

RMB10F

Fast Recovery Bridge Rectifiers



**Voltage:** 1000 Volts

**Current:** 1 A

**Package:** MBF

**Features**

- NH'S Fast Recovery Rectifiers Chip Technology
- Low Switching Loss For High Efficiency
- Low Leakage Current For High Reliability
- Fast Switching Speed

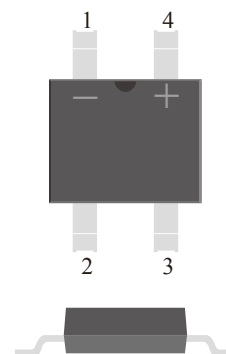
**Mechanical Data**

- **Case:** Molded With UL-94 ClassV-0 Recognized, RoHS-Compliant
- **Polarity:** Look At The Diagram And Polarity On The Right
- **Terminals:** Tin Plated Leads,Solderable Per J-STD-002 And JESD22-B102

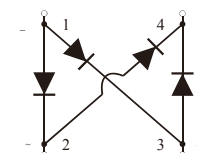
**Typical Applications**

- Switch Mode Power Supplies (SMPS)
- Fast Chargers
- LED Driver And Monitor Lighting
- Automotive Electronics And Charging Posts

**Diagram:**



**Polarity:**



Single Phase,Half Wave,60Hz,Resistive Or Inductive Load.For Capacitive Load,Derate Current By 20%

**Maximum Ratings (Ta=25°C Unless Otherwise Specified)**

| Parameter                                 | Test Conditions                                          | Symbol      | Ratings | Unit               |
|-------------------------------------------|----------------------------------------------------------|-------------|---------|--------------------|
| Maximum Repetitive Peak Reverse Voltage   |                                                          | $V_{RRM}$   | 1000    | V                  |
| Maximum RMS Voltag                        |                                                          | $V_{RMS}$   | 700     | V                  |
| Maximum DC Blocking Voltage               |                                                          | $V_{DC}$    | 1000    | V                  |
| Maximum Average Forward Rectified Current |                                                          | $I_{F(AV)}$ | 1       | A                  |
| Peak Forward Surge Current Per Diode      | 8.3ms Single Half Sine-wave<br>Superimposed On Rate Load | $I_{FSM}$   | 30      | A                  |
| Current Squared Time Per Diode            | $t < 8.3ms$                                              | $I^2t$      | 3.7     | A <sup>2</sup> sec |

**Electrical Characteristics (Ta=25°C Unless Otherwise Specified )**

| Parameter                                               | Test Conditions             | Symbol    | Ratings |      |      | Unit |
|---------------------------------------------------------|-----------------------------|-----------|---------|------|------|------|
|                                                         |                             |           | Min.    | Typ. | Max. |      |
| Instaneous Forward Voltage Per Diode                    | IF=1A                       | $V_F$     | --      | 1    | 1.3  | V    |
| Maximum DC Reverse Current at Rated DC Blocking Voltage | Ta=25°C ,VR=VRRM            | $I_{RRM}$ | --      | 1    | 5    | uA   |
|                                                         | Ta=125°C ,VR=VRRM*80%       |           | --      | 25   | 200  | uA   |
| Typical Junction Capacitance Per Diode                  | 4 V,1MHz                    | $C_J$     | --      | 15   | --   | pF   |
| Maximum Reverse Recovery Time                           | IF=0.5A, IR=1.0A, IRR=0.25A | $T_{rr}$  | --      | 200  | 500  | nS   |

**Thermal Characteristics (Ta=25°C Unless Otherwise Specified )**

| Parameter                                                   | Test Conditions                                        | Symbol           | Ratings |    |     | Unit |
|-------------------------------------------------------------|--------------------------------------------------------|------------------|---------|----|-----|------|
| Operating Junction Temperature Range                        |                                                        | T <sub>J</sub>   | -55     | to | 150 | °C   |
| Storage Temperature Range                                   |                                                        | T <sub>STD</sub> | -55     | to | 150 |      |
| Thermal Resistance Junction To Ambient<br>With Steady-State | Still Air Environment<br>With Ta=25°C                  | R <sub>θJA</sub> | 80      |    |     | °C/W |
| Thermal Resistance Junction-Case<br>With Steady-State       | Device Mounted On<br>1 in2 FR-4 Board With 2oz. Copper | R <sub>θJC</sub> | 25      |    |     |      |

Notes: 1.Pulse Test: 300 Us Pulse Width,1% Duty Cycle

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Typical Characteristics Curves

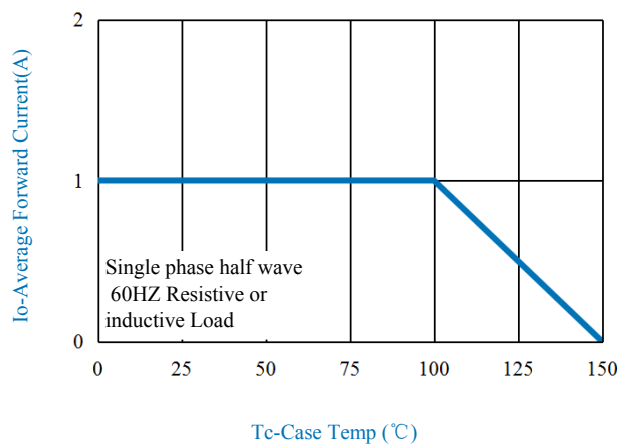


Fig.1-Forward Current Derating Curve

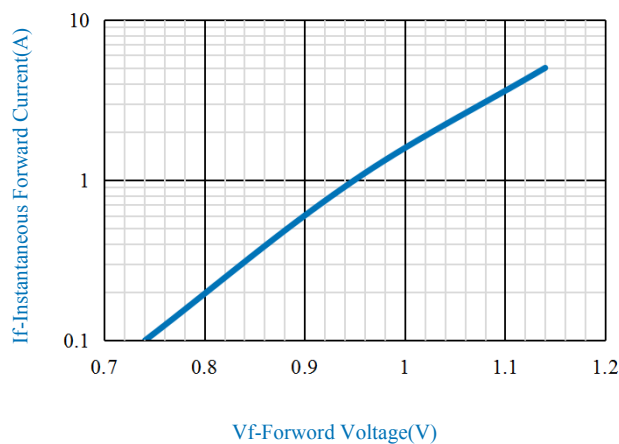


Fig.2-Typical Instantaneous Forward

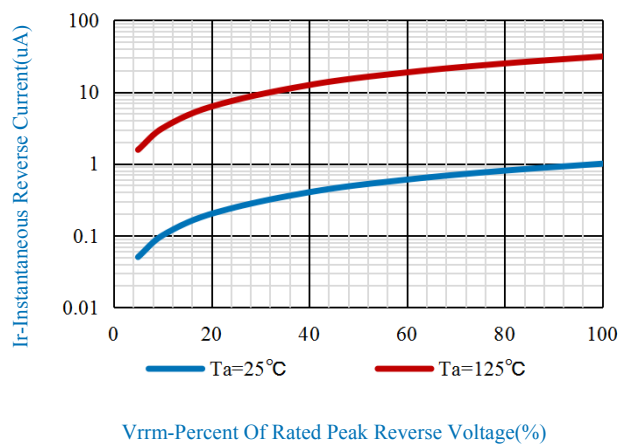


Fig.3-Typical Reverse Characteristics

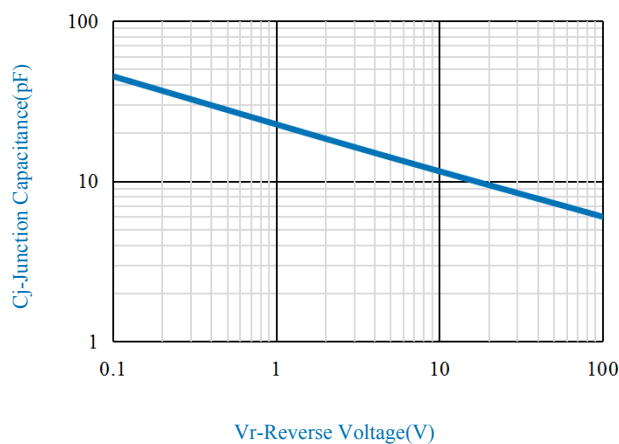


Fig.4-Typical Junction Capacitance

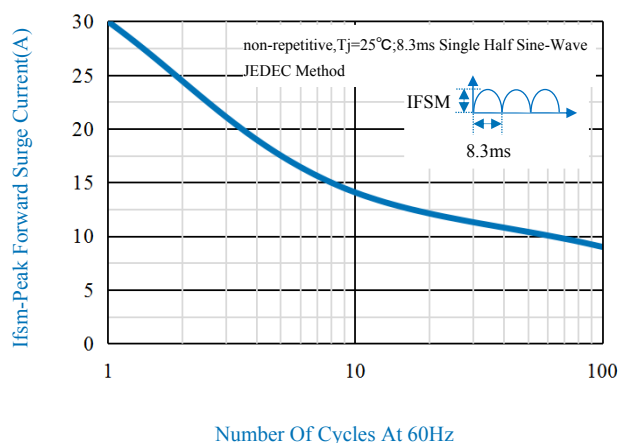


Fig.5-Max. Non-Repetitive Surge Current

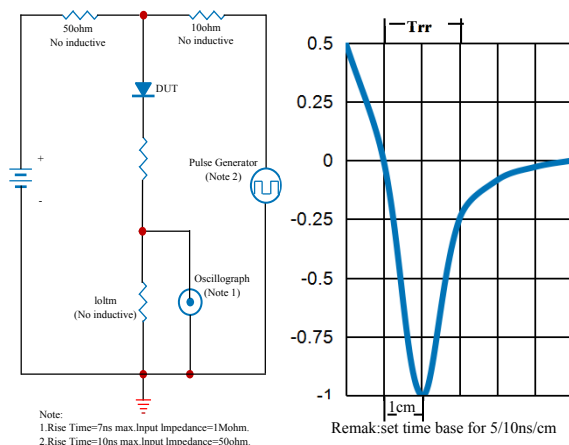


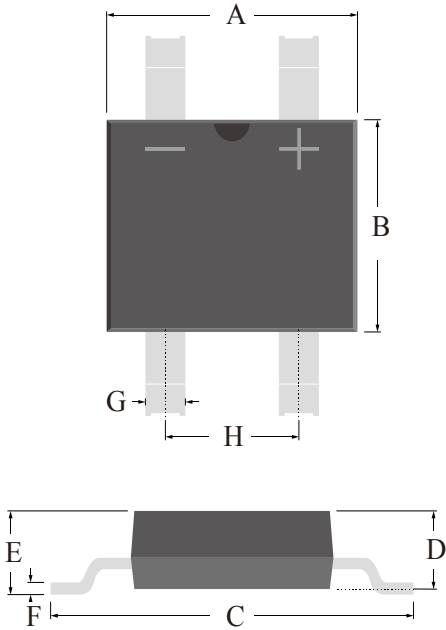
Fig.6-Reverse Recovery Time Characteristic And Test Circuit

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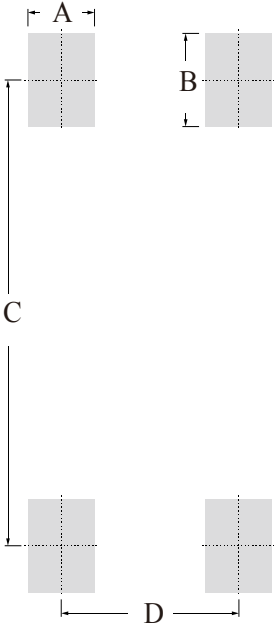
OUTLINE DRAWINGS



MBF

| OUTLINE DIMENSIONS |            |      |      |        |      |        |
|--------------------|------------|------|------|--------|------|--------|
| Dim.               | Milimeters |      |      | Inches |      |        |
|                    | Min.       | Typ. | Max. | Min.   | Typ. | Max.   |
| A                  | 4.50       | -    | 4.90 | 0.1772 | -    | 0.1929 |
| B                  | 3.60       | -    | 4.00 | 0.1417 | -    | 0.1575 |
| C                  | 6.60       | -    | 7.00 | 0.2598 | -    | 0.2756 |
| D                  | 1.20       | -    | 1.60 | 0.0472 | -    | 0.0630 |
| E                  | -          | -    | 1.80 | -      | -    | 0.0709 |
| F                  | 0.15       | -    | 0.35 | 0.0059 | -    | 0.0138 |
| G                  | 0.45       | -    | 1.05 | 0.0177 | -    | 0.0413 |
| H                  | 2.20       | -    | 2.80 | 0.0866 | -    | 0.1102 |

RECOMMEDND LAYOUT DRAWINGS



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| OUTLINE DIMENSIONS |            |      |      |        |        |      |
|--------------------|------------|------|------|--------|--------|------|
| Dim.               | Milimeters |      |      | Inches |        |      |
|                    | Min.       | Typ. | Max. | Min.   | Typ.   | Max. |
| A                  | -          | 0.90 | -    | -      | 0.0354 | -    |
| B                  | -          | 1.84 | -    | -      | 0.0724 | -    |
| C                  | -          | 6.00 | -    | -      | 0.2362 | -    |
| D                  | -          | 2.40 | -    | -      | 0.0945 | -    |

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MARKING

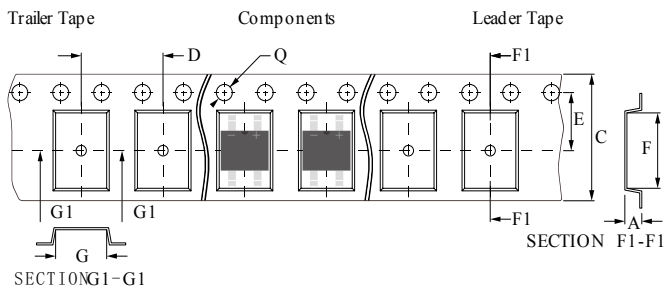


MARKING INSTRUCTION

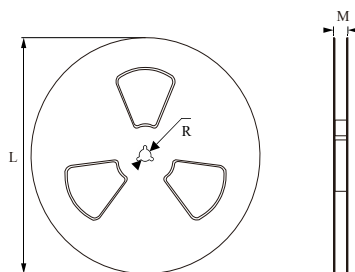
NH=Niuhan Trademark  
FF=Product Line Code,According To Actual Changes  
YWW=Date Code,According To Actual Changes  
RMB10F=Model  
- +=Polarity Mark

PACKAGING

TAPE



REEL



MBF

OUTLINE DIMENSIONS

| Dim. | Milimeters |       |        | Inches |      |        |
|------|------------|-------|--------|--------|------|--------|
|      | Min.       | Typ.  | Max.   | Min.   | Typ. | Max.   |
| TAPE |            |       |        |        |      |        |
| A    | 1.64       | 1.65  | 1.66   | 0.0646 | -    | 0.0654 |
| C    | 11.70      | 12.00 | 12.30  | 0.4606 | -    | 0.4843 |
| D    | 7.70       | 8.00  | 8.30   | 0.3031 | -    | 0.3268 |
| E    | 5.30       | 5.50  | 5.70   | 0.2087 | -    | 0.2244 |
| F    | 6.95       | 7.15  | 7.35   | 0.2736 | -    | 0.2894 |
| G    | 4.80       | 5.00  | 5.20   | 0.1890 | -    | 0.2047 |
| Q Φ  | 1.40       | 1.55  | 1.60   | 0.0551 | -    | 0.0630 |
| REEL |            |       |        |        |      |        |
| L    | 277.00     | -     | 281.00 | 10.906 | -    | 11.063 |
| R    | 12.00      | -     | 14.00  | 0.4724 | -    | 0.5512 |
| M    | 14.50      | -     | 18.50  | 0.5709 | -    | 0.7283 |

PACKING INFORMATION

| Package Type | Package Code | Product Weight Approx(g/Pcs) | Package Method | Quantity (Pcs/Min. Pack.) | Quantity (Pcs/Inner Box) | Quantity (Pcs/Carton) |
|--------------|--------------|------------------------------|----------------|---------------------------|--------------------------|-----------------------|
| MBF          | P1           | 0.08                         | 13" Reel       | 5000                      | 10000                    | 50000                 |
| MBF          | P2           | 0.08                         | 13" Reel       | 5000                      | 10000                    | 100000                |

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Recommended wave soldering condition

| Product         | Peak Temperature | Soldering Time  |
|-----------------|------------------|-----------------|
| Pb-free devices | 260 +0/-5 °C     | 5 +1/-1 seconds |

Recommended temperature profile for IR reflow

|  | Profile feature                                                                                                                          | Sn-Pb eutectic Assembly          | Pb-free Assembly                 |
|--|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------|
|  | Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )                                                                              | 3°C/second max.                  | 3°C/second max.                  |
|  | Preheat-Temperature Min (T <sub>S</sub> min)<br>-Temperature Max (T <sub>S</sub> max)<br>-Time(t <sub>s</sub> min to t <sub>s</sub> max) | 100°C<br>150°C<br>60-120 seconds | 150°C<br>200°C<br>60-180 seconds |
|  | Time maintained above:<br>-Temperature (T <sub>L</sub> )<br>- Time (t <sub>L</sub> )                                                     | 183°C<br>60-150 seconds          | 217°C<br>60-150 seconds          |
|  | Peak Temperature(T <sub>P</sub> )                                                                                                        | 240 +0/-5 °C                     | 260 +0/-5 °C                     |
|  | Time within 5°C of actual peak temperature (t <sub>p</sub> )                                                                             | 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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Specification Revision History

| Rev.        | Date       | Changed Items | Pre-Changed Content | Changed Content |
|-------------|------------|---------------|---------------------|-----------------|
| A/1         | 2014-10-20 | First Issue   |                     |                 |
| Blank Below |            |               |                     |                 |