

SMAF Plastic-Encapsulate Diodes

Super Fast Recovery Rectifier Diode

Features

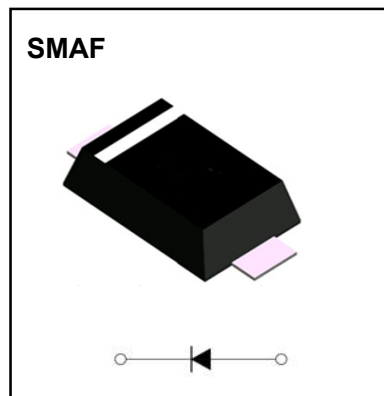
- I_o 1A
- V_{RRM} 50V-600V
- High surge current capability
- Glass passivated chip
- Polarity: Color band denotes cathode

Applications

- Rectifier

Marking

- ES1AF-ES1JF : ES1A-ES1J



Limiting Values (Absolute Maximum Rating)

| Item | Symbol | Unit | Test Conditions | ES1 | | | | | | | |
|--------------------------------------|-------------|-------------|----------------------------------------------------------|------------|-----|-----|-----|-----|-----|-----|-----|
| | | | | AF | BF | CF | DF | EF | GF | HF | JF |
| Repetitive Peak Reverse Voltage | V_{RRM} | V | | 50 | 100 | 150 | 200 | 300 | 400 | 500 | 600 |
| Maximum RMS Voltage | V_{RMS} | V | | 35 | 70 | 105 | 140 | 210 | 280 | 350 | 420 |
| Average Forward Current | $I_{F(AV)}$ | A | 60HZ Half-sine wave, Resistance load, $T_L=120^{\circ}C$ | 1.0 | | | | | | | |
| Surge(Non-repetitive)Forward Current | I_{FSM} | A | 60Hz Half-sine wave ,1 cycle , $T_a=25^{\circ}C$ | 30 | | | | | | | |
| Junction Temperature | T_J | $^{\circ}C$ | | -55~+150 | | | | | | | |
| Storage Temperature | T_{STG} | $^{\circ}C$ | | -55 ~ +150 | | | | | | | |

Electrical Characteristics (T=25°C Unless otherwise specified)

| Item | Symbol | Unit | Test Condition | ES1 | | | | | | | |
|-------------------------------|------------------|---------------|------------------------------------|--------------------|------------------|-----|------|----|------|----|----|
| | | | | AF | BF | CF | DF | EF | GF | HF | JF |
| Peak Forward Voltage | V_F | V | $I_F=1.0A$ | 0.95 | | | 1.25 | | 1.70 | | |
| Maximum reverse recovery time | t_{rr} | ns | $I_F=0.5A, I_R=1.0A, I_{rr}=0.25A$ | 35 | | | | | | | |
| Peak Reverse Current | I_{RRM} | μA | $V_{RM}=V_{RRM}$ | $T_a=25^{\circ}C$ | | 5 | | | | | |
| | I | | | $T_a=100^{\circ}C$ | | 100 | | | | | |
| Thermal Resistance(Typical) | $R_{\theta J-A}$ | $^{\circ}C/W$ | Between junction and ambient | | 85 ¹⁾ | | | | | | |
| | $R_{\theta J-L}$ | | Between junction and terminal | | 35 ¹⁾ | | | | | | |

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

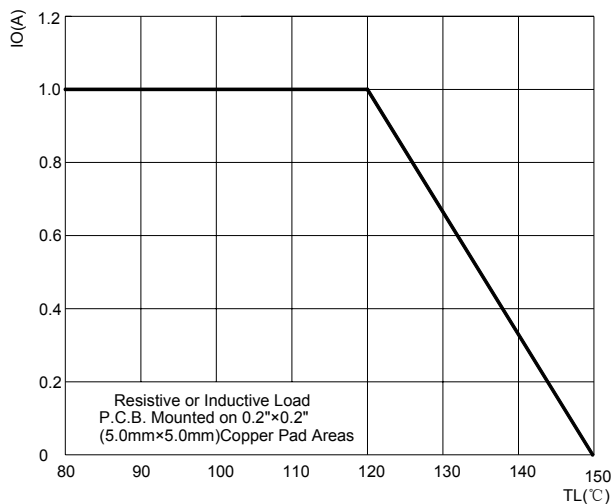


FIG.2: MAXIMUM NON-REPETITIVE FORWARD URGE CURRENT

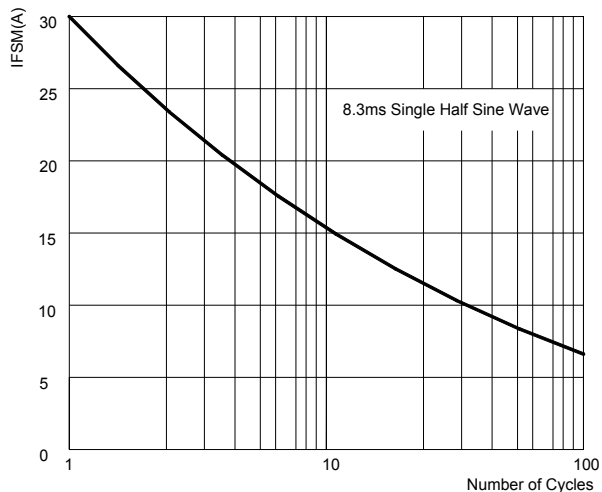


FIG.3: TYPICAL FORWARD CHARACTERISTICS

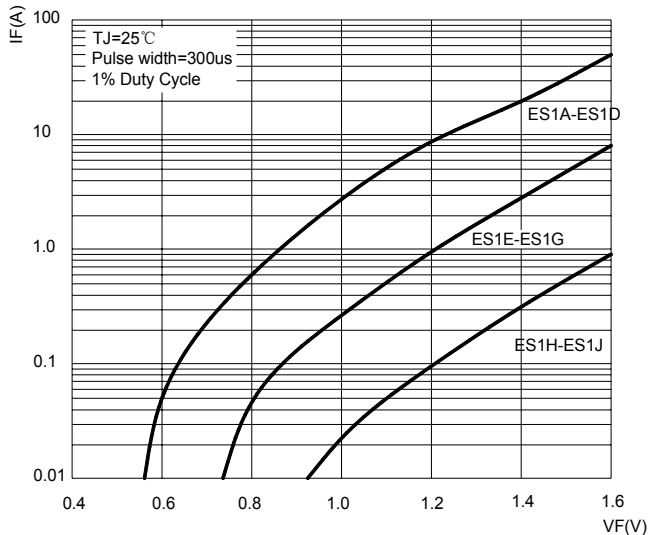


FIG.4: TYPICAL REVERSE CHARACTERISTICS

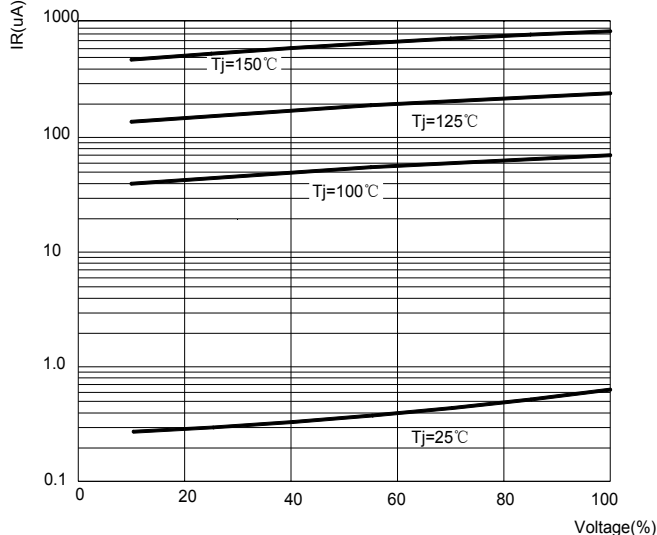
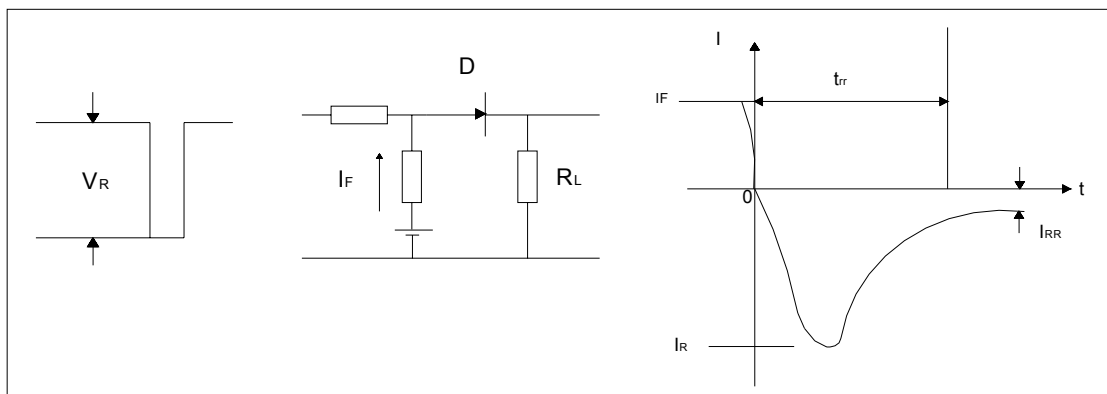
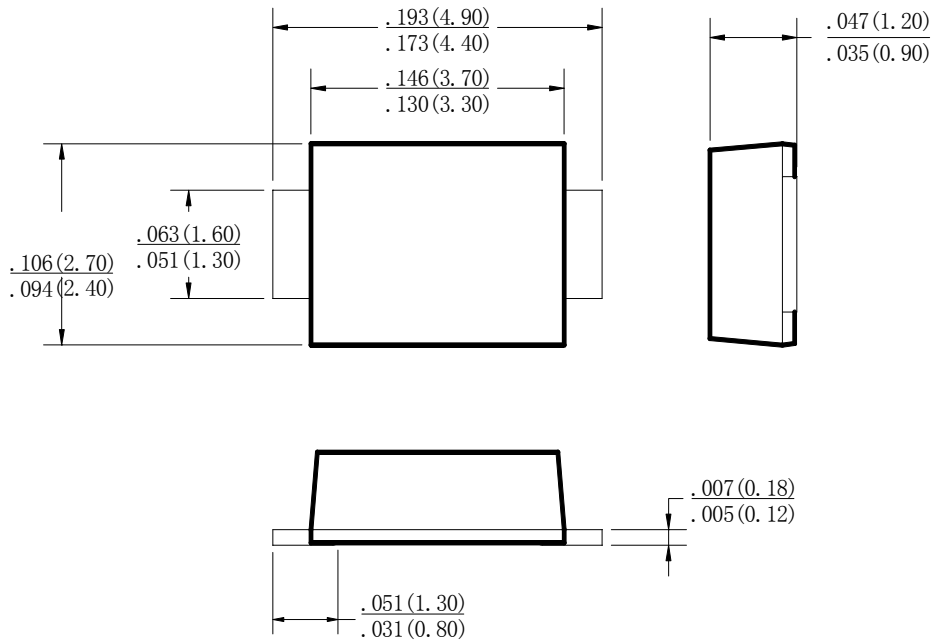


FIG.5: Diagram of circuit and Testing wave form of reverse recovery time

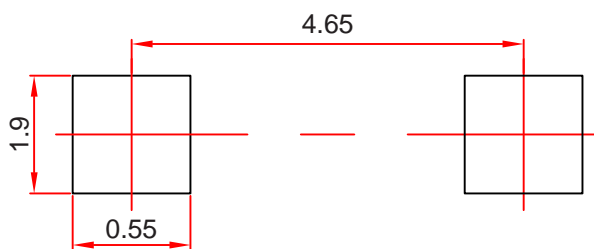


SMAF Package Outline Dimensions



Dimensions in inches and (millimeters)

SMAF Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 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

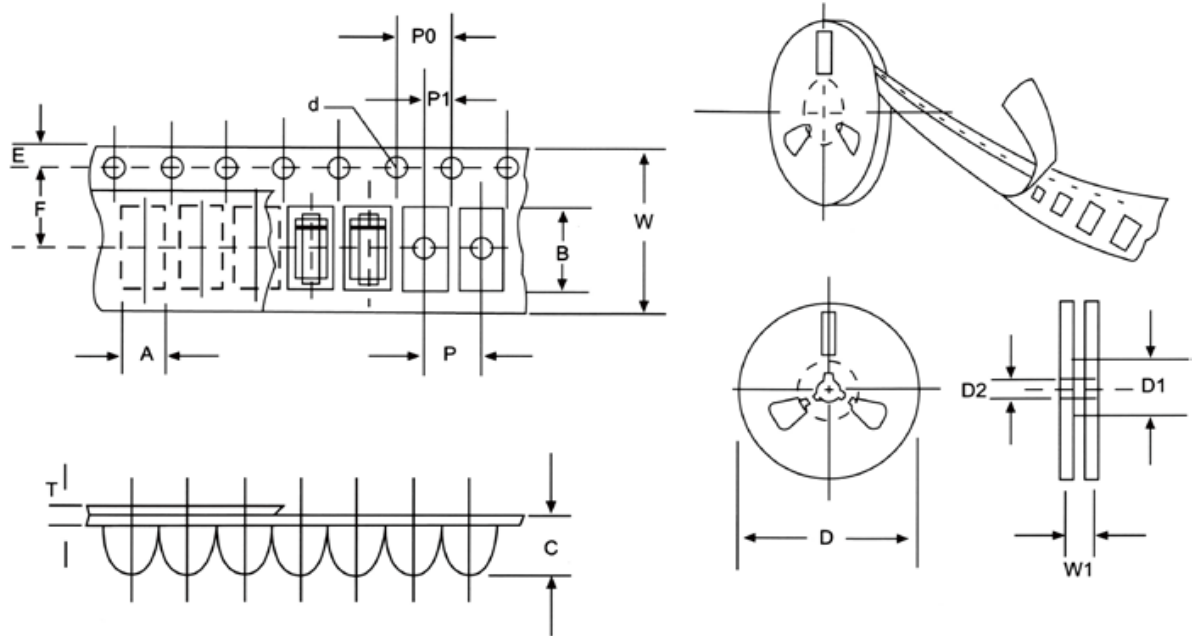


FIG:CONFIGURATION OF AXIAL TAPING

| 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 | 280/178+2.0(11/7.0+0.079) |
| Reel inner diameter | D1 | 8.0+0.2(0.315+0.008) |
| 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) |
| Totall 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 packde in accordance with EIA standard RS-481-A and specification given above.