

## Features

- The plastic package carries UL Flammability Classification 94V-0
- For surface mounted applications
- 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



## Mechanical Characteristics

- Case: SOD-123F package 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: 0.0006 ounce, 0.0169 grams

## Absolute Maximum Ratings and Electrical Parameters (TA=25°C unless otherwise specified)

| PARAMETER                                                                         |                        | SYMBOL           | R1A        | R1B | R1D | R1G | R1J | R1K | R1M  | UNIT |
|-----------------------------------------------------------------------------------|------------------------|------------------|------------|-----|-----|-----|-----|-----|------|------|
| Maximum repetitive peak reverse voltage                                           |                        | V <sub>RRM</sub> | 50         | 100 | 200 | 400 | 600 | 800 | 1000 | V    |
| Maximum RMS voltage                                                               |                        | V <sub>RMS</sub> | 35         | 70  | 140 | 280 | 420 | 560 | 700  | V    |
| Maximum DC blocking voltage                                                       |                        | V <sub>DC</sub>  | 50         | 100 | 200 | 400 | 600 | 800 | 1000 | V    |
| Maximum average forward rectified current                                         |                        | I <sub>AV</sub>  | 1          |     |     |     |     |     |      | A    |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load |                        | I <sub>FSM</sub> | 30         |     |     |     |     |     |      | A    |
| Maximum instantaneous forward voltage at 1A                                       |                        | V <sub>F</sub>   | 1.3        |     |     |     |     |     |      | V    |
| Maximum DC reverse current at rated DC blocking voltage                           | T <sub>A</sub> =25 °C  | I <sub>R</sub>   | 5          |     |     |     |     |     |      | uA   |
|                                                                                   | T <sub>A</sub> =100 °C | I <sub>RT</sub>  | 50         |     |     |     |     |     |      | uA   |
| Maximum reverse recovery time <sup>(NOTE 1)</sup>                                 |                        | t <sub>rr</sub>  | 150        |     |     |     | 250 | 500 |      | ns   |
| Typical junction capacitance <sup>(NOTE 2)</sup>                                  |                        | C <sub>J</sub>   | 15         |     |     |     |     |     |      | pF   |
| Typical Thermal Resistance Junction to Ambient <sup>(NOTE3)</sup>                 |                        | R <sub>θJA</sub> | 90         |     |     |     |     |     |      | °C/W |
| Typical Thermal Resistance Junction to Lead <sup>(NOTE3)</sup>                    |                        | R <sub>θJL</sub> | 30         |     |     |     |     |     |      | °C/W |
| Operating Temperature Range                                                       |                        | T <sub>J</sub>   | -55 to 150 |     |     |     |     |     |      | °C   |
| Storage Temperature Range                                                         |                        | T <sub>STG</sub> | -55 to 150 |     |     |     |     |     |      | °C   |

Note1: Reverse recovery condition  $I_F=0.5A, I_R=1.0A, I_{rr}=0.25A$

Note2: Measured at 1MHz and applied reverse voltage of 4.0V DC.

Note3: PCB. mounted with 3×3mm copper pad areas

## Summary of Packing Options

| Package  | Packing Description | Packing Quantity | Industry Standard |
|----------|---------------------|------------------|-------------------|
| SOD-123F | Tape/Reel, 13" reel | 10000            | EIA-481-1         |
|          | Tape/Reel, 7" reel  | 3000             | EIA-481-1         |

### Rating And Characteristic Curves ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

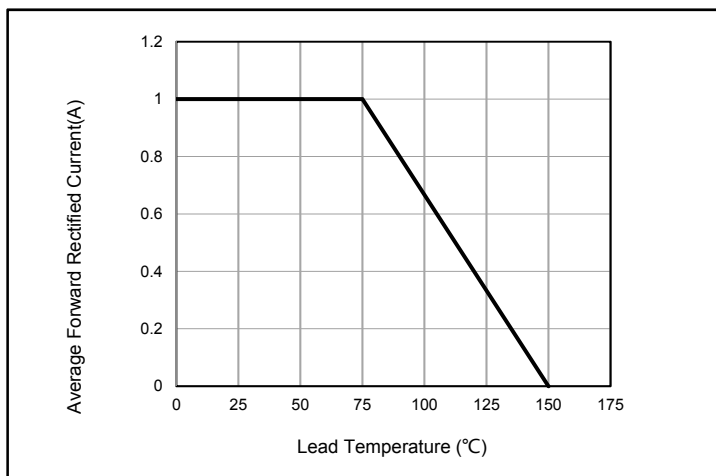


Fig. 1 - Forward Current Derating Curve

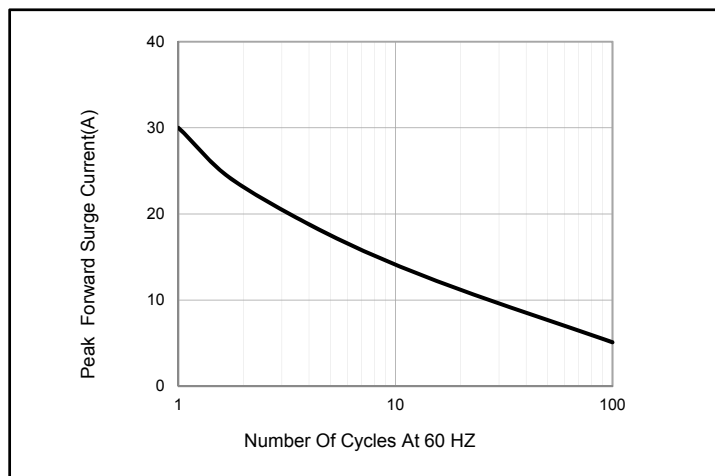


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

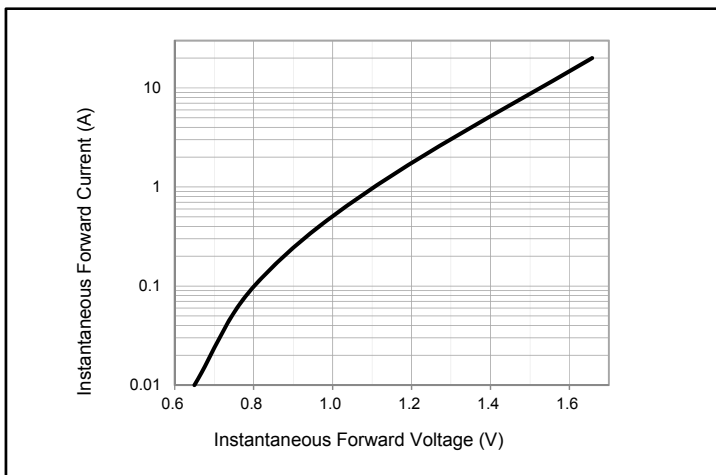


Fig. 3 - Typical Instantaneous Forward Characteristics

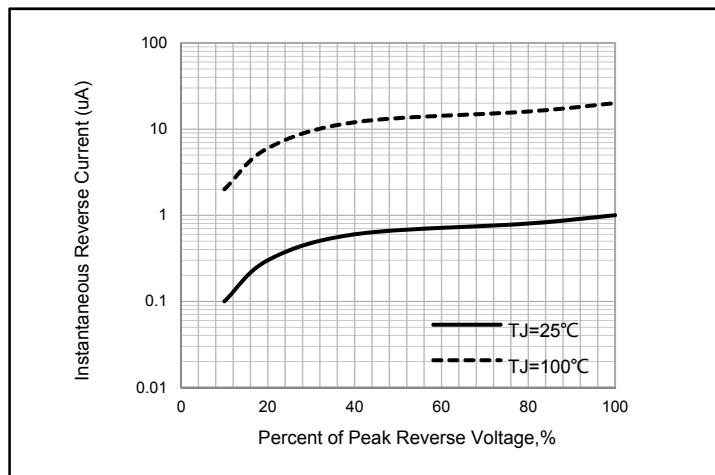


Fig. 4 - Typical Reverse Characteristics

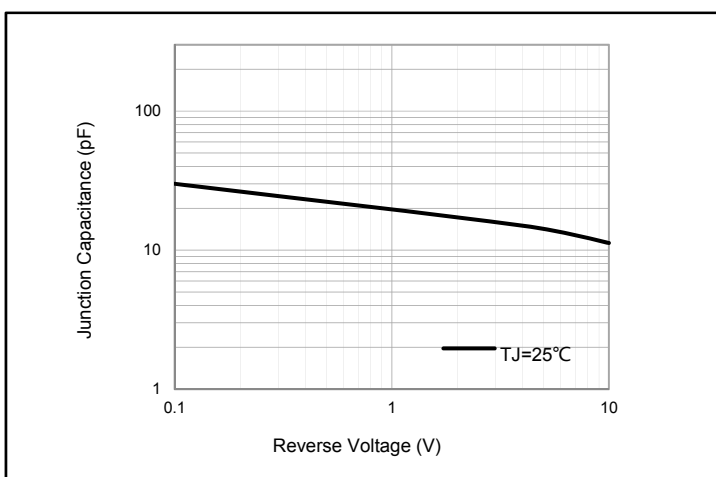


Fig. 5 - Typical Junction Capacitance

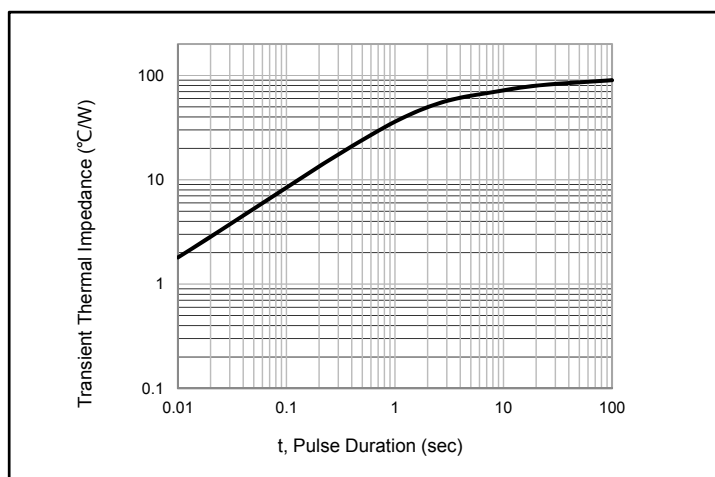
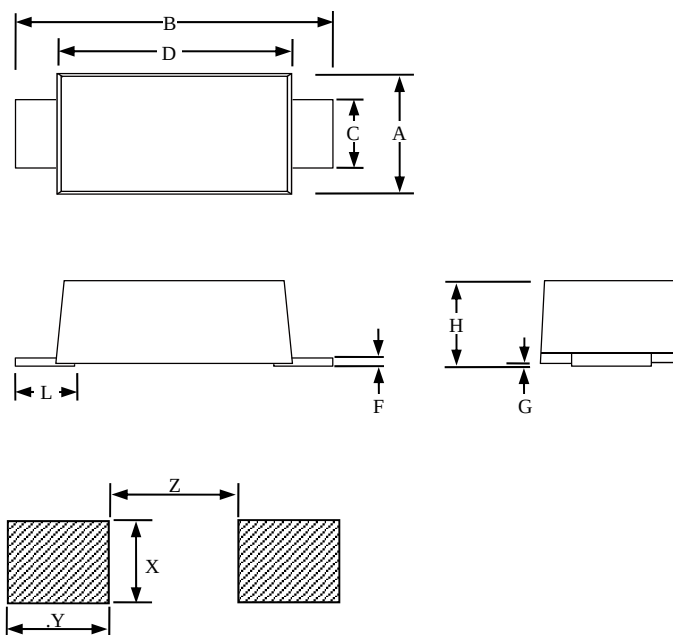


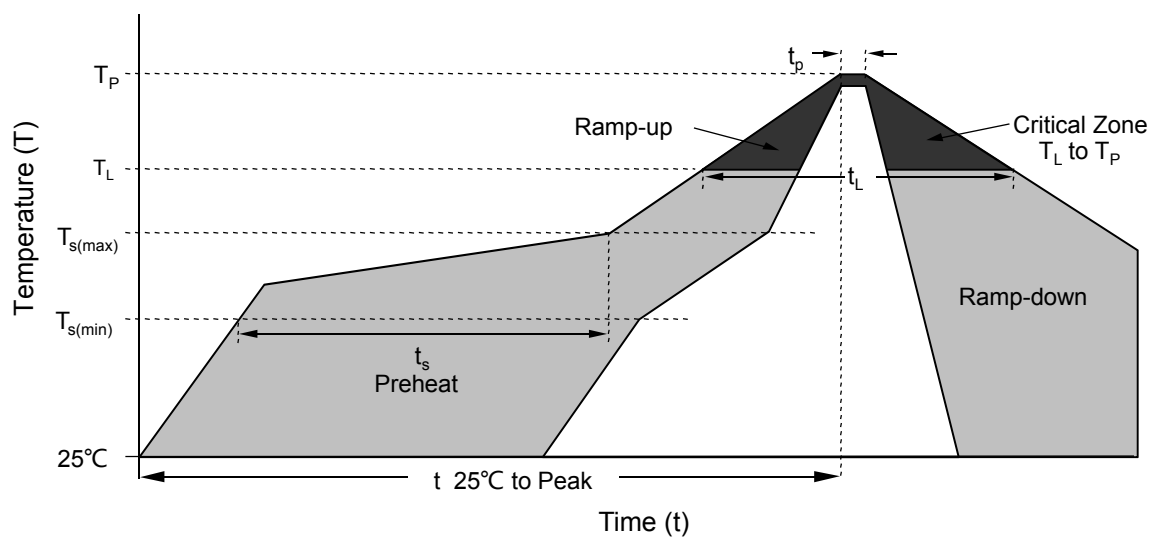
Fig. 6 - Typical Transient Thermal Impedance

### Package Dimensions



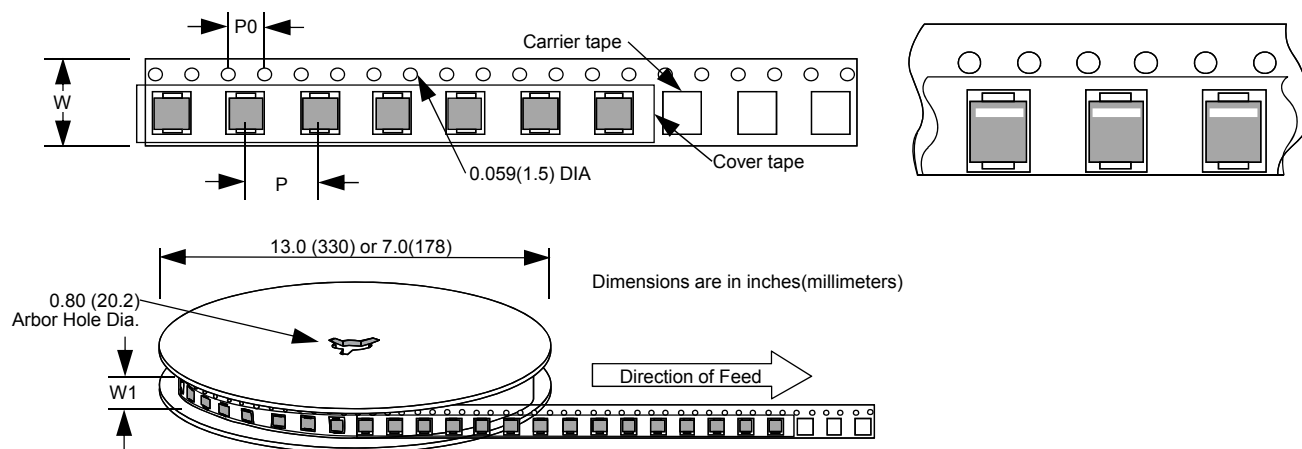
| SOD-123F  |        |       |       |             |     |      |
|-----------|--------|-------|-------|-------------|-----|------|
| Dimension | Inches |       |       | Millimeters |     |      |
|           | MIN    | NOM   | MAX   | MIN         | NOM | MAX  |
| A         | 0.059  |       | 0.079 | 1.5         |     | 2    |
| B         | 0.134  |       | 0.154 | 3.4         |     | 3.9  |
| C         | 0.028  |       | 0.047 | 0.7         |     | 1.2  |
| D         | 0.098  |       | 0.114 | 2.5         |     | 2.9  |
| L         | 0.014  |       | 0.035 | 0.35        |     | 0.9  |
| F         | 0.002  |       | 0.01  | 0.05        |     | 0.26 |
| G         | -      |       | 0.004 | -           |     | 0.1  |
| H         | 0.037  |       | 0.053 | 0.95        |     | 1.35 |
| X         |        | 0.055 |       |             | 1.4 |      |
| Y         |        | 0.051 |       |             | 1.3 |      |
| Z         |        | 0.063 |       |             | 1.6 |      |

### Soldering Parameters



| Reflow Condition                                       |                                    | Lead-free assembly      |
|--------------------------------------------------------|------------------------------------|-------------------------|
| Pre Heat                                               | - Temperature Min ( $T_{s(min)}$ ) | 150°C                   |
|                                                        | - Temperature Max ( $T_{s(max)}$ ) | 200°C                   |
|                                                        | - Time (min to max) ( $t_s$ )      | 60 – 180 secs           |
| Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak) |                                    | 3°C/second max          |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                   |                                    | 3°C/second max          |
| Reflow                                                 | - Temperature ( $T_L$ ) (Liquidus) | 217°C                   |
|                                                        | - Time ( $t_L$ )                   | 60 – 150 secs           |
| Peak Temperature ( $T_P$ )                             |                                    | 260 <sup>+0/-5</sup> °C |
| Time within 5°C of actual peak Temperature ( $t_p$ )   |                                    | 20 – 40 secs            |
| Ramp-down Rate                                         |                                    | 6°C/second max          |
| Time 25°C to peak Temperature (t)                      |                                    | 8 minutes Max.          |
| Do not exceed                                          |                                    | 260°C                   |

### Tape and Reel Specification



| Dimension | Inches |       |     | Millimeters |     |     |
|-----------|--------|-------|-----|-------------|-----|-----|
|           | MIN    | NOM   | MAX | MIN         | NOM | MAX |
| P         |        | 0.157 |     |             | 4   |     |
| P0        |        | 0.157 |     |             | 4   |     |
| W         |        | 0.315 |     |             | 8   |     |
| W1        |        | 0.374 |     |             | 9.5 |     |

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