

RABS10

Fast Recovery Bridge Rectifiers



Voltage: 1000 Volts

Current: 1 A

Package: ABS

Features

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

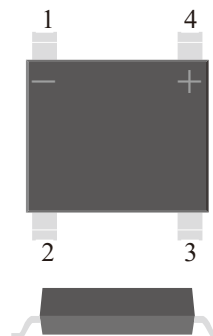
Mechanical Data

- > **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

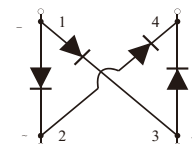
Typical Applications

- > 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(Note2) |                                                       | $I_{F(AV)}$ | 1       | A                  |
| Peak Forward Surge Current Per Diode             | 8.3ms Single Half Sine-wave 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                    | $I_F = 1.0 A$                     | $V_F$     | --      | 1.1  | 1.3  | V    |
| Maximum DC Reverse Current at Rated DC Blocking Voltage | Ta=25°C , $V_R = V_{RRM}$         | $I_{RRM}$ | --      | 1    | 5    | uA   |
|                                                         | Ta=125°C , $V_R = V_{RRM} * 80\%$ |           | --      | 25   | 200  | uA   |
| Typical Junction Capacitance Per Diode                  | 4 V,1MHz                          | $C_J$     | --      | 10   | --   | 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                     |                                                     | $T_J$           | -55 to 150 | °C   |
| Storage Temperature Range                                |                                                     | $T_{STD}$       | -55 to 150 |      |
| Thermal Resistance Junction To Ambient With Steady-State | Still Air Environment With Ta=25°C                  | $R_{\theta JA}$ | 65.0       | °C/W |
| Thermal Resistance Junction-Case With Steady-State       | Device Mounted On 1 in2 FR-4 Board With 2oz. Copper | $R_{\theta JC}$ | 28.0       |      |

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

2.Device mounted on 250mm x 250mm x 2.0mm Aluminum Plate Heatsink.

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Typical Characteristics Curves

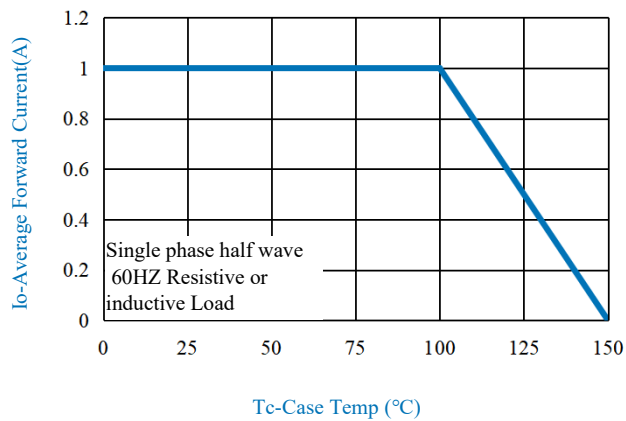


Fig.1-Forward Current Derating Curve

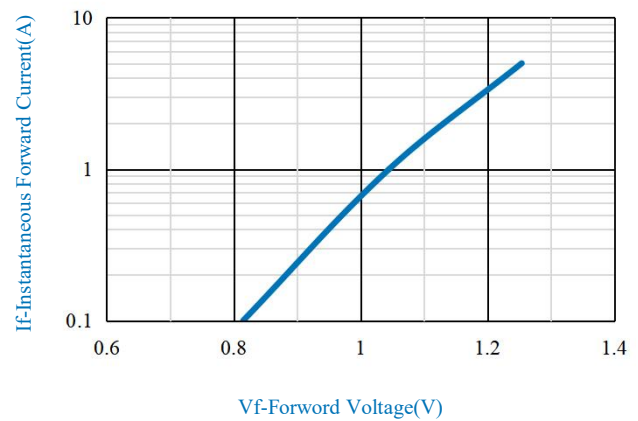


Fig.2-Typical Instantaneous Forward

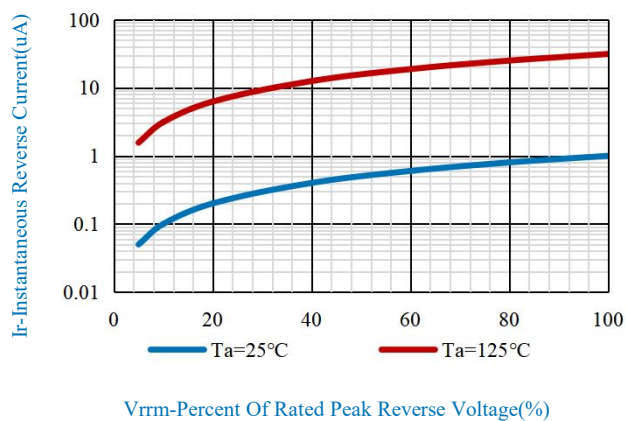


Fig.3-Typical Reverse Characteristics

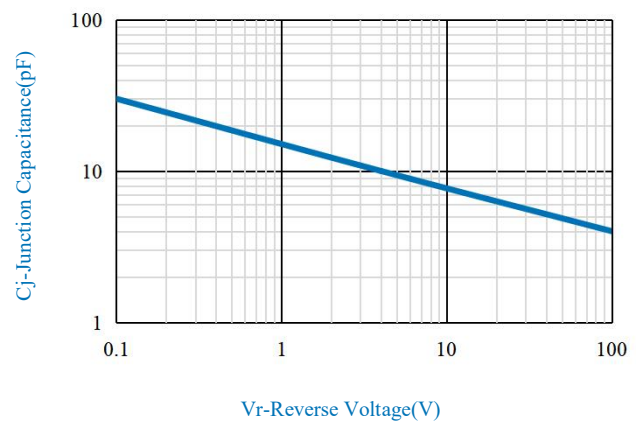


Fig.4-Typical Junction Capacitance

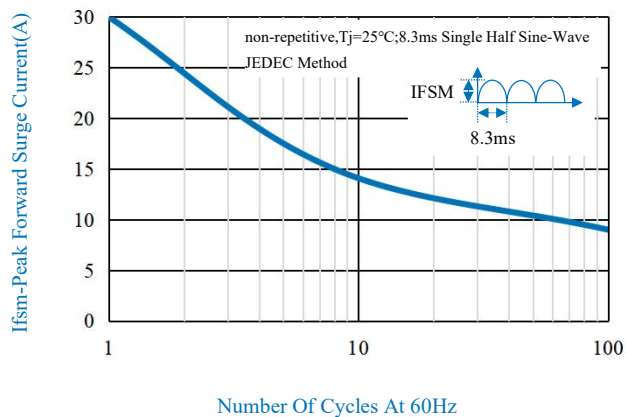


Fig.5-Max. Non-Repetitive Surge Current

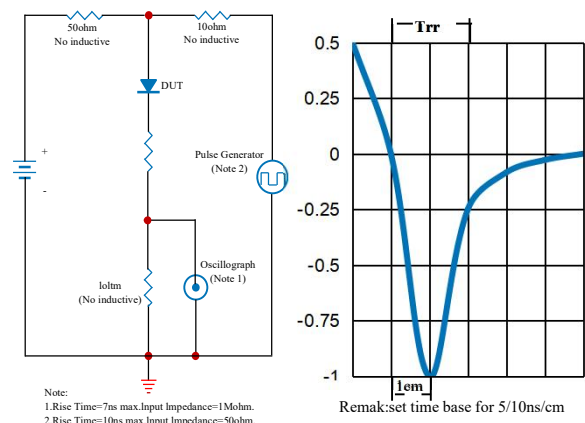


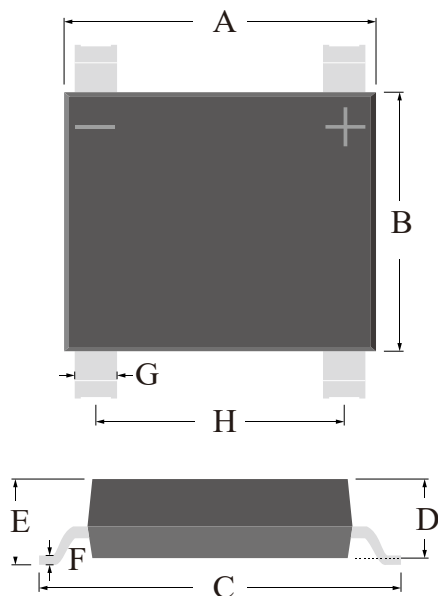
Fig.6-Reverse Recovery Time Characteristic And Test Circuit

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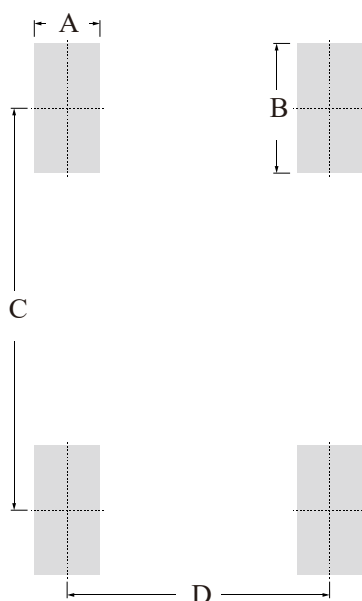
OUTLINE DRAWINGS



ABS

| OUTLINE DIMENSIONS |            |      |      |        |      |        |
|--------------------|------------|------|------|--------|------|--------|
| Dim.               | Milimeters |      |      | Inches |      |        |
|                    | Min.       | Typ. | Max. | Min.   | Typ. | Max.   |
| A                  | 4.90       | -    | 5.40 | 0.1929 | -    | 0.2126 |
| B                  | 4.25       | -    | 4.50 | 0.1673 | -    | 0.1772 |
| C                  | 5.40       | -    | 6.55 | 0.2126 | -    | 0.2579 |
| D                  | 1.22       | -    | 1.45 | 0.0480 | -    | 0.0571 |
| E                  | 1.35       | -    | 1.55 | 0.0531 | -    | 0.0610 |
| F                  | 0.15       | -    | 0.30 | 0.0059 | -    | 0.0118 |
| G                  | 0.55       | -    | 0.85 | 0.0217 | -    | 0.0335 |
| H                  | 3.80       | -    | 4.40 | 0.1496 | -    | 0.1732 |

RECOMMENDED LAYOUT DRAWINGS



ABS

| OUTLINE DIMENSIONS |            |      |      |        |        |      |
|--------------------|------------|------|------|--------|--------|------|
| Dim.               | Milimeters |      |      | Inches |        |      |
|                    | Min.       | Typ. | Max. | Min.   | Typ.   | Max. |
| A                  | -          | 1.00 | -    | -      | 0.0394 | -    |
| B                  | -          | 2.00 | -    | -      | 0.0787 | -    |
| C                  | -          | 6.20 | -    | -      | 0.2441 | -    |
| D                  | -          | 4.00 | -    | -      | 0.1575 | -    |

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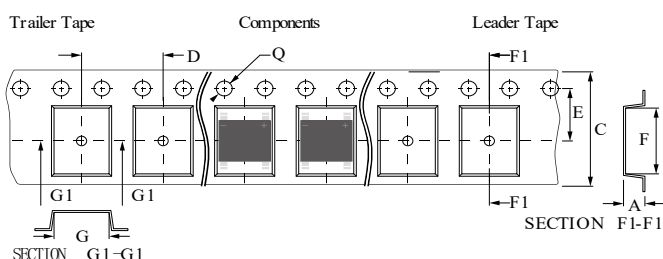
### MARKING



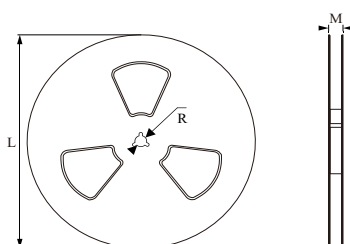
### MARKING INSTRUCTION

NH=Nihang Trademark  
FF=Product Line Code,According To Actual Changes  
YW=Date Code,According To Actual Changes  
RABS10=Model  
- +=Polarity Mark

#### TAPE



#### REEL



### OUTLINE DIMENSIONS

| Dim. | Milimeters |       |        | Inches |      |        |
|------|------------|-------|--------|--------|------|--------|
|      | Min.       | Typ.  | Max.   | Min.   | Typ. | Max.   |
| TAPE |            |       |        |        |      |        |
| A    | 2.00       | 2.10  | 2.20   | 0.0787 | -    | 0.0866 |
| 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    | 6.70       | 6.90  | 7.10   | 0.2638 | -    | 0.2795 |
| G    | 5.20       | 5.40  | 5.60   | 0.2047 | -    | 0.2205 |
| 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) |
|--------------|--------------|------------------------------|----------------|---------------------------|--------------------------|-----------------------|
| ABS          | P1           | 0.09                         | 13" Reel       | 5000                      | 10000                    | 50000                 |
| ABS          | P2           | 0.09                         | 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 (Tlmax to Tp)                                                       | 3°C/second max.                  | 3°C/second max.                  |
|  | Preheat-Temperature Min (TS min)<br>-Temperature Max (TS max)<br>-Time(ts min to ts max) | 100°C<br>150°C<br>60-120 seconds | 150°C<br>200°C<br>60-180 seconds |
|  | Time maintained above:<br>-Temperature (TL)<br>- Time (tL)                               | 183°C<br>60-150 seconds          | 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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Specification Revision History

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