

SURFACE MOUNT ULTRA FAST RECTIFIER

Features

- ◆ The plastic package carries Underwriters Laboratory Flammability Classification 94V-0
- ◆ For surface mounted applications
- ◆ Ultra fast switching for high efficiency
- ◆ Low reverse leakage
- ◆ Built-in strain relief, ideal for automated placement
- ◆ High forward surge current capability
- ◆ High temperature soldering guaranteed
250 °C/10 seconds at terminals

Mechanical Data

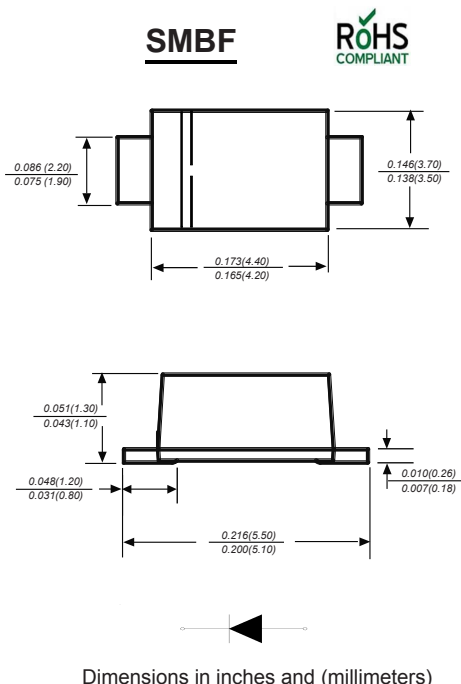
Case : JEDEC SMBF Molded plastic body

Terminals : Solder plated, solderable per MIL-STD-750, Method 2026

Polarity : Polarity symbol marking on body

Mounting Position : Any

Weight : 0.002 ounce, 0.057 grams



Maximum Ratings And Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

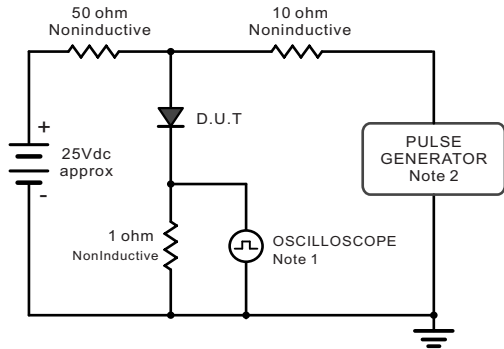
Single phase half-wave 60Hz, resistive or inductive load, for capacitive load current derate by 20%.

| Parameter | SYMBOLS | US5ABF | US5BBF | US5DBF | US5GBF | US5JBF | US5KBF | US5MBF | UNITS | |
|---|-----------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------------------|----|
| | | MDD U5AB | MDD U5BB | MDD U5DB | MDD U5GB | MDD U5JB | MDD U5KB | MDD U5MB | | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V | |
| Maximum RMS voltage | V_{RMS} | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V | |
| Maximum DC blocking voltage | V_{DC} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V | |
| Maximum average forward rectified current at $T_L=55^\circ\text{C}$ | $I_{(AV)}$ | 5.0 | | | | | | | A | |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) | I_{FSM} | 125 | | | | | | | A | |
| Maximum instantaneous forward voltage at 5.0A | V_F | 1.0 | | 1.30 | | 1.60 | | | V | |
| Maximum DC reverse current $T_A=25^\circ\text{C}$ at rated DC blocking voltage $T_A=125^\circ\text{C}$ | I_R | 5.0 150.0 | | | | | | | μA | |
| Maximum reverse recovery time | t_{rr} | 50 | | | | 75 | | | | ns |
| Typical thermal resistance | $R_{\theta JA}$ | 56.0 | | | | | | | $^\circ\text{C}/\text{W}$ | |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +150 | | | | | | | $^\circ\text{C}$ | |

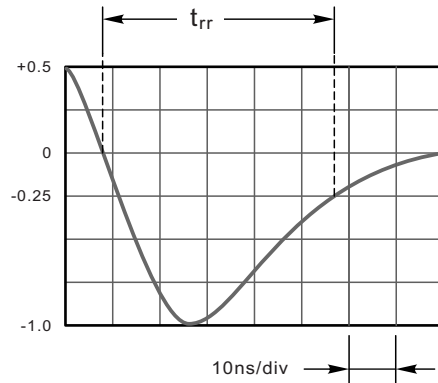
Note: 1. Reverse recovery condition $I_F=0.5\text{A}, I_R=1.0\text{A}, I_{rr}=0.25\text{A}$
 2. Measured at 1MHz and applied reverse voltage of 4.0V D.C.
 3. P.C.B. mounted with 0.5x0.5" (12.5x12.7mm) copper pad areas

Ratings And Characteristic Curves

Fig.1 Reverse Recovery Time Characteristic And Test Circuit Diagram



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



Set time Base for 10ns/div

Fig.2 Maximum Average Forward Current Rating

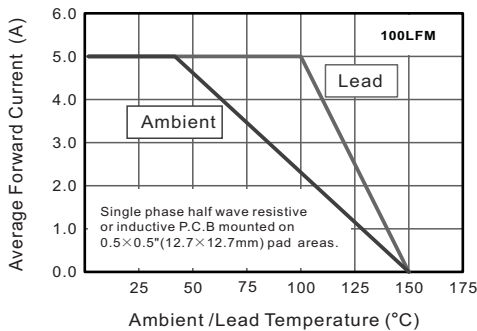


Fig.3 Typical Reverse Characteristics

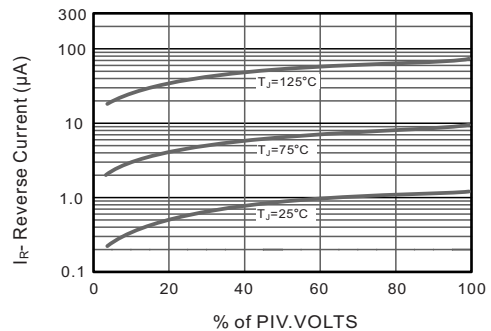


Fig.3 Typical Instantaneous Forward Characteristics

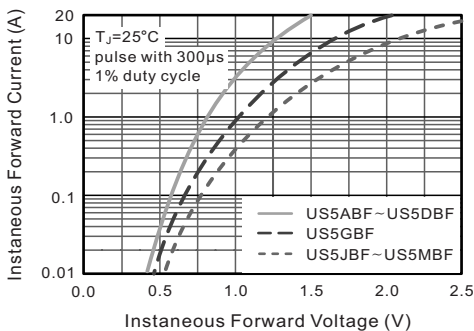
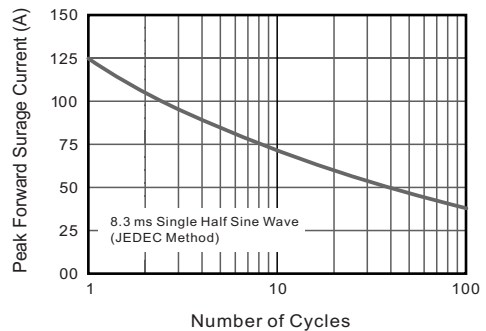
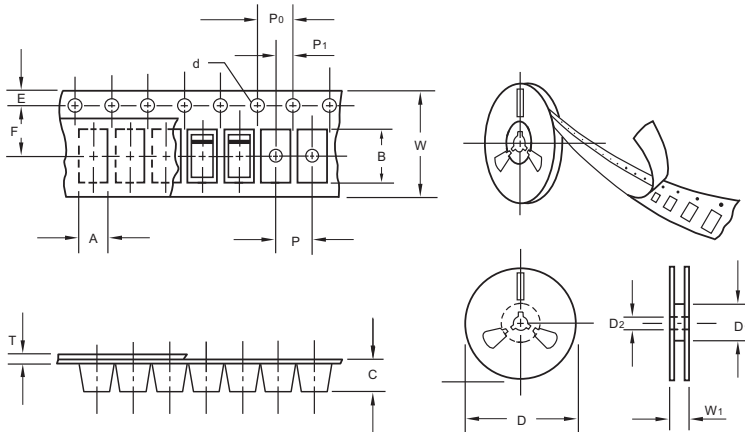


Fig.4 Maximum Non-Repetitive Peak Forward Surge Current



The curve above is for reference only.

Packing information



unit:mm

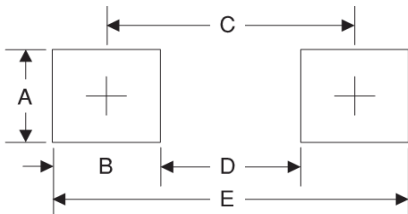
| Item | Symbol | Tolerance | SMBF |
|---------------------------|----------------|-----------|--------|
| Carrier width | A | 0.1 | 3.81 |
| Carrier length | B | 0.1 | 5.61 |
| Carrier depth | C | 0.1 | 1.60 |
| Sprocket hole | d | 0.05 | 1.50 |
| 13" Reel outside diameter | D | 2.0 | 330.00 |
| 13" Reel inner diameter | D ₁ | min | 50.00 |
| Feed hole diameter | D ₂ | 0.5 | 13.00 |
| Sprocket hole position | E | 0.1 | 1.75 |
| Punch hole position | F | 0.1 | 5.50 |
| Punch hole pitch | P | 0.1 | 4.00 |
| Sprocket hole pitch | P ₀ | 0.1 | 4.00 |
| Embossment center | P ₁ | 0.1 | 2.00 |
| Overall tape thickness | T | 0.1 | 0.30 |
| Tape width | W | 0.3 | 12.00 |
| Reel width | W ₁ | 1.0 | 12.30 |

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

Reel packing

| PACKAGE | REEL SIZE | REEL (pcs) | COMPONENT SPACING (mm) | BOX (pcs) | INNER BOX (mm) | REEL DIA, (mm) | CARTON SIZE (mm) | CARTON (pcs) | APPROX. GROSS WEIGHT (kg) |
|---------|-----------|------------|------------------------|-----------|----------------|----------------|------------------|--------------|---------------------------|
| SMBF | 13" | 5,000 | 4.0 | 10,000 | 190*190*41 | 330 | 365*365*360 | 80,000 | 14.0 |

Suggested Pad Layout



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A | 2.54 | 0.100 |
| B | 1.8 | 0.071 |
| C | 4.8 | 0.189 |
| D | 3.0 | 0.118 |
| E | 6.6 | 0.260 |