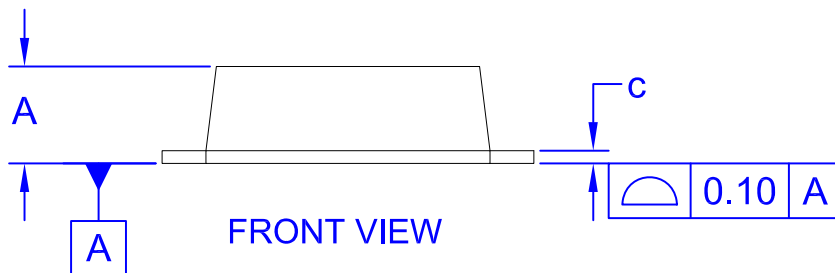
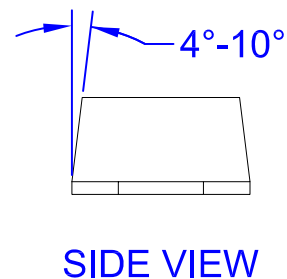
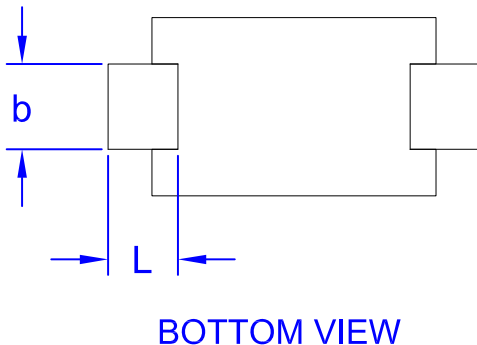
SCALE 4:1

**SOD-123FL**  
**CASE 425AD**  
**ISSUE A**

DATE 04 AUG 2017

**NOTES:**

- A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
- B. ALL DIMENSIONS ARE IN MILLIMETERS
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.



| DIM | INCHES |       | MILLIMETERS |      |
|-----|--------|-------|-------------|------|
|     | MIN    | MAX   | MIN         | MAX  |
| A   | 0.031  | 0.043 | 0.80        | 1.08 |
| b   | 0.020  | 0.045 | 0.50        | 1.15 |
| c   | 0.002  | 0.008 | 0.05        | 0.20 |
| D   | 0.098  | 0.118 | 2.50        | 3.00 |
| E   | 0.059  | 0.077 | 1.50        | 1.95 |
| H   | 0.130  | 0.154 | 3.30        | 3.90 |
| L   | 0.018  | 0.035 | 0.45        | 0.90 |

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