

**REVERSE VOLTAGE – 1000 Volts FORWARD CURRENT – 3.0 Ampere**

## GENERAL DESCRIPTION

Suitable for AC-to-DC bridge full wave rectification for SMPS, LED lighting, adapter, battery charger, home appliances, office equipment, and telecommunication applications.

## FEATURES

- Rated at 1000V PRV
- Compact, thin profile package design
- Ideal for SMT manufacturing
- Reliable robust construction
- UL recognized file#E364304

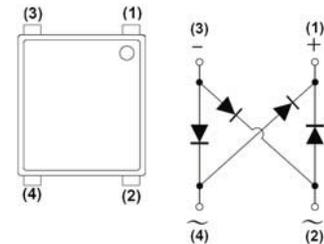
## MECHANICAL DATA

- Molding compound meets UL 94 V-0 flammability rating, Halogen-free, RoHS-compliant, and commercial grade
- Polarity indicator: As marked on body
- Marking : MSB310
- Weight: 216 mg

UMSB-4



Pin Assignment



Maximum Ratings & Thermal Characteristics @  $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristics  | Symbol   | Limit       | Unit                 |
|--|--|-------------|----------------------|
| Maximum Repetitive Peak Reverse Voltage                                  | $V_{RRM}$  | 1000        | V                    |
| Maximum DC Blocking Voltage  | $V_{DC}$   | 1000        | V                    |
| Maximum Average Forward Rectified Current<br>@ $T_c = 120^\circ\text{C}$ | $I_{(AV)}$   | 3.0         | A                    |
| Peak Forward Surge Current 8.3ms<br>single half sine-wave                | $I_{FSM}$<br>@ $T_J = 25^\circ\text{C}$<br>@ $T_J = 125^\circ\text{C}$ | 100<br>80   | A                    |
| Peak Forward Surge Current 1.0ms<br>single half sine-wave                | $I_{FSM}$<br>@ $T_J = 25^\circ\text{C}$<br>@ $T_J = 125^\circ\text{C}$ | 200<br>160  | A                    |
| $I^2 t$ Rating for fusing ( $1\text{ms} < t < 8.3\text{ms}$ )            | $I^2 t$  | 26.56       | $\text{A}^2\text{S}$ |
| Operating and Storage Temperature Range                                  | $T_J, T_{STG}$   | -55 to +150 | $^\circ\text{C}$     |

Electrical Characteristics @  $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristics  | Test Condition  | Symbol               | Min   | Typ.       | Max         | Unit          |
|--|---|----------------------|-------|------------|-------------|---------------|
| Maximum Forward Voltage                                    | @ $T_J = 25^\circ\text{C}$<br>@ $T_J = 125^\circ\text{C}$ | $I_F = 1.5\text{A}$  | $V_F$ | --<br>0.80 | 1.02<br>--- | V             |
| Maximum Forward Voltage                                    | @ $T_J = 25^\circ\text{C}$<br>@ $T_J = 125^\circ\text{C}$ | $I_F = 3.0\text{A}$  | $V_F$ | --<br>0.88 | 1.1<br>--   | V             |
| Maximum DC Reverse Current<br>at Rated DC Blocking Voltage | @ $T_J = 25^\circ\text{C}$<br>@ $T_J = 125^\circ\text{C}$ | $V_R = 1000\text{V}$ | $I_R$ | --         | 5<br>500    | $\mu\text{A}$ |
| Typical junction capacitance per element                   | Note(1)   | $C_J$                | --    | 35         | --          | pF            |

Thermal Characteristics

| Characteristics                     | Symbol          | Min | Typ. | Max | Unit               |
|-------------------------------------|-----------------|-----|------|-----|--------------------|
| Typical thermal resistance (Note 2) | $R_{\theta JC}$ | --  | 8    | --  | $^\circ\text{C/W}$ |
|                                     | $R_{\theta JL}$ | --  | 15   | --  |                    |
|                                     | $R_{\theta JA}$ | --  | 25   | --  |                    |

Note :

- (1) Measured at 1.0MHz and applied reverse voltage of 4.0V DC.
- (2) Thermal Resistance test performed in accordance with JESD-51. Unit mounted on 15 mm\*12 mm\*1.6 mm AL pad attach 195 mm\*110 mm\*10 mm steel plate

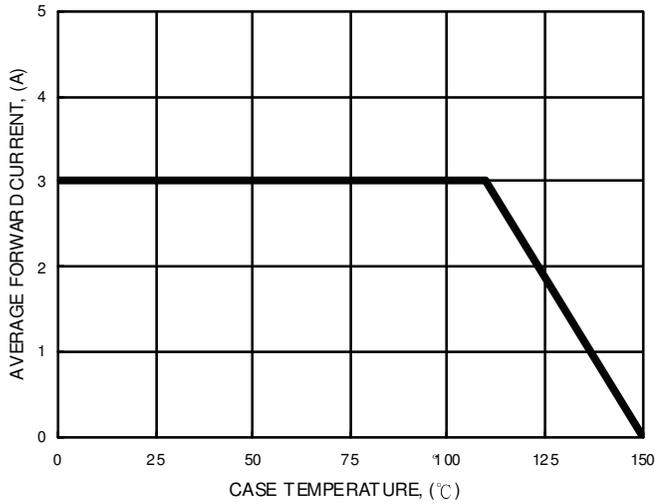


FIG.2- MAXIMUM NON-REPETITIVE SURGE CURRENT

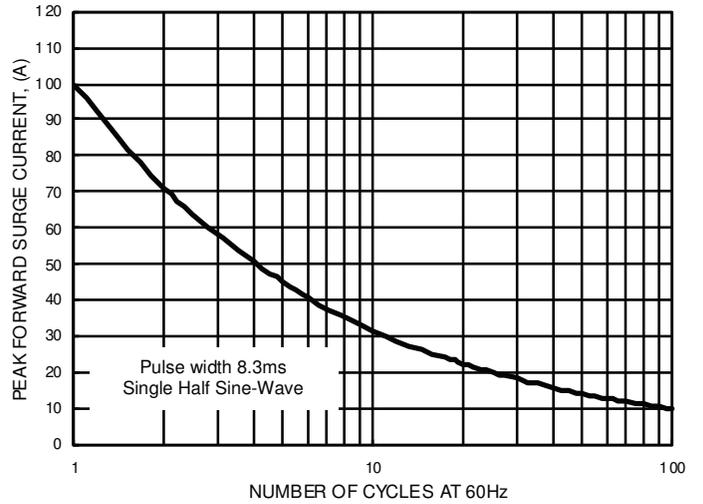


FIG.3- TYPICAL FORWARD CHARACTERISTICS

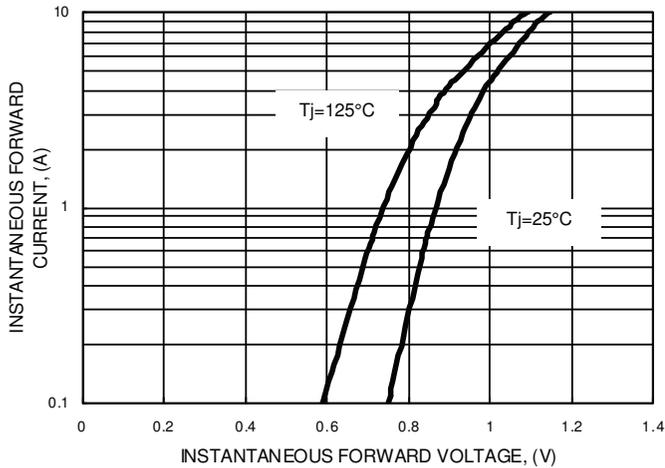


FIG.4- TYPICAL JUNCTION CAPACITANCE

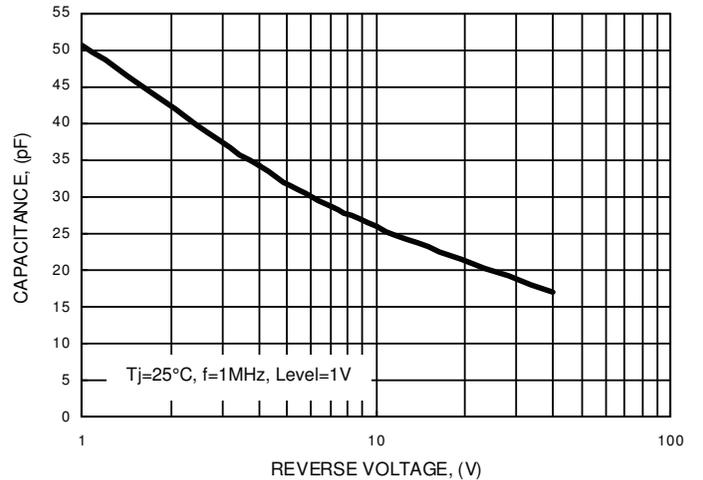


FIG.5- TYPICAL REVERSE CHARACTERISTICS

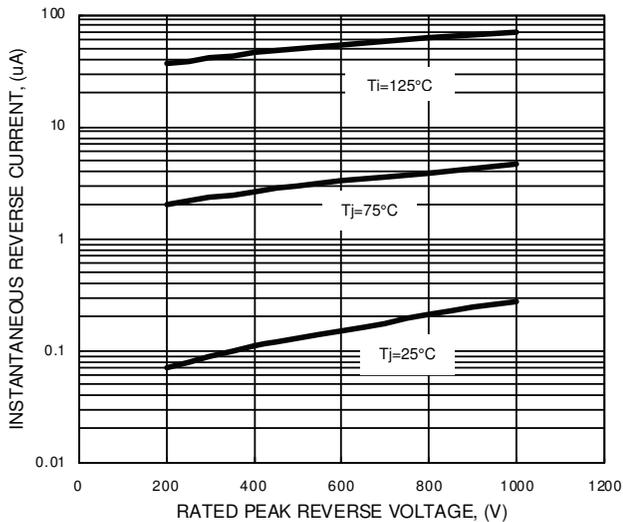
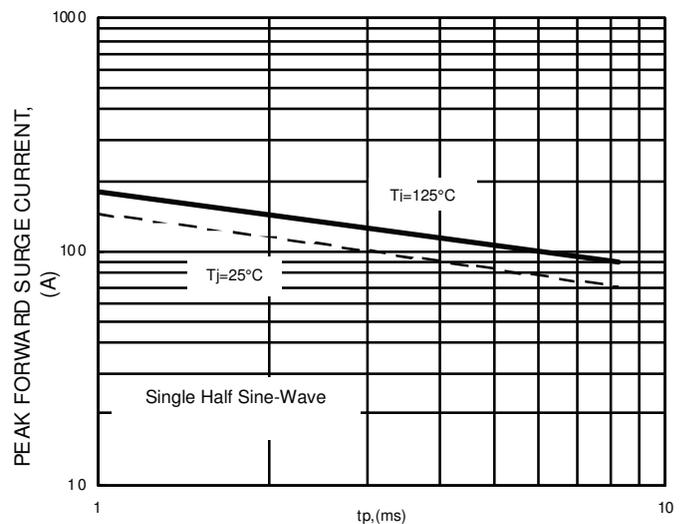
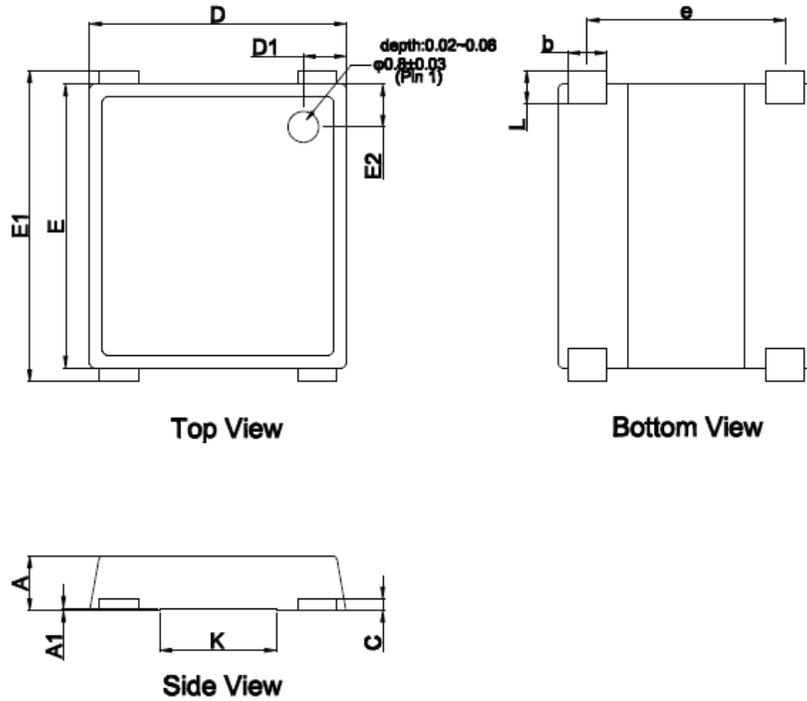


FIG.6- NON-REPETITIVE SURGE CURRENT



## Package Dimension

UMSB-4



| MSBL |      |      |      |
|------|------|------|------|
| Dim. | Min. | Typ. | Max. |
| A    | 1.30 | 1.40 | 1.50 |
| A1   | 0.04 | 0.06 | 0.08 |
| C    | 0.27 | 0.30 | 0.40 |
| D    | 6.50 | 6.60 | 6.70 |
| D1   | 0.95 | 1.10 | 1.25 |
| E    | 7.20 | 7.30 | 7.40 |
| E1   | 8.20 | 8.50 | 8.80 |
| E2   | 0.95 | 1.10 | 1.25 |
| L    | 0.90 | 1.10 | 1.15 |
| b    | 0.95 | 1.00 | 1.15 |
| e    | 5.00 | 5.10 | 5.20 |
| K    | 2.90 | 3.00 | 3.10 |

All dimensions in millimeter