



ST54BF THRU ST510BF

Reverse Voltage - 40 to 100 Volts Forward Current - 5.0 Ampere

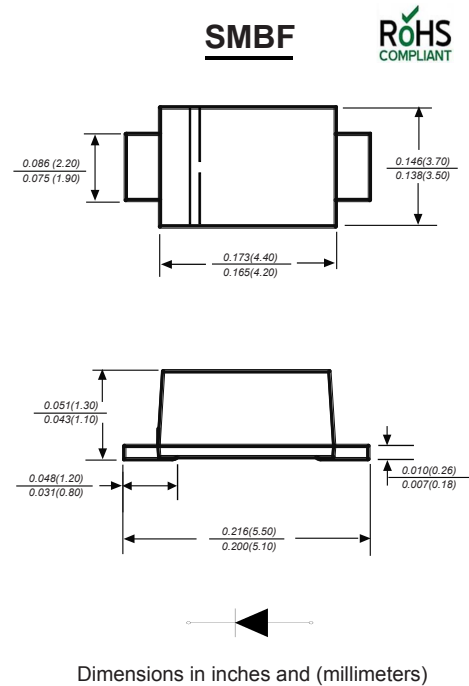
SURFACE MOUNT TRENCH SCHOTTKY RECTIFIER

Features

- ◆ The plastic package carries Underwriters Laboratory Flammability Classification 94V-0
- ◆ Metal silicon junction, majority carrier conduction
- ◆ High efficiency operation
- ◆ Ultra low forward voltage drop, low power losses
- ◆ High forward surge current capability
- ◆ High temperature soldering guaranteed:
260°C/10 seconds, 0.375" (9.5mm) lead length, 5 lbs. (2.3kg) tension

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 : 0.002ounce, 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 | ST54BF | ST56BF | ST510BF | UNITS |
|---|-------------------|---------------|---------------|----------------|-------|
| | | MDD ST54BF | MDD ST56BF | MDD ST510BF | |
| Maximum repetitive peak reverse voltage | V _{RMM} | 40 | 60 | 100 | V |
| Maximum RMS voltage | V _{RMS} | 28 | 42 | 70 | V |
| Maximum DC blocking voltage | V _{DC} | 40 | 60 | 100 | V |
| Maximum average forward rectified current 0.375" (9.5mm) lead length (see fig.1) | I _(AV) | 5.0 | | | A |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) | I _{FSM} | 80 | 60 | | A |
| Maximum instantaneous forward voltage at 5.0A | V _F | 0.41 | 0.50 | 0.60 | V |
| Maximum DC reverse current at rated DC blocking voltage TA=25°C TA=125°C | I _R | 0.10 | 0.03 | 0.02 | mA |
| | | 20.0 | | 10.0 | |
| Typical junction capacitance (NOTE 1) | C _J | 500 | | | pF |
| Typical thermal resistance (NOTE 2) | R _{θJA} | 68.0 | | | °C/W |
| Operating junction temperature range | T _J | -55 to +125 | -55 to +150 | | °C |
| Operating storage temperature range | T _{STG} | -55 to +150 | | | °C |

Note: 1. Measured at 1MHz and applied reverse voltage of 4.0V D.C.
 2. Thermal resistance from junction to ambient at 0.375" (9.5mm) lead length, P.C.B. mounted



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Ratings And Characteristic Curves

AVERAGE FORWARD RECTIFIED CURRENT, AMPERES

FIG. 1- FORWARD CURRENT DERATING CURVE

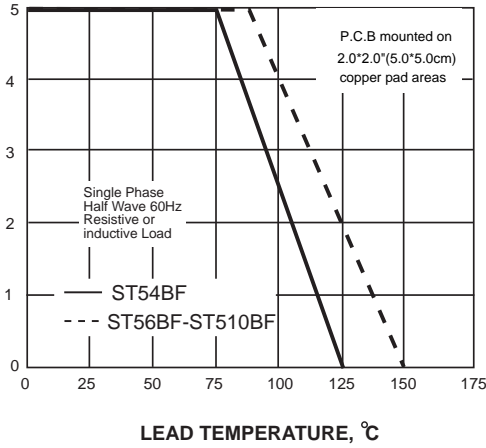


FIG. 2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

PEAK FORWARD SURGE CURRENT, AMPERES

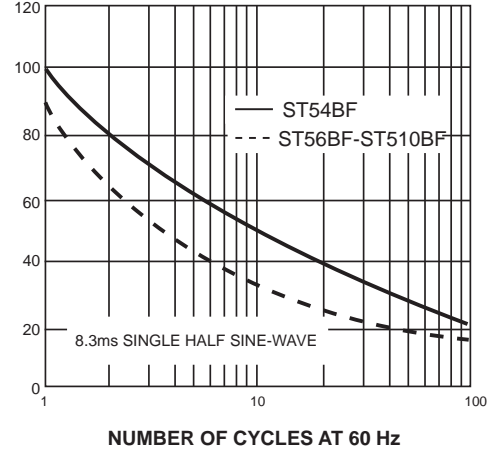


FIG. 3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

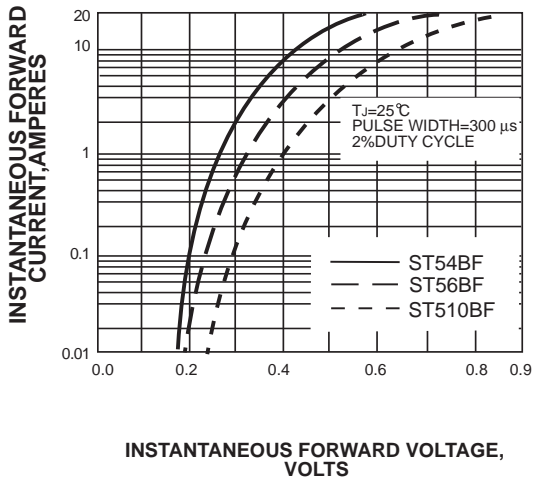


FIG. 4-TYPICAL REVERSE CHARACTERISTICS

INSTANTANEOUS REVERSE CURRENT, MILLIAMPERES

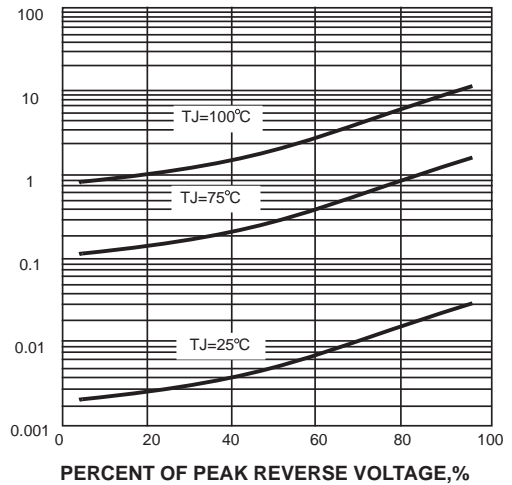


FIG. 5-TYPICAL JUNCTION CAPACITANCE

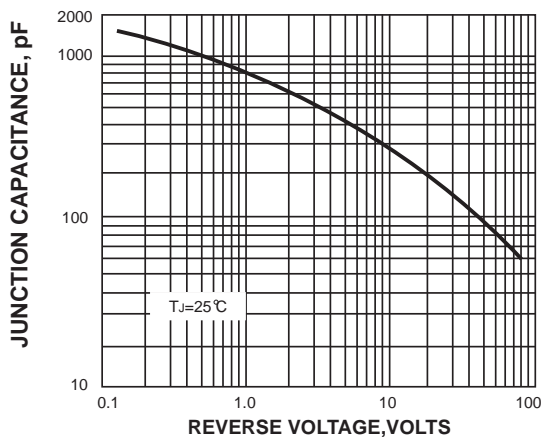
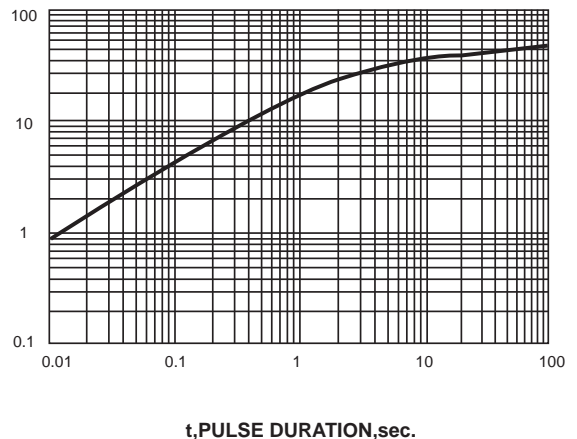


FIG. 6-TYPICAL TRANSIENT THERMAL IMPEDANCE

TRANSIENT THERMAL IMPEDANCE, $^{\circ}\text{C/W}$



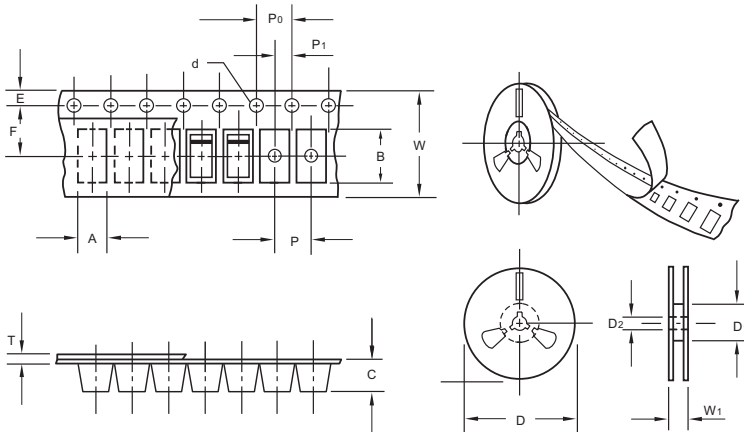
The curve above is for reference only.



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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 | D1 | min | 50.00 |
| Feed hole diameter | D2 | 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 | P0 | 0.1 | 4.00 |
| Embossment center | P1 | 0.1 | 2.00 |
| Overall tape thickness | T | 0.1 | 0.30 |
| Tape width | W | 0.3 | 12.00 |
| Reel width | W1 | 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 |

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