

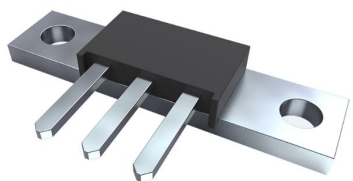
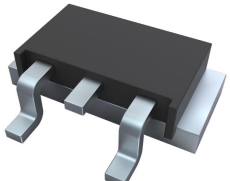
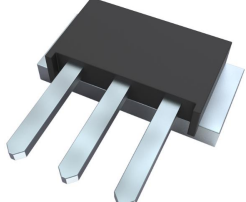
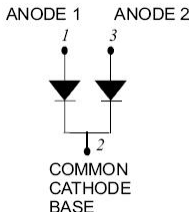
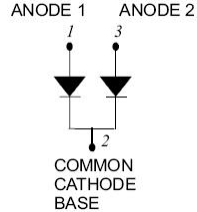
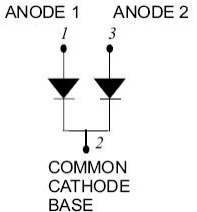
## 81CNQ SERIES SCHOTTKY RECTIFIER

### Applications

- Switching power supply
- Converters
- Free-Wheeling diodes
- Reverse battery protection

### Features

- 175°C T<sub>J</sub> operation
- Center tap module
- Very Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Low profile, high current package
- This is a Pb – Free Device
- All SMC parts are traceable to the wafer lot
- Additional electrical and life testing can be performed upon request

| 81CNQ...  | 81CNQ...SL  | 81CNQ...SM  |
|---|---|---|
|   |   |   |
|  |  |  |
| <b>PRM2</b>   | <b>PRM2-SL</b>  | <b>PRM2-SM</b>  |

### Maximum Ratings:

| Characteristics  | Symbol   | Condition   | Max.   | Units |
|--|--|---|--|-------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | V <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>R</sub> | -   | 35(81CNQ035)<br>40(81CNQ040)<br>45(81CNQ045) | V     |
| Average Rectified Forward Current  | I <sub>F(AV)</sub>                                     | 50% duty cycle @T <sub>C</sub> =141°C,<br>rectangular wave form   | 40(Per Leg)<br>80(Per Device)                | A     |
| Peak One Cycle Non-Repetitive Surge Current(Per leg)                                   | I <sub>FSM</sub>                                       | 8.3 ms, half Sine pulse   | 950  | A     |
| Non-Repetitive Avalanche Energy (Per leg)  | E <sub>AS</sub>  | T <sub>J</sub> =25°C, I <sub>AS</sub> =8A, L=1.7mH  | 54   | mJ    |
| Repetitive Avalanche Current(Per leg)  | I <sub>AR</sub>  | Current decaying linearly to zero in 1 μsec<br>Frequency limited by T <sub>J</sub> max.<br>V <sub>A</sub> =1.5×V <sub>R</sub> typical | 8  | A     |

**Electrical Characteristics:**

| Characteristics                  | Symbol          | Condition   | Typ. | Max.   | Units |
|----------------------------------|-----------------|---|------|--------|-------|
| Forward Voltage Drop (Per leg) * | V <sub>F1</sub> | @ 40A, Pulse, T <sub>J</sub> = 25 °C                                    | 0.54 | 0.60   | V     |
|                                  |                 | @ 80A, Pulse, T <sub>J</sub> = 25 °C                                    | 0.64 | 0.74   |       |
|                                  | V <sub>F2</sub> | @ 40A, Pulse, T <sub>J</sub> = 125 °C                                   | 0.46 | 0.54   | V     |
|                                  |                 | @ 80A, Pulse, T <sub>J</sub> = 125 °C                                   | 0.56 | 0.66   |       |
| Reverse Current (Per leg) *      | I <sub>R1</sub> | @V <sub>R</sub> = rated V <sub>R</sub> T <sub>J</sub> = 25 °C           | 0.03 | 5      | mA    |
|                                  | I <sub>R2</sub> | @V <sub>R</sub> = rated V <sub>R</sub> T <sub>J</sub> = 125 °C          | 25   | 45     | mA    |
| Junction Capacitance (Per leg)   | C <sub>T</sub>  | @V <sub>R</sub> = 5V, T <sub>C</sub> = 25 °C<br>f <sub>SIG</sub> = 1MHz | 2200 | 2600   | pF    |
| Series Inductance (Per leg)      | L <sub>S</sub>  | Measured lead to lead 5 mm from package body                            | 5.5  | -      | nH    |
| Voltage Rate of Change           | dv/dt           | -   | -    | 10,000 | V/μs  |

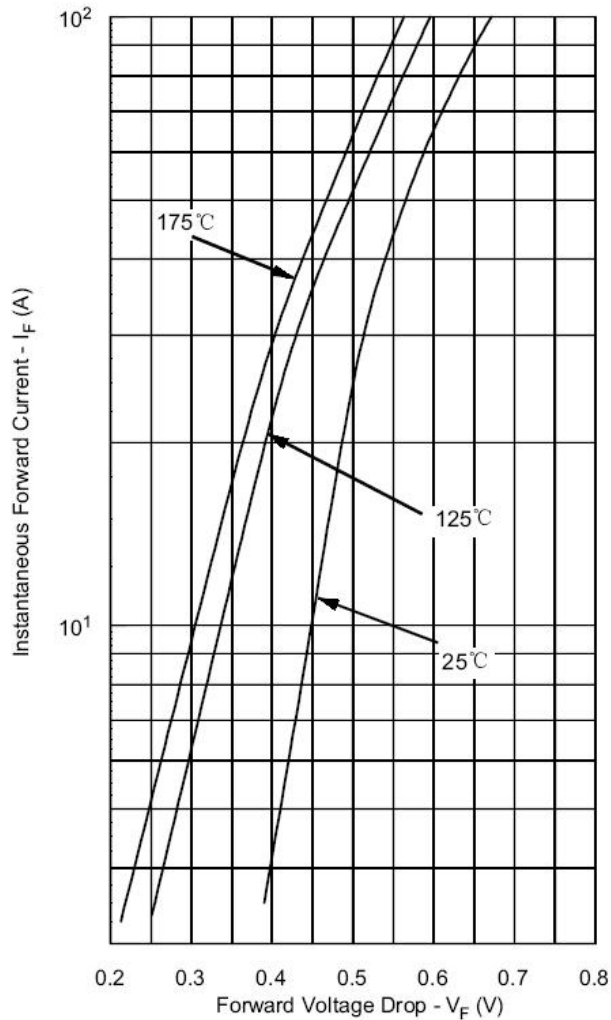
\* Pulse width < 300 μs, duty cycle < 2%

**Thermal-Mechanical Specifications:**

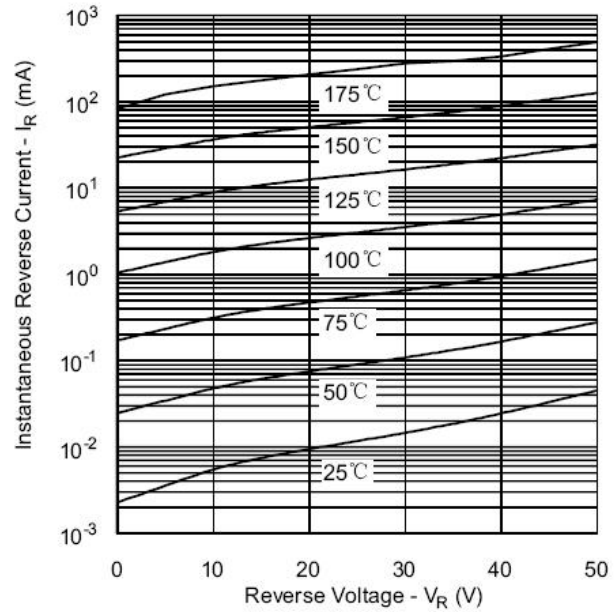
| Characteristics   | Symbol               | Condition                            | Specification | Units |
|---|----------------------|--------------------------------------|---------------|-------|
| Junction Temperature                                      | T <sub>J</sub>       | -                                    | -55 to +175   | °C    |
| Storage Temperature                                       | T <sub>stg</sub>     | -                                    | -55 to +175   | °C    |
| Typical Thermal Resistance Junction to Case (per leg)     | R <sub>θJC</sub>     | DC operation                         | 0.85          | °C/W  |
| Typical Thermal Resistance Junction to Case (per package) | R <sub>θJC</sub>     | DC operation                         | 0.42          | °C/W  |
| Typical Thermal Resistance, case to Heat Sink             | R <sub>θcs</sub>     | Mounting surface, smooth and greased | 0.30          | °C/W  |
| Mounting Torque   | TM                   | -                                    | 40(min)       | Kg-cm |
|   |                      |                                      | 58(max)       |       |
| Approximate Weight  | wt                   | -                                    | 7.8           | g     |
| Case Style  | PRM2 PRM2-SL PRM2-SM |                                      |               |       |

**Ratings and Characteristics Curves**

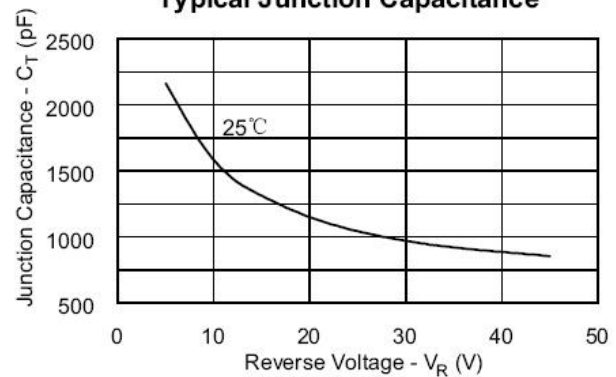
**Typical Forward Characteristics**



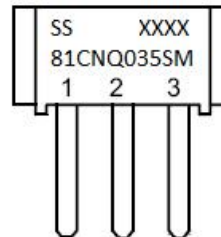
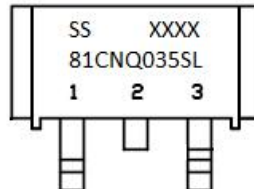
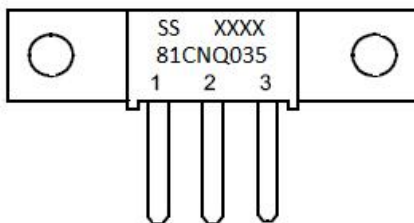
**Typical Reverse Characteristics**



**Typical Junction Capacitance**



**Marking Diagram**



Where XXXX is YYWW

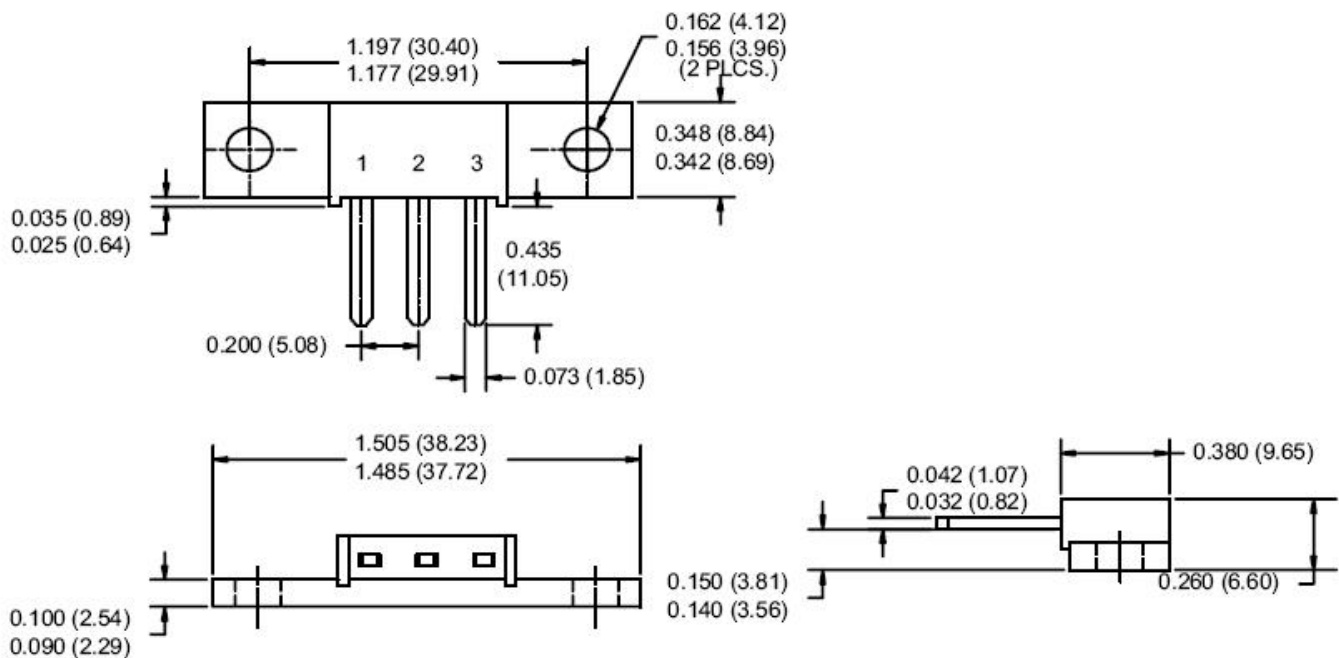
1st row SS YYWWL  
2nd row 81CNQ035/SL/SM  
3rd row 1 2 3 (pin)  
SS = SS  
YY = Year  
WW = Week

**Cautions:** Molding resin  
Epoxy resin UL:94V-0

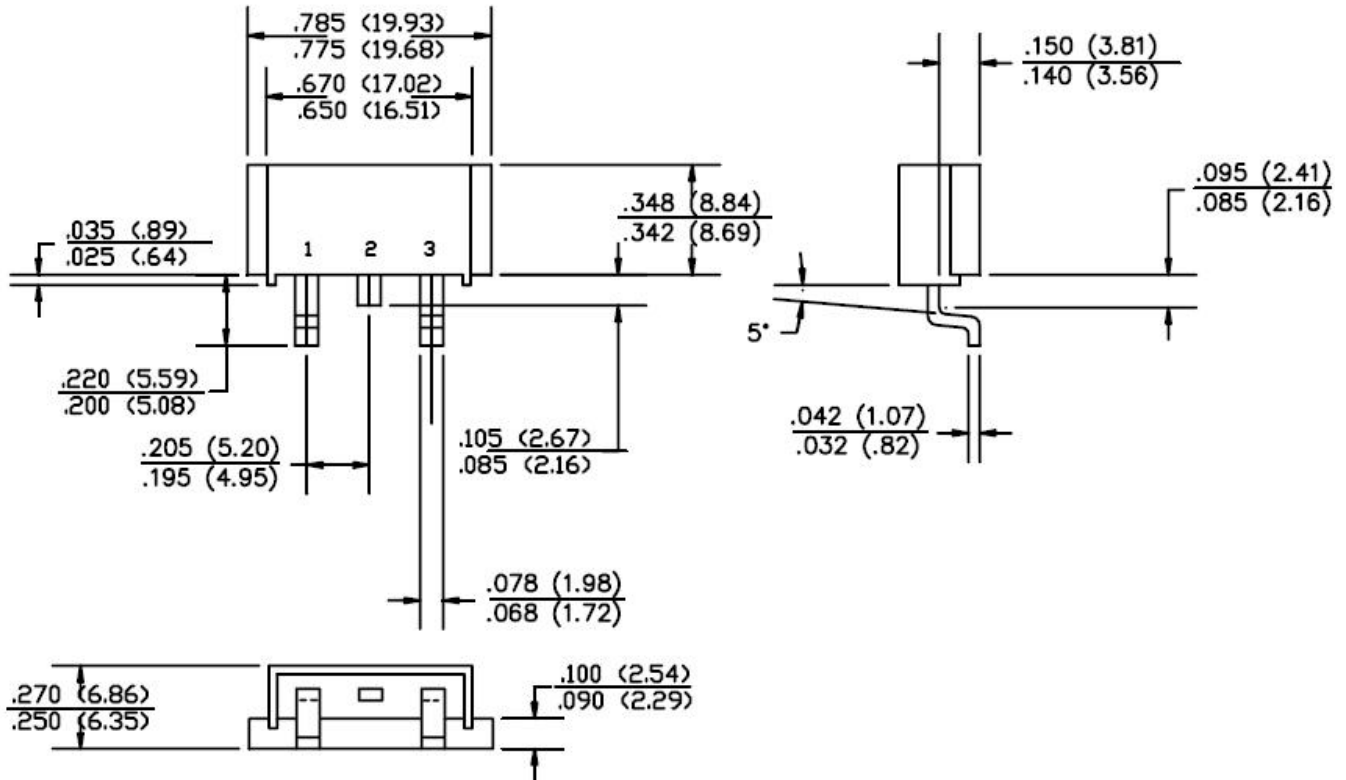
**Ordering Information**

| Device       | Package | Terminals finish | Shipping     |
|--------------|---------|------------------|--------------|
| 81CNQ035     | PRM2    | Nickel plated    | 48pcs / box  |
| 81CNQ035S2   | PRM2    | Pure Sn dipped   | 48pcs / box  |
| 81CNQ040     | PRM2    | Nickel plated    | 48pcs / box  |
| 81CNQ040S2   | PRM2    | Pure Sn dipped   | 48pcs / box  |
| 81CNQ045     | PRM2    | Nickel plated    | 48pcs / box  |
| 81CNQ045S2   | PRM2    | Pure Sn dipped   | 48pcs / box  |
| 81CNQ035SL   | PRM2-SL | Nickel plated    | 100pcs / box |
| 81CNQ040SL   | PRM2-SL | Nickel plated    | 100pcs / box |
| 81CNQ045SL   | PRM2-SL | Nickel plated    | 100pcs / box |
| 81CNQ035SM   | PRM2-SM | Nickel plated    | 48pcs / box  |
| 81CNQ035SMS2 | PRM2-SM | Pure Sn dipped   | 48pcs / box  |
| 81CNQ040SM   | PRM2-SM | Nickel plated    | 48pcs / box  |
| 81CNQ040SMS2 | PRM2-SM | Pure Sn dipped   | 48pcs / box  |
| 81CNQ045SM   | PRM2-SM | Nickel plated    | 48pcs / box  |
| 81CNQ045SMS2 | PRM2-SM | Pure Sn dipped   | 48pcs / box  |

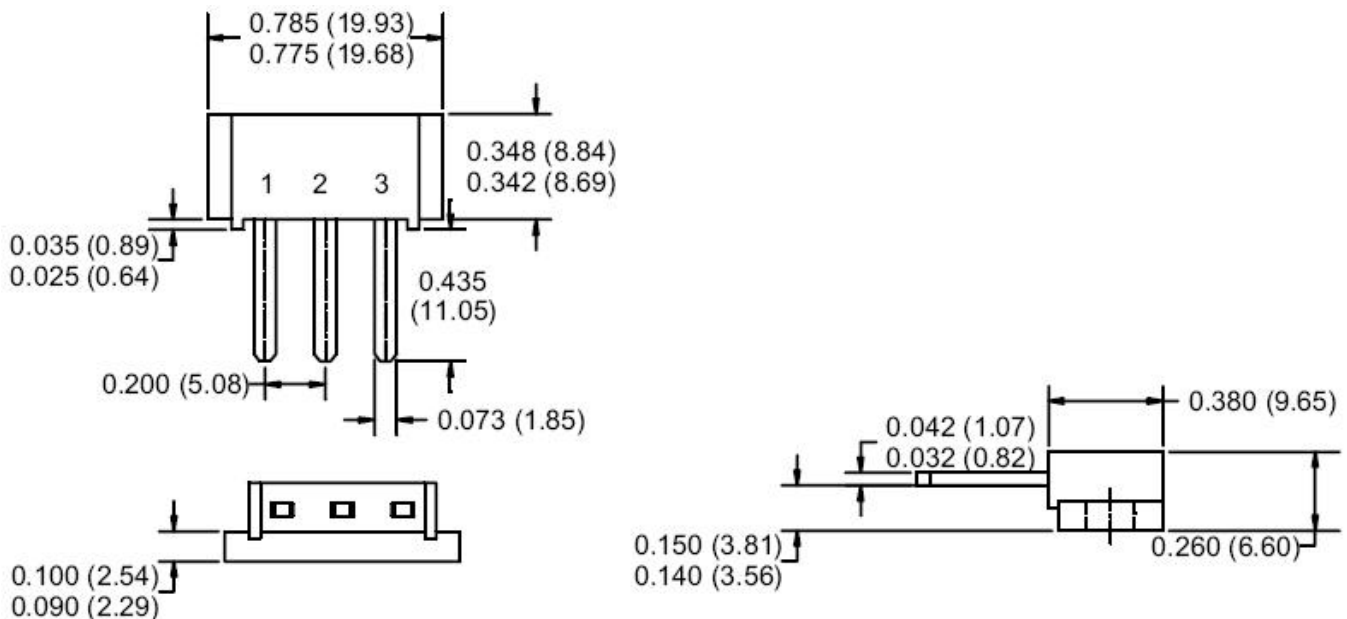
**Mechanical Dimensions PRM2 (Inches/Millimeters)**



**Mechanical Dimensions PRM2-SL (Inches/Millimeters)**



**Mechanical Dimensions PRM2-SM (Inches/Millimeters)**





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