



## SMAF Plastic-Encapsulate Diodes

### US1AF THRU US1MF High Efficient Rectifier Diodes

#### Features

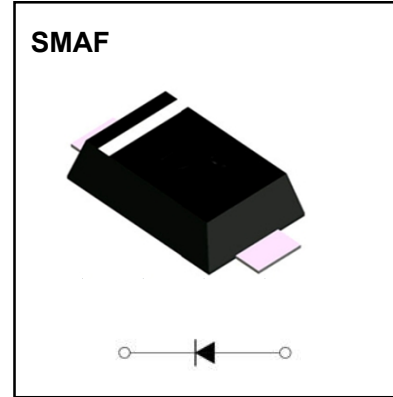
- $I_{F(AV)}$  1A
- $V_{RRM}$  50V-1000V
- High surge current capability
- Polarity: Color band denotes cathode

#### Applications

- Rectifier

#### Marking

- US1X  
X : From A To M



#### Limiting Values(Absolute Maximum Rating)

| Item   | Symbol         | Unit             | Test Conditions  | US1        |     |     |     |     |     |      |
|--|----------------|------------------|--|------------|-----|-----|-----|-----|-----|------|
|  |                |                  |  | AF         | BF  | DF  | GF  | JF  | KF  | MF   |
| Repetitive Peak Reverse Voltage                  | $V_{RRM}$      | V                |  | 50         | 100 | 200 | 400 | 600 | 800 | 1000 |
| Maximum RMS Voltage                              | $V_{RMS}$      | V                |  | 35         | 70  | 140 | 280 | 420 | 560 | 700  |
| Average Forward Current                          | $I_{F(AV)}$    | A                | 60Hz Half-sine wave,<br>Resistance load, $T_L=115^\circ\text{C}$ | 1.0        |     |     |     |     |     |      |
| Surge(Non-repetitive)Forward Current             | $I_{FSM}$      | A                | 60Hz Half-sine wave,<br>1 cycle, $T_a=25^\circ\text{C}$          | 30         |     |     |     |     |     |      |
| Operation Junction and Storage Temperature Range | $T_J, T_{STG}$ | $^\circ\text{C}$ |  | -55 ~ +150 |     |     |     |     |     |      |

#### Electrical Characteristics ( $T=25^\circ\text{C}$ Unless otherwise specified)

| Item                          | Symbol           | Unit               | Test Condition  | US1 |    |    |     |     |    |    |
|-------------------------------|------------------|--------------------|---|-----|----|----|-----|-----|----|----|
|                               |                  |                    |   | AF  | BF | DF | GF  | JF  | KF | MF |
| Peak Forward Voltage          | $V_F$            | V                  | $I_F=1.0\text{A}$                                       | 1.0 |    |    | 1.3 | 1.7 |    |    |
| Maximum reverse recovery time | $t_{rr}$         | ns                 | $I_F=0.5\text{A}, I_R=1.0\text{A}, I_{rr}=0.25\text{A}$ | 50  |    |    |     | 75  |    |    |
| Peak Reverse Current          | $I_{RRM1}$       | $\mu\text{A}$      | $V_{RM}=V_{RRM}$  |     |    |    | 5   |     |    |    |
|                               | $I_{RRM2}$       |                    |   |     |    |    | 100 |     |    |    |
| Thermal Resistance(Typical)   | $R_{\theta J-A}$ | $^\circ\text{C/W}$ | Between junction and ambient                            |     | 75 |    |     |     |    |    |
|                               | $R_{\theta J-L}$ |                    | Between junction and terminal                           |     | 27 |    |     |     |    |    |

#### Notes:

Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

# Typical Characteristics

FIG.1: FORWARD CURRENT DERATING CURVE

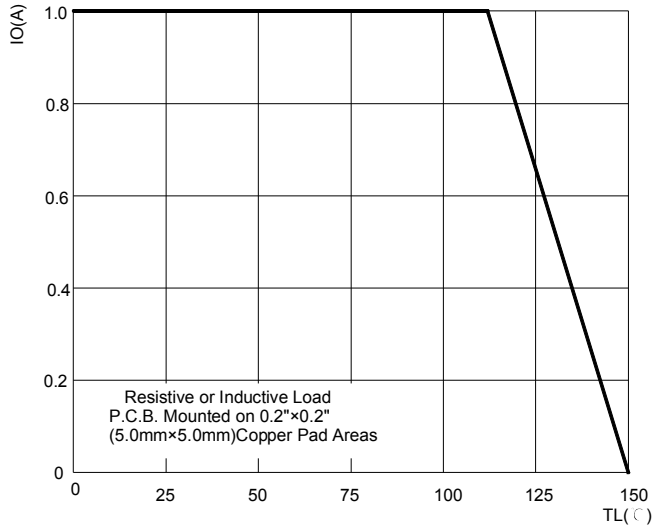


FIG.2: MAXIMUM NON-REPETITIVE FORWARD URGE CURRENT

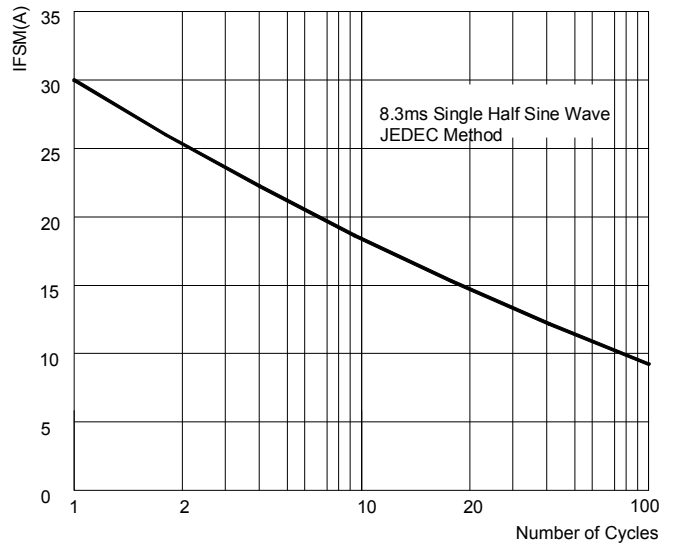


FIG.3: TYPICAL FORWARD CHARACTERISTICS

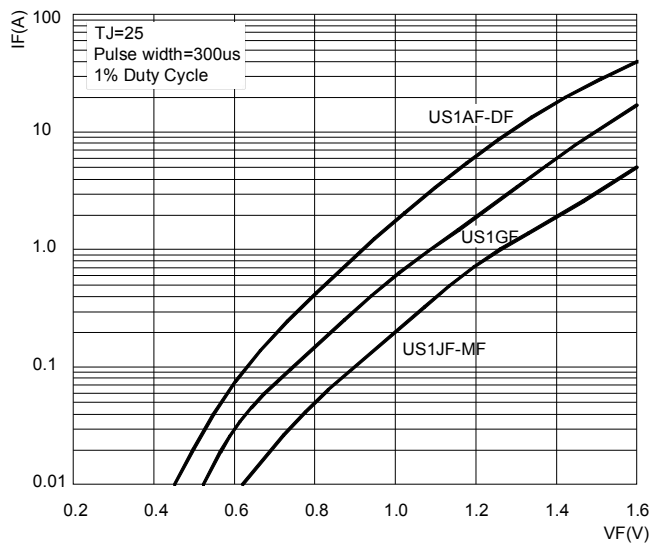


FIG.4: TYPICAL REVERSE CHARACTERISTICS

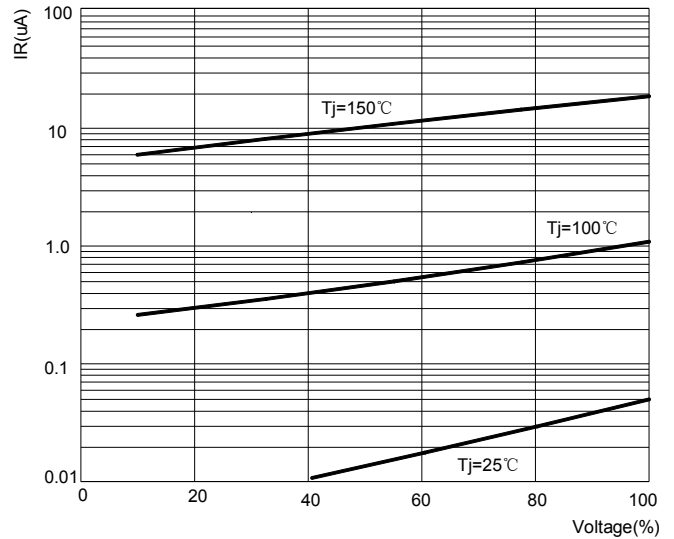
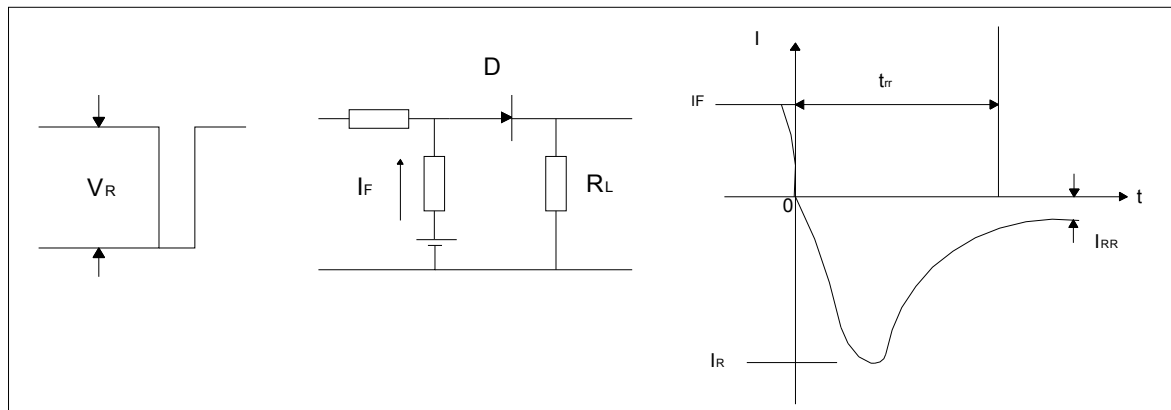


FIG.5: Diagram of circuit and Testing wave form of reverse recovery time

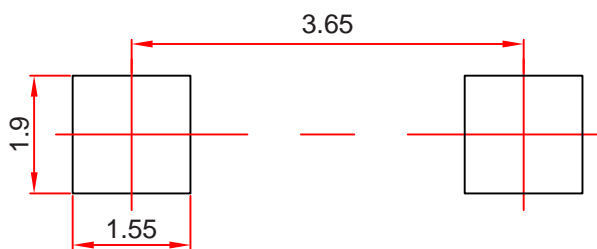


## SMAF Package Outline Dimensions



Dimensions in inches and (millimeters)

## SMAF Suggested Pad Layout



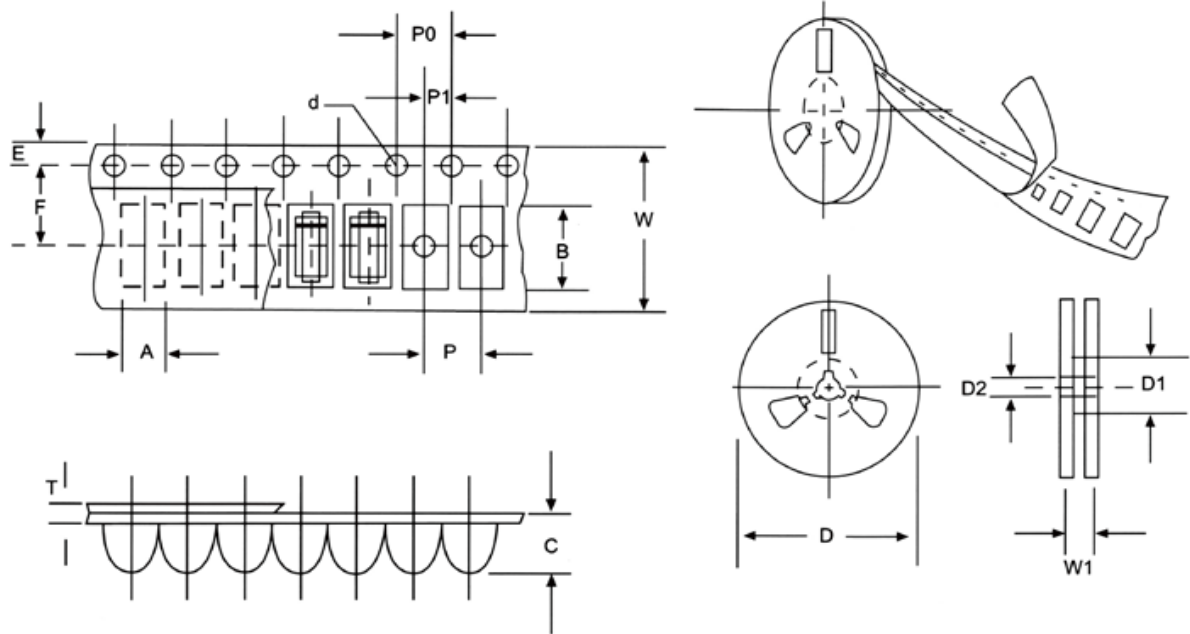
### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$ mm.
3. The pad layout is for reference purposes only.

### NOTICE

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## Reel Taping Specifications For Surface Mount Devices- SMAF



**FIG: CONFIGURATION OF SURFACE MOUNTED DEVICES TAPING**

| ITEM                   | SYMBOL | SMAF mm(inch)          |
|------------------------|--------|------------------------|
| Carrier width          | A      | 2.83+0.1(0.112+0.004)  |
| Carrier length         | B      | 4.90+0.1(0.193+0.004)  |
| Carrier depth          | C      | 1.45+0.1(0.057+0.004)  |
| Sprocket hole          | d      | 1.55+0.05(0.061+0.002) |
| Reel outside diameter  | D      | 178+2.0(7.0+0.079)     |
| Reel inner diameter    | D1     | 54±1.0(2.13±0.039)     |
| Feed hole diameter     | D2     | 13+0.5(0.512+0.020)    |
| Sprocket hole position | E      | 1.75+0.1(0.069+0.004)  |
| Punch hole position    | F      | 5.5+0.05(0.217+0.002)  |
| Punch hole pitch       | P      | 4.0+0.1(0.157+0.004)   |
| Sprocket hole pitch    | P0     | 4.0+0.1(0.157+0.004)   |
| Embossment center      | P1     | 2.0+0.1(0.079+0.004)   |
| Total tape thickness   | T      | 0.23-0.29(0.009-0.011) |
| Tape width             | W      | 12.0+0.1(0.472+0.004)  |
| Reel width             | W1     | 16.8+2.0(0.661+0.079)  |

NOTE: Devices are packed in accordance with EIA standard RS-481-A and specification given above.