

### 3.0A SURFACE MOUNT GLASS PASSIVATED BRIDGE RECTIFIER

#### 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)
800	3.0	1.1	5

#### Description and Applications

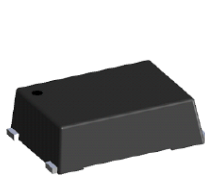
Suitable for AC to DC bridge full wave rectification for SMPS, LED lighting, adapter, battery charger, home appliances, office equipment, and telecommunication applications.

#### Features and Benefits

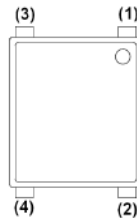
- Glass Passivated Die Construction
- Compact, Thin Profile Package Design
- Reliable Robust Construction
- Ideal for SMT Manufacturing
- Rated at 1000V PRV
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

#### Mechanical Data

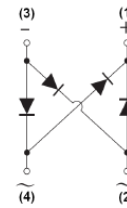
- Case: MSBL
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208e3
- Polarity: As Marked on Body
- Weight: 0.216 grams (Approximate)



Top View



Pin Diagram



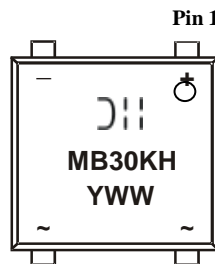
Internal Schematic

#### Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
MSB30KH-13	Commercial	MSBL	2500/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



MB30KH = 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 Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	800	V
RMS Reverse Voltage	$V_{R(RMS)}$	560	V
Average Rectified Output Current @ $T_C = +110^\circ\text{C}$	$I_O$	3.0	A
Non-Repetitive Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	110	A
Non-Repetitive Peak Forward Surge Current, 1.0ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	220	A
$I^2t$ Rating for Fusing (1ms < t < 8.3ms)	$I^2t$	50.21	A <sup>2</sup> S

**Thermal Characteristics**

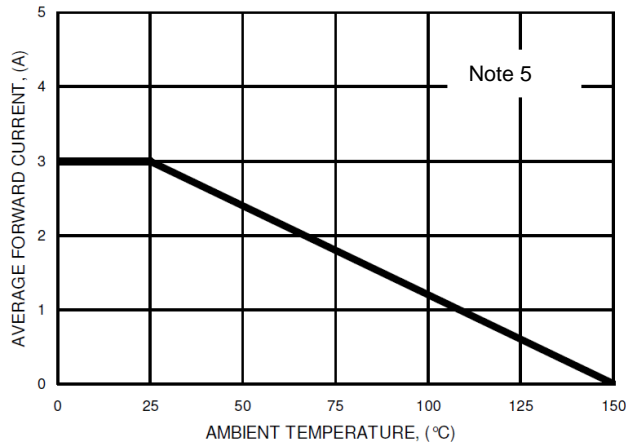
Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Ambient (Note 5) (per element)	$R_{\theta JA}$	29	$^\circ\text{C/W}$
Typical Thermal Resistance, Junction to Case	$R_{\theta JC}$	11	$^\circ\text{C/W}$
Typical Thermal Resistance, Junction to Lead	$R_{\theta JL}$	12	$^\circ\text{C/W}$
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.)

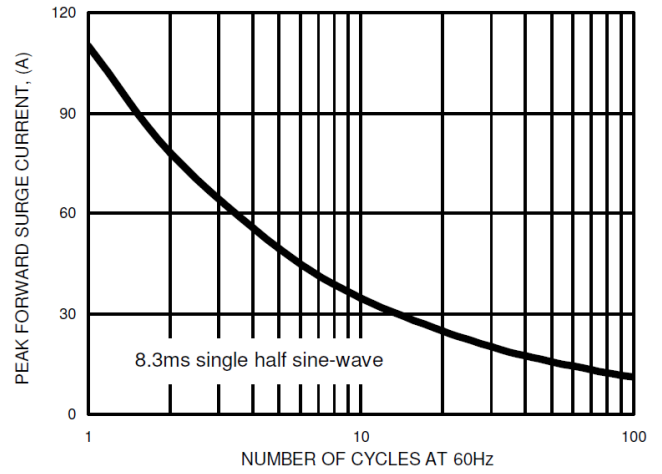
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	$V_{(BR)R}$	1000	—	—	V	$I_R = 5\mu\text{A}$
Forward Voltage (per element)	$V_F$	—	0.87 0.75 0.93 0.82	1.02 — 1.1 —	V	$I_F = 1.5\text{A}, T_A = +25^\circ\text{C}$ $I_F = 1.5\text{A}, T_A = +125^\circ\text{C}$ $I_F = 3.0\text{A}, T_A = +25^\circ\text{C}$ $I_F = 3.0\text{A}, T_A = +125^\circ\text{C}$
Leakage Current (Note 6) (per element)	$I_R$	—	0.4 60	5 500	$\mu\text{A}$	$V_R = 800\text{V}, T_A = +25^\circ\text{C}$ $V_R = 800\text{V}, T_A = +125^\circ\text{C}$
Total Capacitance (Note 7)	$C_T$	—	45	—	pF	$V_R = 4\text{V}, f = 1.0\text{MHz}$

- Notes:
5. Device mounted on Unit mounted on 15mm\*15mm\*1.6mm AL pad attach 50mm\*50mm\*1mm copper plate heatsink.
  6. Short duration pulse test used to minimize self-heating effect.
  7. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.

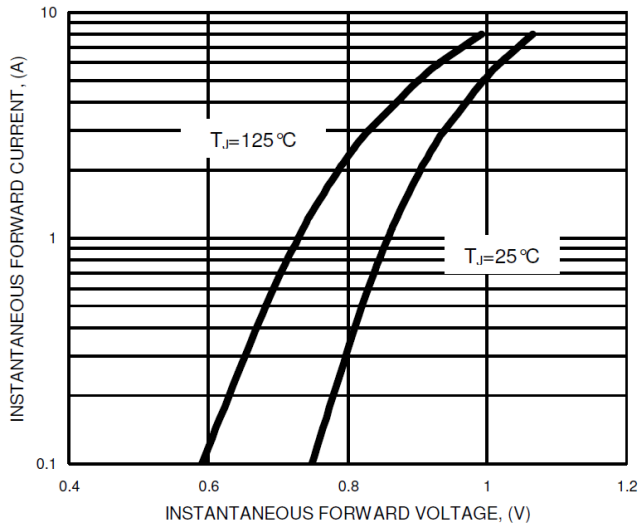
**FIG.1- FORWARD CURRENT DERATING CURVE**



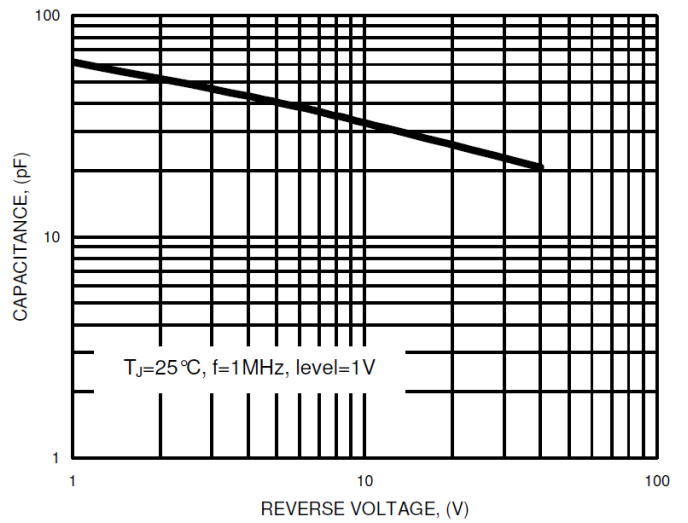
**FIG.2- MAXIMUM NON-REPETITIVE SURGE CURRENT**



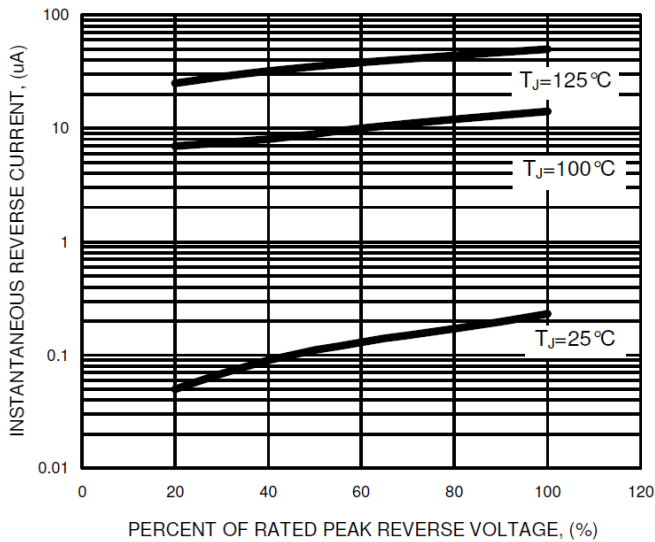
**FIG.3- TYPICAL FORWARD CHARACTERISTICS**



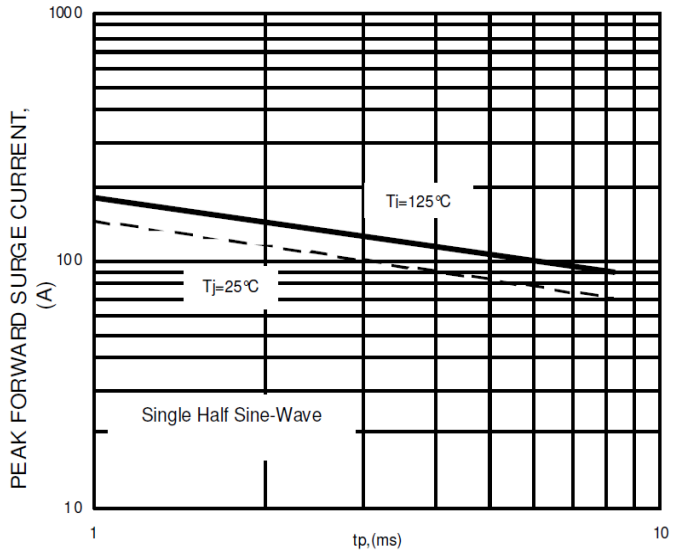
**FIG.4- TYPICAL TOTAL CAPACITANCE**



**FIG.5- TYPICAL REVERSE CHARACTERISTICS**



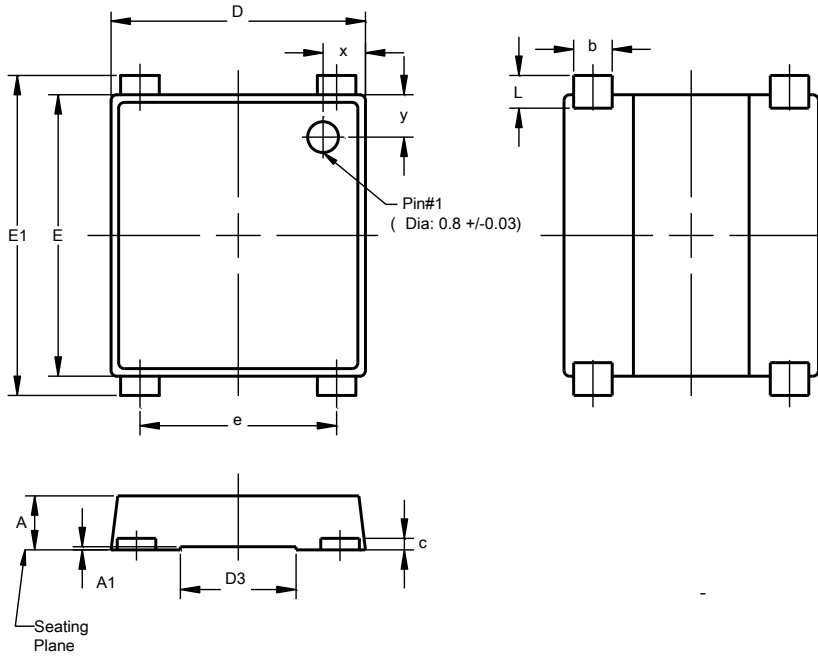
**FIG.6- NON-REPETITIVE SURGE CURRENT**



**Package Outline Dimensions**

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

**MSBL**

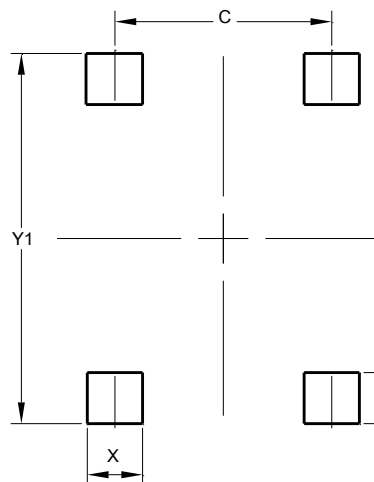


MSBL			
Dim	Min	Max	Typ
A	1.30	1.50	1.40
A1	0.04	0.08	0.06
b	0.95	1.15	1.00
c	0.27	0.40	0.30
D	6.50	6.70	6.60
D3	2.90	3.10	3.00
E	7.20	7.40	7.30
E1	7.90	8.60	8.30
e	5.00	5.20	5.10
L	0.65	1.05	0.85
x	0.95	1.25	1.10
y	0.95	1.25	1.10
All Dimensions in mm			

**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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