

## RABS10

### FAST RECOVERY BRIDGE RECTIFIERS



|                                                                                                                                                                                                                                                                                                                                                                           |                             |                                                                                                                                                                                                                                                     |                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| <b>VOLTAGE:</b> 1000 Volts                                                                                                                                                                                                                                                                                                                                                | <b>CURRENT:</b> 1.0 Amperes | <b>ABS</b>                                                                                                                                                                                                                                          | <b>Marking &amp; Schematic diagram</b> |
| <b>FEATURES</b> <ul style="list-style-type: none"> <li>Glass passivated die construction</li> <li>low forward voltage drop</li> <li>High surge current capability</li> <li>Good soft recovery features are good for EMC</li> <li>Plastic material-UL flammability 94V-0</li> </ul>                                                                                        |                             |                                                                                                                                                                                                                                                     |                                        |
| <b>MECHANICAL DATA</b> <ul style="list-style-type: none"> <li><b>Case:</b> ABS</li> <li><b>Terminals:</b> Plated Leads Solderable per MIL-STD-202, Method 208</li> <li><b>Polarity:</b> As Marked on Case</li> <li><b>Mounting Position:</b> Any</li> <li><b>Lead Free:</b> For RoHS / Lead Free Version</li> <li><b>Weight:</b> App. 0.1 grams (0.0035 ounce)</li> </ul> |                             | <b>Remark:</b> <ol style="list-style-type: none"> <li>NH=niuhang trademark</li> <li>FF=Product line code, According to actual changes<br/>YWW=Data code, According to actual changes</li> <li>RABS10=Model</li> <li>"- "+"=Polarity mark</li> </ol> |                                        |
| <b>TYPICAL APPLICATIONS</b> <ul style="list-style-type: none"> <li>For use in switch power supply ,high frequency inverters ,<br/>PD power supply applications</li> </ul>                                                                                                                                                                                                 |                             |                                                                                                                                                                                                                                                     |                                        |

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

#### Maximum Ratings (Ratings at 25°C ambient temperature unless otherwise specified )

| Parameter                                                                                       | Symbol      | RABS10 | 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 @ TC=100°C (see fig.1)                                | $I_{F(AV)}$ | 1      | A                  |
| Peak Forward Surge Current 8.3ms Single Half Sine-wave Superimposed On Rate Load (JEDEC Method) | $I_{FSM}$   | 30     | A                  |
| Current Squared Time Per Diode(t<8.3ms)                                                         | $I^2t$      | 3.74   | A <sup>2</sup> sec |

#### Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified )

| Parameter                                                        | Test Conditions                          | Symbol    | RABS10 |      |          | Unit |
|------------------------------------------------------------------|------------------------------------------|-----------|--------|------|----------|------|
|                                                                  |                                          |           | Min.   | Typ. | Max.     |      |
| Maximum Forward Voltage Per Diode (Note 1)                       | Ta=25°C IF= 1.0 A                        | $V_{FM}$  | --     | --   | 1.3      | V    |
| Maximum DC Reverse Current at Rated DC Blocking Voltage (Note 1) | Ta=25°C VR= 1000 V<br>Ta=125°C VR= 800 V | $I_{RRM}$ | --     | --   | 5<br>500 | uA   |
| Maximum Reverse Recovery Time                                    | IF=0.5A, IR=1.0A, IRR=0.25A              | $T_{RR}$  | --     | --   | 500      | nS   |
| Typical Junction Capacitance Per Diode                           | 4V, 1MHz                                 | $C_J$     | --     | 35   | --       | pF   |

#### Thermal Characteristics (Ratings at 25°C ambient temperature unless otherwise specified )

| Parameter                            | Symbol          | RABS10     | Unit |
|--------------------------------------|-----------------|------------|------|
| Operating Junction Temperature Range | $T_J$           | -55 to 150 | °C   |
| Storage Temperature Range            | $T_{STD}$       | -55 to 150 | °C   |
| Typical thermal resistance (Note 2)  | $R_{\theta JA}$ | 62.5       | °C/W |
|                                      | $R_{\theta JL}$ | 25.0       |      |

- Notes:
- Pulse test: 300  $\mu$ s pulse width, 1% duty cycle
  - Mounted on glass epoxy PC board with 4×1.5"×1.5" (3.81×3.81 cm) copper pad.

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## FAST RECOVERY BRIDGE RECTIFIERS



### RATING AND CHARACTERISTIC CURVES

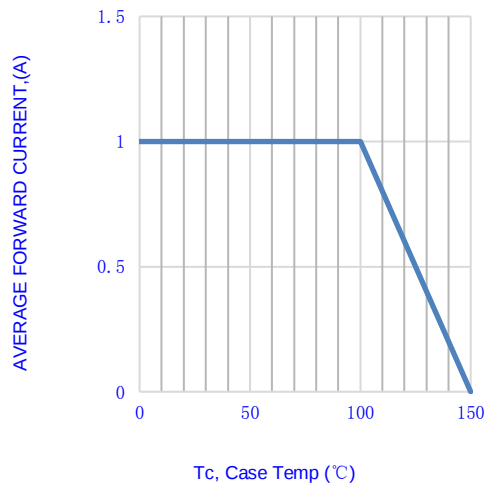


Fig.1-FORWARD CURRENT DERATING CURVE

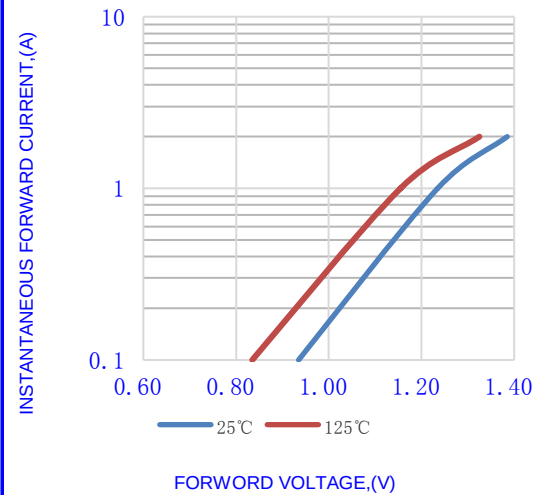


Fig.2- TYPICAL INSTANTANEOUS FORWARD

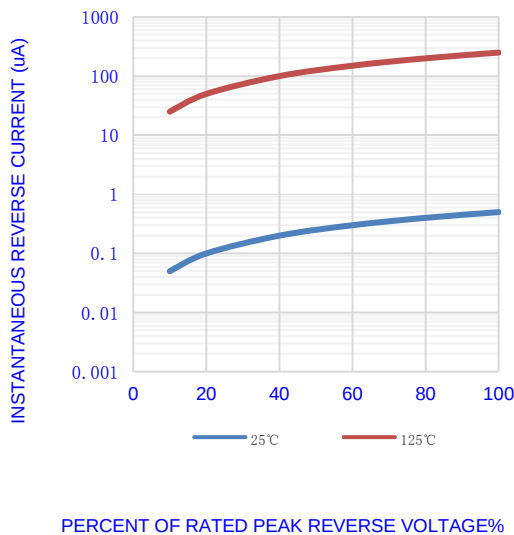


Fig.3- TYPICAL REVERSE CHARACTERISTICS

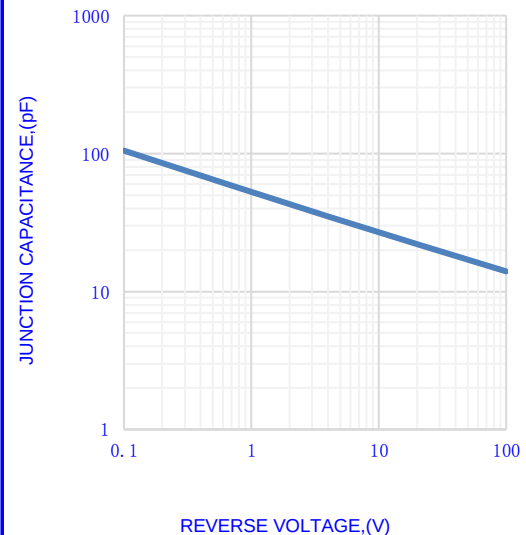


Fig.4- TYPICAL JUNCTION CAPACITANCE

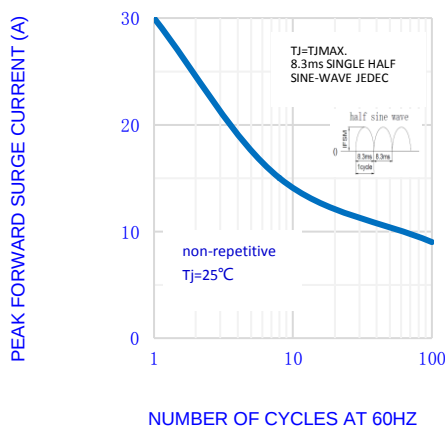


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

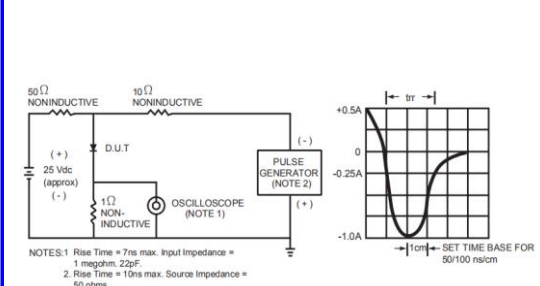


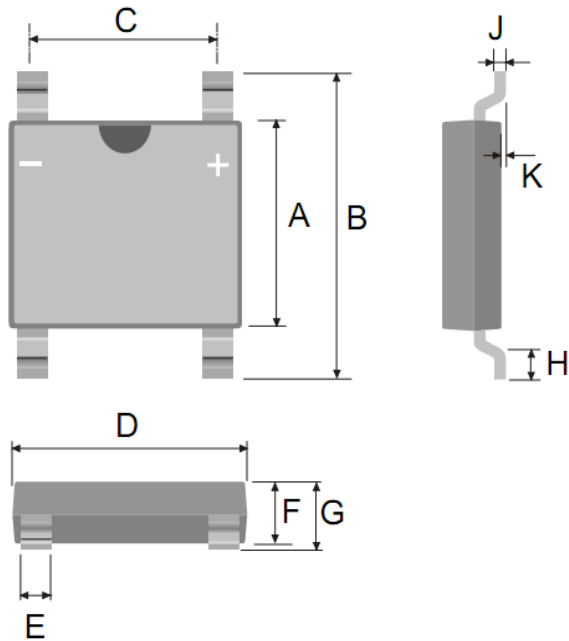
Fig.6- TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTIC

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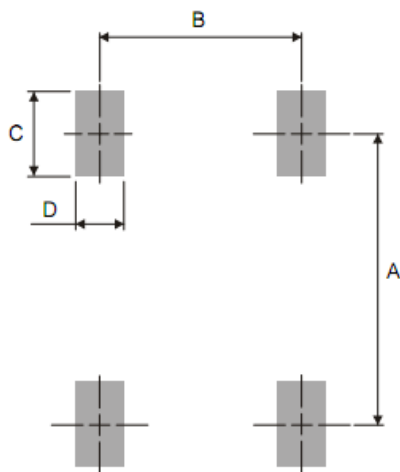
### OUTLINE DRAWINGS



### ABS

| OUTLINE DIMENSIONS |             |      |       |        |      |       |
|--------------------|-------------|------|-------|--------|------|-------|
| Dim.               | Millimeters |      |       | Inches |      |       |
|                    | Min.        | Typ. | Max.  | Min.   | Typ. | Max.  |
| A                  | 4.300       | -    | 4.500 | 0.169  | -    | 0.177 |
| B                  | 6.000       | -    | 6.500 | 0.236  | -    | 0.252 |
| C                  | 3.800       | -    | 4.400 | 0.150  | -    | 0.173 |
| D                  | 4.900       | -    | 5.400 | 0.193  | -    | 0.213 |
| E                  | 0.550       | -    | 0.850 | 0.022  | -    | 0.033 |
| F                  | 1.220       | -    | 1.450 | 0.048  | -    | 0.056 |
| G                  | -           | -    | 1.500 | -      | -    | 0.059 |
| H                  | 0.300       | -    | 0.800 | 0.012  | -    | 0.031 |
| J                  | 0.150       | -    | 0.250 | 0.006  | -    | 0.010 |
| K                  | 0.030       | -    | 0.150 | 0.001  | -    | 0.006 |

### RECOMMENDED LAYOUT DRAWINGS



### ABS

| RECOMMENDED LAYOUT DIMENSIONS |             |       |      |        |       |      |
|-------------------------------|-------------|-------|------|--------|-------|------|
| Dim.                          | Millimeters |       |      | Inches |       |      |
|                               | Min.        | Typ.  | Max. | Min.   | Typ.  | Max. |
| A                             | -           | 6.200 | -    | -      | 0.244 | -    |
| B                             | -           | 4.000 | -    | -      | 0.157 | -    |
| C                             | -           | 2.000 | -    | -      | 0.079 | -    |
| D                             | -           | 1.000 | -    | -      | 0.039 | -    |

### PACKING INFORMATION

### ABS

| Package Method | Reel Size (mm) | Quantity (pcs/reel) | Inner Box Size L×W×H(mm) | Quantity (pcs/Inner Box) | Outer Carton Size L×W×H(mm) | Quantity (pcs/carton) |
|----------------|----------------|---------------------|--------------------------|--------------------------|-----------------------------|-----------------------|
| Tape Reel      | Φ330           | 5000                | 340×340×40               | 10000                    | 360×360×260                 | 60000                 |

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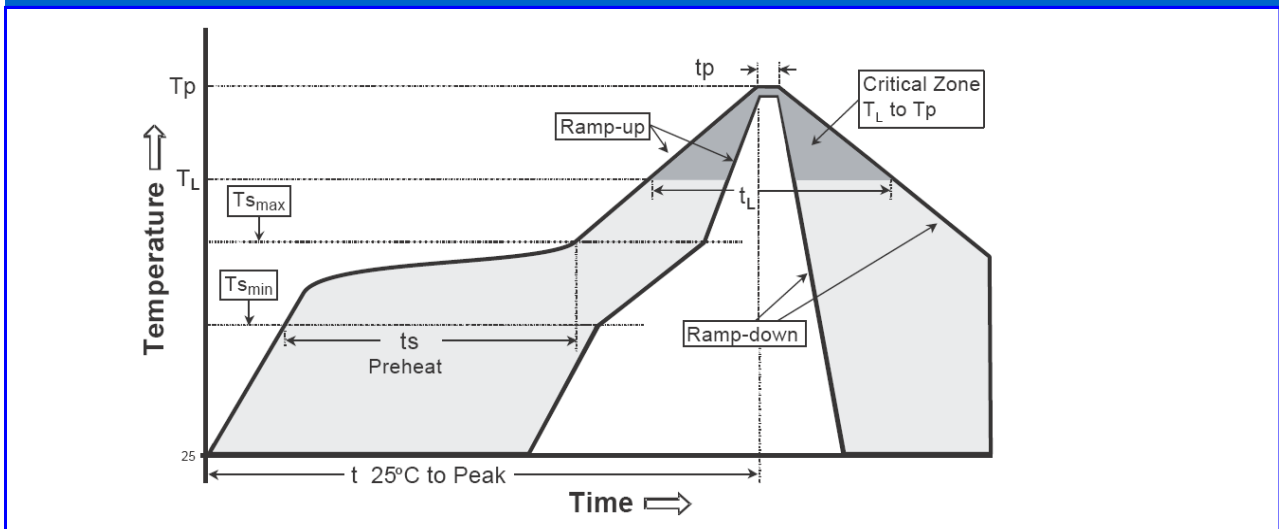
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### Recommended wave soldering condition

| 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>max</sub> to T <sub>p</sub> )                                 | 3°C/second max.                  | 3°C/second max.                  |
| Preheat<br>-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 (T <sub>L</sub> )<br>- Time (t <sub>L</sub> )       | 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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