

## Surface Mount Superfast Recovery Rectifier

Reverse Voltage - 50 to 600 V

Forward Current - 2 A

### FEATURES

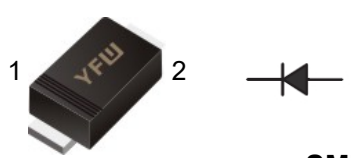
- ♦Glass Passivated Chip Junction
- ♦For surface mounted applications
- ♦Low profile package
- ♦Superfast reverse recovery time
- ♦Lead free in comply with EU RoHS 2011/65/EU directives

### MECHANICAL DATA

- ♦Case: SMBF
- ♦Terminals: Solderable per MIL-STD-750, Method 2026
- ♦Approx. Weight: 57mg / 0.002oz



### Pinning

| 1.Cathode                                                                                       | 2.Anode |
|-------------------------------------------------------------------------------------------------|---------|
|  <p>SMBF</p> |         |

### Marking Code

|        |      |
|--------|------|
| ES2ABF | E2AB |
| ES2BBF | E2BB |
| ES2DBF | E2DB |
| ES2GBF | E2GB |
| ES2JBF | E2JB |

### Absolute Maximum Ratings and characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

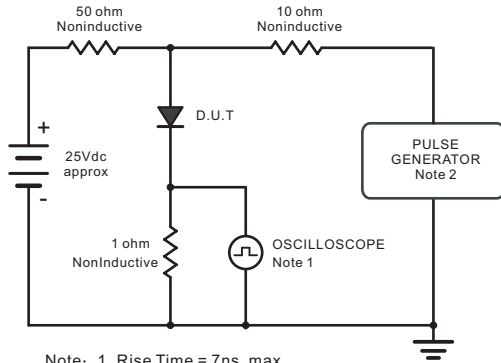
Single phase half-wave 60 Hz, resistive or inductive load, for capacitive load current derate by 20 %.

| Parameter                                                                                             | Symbols                                 | ES2ABF     | ES2BBF | ES2DBF | ES2GBF | ES2JBF | Units       |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------|------------|--------|--------|--------|--------|-------------|
| Maximum Repetitive Peak Reverse Voltage                                                               | <b>V<sub>RRM</sub></b>                  | 50         | 100    | 200    | 400    | 600    | <b>V</b>    |
| Maximum RMS voltage                                                                                   | <b>V<sub>RMS</sub></b>                  | 35         | 70     | 140    | 280    | 420    | <b>V</b>    |
| Maximum DC Blocking Voltage                                                                           | <b>V<sub>DC</sub></b>                   | 50         | 100    | 200    | 400    | 600    | <b>V</b>    |
| Maximum Average Forward Rectified Current at T <sub>c</sub> = 125 °C                                  | <b>I<sub>F(AV)</sub></b>                | 2          |        |        |        |        | <b>A</b>    |
| Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load                    | <b>I<sub>FSM</sub></b>                  | 50         |        |        |        |        | <b>A</b>    |
| Maximum Instantaneous Forward Voltage at 2 A                                                          | <b>V<sub>F</sub></b>                    | 0.95       |        |        | 1.25   | 1.65   | <b>V</b>    |
| Maximum DC Reverse Current T <sub>a</sub> = 25 °C at Rated DC Blocking Voltage T <sub>a</sub> =125 °C | <b>I<sub>R</sub></b>                    | 5<br>100   |        |        |        |        | <b>μA</b>   |
| Typical Junction Capacitance at V <sub>R</sub> =4V,f=1MHZ                                             | <b>C<sub>J</sub></b>                    | 28         |        |        |        |        | <b>pF</b>   |
| Maximum Reverse Recovery Time <sup>(1)</sup>                                                          | <b>T<sub>rr</sub></b>                   | 35         |        |        |        |        | <b>nS</b>   |
| Typical Thermal Resistance <sup>(2)</sup>                                                             | <b>R<sub>θJA</sub>/ R<sub>θJC</sub></b> | 60/18      |        |        |        |        | <b>°C/W</b> |
| Operating and Storage Temperature Range                                                               | <b>T<sub>j</sub>, T<sub>stg</sub></b>   | -55 ~ +150 |        |        |        |        | <b>°C</b>   |

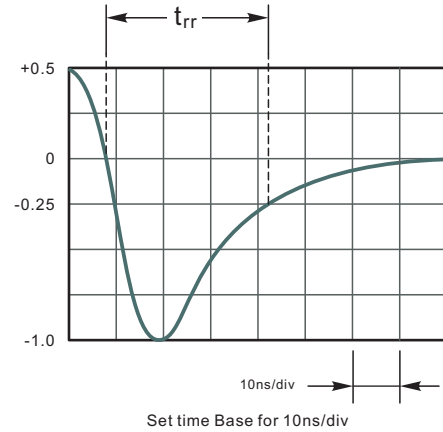
(1) Measured with  $I_F=0.5\text{A}, I_R=1\text{A}, I_n=0.25\text{A}$

(2) P.C.B. mounted with 2.0" X 2.0" (5 X 5 cm) copper pad areas.

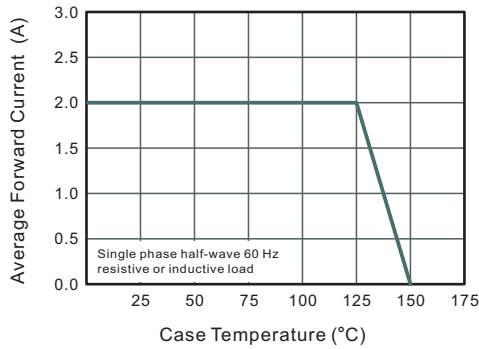
**Fig.1 Reverse Recovery Time Characteristic And Test Circuit Diagram**



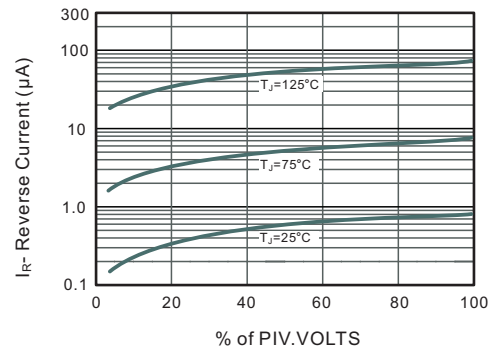
Note: 1. Rise Time = 7ns, max.  
Input Impedance = 1megohm, 22pF.  
2. Rise Time = 10ns, max.  
Source Impedance = 50 ohms.



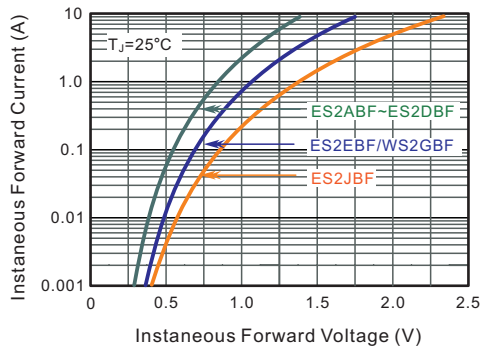
**Fig.2 Maximum Average Forward Current Rating**



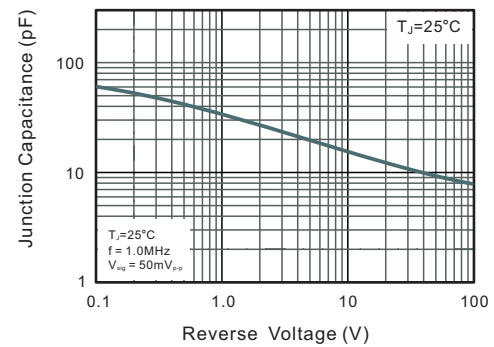
**Fig.3 Typical Reverse Characteristics**



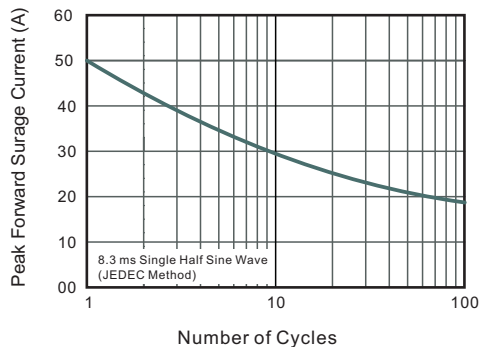
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Junction Capacitance**



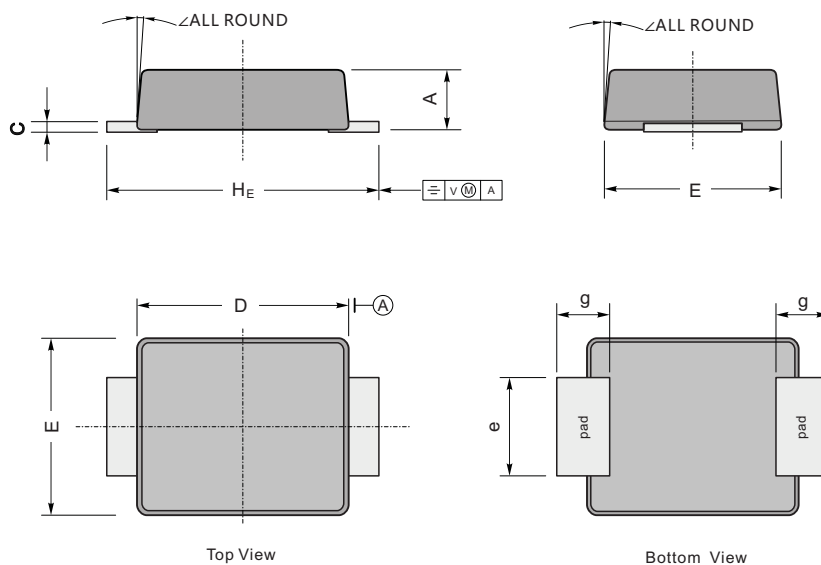
**Fig.6 Maximum Non-Repetitive Peak Forward Surge Current**



## Package Outline

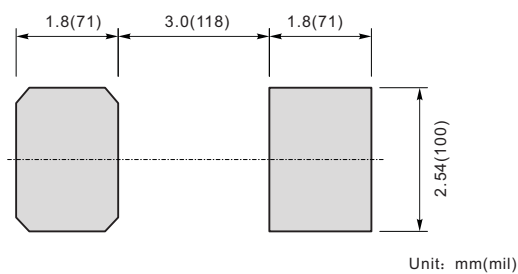
## SMBF

Plastic surface mounted package; 2 leads



| UNIT |     | A   | C    | D   | E   | H <sub>E</sub> | e   | g   | ∠  |
|------|-----|-----|------|-----|-----|----------------|-----|-----|----|
| mm   | max | 1.3 | 0.26 | 4.4 | 3.7 | 5.5            | 2.2 | 1.0 | 9° |
|      | min | 1.1 | 0.18 | 4.2 | 3.5 | 5.1            | 1.9 |     |    |
| mil  | max | 51  | 10   | 173 | 146 | 216            | 86  | 40  |    |
|      | min | 43  | 7    | 165 | 138 | 200            | 75  |     |    |

## The recommended mounting pad size



## Summary of Packing Options

| Package | Packing Description | Packing Quantity | Industry Standard |
|---------|---------------------|------------------|-------------------|
| SMBF    | Tape/Reel, 13" reel | 5000             | EIA-481-1         |