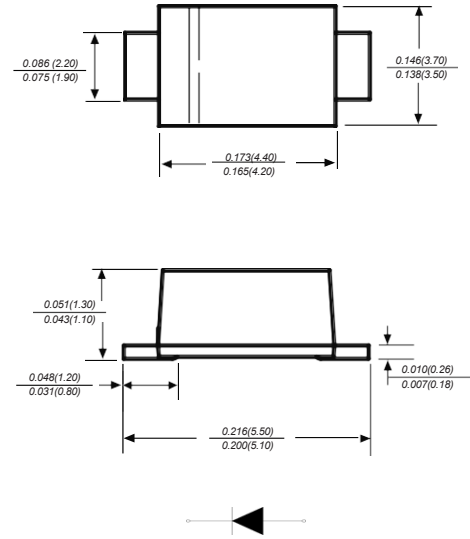


## SURFACE MOUNT TRENCH SCHOTTKY RECTIFIER

### 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

### SMBF



Dimensions in inches and (millimeters)

### 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 |
|-----------------------------------------------------------------------------------------------------|-------------------|-------------|-------------|---------|-------|
| Marking Code                                                                                        |                   | ST54BF      | ST56BF      | ST510BF |       |
| Maximum repetitive peak reverse voltage                                                             | V <sub>RMM</sub>  | 40          | 60          | 100     | V     |
| Maximum RMS voltage                                                                                 | V <sub>RMS</sub>  | 28          | 42          | 70      | V     |
| Maximum DC blocking voltage                                                                         | V <sub>DC</sub>   | 40          | 60          | 100     | V     |
| Maximum average forward rectified current<br>0.375”(9.5mm) lead length(see fig.1)                   | I <sub>(AV)</sub> | 5.0         |             |         | A     |
| Peak forward surge current 8.3ms single half sine-wave<br>superimposed on rated load (JEDEC Method) | I <sub>FSM</sub>  | 80          | 60          |         | A     |
| Maximum instantaneous forward voltage at 5.0A                                                       | V <sub>F</sub>    | 0.45        | 0.50        | 0.60    | V     |
| Maximum DCreverse current      TA=25℃<br>at rated DCblocking voltage      TA=125℃                   | I <sub>R</sub>    | 0.10        | 0.03        | 0.02    | mA    |
|                                                                                                     |                   | 20.0        |             | 10.0    |       |
| Typical junction capacitance (NOTE 1)                                                               | C <sub>J</sub>    | 500         |             |         | pF    |
| Typical thermal resistance (NOTE 2)                                                                 | R <sub>θJA</sub>  | 68.0        |             |         | ℃/W   |
| Operating junction temperature range                                                                | T <sub>J</sub>    | -55 to +125 | -55 to +150 |         | ℃     |
| Operating storage temperaturerange                                                                  | T <sub>STG</sub>  | -55 to +150 |             |         | ℃     |

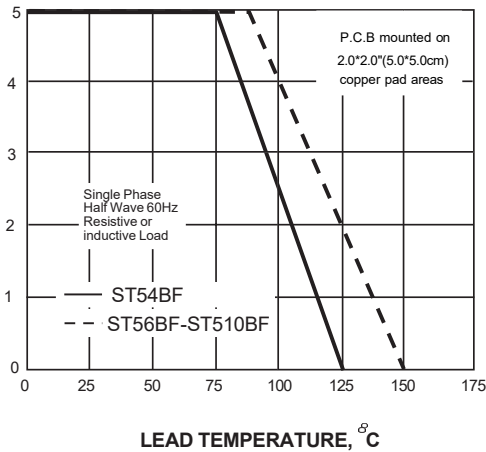
**Note:** 1. Measured at 1MHz and applied reverse voltage of 4.0V D.C.

2. Thermal resistance from junction to ambient at 0.375"(9.5mm) lead length, P.C.B. mounted

## Ratings And Characteristic Curves

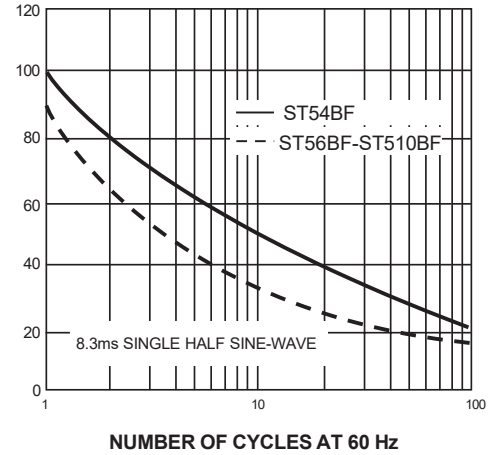
AVERAGE FORWARD RECTIFIED CURRENT,  
AMPERES

FIG. 1- FORWARD CURRENT DERATING CURVE



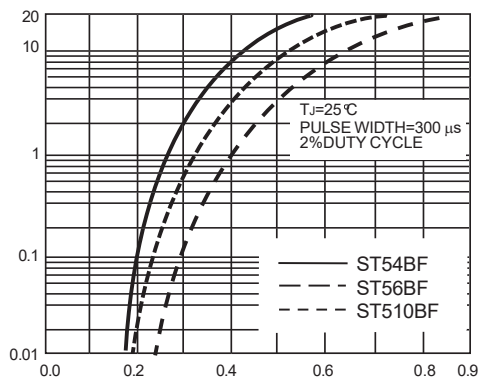
PEAK FORWARD SURGE CURRENT,  
AMPERES

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



INSTANTANEOUS FORWARD  
CURRENT, AMPERES

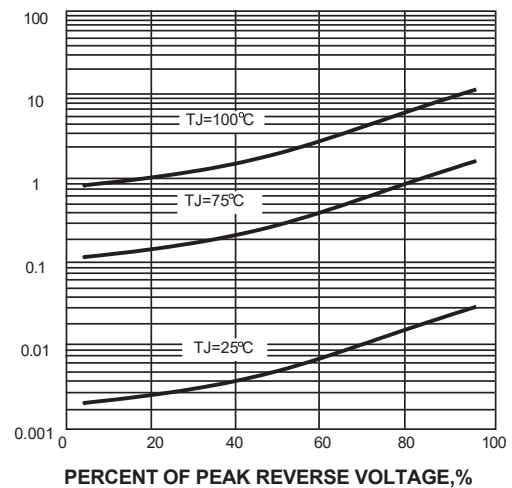
FIG. 3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS



INSTANTANEOUS FORWARD VOLTAGE,  
VOLTS

INSTANTANEOUS REVERSE CURRENT,  
MILLIAMPERES

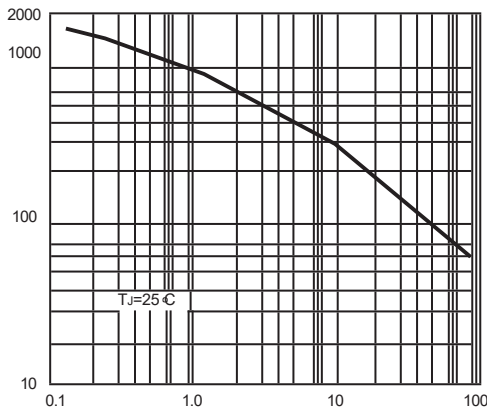
FIG. 4-TYPICAL REVERSE CHARACTERISTICS



PERCENT OF PEAK REVERSE VOLTAGE, %

JUNCTION CAPACITANCE, pF

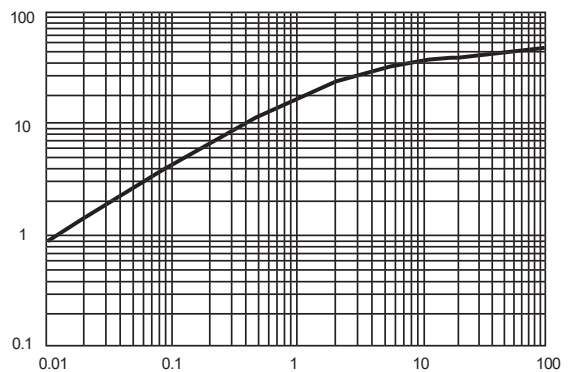
FIG. 5-TYPICAL JUNCTION CAPACITANCE



REVERSE VOLTAGE, VOLTS

TRANSIENT THERMAL IMPEDANCE,  
°C/W

FIG. 6-TYPICAL TRANSIENT THERMAL IMPEDANCE



t, PULSE DURATION, sec.

The curve above is for reference only.