

**Product Summary** (@T<sub>A</sub> = +25°C)

| V <sub>RRM</sub> (V) | I <sub>o</sub> (A) | V <sub>F</sub> (V) | I <sub>R</sub> (μA) |
|----------------------|--------------------|--------------------|---------------------|
| 1000                 | 3.0                | 1.1                | 5                   |

**Description and Applications**

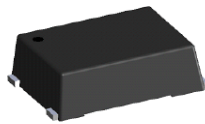
Suitable for AC to DC bridge full wave rectification for SMPS, LED lighting, adapter, battery charger, home appliances, office equipment, and telecommunication applications.

**Features and Benefits**

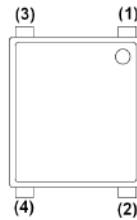
- Glass Passivated Die Construction
- Compact, Thin Profile Package Design
- Reliable Robust Construction
- Ideal for SMT Manufacturing
- Rated at 1000V PRV
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

**Mechanical Data**

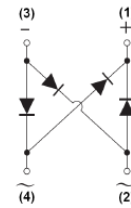
- Case: MSBL
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 **(e3)**
- Polarity: As marked on Body
- Weight: 0.216 grams (Approximate)



Top View



Pin Diagram

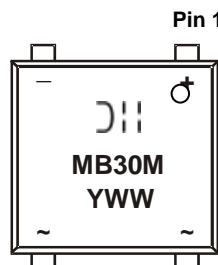


Internal Schematic

**Ordering Information** (Note 4)

| Part Number | Compliance | Case | Packaging         |
|-------------|------------|------|-------------------|
| MSB30M-13   | Commercial | MSBL | 2,500/Tape & Reel |

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**


MB30M= Product Type Marking Code  
 ⌋⌋⌋ = Manufacturers' Code Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 6 = 2016)  
 WW = Week Code (01 to 53)

**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.  
 For capacitive load, derate current by 20%.

| Characteristic   | Symbol                          | Value | Unit                 |
|--|---------------------------------|-------|----------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage               | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 1000  | V                    |
| RMS Reverse Voltage  | $V_{R(RMS)}$                    | 700   | V                    |
| Average Rectified Output Current @ $T_C = +120^\circ\text{C}$  | $I_O$                           | 3.0   | A                    |
| Non-Repetitive Peak Forward Surge Current, 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$                       | 100   | A                    |
| Non-Repetitive Peak Forward Surge Current, 1.0ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$                       | 200   | A                    |
| $I^2t$ Rating for Fusing (1ms < t < 8.3ms)   | $I^2t$                          | 41.5  | $\text{A}^2\text{S}$ |

**Thermal Characteristics**

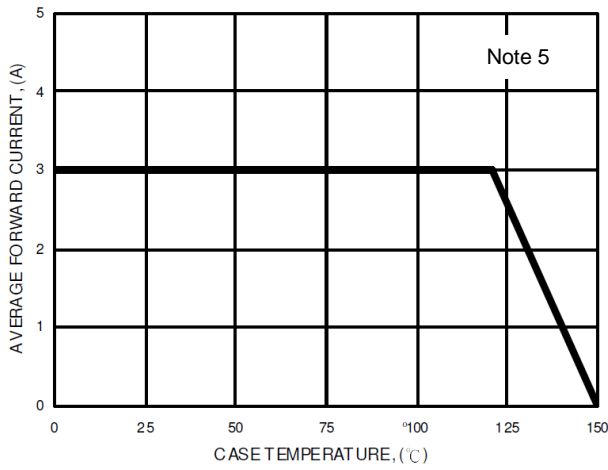
| Characteristic  | Symbol          | Value       | Unit               |
|---|-----------------|-------------|--------------------|
| Typical Thermal Resistance, Junction to Ambient (Note 5)<br>(Per Element) | $R_{\theta JA}$ | 11          | $^\circ\text{C/W}$ |
| Typical Thermal Resistance, Junction to Case                              | $R_{\theta JC}$ | 8           | $^\circ\text{C/W}$ |
| Typical Thermal Resistance, Junction to Lead                              | $R_{\theta JL}$ | 15          | $^\circ\text{C/W}$ |
| 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.)

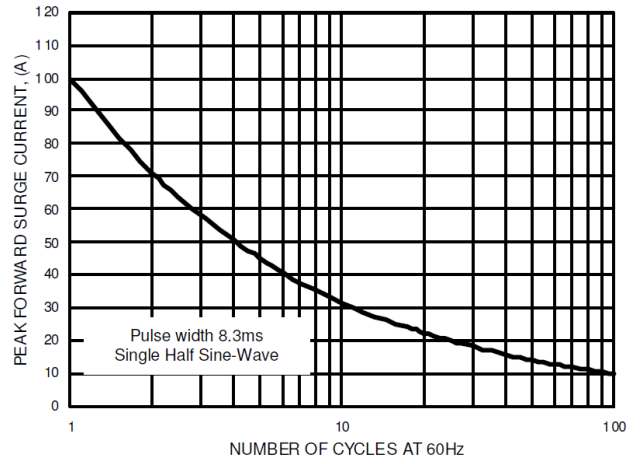
| Characteristic                         | Symbol      | Min   | Typ  | Max  | Unit          | Test Condition   |
|--|-------------|-------|------|------|---------------|--|
| Reverse Breakdown Voltage (Note 6)     | $V_{(BR)R}$ | 1,000 | —    | —    | V             | $I_R = 5\mu\text{A}$   |
| Forward Voltage (Per Element)          | $V_F$       | —     | 0.80 | 1.02 | V             | $I_F = 1.5\text{A}, T_A = +25^\circ\text{C}$<br>$I_F = 1.5\text{A}, T_A = +125^\circ\text{C}$<br>$I_F = 3.0\text{A}, T_A = +25^\circ\text{C}$<br>$I_F = 3.0\text{A}, T_A = +125^\circ\text{C}$ |
| Leakage Current (Note 6) (Per Element) | $I_R$       | —     | 0.31 | 5    | $\mu\text{A}$ | $V_R = 1,000\text{V}, T_A = +25^\circ\text{C}$<br>$V_R = 1,000\text{V}, T_A = +125^\circ\text{C}$  |
| Total Capacitance (Note 7)             | $C_T$       | —     | 35   | —    | pF            | $V_R = 4\text{V}, f = 1.0\text{MHz}$   |

- Notes:
- Device mounted on 15mm\*12mm\*1.6mm AL pad attach 195mm\*110mm\*10mm steel plate.
  - Short duration pulse test used to minimize self-heating effect.
  - Measured at 1.0MHz and applied reverse voltage of 4.0V DC.

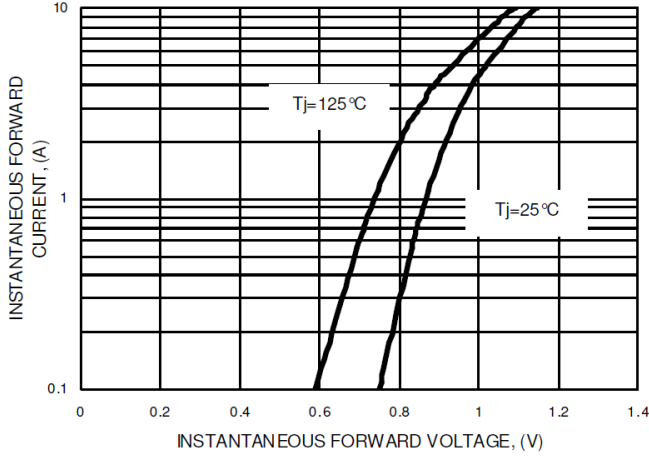
**FIG.1-FORWARD CURRENT DERATING CURVE**



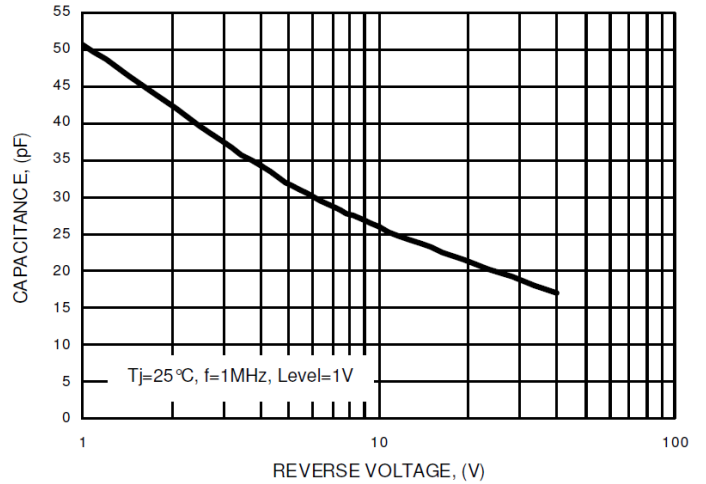
**FIG.2- MAXIMUM NON-REPETITIVE SURGE CURRENT**



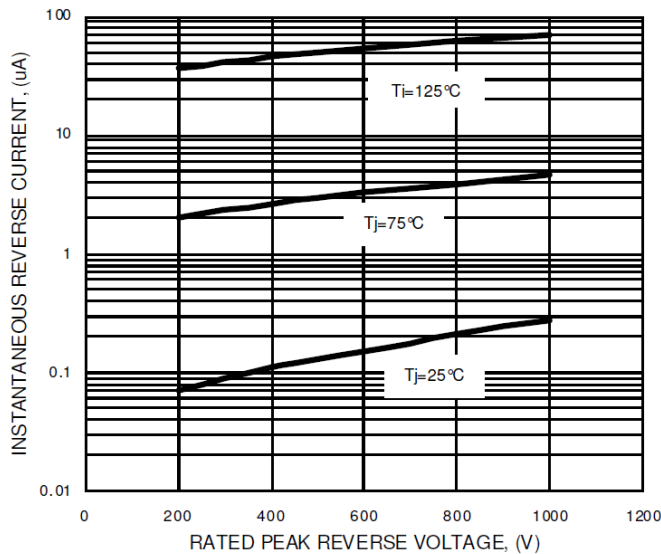
**FIG.3- TYPICAL FORWARD CHARACTERISTICS**



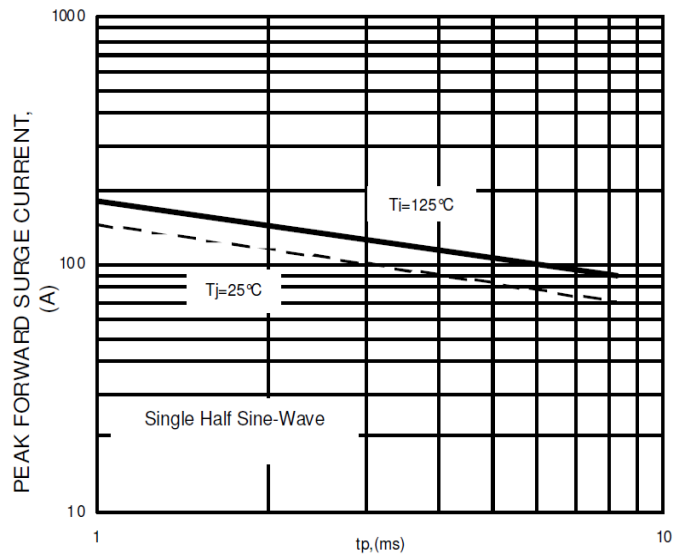
**FIG.4- TYPICAL TOTAL CAPACITANCE**



**FIG.5- TYPICAL REVERSE CHARACTERISTICS**



**FIG.6- NON-REPETITIVE SURGE CURRENT**

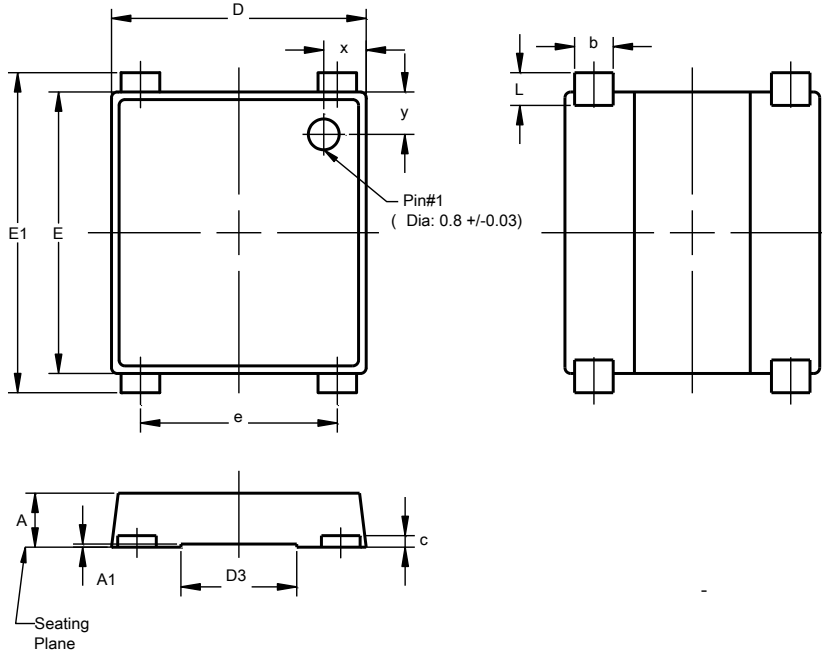


**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

NEW PRODUCT

MSBL

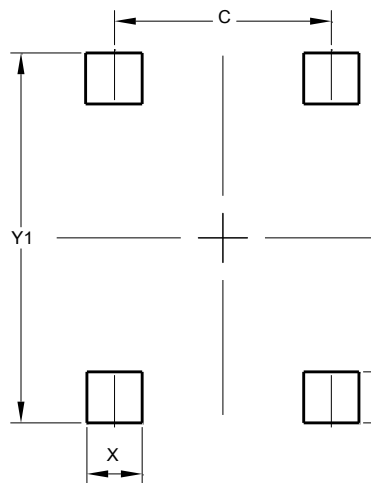


| MSBL                 |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 1.30 | 1.50 | 1.40 |
| A1                   | 0.04 | 0.08 | 0.06 |
| b                    | 0.95 | 1.15 | 1.00 |
| c                    | 0.27 | 0.40 | 0.30 |
| D                    | 6.50 | 6.70 | 6.60 |
| D3                   | 2.90 | 3.10 | 3.00 |
| E                    | 7.20 | 7.40 | 7.30 |
| E1                   | 7.90 | 8.60 | 8.30 |
| e                    | 5.00 | 5.20 | 5.10 |
| L                    | 0.65 | 1.05 | 0.85 |
| x                    | 0.95 | 1.25 | 1.10 |
| y                    | 0.95 | 1.25 | 1.10 |
| All Dimensions in mm |      |      |      |

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

MSBL



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 5.10          |
| X          | 1.30          |
| Y          | 1.20          |
| Y1         | 8.70          |

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