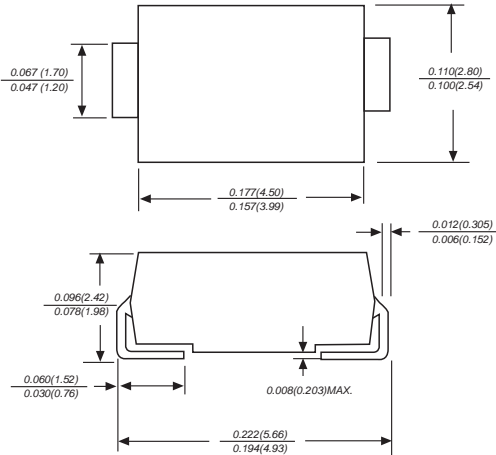


# US1A THRU US1M

## SURFACE MOUNT ULTRA FAST RECTIFIER

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

### DO-214AC



Dimensions in inches and (millimeters)

### 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 DO-214AC molded plastic body

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

**Polarity:** Color band denotes cathode end

**Mounting Position:** Any

**Weight:** 0.002 ounce, 0.07 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%.

|   | SYMBOLS         | US1A        | US1B | US1D | US1G | US1J | US1K | US1M  | 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 $T_L=75^\circ\text{C}$                                       | $I_{(AV)}$      | 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        |      |      |      |      |      |       | $^\circ\text{C/W}$ |
| Operating junction and storage temperature range  | $T_J, T_{STG}$  | -65 to +150 |      |      |      |      |      |       | $^\circ\text{C}$   |

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

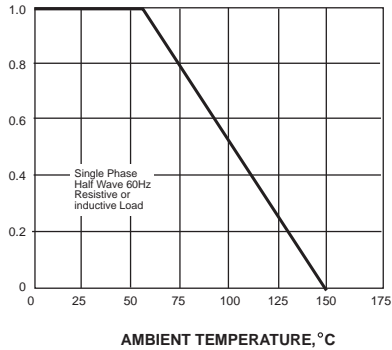
2. Measured at 1MHz and applied reverse voltage of 4.0V D.C.

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

# RATINGS AND CHARACTERISTIC CURVES US1A THRU US1M

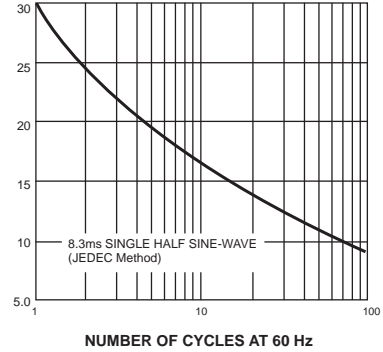
AVERAGE FORWARD RECTIFIED CURRENT,  
AMPERES

FIG. 1- FORWARD CURRENT DERATING CURVE



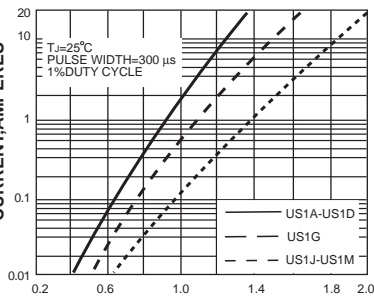
PEAK FORWARD SURGE CURRENT,  
AMPERES

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



INSTANTANEOUS FORWARD CURRENT, AMPERES

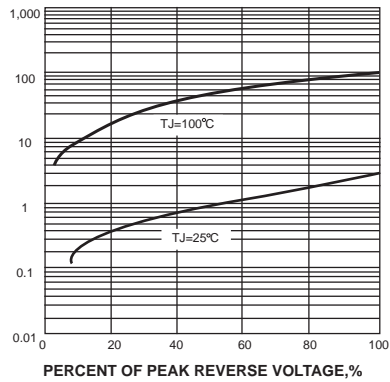
FIG. 3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS



INSTANTANEOUS FORWARD VOLTAGE,  
VOLTS

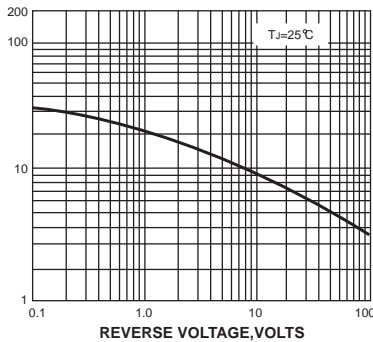
INSTANTANEOUS REVERSE CURRENT,  
MICROAMPERES

FIG. 4-TYPICAL REVERSE CHARACTERISTICS



JUNCTION CAPACITANCE, pF

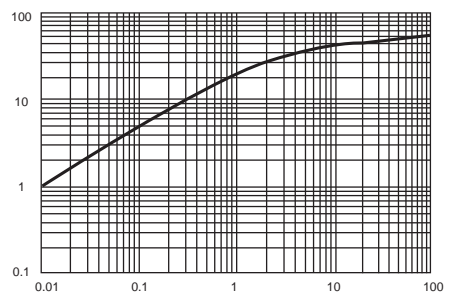
FIG. 5-TYPICAL JUNCTION CAPACITANCE



REVERSE VOLTAGE, VOLTS

TRANSIENT THERMAL IMPEDANCE,  
°C/W

FIG. 6-TYPICAL TRANSIENT THERMAL IMPEDANCE



t, PULSE DURATION, sec.