

**Surface Mount Ultrafast Recovery Rectifier**

**Reverse Voltage - 50 to 1000 V**

**Forward Current - 1 A**

**FEATURES**

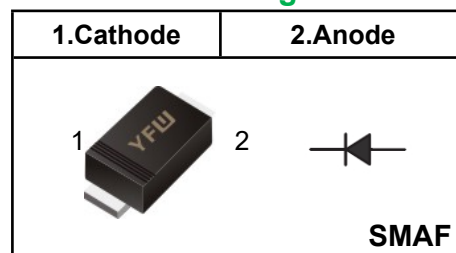
- ◆For surface mounted applications
- ◆Low profile package
- ◆Glass Passivated Chip Junction
- ◆High efficiency
- ◆Lead free in comply with EU RoHS 2011/65/EU directives

**MECHANICAL DATA**

- ◆Case: SMAF
- ◆Terminals: Solderable per MIL-STD-750, Method 2026
- ◆Approx. Weight: 27mg / 0.00095oz



**Pinning**



**Marking Code**

|       |      |
|-------|------|
| US1AF | US1A |
| US1BF | US1B |
| US1DF | US1D |
| US1GF | US1G |
| US1JF | US1J |
| US1KF | US1K |
| US1MF | US1M |

**Maximum Ratings and characteristics**

Ratings at 25 °C ambient temperature unless otherwise specified.

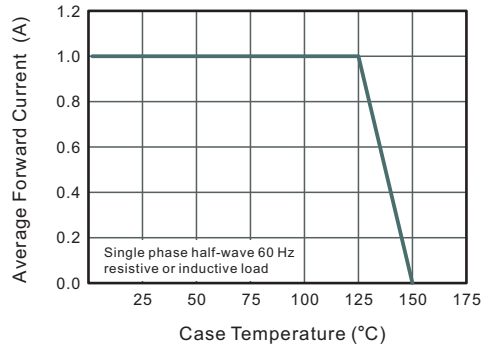
Single phase half-wave 60 Hz, resistive or inductive load, for capacitive load current derate by 20 %.

| Parameter                                                                                             | Symbols                               | US1AF      | US1BF | US1DF | US1GF | US1JF | US1KF | US1MF | Units       |
|-------------------------------------------------------------------------------------------------------|---------------------------------------|------------|-------|-------|-------|-------|-------|-------|-------------|
| Maximum Repetitive Peak Reverse Voltage                                                               | <b>V<sub>RRM</sub></b>                | 50         | 100   | 200   | 400   | 600   | 800   | 1000  | <b>V</b>    |
| Maximum RMS voltage                                                                                   | <b>V<sub>RMS</sub></b>                | 35         | 70    | 140   | 280   | 420   | 560   | 700   | <b>V</b>    |
| Maximum DC Blocking Voltage                                                                           | <b>V<sub>DC</sub></b>                 | 50         | 100   | 200   | 400   | 600   | 800   | 1000  | <b>V</b>    |
| Maximum Average Forward Rectified Current at T <sub>c</sub> = 125 °C                                  | <b>I<sub>F(AV)</sub></b>              | 1          |       |       |       |       |       |       | <b>A</b>    |
| Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load                    | <b>I<sub>FSM</sub></b>                | 30         |       |       |       |       |       |       | <b>A</b>    |
| Maximum Instantaneous Forward Voltage at 1 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>   |
| Maximum Reverse Recovery Time <sup>(1)</sup>                                                          | <b>T<sub>rr</sub></b>                 | 50         |       |       |       | 75    |       |       | <b>nS</b>   |
| Typical Thermal Resistance <sup>(2)</sup>                                                             | <b>R<sub>θJA</sub></b>                | 80         |       |       |       |       |       |       | <b>°C/W</b> |
| Operating and Storage Temperature Range                                                               | <b>T<sub>j</sub>, T<sub>stg</sub></b> | -55 ~ +150 |       |       |       |       |       |       | <b>°C</b>   |

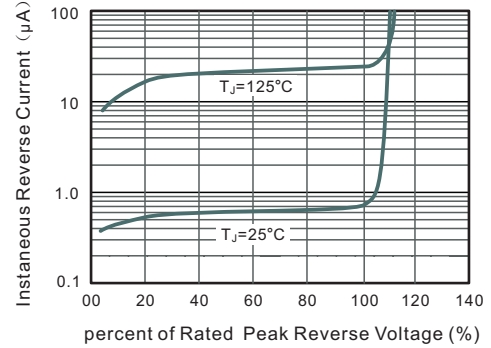
(1) Measured with  $I_F=0.5\text{A}, I_R=1\text{A}, I_n=0.25\text{A}$

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

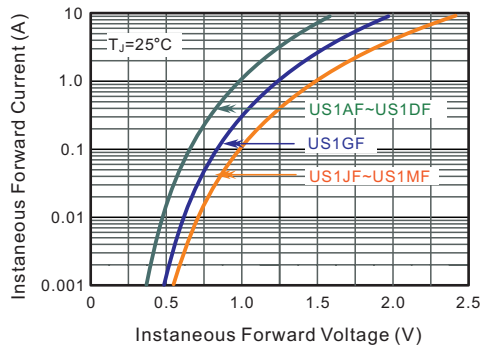
**Fig.1 Forward Current Derating Curve**



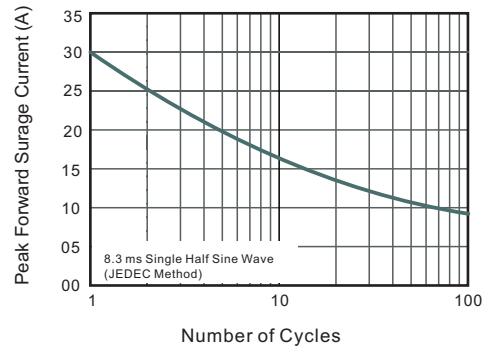
**Fig.2 Typical Reverse Characteristics**



**Fig.3 Typical Forward Characteristics**



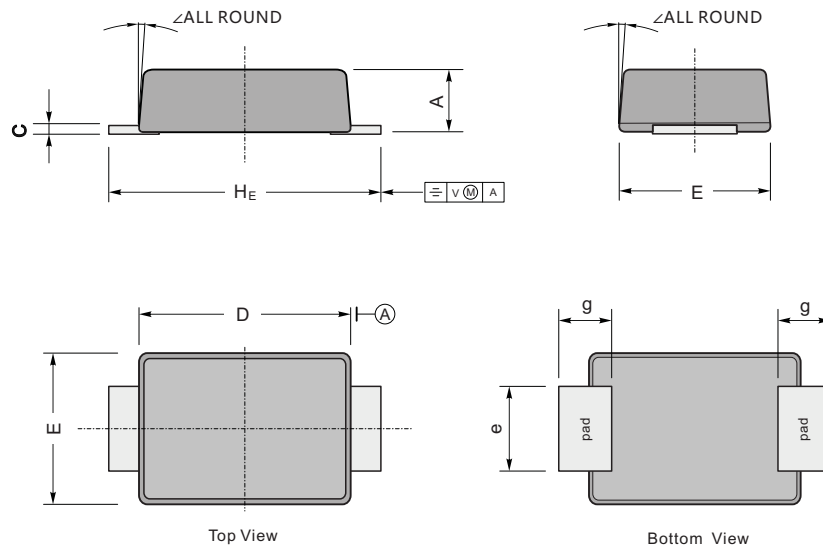
**Fig.4 Maximum Non-Repetitive Peak Forward Surge Current**



## Package Outline

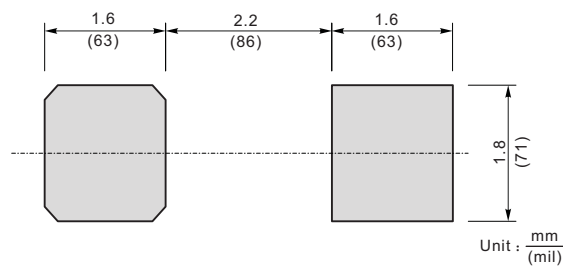
## SMAF

Plastic surface mounted package; 2 leads



| UNIT |     | A   | C    | D   | E   | e   | g   | $H_E$ | $\angle$ |
|------|-----|-----|------|-----|-----|-----|-----|-------|----------|
| 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



## Summary of Packing Options

| Package | Packing Description | Packing Quantity | Industry Standard |
|---------|---------------------|------------------|-------------------|
| SMAF    | Tape/Reel, 13" reel | 10000            | EIA-481-1         |
|         | Tape/Reel, 7" reel  | 3000             | EIA-481-1         |