

# ES3AF THRU ES3JF

## Surface Mount Superfast Recovery Rectifier

Reverse Voltage – 50 to 600 V

Forward Current – 3 A

### FEATURES

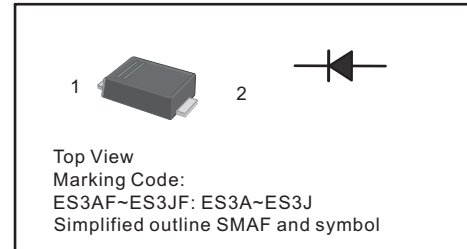
- For surface mounted applications
- Low profile package
- Glass Passivated Chip Junction
- Superfast reverse recovery time
- Lead free in comply with EU RoHS 2011/65/EU directives

### MECHANICAL DATA

- Case: SMAF
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 27mg 0.00086oz

### PINNING

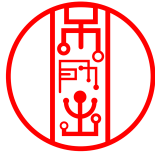
| PIN | DESCRIPTION |
|-----|-------------|
| 1   | Cathode     |
| 2   | Anode       |



### Absolute Maximum Ratings and Characteristics

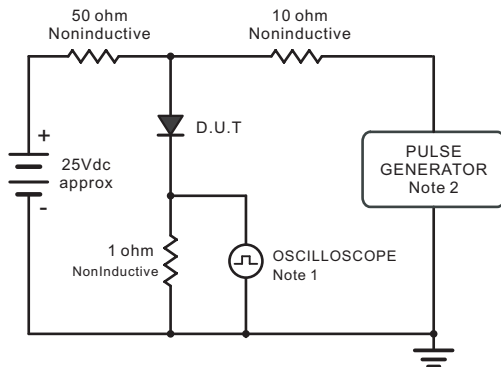
Ratings at 25 °C ambient temperature unless otherwise specified. Single phase, half wave, 60 Hz, resistive or inductive load. For capacitive load, derate current by 20%.

| Parameter                                                                                         | Symbols                           | ES3AF      | ES3BF | ES3CF | ES3DF | ES3EF | ES3GF | ES3JF | Units |
|---------------------------------------------------------------------------------------------------|-----------------------------------|------------|-------|-------|-------|-------|-------|-------|-------|
| Maximum Repetitive Peak Reverse Voltage                                                           | V <sub>RRM</sub>                  | 50         | 100   | 150   | 200   | 300   | 400   | 600   | V     |
| Maximum RMS voltage                                                                               | V <sub>RMS</sub>                  | 35         | 70    | 105   | 140   | 210   | 280   | 420   | V     |
| Maximum DC Blocking Voltage                                                                       | V <sub>DC</sub>                   | 50         | 100   | 150   | 200   | 300   | 400   | 600   | V     |
| Maximum Average Forward Rectified Current at T <sub>L</sub> = 100 °C                              | I <sub>F(AV)</sub>                | 3          |       |       |       |       |       |       | A     |
| Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) | I <sub>FSM</sub>                  | 100        |       |       |       |       |       |       | A     |
| Maximum Forward Voltage at 3A                                                                     | V <sub>F</sub>                    | 1          |       |       |       | 1.25  |       | 1.7   | V     |
| Maximum DC Reverse Current Ta = 25 °C<br>at Rated DC Blocking Voltage Ta = 125 °C                 | I <sub>R</sub>                    | 5<br>200   |       |       |       |       |       |       | μA    |
| Typical Junction Capacitance at V <sub>R</sub> =4V, f=1MHz                                        | C <sub>j</sub>                    | 45         |       |       |       |       |       |       | pF    |
| Maximum Reverse Recovery Time at I <sub>F</sub> =0.5A, I <sub>R</sub> =1A, I <sub>rr</sub> =0.25A | t <sub>rr</sub>                   | 35         |       |       |       |       |       |       | ns    |
| Operating and Storage Temperature Range                                                           | T <sub>j</sub> , T <sub>stg</sub> | -55 ~ +150 |       |       |       |       |       |       | °C    |



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**Fig.1 Reverse Recovery Time Characteristic And Test Circuit Diagram**



Note: 1. Rise Time = 7ns, max.  
Input Impedance = 1megohm, 22pF.  
2. Rises Time = 10ns, max.  
Source Impedance = 50 ohms.

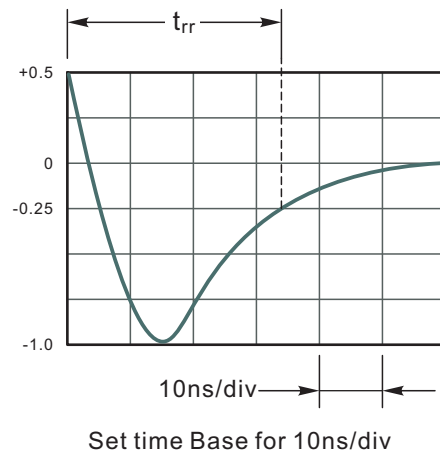


**Fig.2 Maximum Average Forward Current Rating**

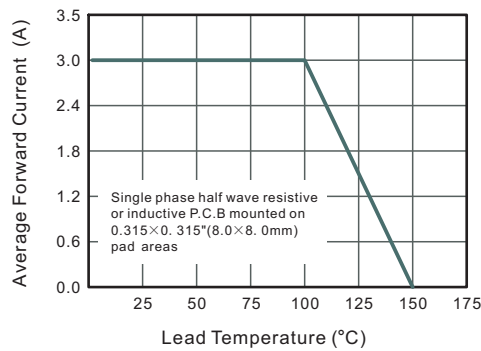


**Fig.3 Typical Reverse Characteristics**

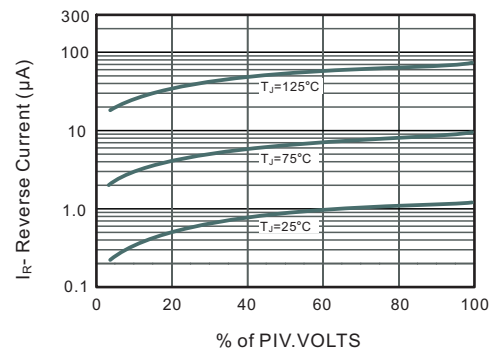


**Fig.4 Typical Forward Characteristics**

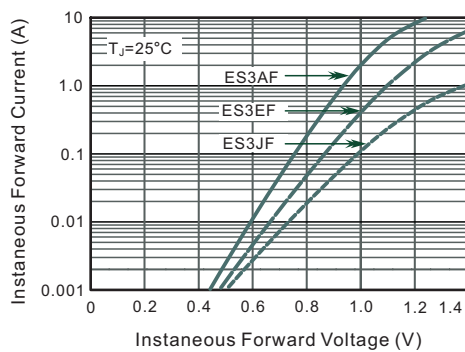
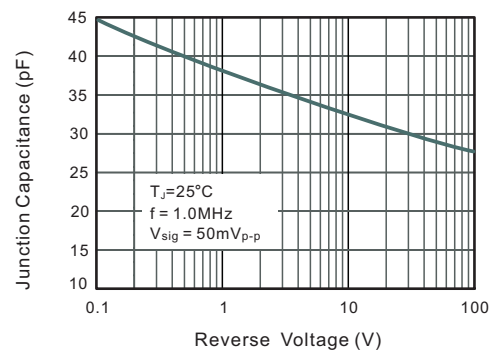
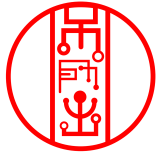


**Fig.5 Typical Junction Capacitance**



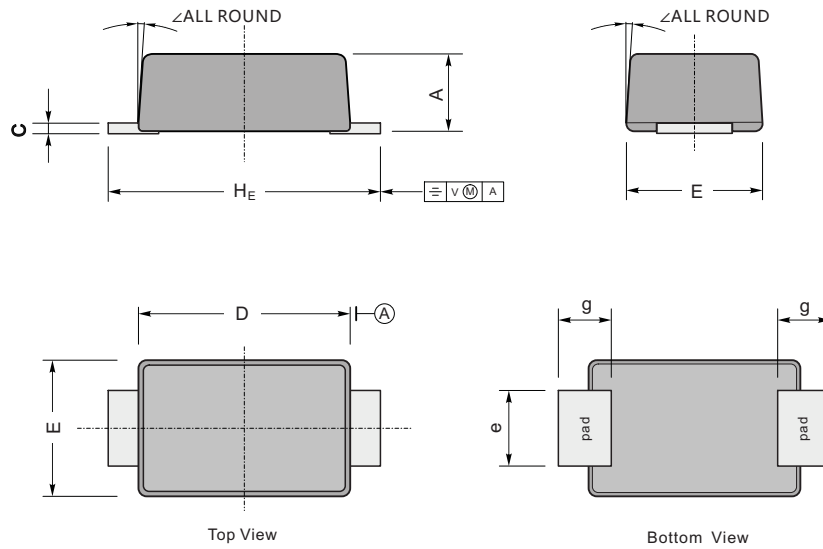


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## PACKAGE OUTLINE

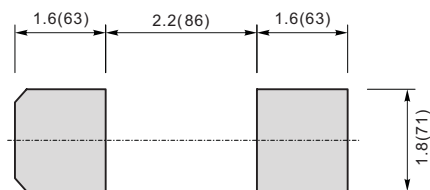
Plastic surface mounted package; 2 leads

SMAF



| UNIT |     | A   | C    | D   | E   | e   | g   | H <sub>E</sub> | ∠  |
|------|-----|-----|------|-----|-----|-----|-----|----------------|----|
| mm   | max | 1.1 | 0.20 | 3.7 | 2.7 | 1.6 | 1.2 | 4.9            | 7° |
|      | min | 0.9 | 0.12 | 3.3 | 2.4 | 1.3 | 0.8 | 4.4            |    |
| mil  | max | 43  | 7.9  | 146 | 106 | 63  | 47  | 193            |    |
|      | min | 35  | 4.7  | 130 | 94  | 51  | 31  | 173            |    |

## The recommended mounting pad size



Unit: mm(mil)