

SS1040

Schottky Barrier Rectifiers



Voltage: 40 Volts

Current: 10 A

Package: SMC

Features

- NH'S Plane Schottky Barrier Chip Technology
- Low Forward Voltage Drop For High Efficiency
- Low Power Loss For High Reliability
- High Frequency Switching Speed

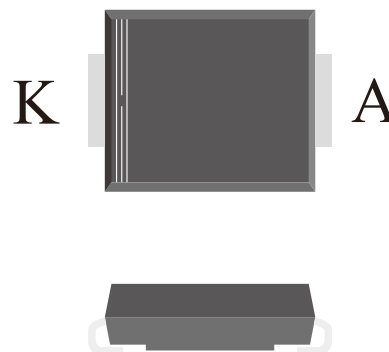
Mechanical Data

- **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   |                                                          | $V_{RRM}$   | 40      | V                  |
| Maximum RMS Voltage                       |                                                          | $V_{RMS}$   | 28      | V                  |
| Maximum DC Blocking Voltage               |                                                          | $V_{DC}$    | 40      | V                  |
| Maximum Average Forward Rectified Current |                                                          | $I_{F(AV)}$ | 10      | 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    | Ratings  |              |              | Unit     |
|---------------------------------------------------------|----------------------------------------------------------|-----------|----------|--------------|--------------|----------|
|                                                         |                                                          |           | Min.     | Typ.         | Max.         |          |
| Instantaneous Forward Voltage Per Diode                 | Ta=25°C<br>Ta=110°C<br>If= 10.0 A                        | $V_F$     | --<br>-- | 0.52<br>0.48 | 0.55<br>0.51 | V        |
| Maximum DC Reverse Current at Rated DC Blocking Voltage | Ta=25°C , $V_R=V_{RRM}$<br>Ta=110°C , $V_R=V_{RRM}*80\%$ | $I_{RRM}$ | --<br>-- | 20<br>1      | 100<br>10    | uA<br>mA |
| Typical Junction Capacitance                            | 4 V,1MHz                                                 | $C_J$     | --       | 850          | --           | pF       |

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<br>With Steady-State | Still Air Environment<br>With Ta=25°C                  | $R_{\theta JA}$ | 40.0       | °C/W |
| Thermal Resistance Junction-Case<br>With Steady-State       | Device Mounted On<br>1 in2 FR-4 Board With 2oz. Copper | $R_{\theta JC}$ | 8.0        |      |

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

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Typical Characteristics Curves

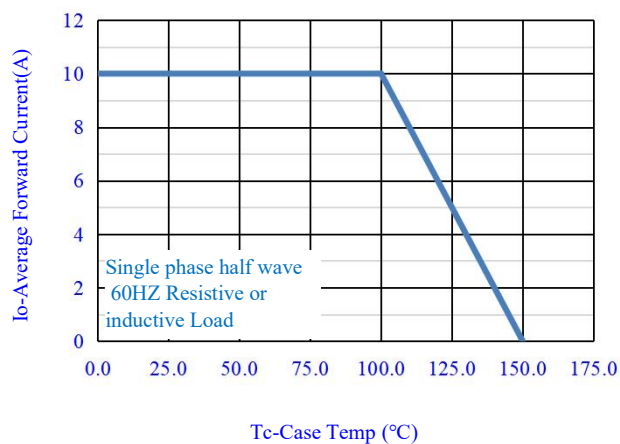


Fig.1-Forward Current Derating Curve

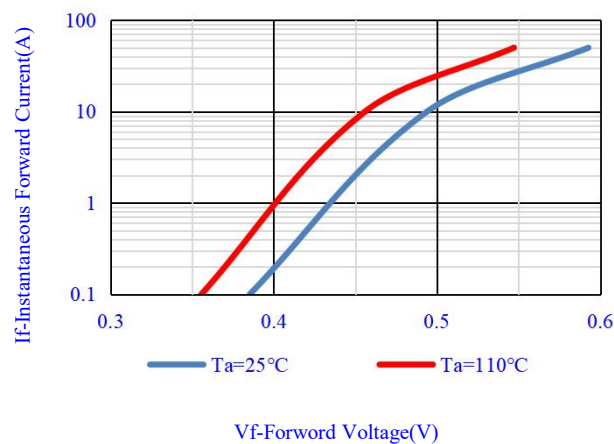


Fig.2-Typical Instantaneous Forward

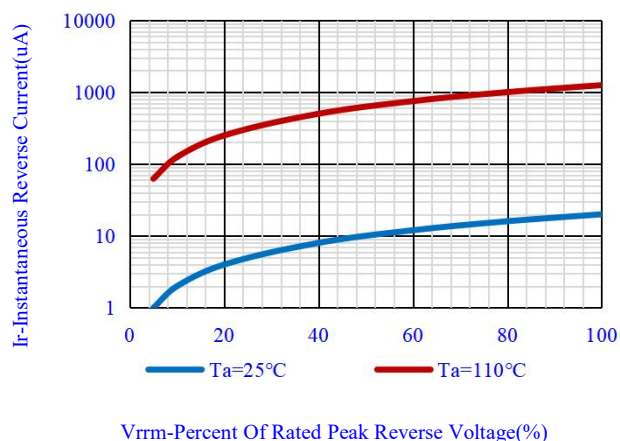


Fig.3-Typical Reverse Characteristics

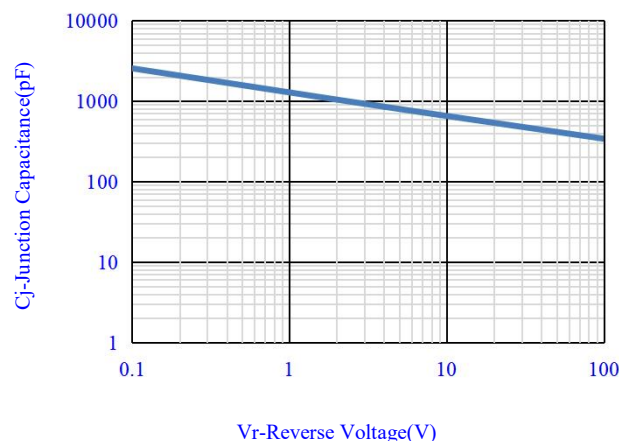


Fig.4-Typical Junction Capacitance

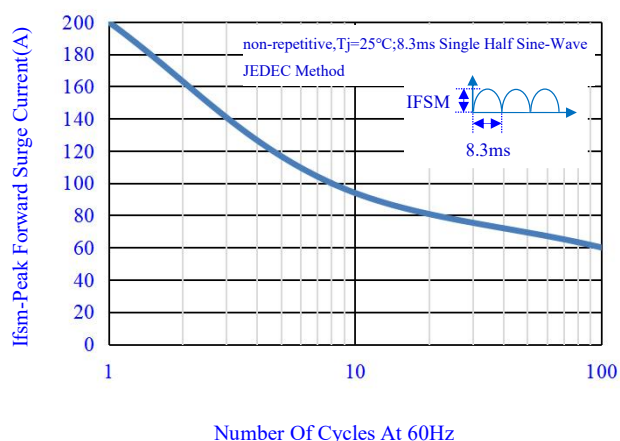


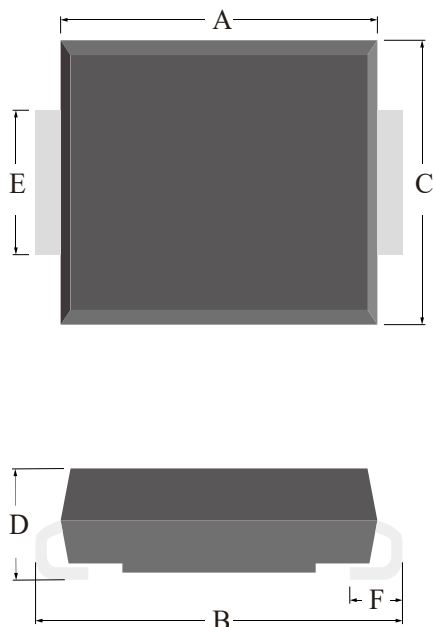
Fig.5-Max. Non-Repetitive Surge Current

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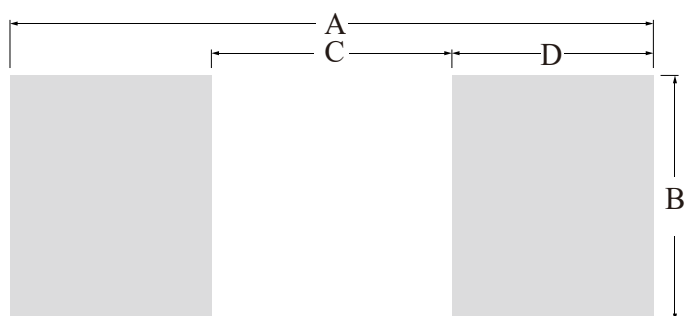
**OUTLINE DRAWINGS**



**SMC**

| OUTLINE DIMENSIONS |            |      |      |        |      |        |
|--------------------|------------|------|------|--------|------|--------|
| Dim.               | Milimeters |      |      | Inches |      |        |
|                    | Min.       | Typ. | Max. | Min.   | Typ. | Max.   |
| A                  | 6.60       | -    | 7.11 | 0.2598 | -    | 0.2799 |
| B                  | 7.75       | -    | 8.13 | 0.3051 | -    | 0.3201 |
| C                  | 5.59       | -    | 6.22 | 0.2201 | -    | 0.2449 |
| D                  | 2.00       | -    | 2.62 | 0.0787 | -    | 0.1031 |
| E                  | 2.75       | -    | 3.25 | 0.1083 | -    | 0.1280 |
| F                  | 0.76       | -    | 1.52 | 0.0299 | -    | 0.0598 |

**RECOMMENDED LAYOUT DRAWINGS**



**SMC**

| OUTLINE DIMENSIONS |            |      |      |        |        |      |
|--------------------|------------|------|------|--------|--------|------|
| Dim.               | Milimeters |      |      | Inches |        |      |
|                    | Min.       | Typ. | Max. | Min.   | Typ.   | Max. |
| A                  | -          | 9.90 | -    | -      | 0.3898 | -    |
| B                  | -          | 3.82 | -    | -      | 0.1504 | -    |
| C                  | -          | 3.84 | -    | -      | 0.1512 | -    |
| D                  | -          | 3.03 | -    | -      | 0.1193 | -    |

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MARKING



MARKING INSTRUCTION

NH=Niuhan Trademark  
FF=Product Line Code,According To Actual Changes  
YW=Date Code,According To Actual Changes  
SS1040=Model  
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) |
|--------------|--------------|---------------------------------|----------------|------------------------------|-----------------------------|--------------------------|
| SMC          | P1           | 0.254                           | 13" Reel       | 3000                         | 6000                        | 48000                    |

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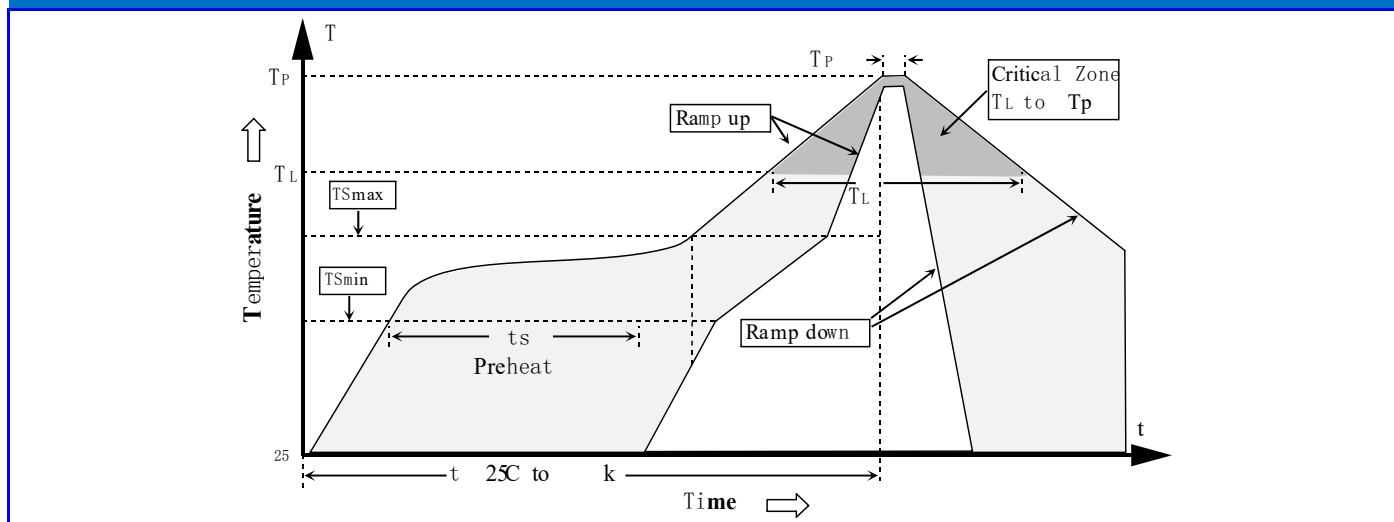
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**Recommended wave soldering condition**

| 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>(Tsmx to Tp)                                                       | 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 (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<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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