

6A05 THRU 6A10

General Purpose Rectifiers



Voltage: 50~1000 Volts

Current: 6.0 Amperes

Package: R-6

Features

- NH'S Standard Rectifier Chip Technology
- Low Forward Voltage Drop For High Efficiency
- Low Leakage Current For High Reliability
- High Surge Capability For High Reliability

Mechanical Data

- **Case:** Molded With UL-94 Class V-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      | 6A<br>05 | 6A<br>1 | 6A<br>2 | 6A<br>4 | 6A<br>6 | 6A<br>8 | 6A<br>10 | Unit               |
|-------------------------------------------|----------------------------------------------------------|-------------|----------|---------|---------|---------|---------|---------|----------|--------------------|
| Maximum Repetitive Peak Reverse Voltage   |                                                          | $V_{RRM}$   | 50       | 100     | 200     | 400     | 600     | 800     | 1000     | V                  |
| Maximum RMS Voltage                       |                                                          | $V_{RMS}$   | 35       | 70      | 140     | 280     | 420     | 560     | 700      | V                  |
| Maximum DC Blocking Voltage               |                                                          | $V_{DC}$    | 50       | 100     | 200     | 400     | 600     | 800     | 1000     | V                  |
| Maximum Average Forward Rectified Current |                                                          | $I_{F(AV)}$ | 6.0      |         |         |         |         |         |          | A                  |
| Peak Forward Surge Current                | 8.3ms Single Half Sine-wave<br>Superimposed On Rate Load | $I_{FSM}$   | 200      |         |         |         |         |         |          | A                  |
| Current Squared Time                      | $t < 8.3ms$                                              | $I^2t$      | 166.0    |         |         |         |         |         |          | A <sup>2</sup> sec |

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

| Parameter                                               | Test Conditions                                              | Symbol    | 6A<br>05  | 6A<br>1 | 6A<br>2 | 6A<br>4 | 6A<br>6 | 6A<br>8 | 6A<br>10 | Unit |
|---------------------------------------------------------|--------------------------------------------------------------|-----------|-----------|---------|---------|---------|---------|---------|----------|------|
| Maximum Instantaneous Forward Voltage                   | $I_F = 6.0 A$                                                | $V_F$     | 1.10      |         |         |         |         |         |          | V    |
| Maximum DC Reverse Current at Rated DC Blocking Voltage | Ta=25°C, $V_R = V_{RRM}$<br>Ta=125°C, $V_R = V_{RRM} * 80\%$ | $I_{RRM}$ | 10<br>500 |         |         |         |         |         |          | uA   |
| Typical Junction Capacitance                            | 4 V, 1MHz                                                    | $C_J$     | 60        |         |         |         |         |         |          | pF   |

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

| Parameter                                                   | Test Conditions                                                | Symbol           | 6A<br>05 | 6A<br>1 | 6A<br>2 | 6A<br>4 | 6A<br>6 | 6A<br>8 | 6A<br>10 | Unit |
|-------------------------------------------------------------|----------------------------------------------------------------|------------------|----------|---------|---------|---------|---------|---------|----------|------|
| Operating Junction Temperature Range                        |                                                                | T <sub>J</sub>   | -55~150  |         |         |         |         |         |          | ℃    |
| Storage Temperature Range                                   |                                                                | T <sub>STD</sub> | -55~150  |         |         |         |         |         |          |      |
| Thermal Resistance Junction To Ambient<br>With Steady-State | Still Air Environment<br>With Ta=25℃                           | R <sub>ΘJA</sub> | 45.0     |         |         |         |         |         |          | ℃/W  |
| Thermal Resistance Junction-Case<br>With Steady-State       | At 0.375"(9.5mm) lead length<br>Mounted On vertical P.C. Board | R <sub>ΘJC</sub> | 12.0     |         |         |         |         |         |          |      |

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

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Typical Characteristics Curves

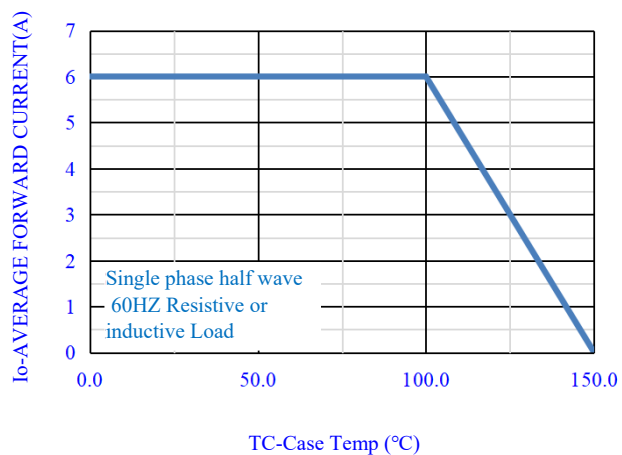


Fig.1-FORWARD CURRENT DERATING CURVE

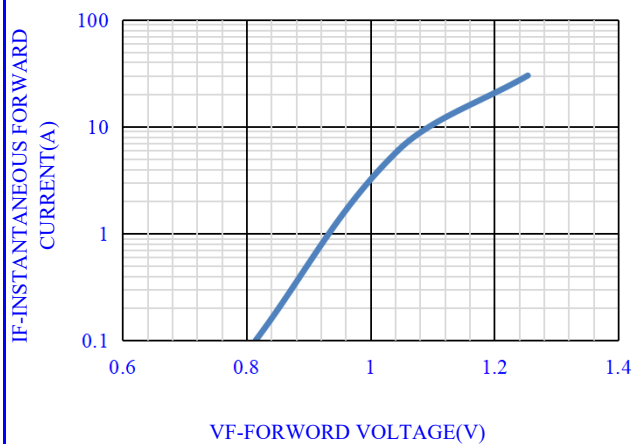


Fig.2- TYPICAL INSTANTANEOUS FORWARD

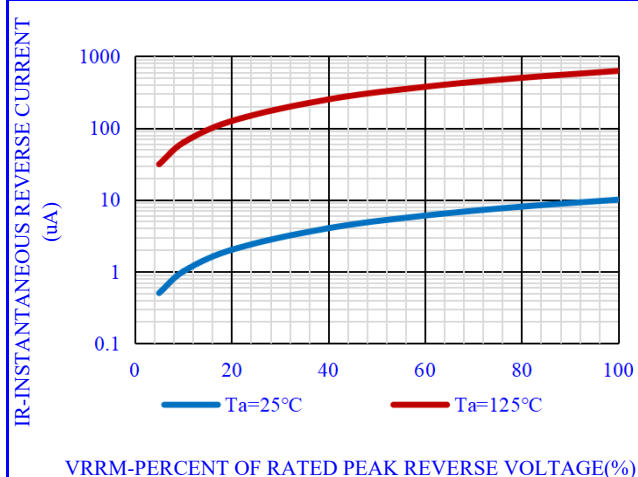


Fig.3- TYPICAL REVERSE CHARACTERISTICS

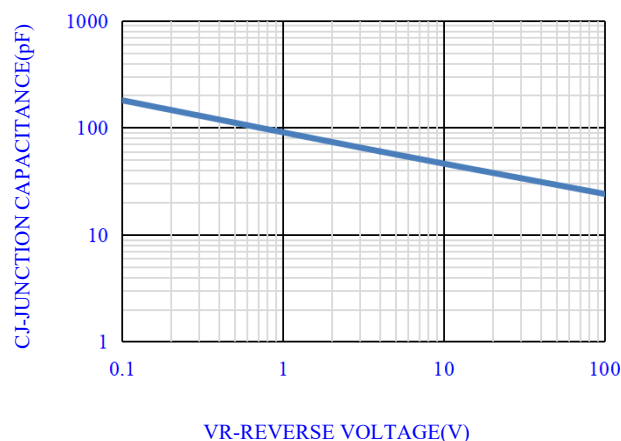


Fig.4- TYPICAL JUNCTION CAPACITANCE

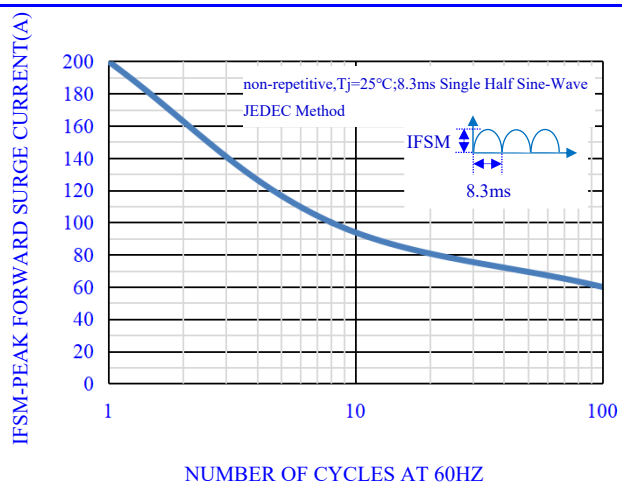


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

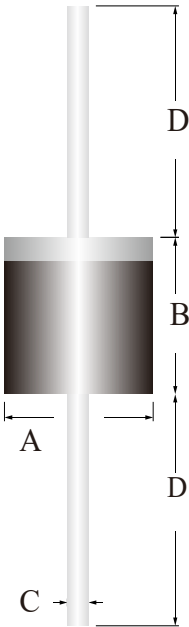
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OUTLINE DRAWINGS

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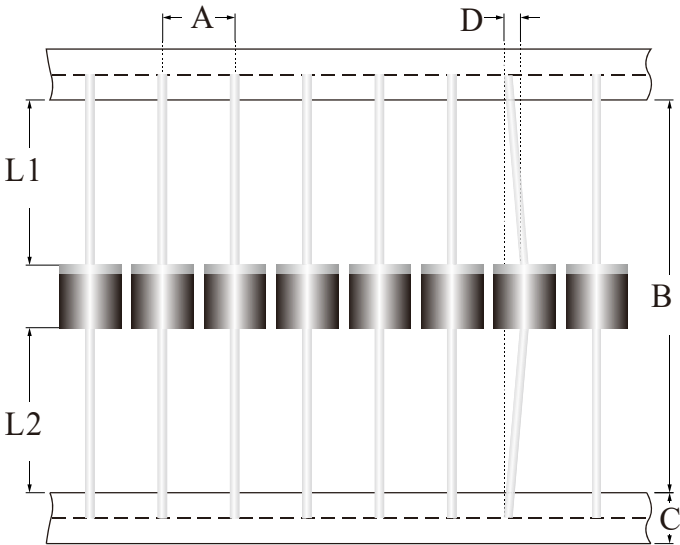


OUTLINE DIMENSIONS

| Dim. | Milimeters |      |       | Inches |      |        |
|------|------------|------|-------|--------|------|--------|
|      | Min.       | Typ. | Max.  | Min.   | Typ. | Max.   |
| A    | 8.00       | -    | 9.60  | 0.3150 | -    | 0.3780 |
| B    | 8.00       | -    | 9.60  | 0.3150 | -    | 0.3780 |
| C    | 1.05       | -    | 1.45  | 0.0413 | -    | 0.0571 |
| D    | 24.50      | -    | 27.50 | 0.9646 | -    | 1.0827 |

COMPONENT PITCH DIMENSION DIAGRAM

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OUTLINE DIMENSIONS

| Dim.  | Milimeters |      |       | Inches |      |        |
|-------|------------|------|-------|--------|------|--------|
|       | Min.       | Typ. | Max.  | Min.   | Typ. | Max.   |
| A     | 9.50       | -    | 10.50 | 0.3740 | -    | 0.4134 |
| B     | 51.00      | -    | 53.00 | 2.0079 | -    | 2.0866 |
| C     | 5.50       | -    | 6.50  | 0.2165 | -    | 0.2559 |
| D     | -          | -    | 1.20  | -      | -    | 0.0472 |
| L2-L1 | -          | -    | 1.00  | -      | -    | 0.0394 |

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MARKING



MARKING INSTRUCTION

NH=Niuhang Trademark  
FF=Product Line Code,According To Actual Changes  
DDK=Inernal Code,According To Actual Changes  
6Axx=Model,xx=05,1,2,4,6,8,10  
White band denotes cathode

PACKING INFORMATION

| Package Type | Package Code | Product Weight<br>Approx(g/Pcs) | Package Method | Quantity<br>(Pcs/Min. Pack.) | Quantity<br>(Pcs/Inner Box) | Quantity<br>(Pcs/Carton) |
|--------------|--------------|---------------------------------|----------------|------------------------------|-----------------------------|--------------------------|
| R-6          | P1           | 1.735                           | Tape           | 400                          | 400                         | 4000                     |
| R-6          | P2           | 1.735                           | Tape           | 500                          | 500                         | 5000                     |

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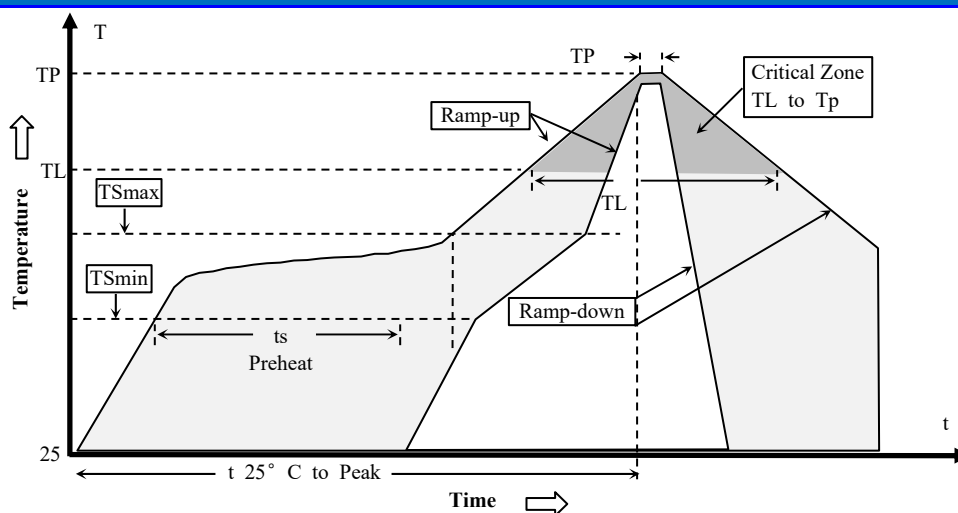
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**Recommended wave soldering condition**

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