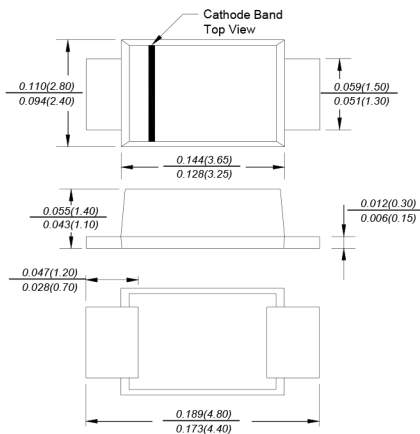


# ES1AF THRU ES1JF

## SURFACE MOUNT SUPER FAST RECTIFIER

Reverse Voltage - 50 to 600 Volts Forward Current - 1.0 Ampere

### SMAF



Dimensions in inches and (millimeters)

### FEATURES

- ◆ The plastic package carries Underwriters Laboratory Flammability Classification 94V-0
- ◆ For surface mounted applications
- ◆ Super 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: 260°C/10 seconds at terminals
- ◆ Glass passivated chip junction

### MECHANICAL DATA

**Case:** JEDEC SMAF molded plastic body over passivated chip

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

**Polarity:** Color band denotes cathode end

**Mounting Position:** Any

**Weight:** 0.0018 ounce, 0.064 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%.

| MDD Catalog Number                                                                                          | SYMBOLS                          | ES1AF       | ES1BF | ES1CF | ES1DF | ES1EF | ES1GF | ES1JF | UNITS |
|-------------------------------------------------------------------------------------------------------------|----------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|
| Maximum repetitive peak reverse voltage                                                                     | V <sub>RRM</sub>                 | 50          | 100   | 150   | 200   | 300   | 400   | 600   | VOLTS |
| Maximum RMS voltage                                                                                         | V <sub>RMS</sub>                 | 35          | 70    | 105   | 140   | 210   | 280   | 420   | VOLTS |
| Maximum DC blocking voltage                                                                                 | V <sub>DC</sub>                  | 50          | 100   | 150   | 200   | 300   | 400   | 600   | VOLTS |
| Maximum average forward rectified current<br>at T <sub>L</sub> =55°C                                        | I <sub>(AV)</sub>                | 1.0         |       |       |       |       |       |       | Amp   |
| Peak forward surge current<br>8.3ms single half sine-wave superimposed on<br>rated load (JEDEC Method)      | I <sub>FSM</sub>                 | 30.0        |       |       |       |       |       |       | Amps  |
| Maximum instantaneous forward voltage at 1.0A                                                               | V <sub>F</sub>                   | 0.95        |       |       |       | 1.25  |       | 1.7   | Volts |
| Maximum DC reverse current    T <sub>A</sub> =25°C<br>at rated DC blocking voltage    T <sub>A</sub> =100°C | I <sub>R</sub>                   | 5.0<br>50.0 |       |       |       |       |       |       | μA    |
| Maximum reverse recovery time        (NOTE 1)                                                               | t <sub>rr</sub>                  | 35          |       |       |       |       |       |       | ns    |
| Typical junction capacitance (NOTE 2)                                                                       | C <sub>J</sub>                   | 15.0        |       |       |       |       |       |       | pF    |
| Typical thermal resistance (NOTE 3)                                                                         | R <sub>θJA</sub>                 | 60.0        |       |       |       |       |       |       | °C/W  |
| Operating junction and storage temperature range                                                            | T <sub>J</sub> ,T <sub>STG</sub> | -50 to +150 |       |       |       |       |       |       | °C    |

**Note:** 1.Reverse recovery condition  $I_F=0.5\text{A}$ ,  $I_R=1.0\text{A}$ ,  $t_{rr}=0.25\text{A}$

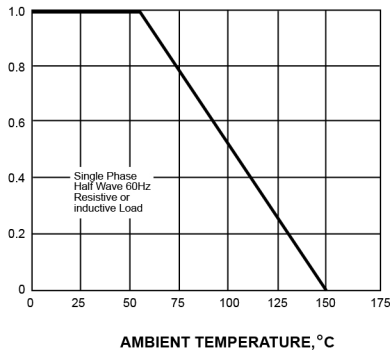
2.Measured at 1MHz and applied reverse voltage of 4.0V D.C.

3.P.C.B. mounted with 0.2x0.2"(5.0x5.0mm) copper pad areas

# RATINGS AND CHARACTERISTIC CURVES ES1AF THRU ES1JF

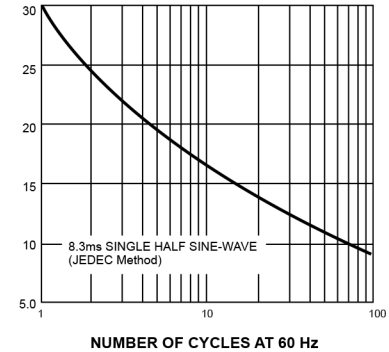
AVERAGE FORWARD RECTIFIED CURRENT,  
AMPERES

FIG. 1- FORWARD CURRENT DERATING CURVE



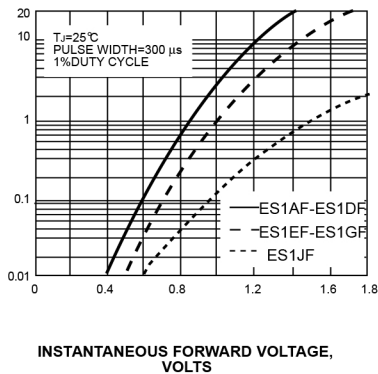
PEAK FORWARD SURGE CURRENT,  
AMPERES

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



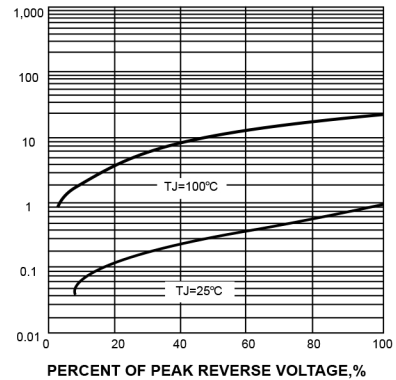
INSTANTANEOUS FORWARD  
CURRENT,AMPERES

FIG. 3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS



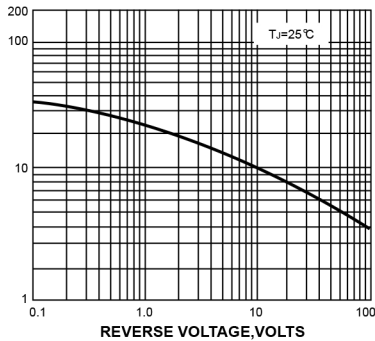
INSTANTANEOUS REVERSE CURRENT,  
MICROAMPERES

FIG. 4-TYPICAL REVERSE CHARACTERISTICS



JUNCTION CAPACITANCE, pF

FIG. 5-TYPICAL JUNCTION CAPACITANCE



TRANSIENT THERMAL IMPEDANCE,  
°C/W

FIG. 6-TYPICAL TRANSIENT THERMAL IMPEDANCE

