

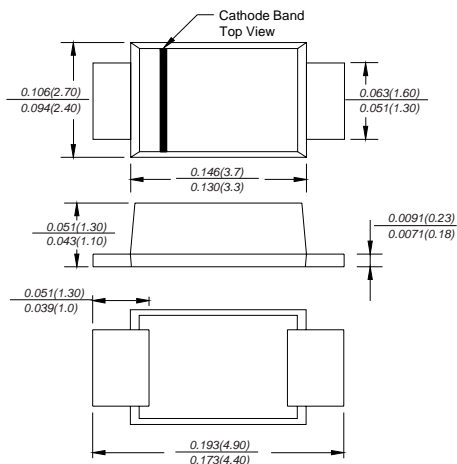


# US1AF THRU US1MF

## SURFACE MOUNT ULTRA FAST RECTIFIER

Reverse Voltage - 50 to 1000 Volts Forward Current - 1.0 Ampere

### SMAF



### 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 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         | US1AF       | US1BF | US1DF | US1GF | US1JF | US1KF | US1MF | UNITS                     |
|---|-----------------|-------------|-------|-------|-------|-------|-------|-------|---------------------------|
| Maximum repetitive peak reverse voltage   | $V_{RRM}$       | 50          | 100   | 200   | 400   | 600   | 800   | 1000  | VOLTS                     |
| Maximum RMS voltage   | $V_{RMS}$       | 35          | 70    | 140   | 280   | 420   | 560   | 700   | VOLTS                     |
| Maximum DC blocking voltage   | $V_{DC}$        | 50          | 100   | 200   | 400   | 600   | 800   | 1000  | VOLTS                     |
| Maximum average forward rectified current at $T_L=55^\circ\text{C}$                                       | $I_{(AV)}$      | 1.0         |       |       |       |       |       |       | Amp                       |
| Peak forward surge current<br>8.3ms single half sine-wave superimposed on rated load (JEDEC Method)       | $I_{FSM}$       | 30.0        |       |       |       |       |       |       | Amps                      |
| Maximum instantaneous forward voltage at 1.0A   | $V_F$           | 1.0         |       | 1.4   |       | 1.7   |       |       | Volts                     |
| Maximum DC reverse current $T_A=25^\circ\text{C}$<br>at rated DC blocking voltage $T_A=100^\circ\text{C}$ | $I_R$           | 5.0<br>50.0 |       |       |       |       |       |       | $\mu\text{A}$             |
| Maximum reverse recovery time (NOTE 1)  | $t_{rr}$        | 50          |       |       |       | 75    |       |       | ns                        |
| Typical junction capacitance (NOTE 2)   | $C_J$           | 15.0        |       |       |       |       |       |       | pF                        |
| Typical thermal resistance (NOTE 3)   | $R_{\theta JA}$ | 50.0        |       |       |       |       |       |       | $^\circ\text{C}/\text{W}$ |
| Operating junction and storage temperature range  | $T_J, T_{STG}$  | -50 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 0.2x0.2" (5.0x5.0mm) copper pad areas

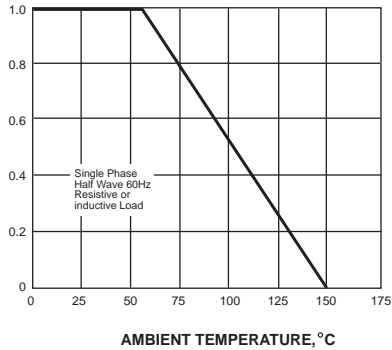


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# RATINGS AND CHARACTERISTIC CURVES US1AF THRU US1MF

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

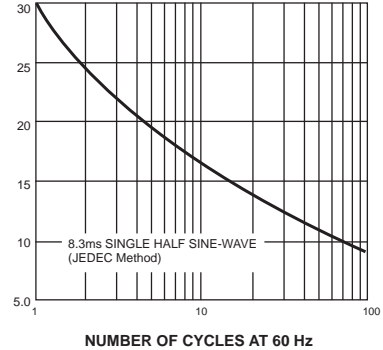
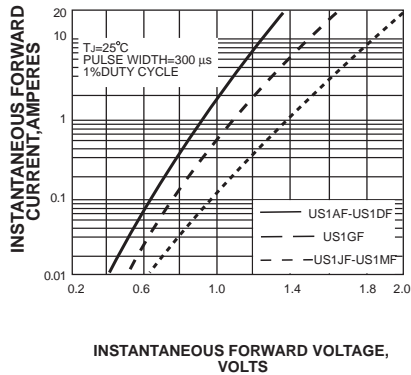


FIG. 3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS



INSTANTANEOUS REVERSE CURRENT,  
MICROAMPERES

FIG. 4-TYPICAL REVERSE CHARACTERISTICS

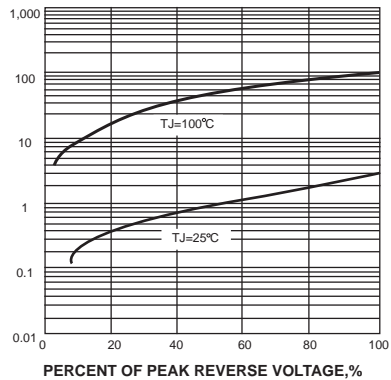
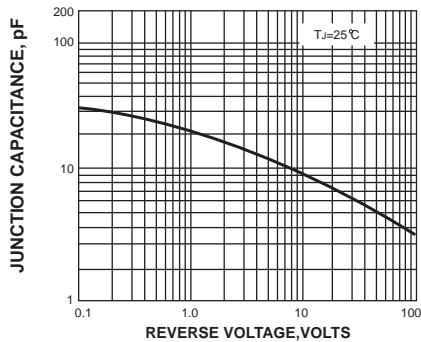
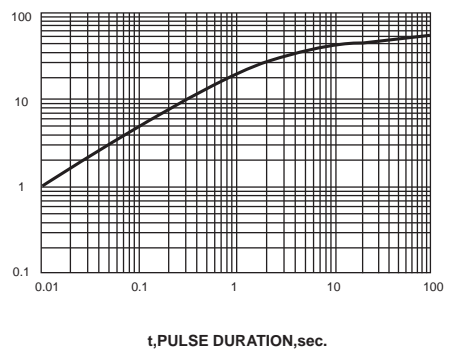


FIG. 5-TYPICAL JUNCTION CAPACITANCE



TRANSIENT THERMAL IMPEDANCE,  
°C/W

FIG. 6-TYPICAL TRANSIENT THERMAL IMPEDANCE



The cruve graph is for reference only, can't be the basis for judgment(曲线图仅供参考!)

