



# SURFACE MOUNT SUPER FAST RECOVERY RECTIFIER

## E1A THRU E1J

VOLTAGE RANGE

50 to 600 Volts

CURRENT

1.0 Ampere



## Features

- Fast recovery glass passivated: chip 46mil
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- High temperature soldering: 260°C/10S at terminals
- Component in accordance to RoHS 2002/95/1 and WEEE 2002/96/EC



## Mechanical Data

- Case: JEDEC SOD-123FL mold plastic  
Body over glass passivated chip
- Terminals: Solder plated, solderable per J-STD-002B and JESD22-B102D
- Polarity: Laser band denote cathode band
- Weight: 0.00063ounce, 0.018grams



## 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 derate current by 20%

| TYPE NUMBER  | SYMBOL                    | E1A         | E1B | E1C | E1D  | E1F | E1G  | E1J | UNIT               |
|--|---------------------------|-------------|-----|-----|------|-----|------|-----|--------------------|
| Maximum Repetitive Peak Reverse Voltage  | $V_{RRM}$                 | 50          | 100 | 150 | 200  | 300 | 400  | 600 | Volts              |
| Maximum RMS Voltage  | $V_{RMS}$                 | 35          | 70  | 105 | 140  | 210 | 280  | 420 | Volts              |
| Maximum DC Blocking Voltage  | $V_{DC}$                  | 50          | 100 | 150 | 200  | 300 | 400  | 600 | Volts              |
| Maximum Average Forward Rectified Current At $T_A=100^\circ\text{C}$                             | $I_{(AV)}$                | 1.0         |     |     |      |     |      |     | Amps               |
| Peak Forward Surge Current 8.3ms single half sine wave superimposed on rated load (JEDEC Method) | $I_{FSM}$                 | 30          |     |     |      |     |      |     | Amps               |
| Maximum Instantaneous Forward Voltage at 1.0A  | $V_F$                     | 0.95        |     |     | 1.25 |     | 1.70 |     | Volts              |
| Maximum DC Reverse Current at rated DC blocking voltage at                                       | $T_A = 25^\circ\text{C}$  | 5.0         |     |     |      |     |      |     | $\mu\text{Amps}$   |
|  | $T_A = 125^\circ\text{C}$ | 100         |     |     |      |     |      |     |                    |
| Maximum Reverse Recovery Time <sup>(NOTE 1)</sup>  | $T_{RR}$                  | 35          |     |     |      |     |      |     | nS                 |
| Typical Junction Capacitance <sup>(NOTE 3)</sup>   | $C_j$                     | 10          |     |     | 8    |     |      |     | pF                 |
| Typical Thermal Resistance <sup>(NOTE 2)</sup>   | $R_{\theta JA}$           | 60          |     |     |      |     |      |     | $^\circ\text{C/W}$ |
|  | $R_{\theta JL}$           | 28          |     |     |      |     |      |     |                    |
| Operating Junction Temperature   | $T_J$                     | -55 to +150 |     |     |      |     |      |     | $^\circ\text{C}$   |
| Storage Temperature Range  | $T_{STG}$                 | -55 to +150 |     |     |      |     |      |     | $^\circ\text{C}$   |

Notes:

1. Reverse Recovery Test Conditions:  $I_f=0.5A, I_r=1.0A, I_{rr}=0.25A$ .
2. Polyimide PCB, 0.043"×0.047"(1.10mm×1.20mm). Copper, minimum recommended pad layout per.
3. Measured at 1.0MHz and applied reverse voltage of 4.0V.



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 CURRENT 1.0 Ampere

Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$  unless otherwise noted)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

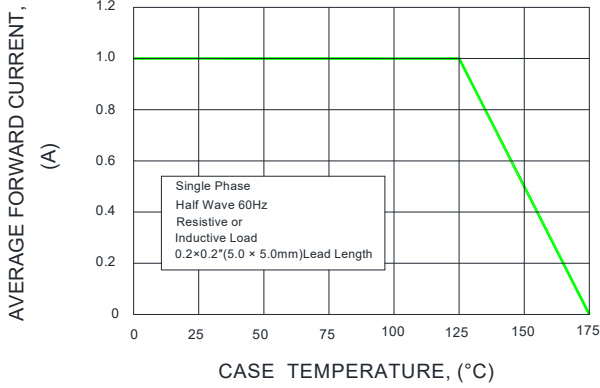


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

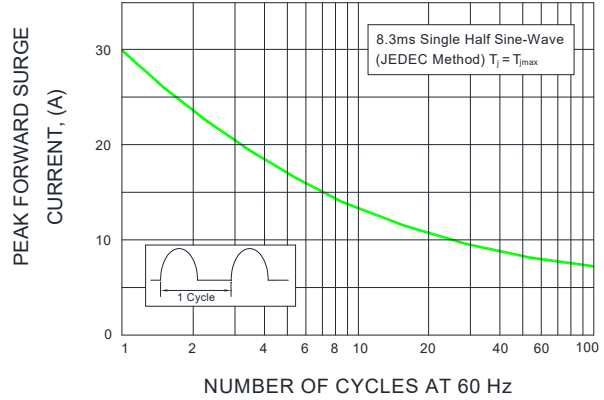


FIG.3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

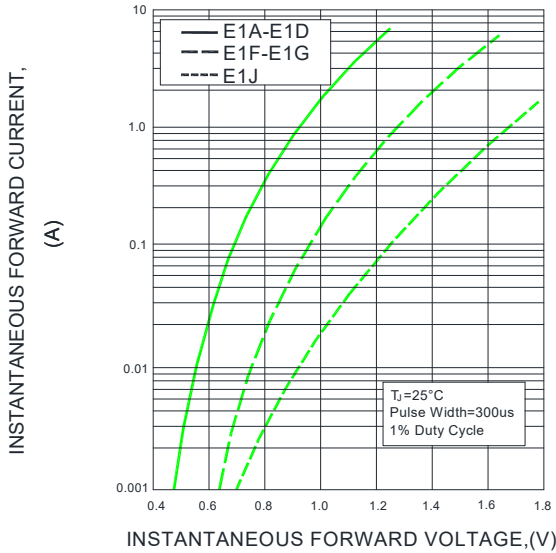


FIG.4-TYPICAL REVERSE CHARACTERISTICS

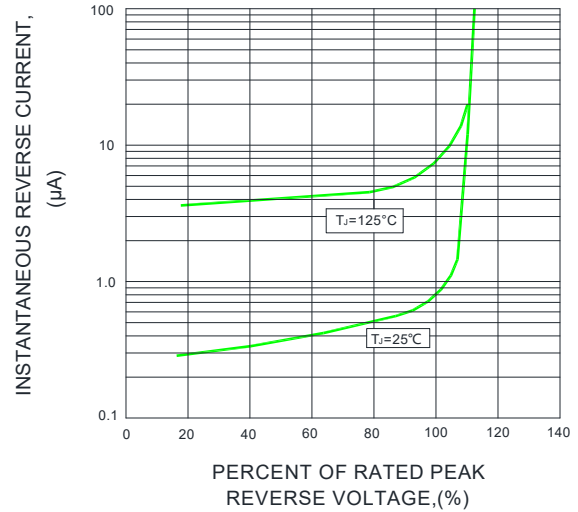


FIG.5-TYPICAL JUNCTION CAPACITANCE

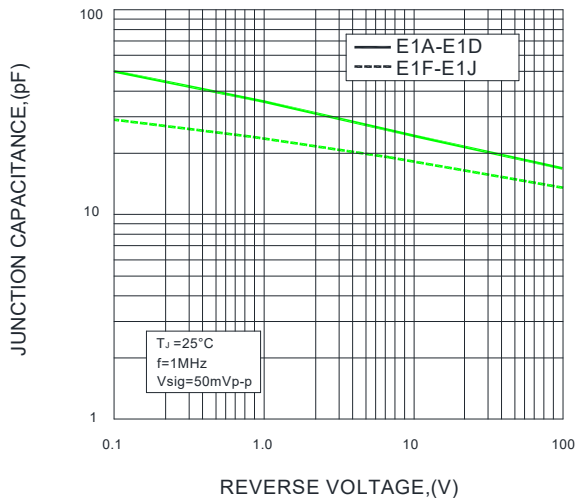
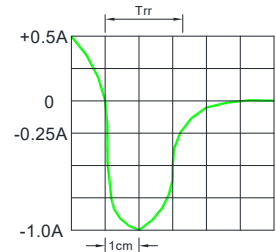
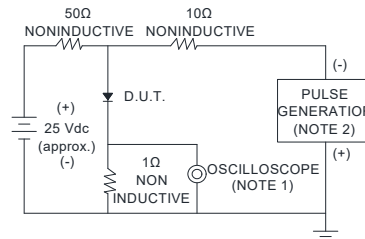


FIG.6-TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTIC



NOTES : 1. Rise Time=7ns max. Input Impedance= 1 magohm, 22pF  
 2. Rise time=10ns max. Source Impedance= 50 ohms

SET TIME BASE FOR 50/100ns/cm



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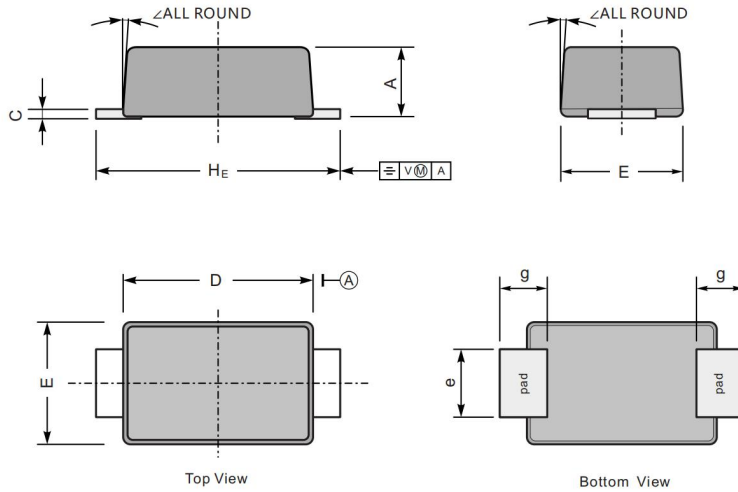
CURRENT

1.0 Ampere

Package Outline Dimensions in inches (millimeters)

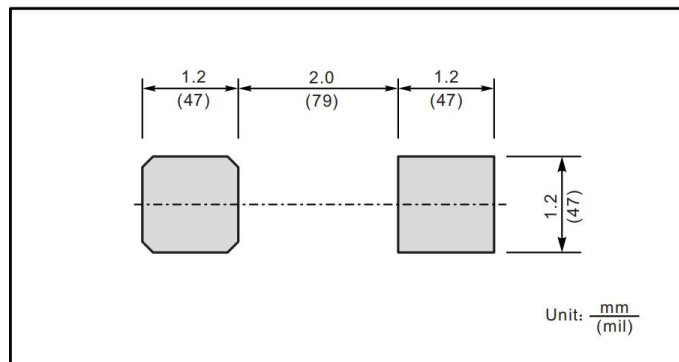
SOD-123FL

Unit: mm



| UNIT |     | A   | C    | D   | E   | e   | g   | H <sub>E</sub> | ∠  |
|------|-----|-----|------|-----|-----|-----|-----|----------------|----|
| mm   | max | 1.1 | 0.20 | 2.9 | 1.9 | 1.1 | 0.9 | 3.8            | 7° |
|      | min | 0.9 | 0.12 | 2.6 | 1.7 | 0.8 | 0.7 | 3.5            |    |
| mil  | max | 43  | 7.9  | 114 | 75  | 43  | 35  | 150            |    |
|      | min | 35  | 4.7  | 102 | 67  | 31  | 28  | 138            |    |

The recommended mounting pad size





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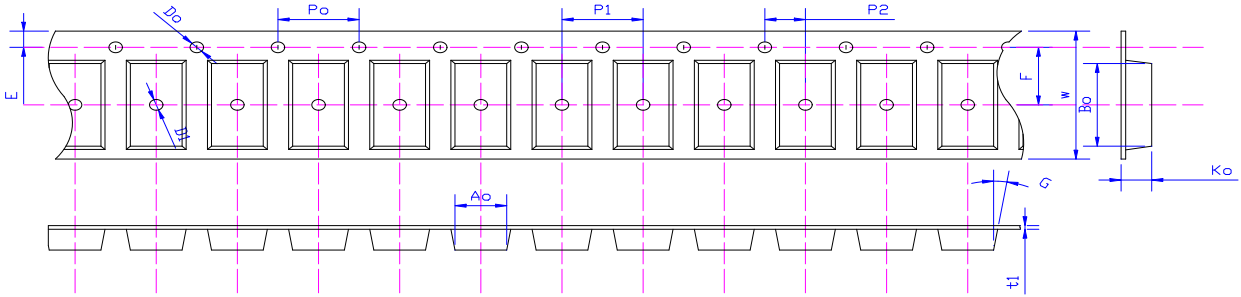
50 to 600 Volts

CURRENT

1.0 Ampere

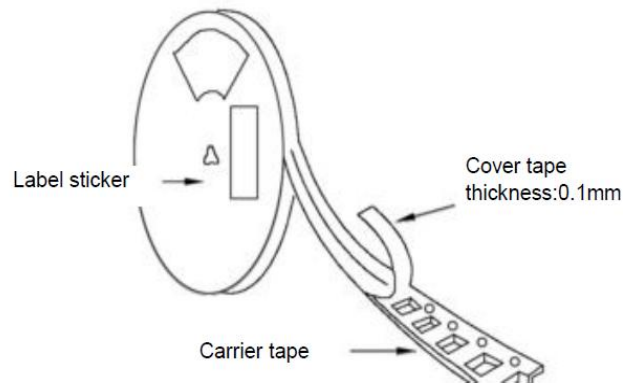
## Packing Requirments

- PS black anti-static carrier tape packing



| Specifications | Ao        | Bo        | Ko        | Po       | W        | t1        |
|----------------|-----------|-----------|-----------|----------|----------|-----------|
| SOD123FL       | 2.12±0.10 | 3.95±0.10 | 1.35±0.10 | 4.00±0.1 | 8.0±0.10 | 0.20±0.02 |

- 7 "antistatic plastic reel



| DEVICE TYPE | 07" Reel       |          |             |                  |
|-------------|----------------|----------|-------------|------------------|
|             | Q'TY/REEL(pcs) | REEL/BOX | BOX/CARTOON | Q'TY/CARTON(pcs) |
| SOD123FL    | 3000           | 4        | 16          | 192000           |



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E1A THRU E1J

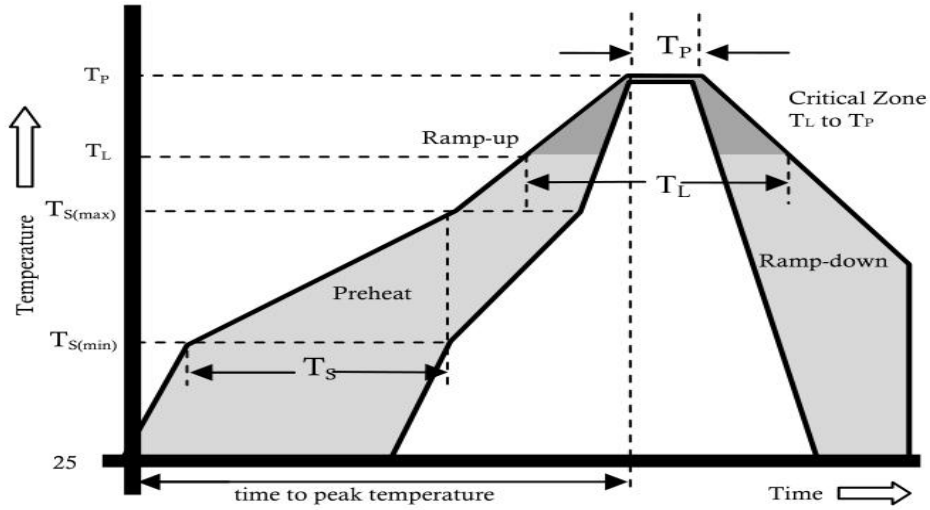
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Reflow Profile



| Reflow Condition                                     |                                 | Pb-Free Assembly |
|--|---------------------------------|------------------|
| Pre Heat   | Temperature Min.                | +150°C           |
|  | Temperature Max.                | +200°C           |
|  | Time(Min to Max)                | 60-180 secs.     |
| Average ramp up rate(Liquidus Temp( $T_L$ ) to peak) |                                 | 3°C/sec. Max.    |
| $T_S(max)$ to $T_L$ - Ramp-up Rate                   |                                 | 3°C/sec. Max.    |
| Reflow   | Temperature ( $T_L$ )(Liquidus) | +217°C           |
|  | Temperature ( $T_I$ )           | 60-150 secs.     |
| Peak Temp ( $T_p$ )                                  |                                 | +(260+0/-5)°C    |
| Time within 5°C of actual Peak Temp ( $T_p$ )        |                                 | 25 secs.         |
| Ramp-down Rate                                       |                                 | 6°C/sec. Max.    |
| Time 25°C to peak Temp ( $T_p$ )                     |                                 | 8 min. Max.      |
| Do not exceed  |                                 | +260°C           |



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