LITE-ON SEMICONDUCTORS

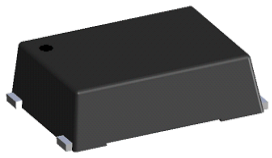
# MSB30KH

**GLASS PASSIVATED**
**SURFACE MOUNT BRIDGE RECTIFIERS**

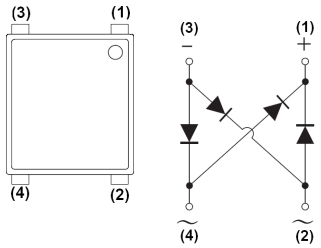
**REVERSE VOLTAGE – 800 Volts**
**FORWARD CURRENT – 3.0 Ampere**

## 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.



Pin Assignment




## FEATURES

- Rated at 800V 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：MB30KH
- Weight: 216 mg

## Maximum Ratings & Thermal Characteristics @ $T_A$ = 25°C unless otherwise specified

| Characteristics | Symbol | Limit | Unit |
|---|---|---|---|
| Maximum Repetitive Peak Reverse Voltage | $V_{RRM}$ | 800 | V |
| Maximum DC Blocking Voltage | $V_{DC}$ | 800 | V |
| Maximum Average Forward Rectified Current @Tc = 125 ℃ | $I_{(AV)}$ | 3.0 | A |
| Peak Forward Surge Current 8.3ms single half sine-wave @$T_J$=25℃ @$T_J$=125℃ | $I_{FSM}$ | 110<br>88 | A |
| Peak Forward Surge Current 1.0ms single half sine-wave @$T_J$=25℃ @$T_J$=125℃ | $I_{FSM}$ | 220<br>176 | A |
| $I^2t$ Rating for fusing (t = 8.3ms) | $I^2t$ | 50 | $A^2S$ |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -55 to +150 | °C |

## Electrical Characteristics @ $T_A$ = 25°C unless otherwise specified

| Characteristics | Test Condition | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Maximum Forward Voltage @Tj=25°C @Tj=125°C | IF = 1.5A | $V_F$ | -- | 0.87<br>0.75 | 1.02<br>--- | V |
| Maximum Forward Voltage @Tj=25°C @Tj=125°C | IF = 3.0A | $V_F$ | -- | 0.93<br>0.82 | 1.1<br>-- | V |
| Maximum DC Reverse Current at Rated DC Blocking Voltage @Tj=25°C @Tj=125°C | VR = 800V | $I_R$ | -- | -- | 5<br>500 | uA |
| Typical junction capacitance per element | Note(1) | $C_J$ | -- | 45 | -- | pF |

## Thermal Characteristics

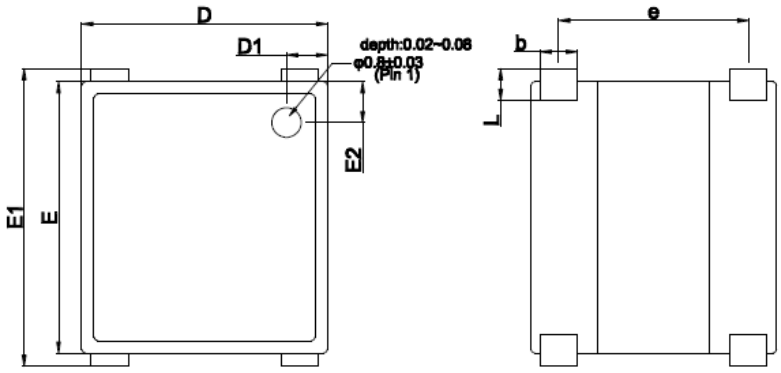
| Characteristics | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|
| Typical thermal resistance (Note 2) | $R_{\Theta JC}$ | -- | 3 | -- | °C/W |
| | $R_{\Theta JL}$ | -- | 7 | -- | |
| | $R_{\Theta JA}$ | -- | 20 | -- | |

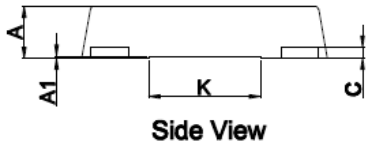
Note :

(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 glass-epoxy substrate with 1oz/ft2_50mm x 50mm copper pad per pin.

# Package Dimension




| MSBL | | |
|---|---|---|
| Dim. | Min. | Max. |
| A | 1.30 | 1.50 |
| A1 | 0.04 | 0.08 |
| C | 0.27 | 0.40 |
| D | 6.50 | 6.70 |
| D1 | 0.95 | 1.25 |
| E | 7.20 | 7.40 |
| E1 | 8.20 | 8.80 |
| E2 | 0.95 | 1.25 |
| L | 0.90 | 1.15 |
| b | 0.95 | 1.15 |
| e | 5.00 | 5.20 |
| K | 2.90 | 3.10 |
| All dimensions in millimeter | | |

## RATING AND CHARACTERISTIC CURVES
## MSB30KH

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**FIG.1-FORWARD CURRENT DERATING CURVE**

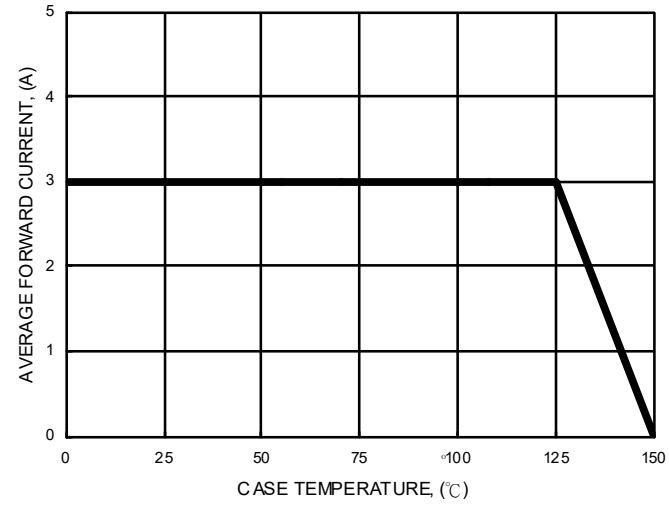



**FIG.2- MAXIMUM NON-REPETITIVE SURGE CURRENT**

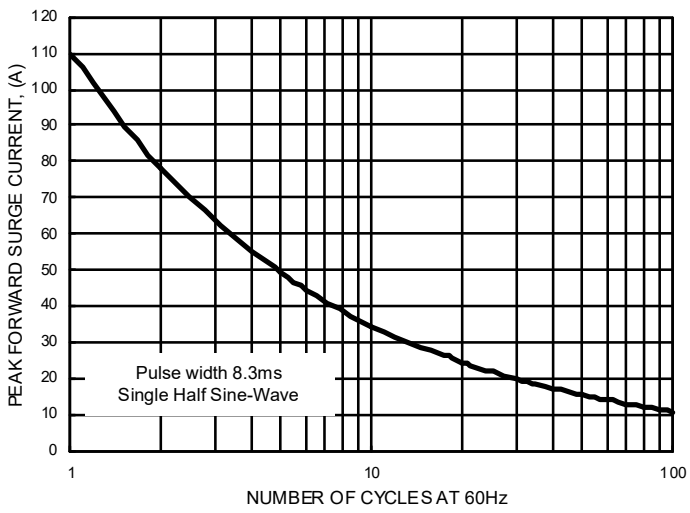



**FIG.3- TYPICAL FORWORD CHARACTERISTICS**

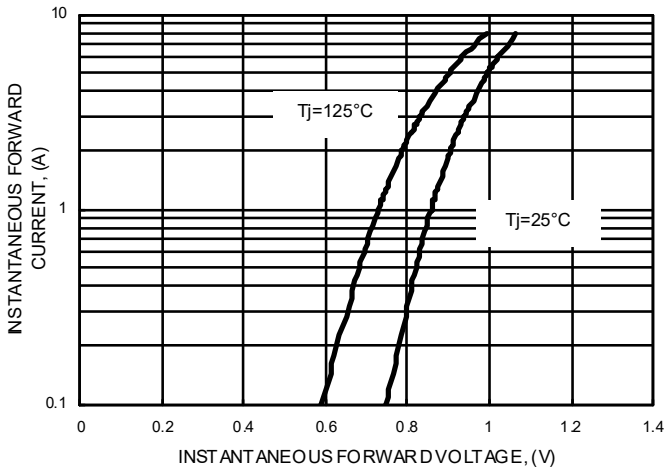



**FIG.4- TYPICAL JUNCTION CAPACITANCE**

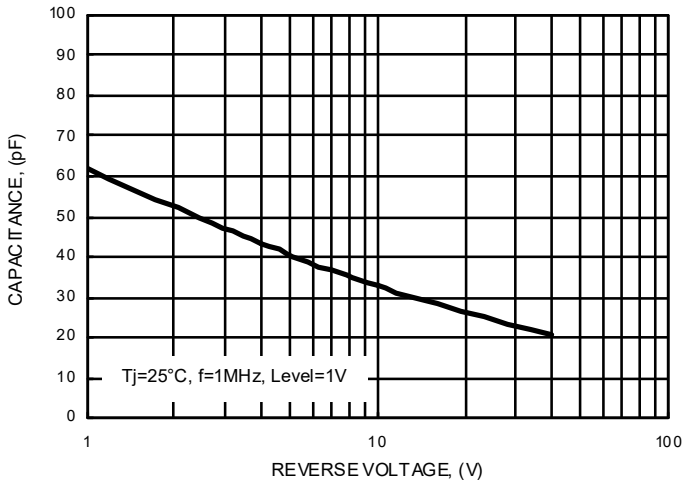



**FIG.5- TYPICAL REVERSE CHARACTERISTICS**

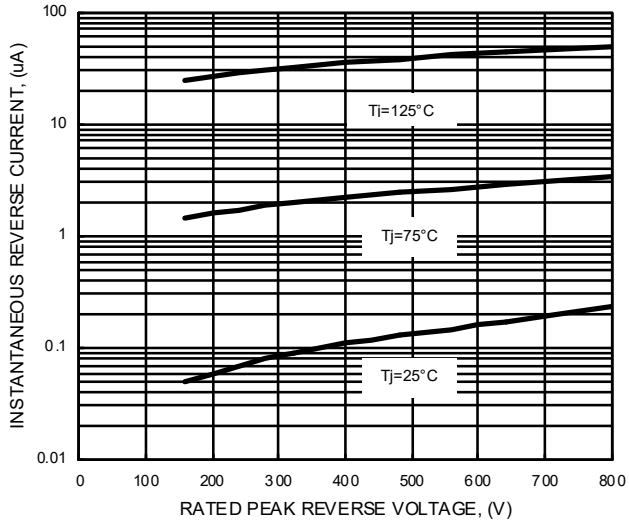
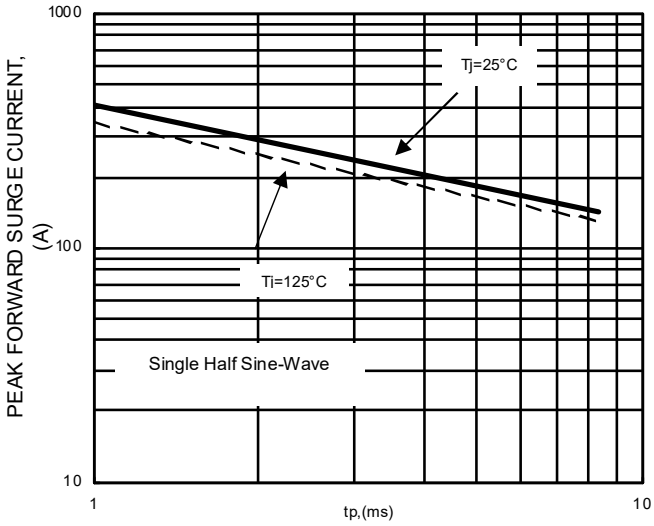



FIG.6- NON-REPETITIVE SURGE CURRENT

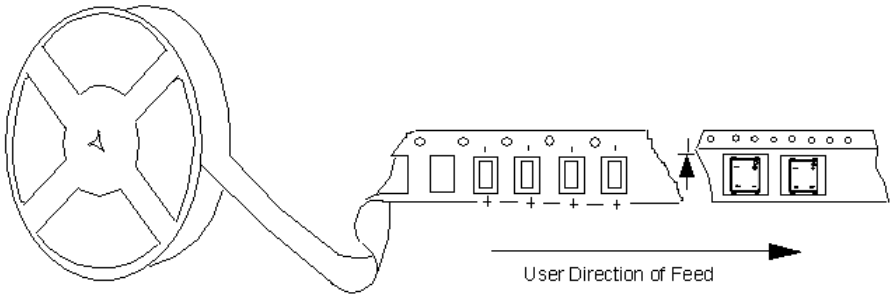


**PACKING INFORMAITON**
**MSB30KH**

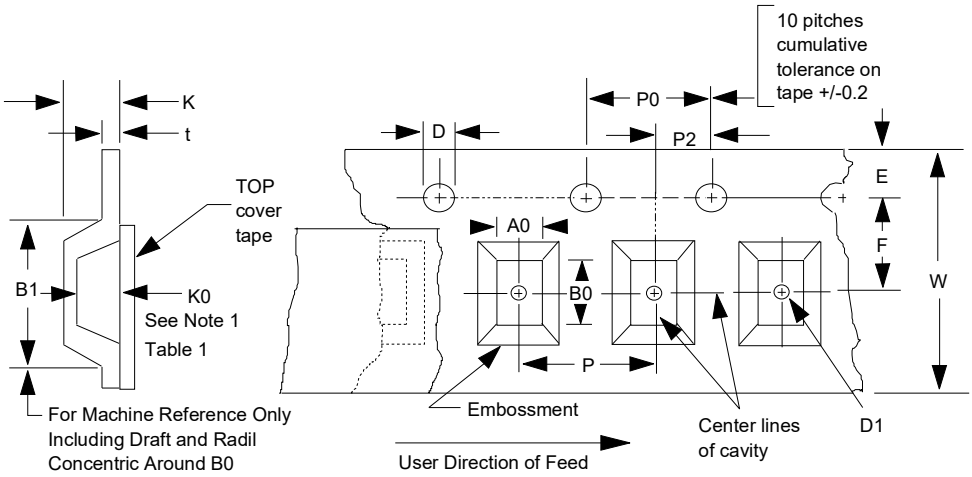
## Packaging Information

| DEVICE | Q'TY/REEL (PCS) | REEL DIA. (mm) | Liner (mm) | CARTON SIZE (mm) | Q'TY/CARTON (PCS) | MOQ |
|---|---|---|---|---|---|---|
| MSB30KH | 2500 | 330 | 1300x200 | 355x245x350 | 25K | 25K |

Polar Units




## Embossed Carrier Dimension




| TAPE SIZE | D | E | PO | t (MAX) | A0 | B0 | K0 |
|---|---|---|---|---|---|---|---|
| 16 | 1.5+0.10/-0.0 | 1.75+/-0.10 | 4.0+/-0.10 | 0.4 | 7.0+/-0.1 | 8.7+/-0.1 | 1.7+/-0.1 |
| | B1 (MAX) | B2 (MAX) | F | K (MAX) | P2 | W | P |
| | 8.2 | 1.5 | 7.5+/-0.1 | 2.2 | 2.0+/-0.05 | 16.0+/-.30 | 12.0+/-.1 |

Unit:mm

**Typical IR Reflow Soldering Thermal Profile**

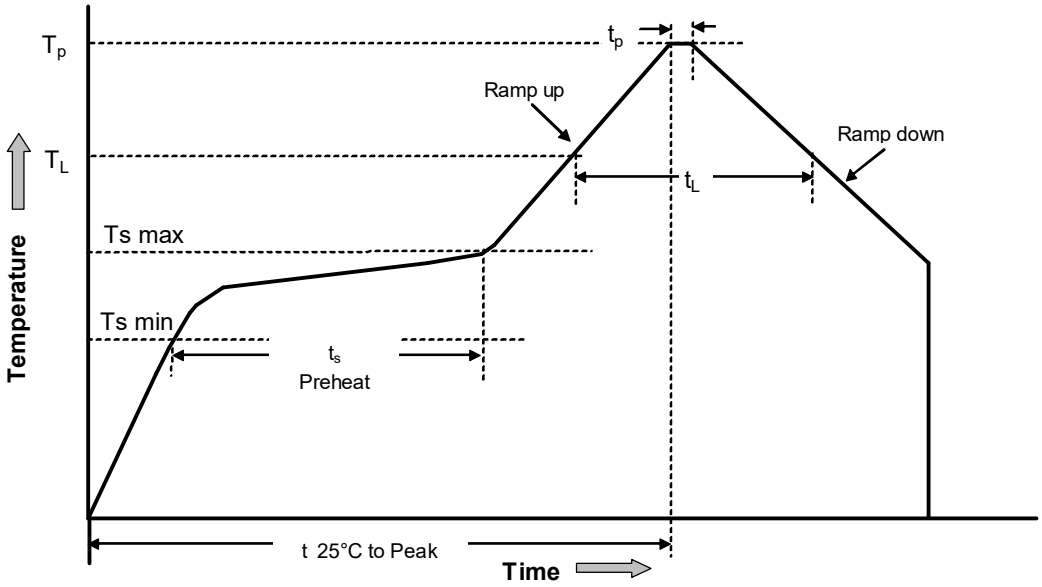



**Table 1- Reflow profile**

| Reflow condition | Sn-Pb assembly | Pb-free assembly |
|---|---|---|
| Average ramp-up rate (Liquidus Temperautre (TL) to Peak) | 3 °C/second max. | 3 °C/second max. |
| Preheat<br>--Tempautre Min, Ts (Min)<br>--Temperature Max, Ts (Max)<br>--Time (min to max, ts) | <br>100 °C<br>150 °C<br>60-120 seconds | <br>150 °C<br>200 °C<br>60-180 seconds |
| Ts(max) to TL<br>- Ramp-up Rate | | 3 °C/second max. |
| Time maintained above:<br>--Temperature(TL)<br>--Time(tL) | <br>183 °C<br>60-150 seconds | <br>217 °C<br>60-150 seconds |
| Peak Temperature (Tp) | 240 +0/-5 °C | 260 +0/-5 °C |
| Time within 5 °C of actual Peak Temperature(tp) | 10-30 seconds | 20-40 seconds |
| Ramp-down Rate | 6 °C/second max. | 6 °C/second max. |
| Time 25 °C to Peak Temperature. | 6 minutes max. | 8 minutes max. |

**Note: All temperatures refer to topside of the package, measured on the package body surface**

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