

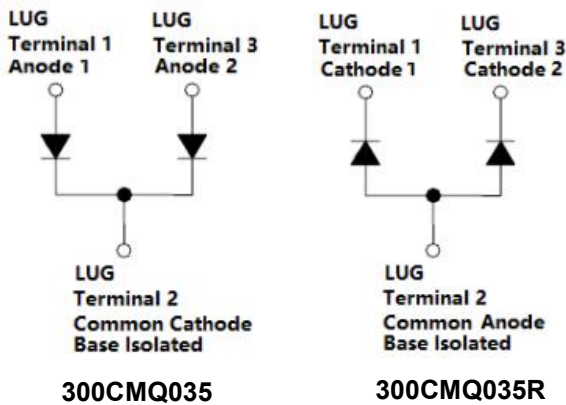
## 400CMQ035/400CMQ040/400CMQ045 SCHOTTKY RECTIFIER



### Features

- 150°C T<sub>J</sub> operation
- Center tap module
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Base plate: Nickel plated; Terminals: Nickel plated
- The terminal hardware is supplied with the module.
- The mounting hardware is not supplied. Recommended is the use of ¼-20 or M6 screws with spring washer.
- This is a Pb – Free Device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request

### Circuit Diagram



### Applications

- High current switching power supply
- Plating power supply
- Free-Wheeling diodes
- Reverse battery protection
- Converters
- UPS System
- Welding

### Maximum Ratings (limiting values, at 25 °C unless otherwise specified)

| Characteristics                                       | Symbol             | Condition   | Max.            |           | Units |
|---|--------------------|---|-----------------|-----------|-------|
|   |                    |   | 35              | 400CMQ035 |       |
| Peak Repetitive Reverse Voltage                       | V <sub>RRM</sub>   | -   | 40              | 400CMQ040 | V     |
| Working Peak Reverse Voltage                          | V <sub>RWM</sub>   |   | 45              | 400CMQ045 |       |
| DC Blocking Voltage                                   | V <sub>R</sub>     |   |                 |           |       |
| Average Rectified Forward Current                     | I <sub>F(AV)</sub> | 50% duty cycle @T <sub>C</sub> =104°C, rectangular wave form  | 200(Per Leg)    |           | A     |
|   |                    |   | 400(Per Device) |           |       |
| Peak One Cycle Non-Repetitive Surge Current (Per Leg) | I <sub>FSM</sub>   | 8.3 ms, half Sine pulse   | 4080            |           | A     |
| Non-Repetitive Avalanche Energy(Peg Leg)              | E <sub>AS</sub>    | T <sub>J</sub> =25°C, I <sub>AS</sub> =40A, L=0.22mH  | 180             |           | mJ    |
| Repetitive Avalanche Current (Peg Leg)                | I <sub>AR</sub>    | Current decaying linearly to zero in 1 µsec Frequency limited by T <sub>J</sub> max. V <sub>A</sub> =1.5×V <sub>R</sub> typical | 40              |           | A     |

- China - Germany - Korea - Singapore - United States •
- <http://www.smc-diodes.com> - [sales@smc-diodes.com](mailto:sales@smc-diodes.com) •

**Electrical Characteristics:**

| Characteristics                | Symbol          | Condition  | Typ.         | Max.         | Units |
|--------------------------------|-----------------|--|--------------|--------------|-------|
| Forward Voltage Drop(Per Leg)* | V <sub>F1</sub> | @ 200A, Pulse, T <sub>J</sub> = 25 °C<br>@ 400A, Pulse, T <sub>J</sub> = 25 °C   | 0.57<br>0.69 | 0.65<br>0.73 | V     |
|                                | V <sub>F2</sub> | @ 200A, Pulse, T <sub>J</sub> = 125 °C<br>@ 400A, Pulse, T <sub>J</sub> = 125 °C | 0.51<br>0.64 | 0.55<br>0.68 | V     |
| Reverse Current(Per Leg)*      | I <sub>R1</sub> | @V <sub>R</sub> = rated V <sub>R</sub> , T <sub>J</sub> = 25 °C                  | 0.6          | 20           | mA    |
|                                | I <sub>R2</sub> | @V <sub>R</sub> = rated V <sub>R</sub> , T <sub>J</sub> = 125 °C                 | 132          | 800          | 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          | 8670         | 10300        | pF    |
| 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 +150     | °C                     |    |
| Storage Temperature                                      | T <sub>stg</sub> | -                                    | -55 to +150     | °C                     |    |
| Typical Thermal Resistance Junction to Case(Per leg)     | R <sub>θJC</sub> | DC operation                         | 0.30            | °C/W                   |    |
| Typical Thermal Resistance Junction to Case(Per package) | R <sub>θJC</sub> | DC operation                         | 0.15            | °C/W                   |    |
| Typical Thermal Resistance, case to Heat Sink            | R <sub>θcs</sub> | Mounting surface, smooth and greased | 0.05            | °C/W                   |    |
| Mounting Torque  | T <sub>M</sub>   | -                                    | Mounting Torque | 3.84(min)<br>4.80(max) | Nm |
|  |                  |                                      | Terminal Torque | 2.35(min)<br>3.43(max) |    |
| Approximate Weight                                       | wt               | -                                    | 110             | g                      |    |
| Case Style   | PRM4 Isolated    |                                      |                 |                        |    |

**Ratings and Characteristics Curves**

Figure 1  
Typical Forward Characteristics

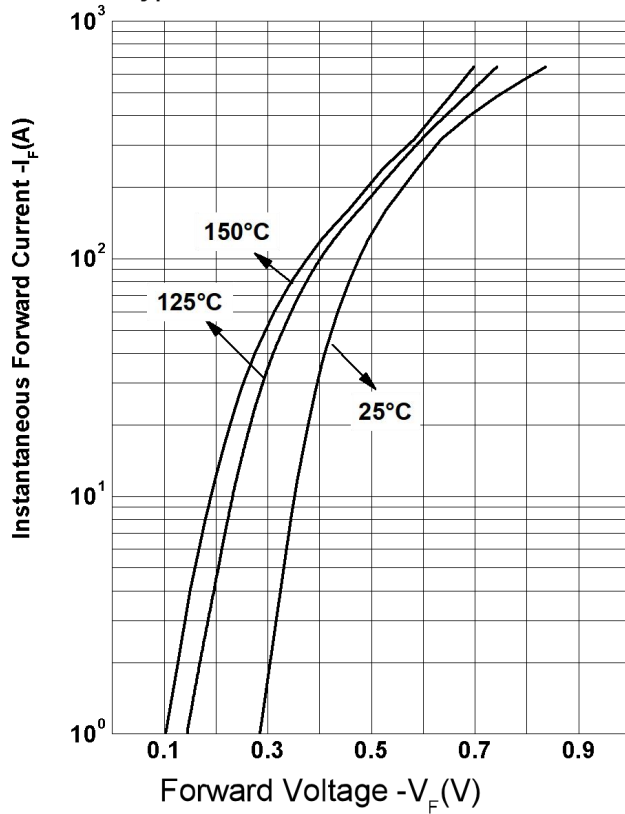


Figure 2  
Typical Reverse Characteristics

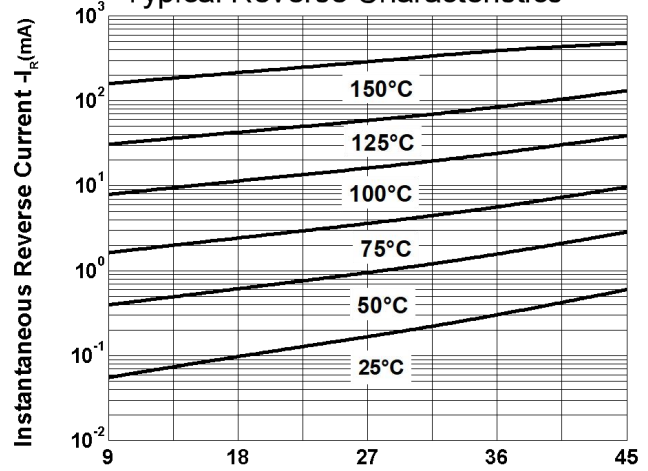
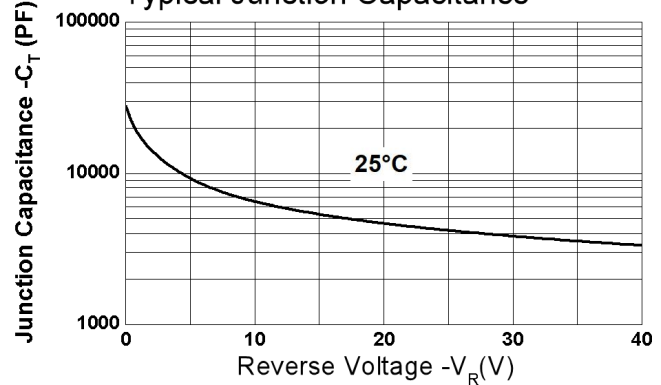
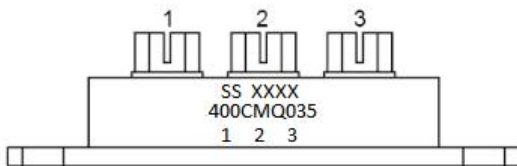


Figure 3  
Reverse Voltage  $-V_R$  (V)  
Typical Junction Capacitance



**Marking Diagram**



Where XXXX is YYWW

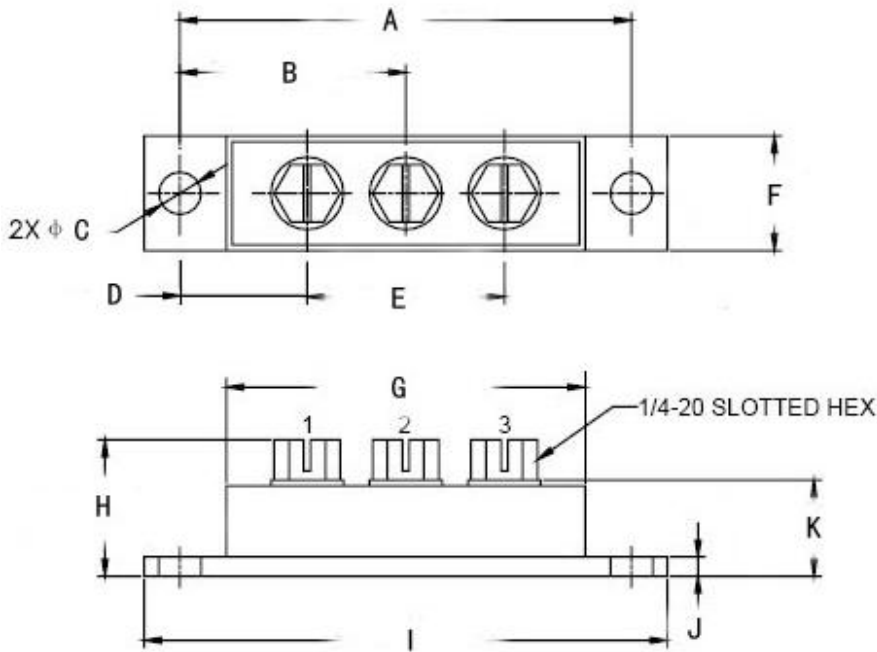
400CMQ035 = Part name  
SS = SS  
YY = Year  
WW = Week

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

**Ordering Information**

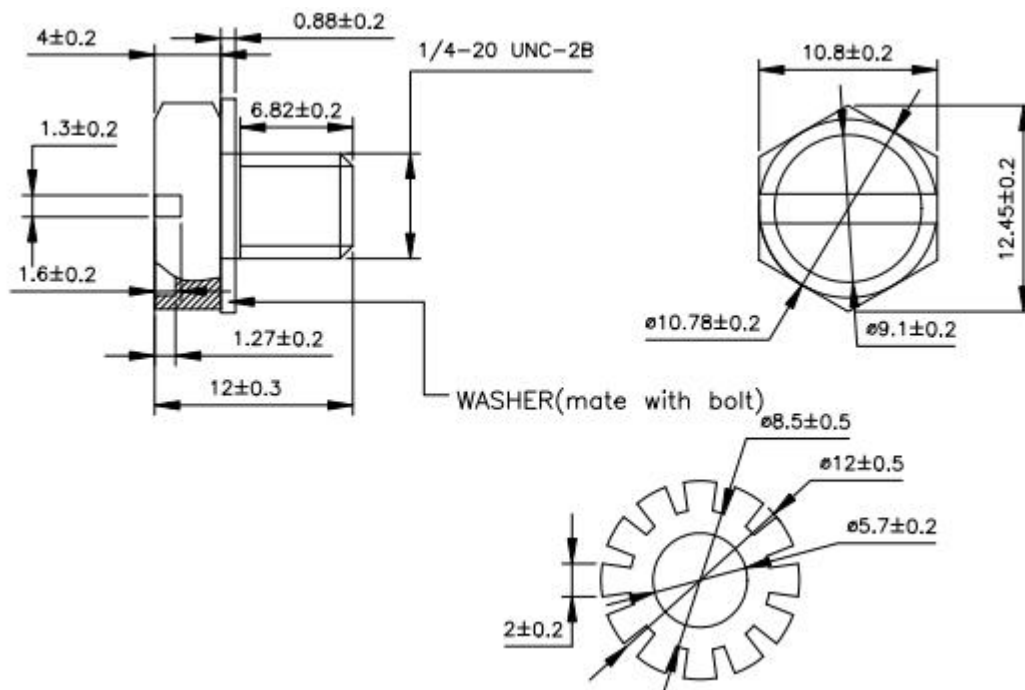
| Device        | Package                 | Shipping  |
|---------------|-------------------------|-----------|
| 400CMQ SERIES | PRM4 Isolated (Pb-Free) | 9 pcs/box |

**Mechanical Dimensions PRM4 Isolated(Millimeters/Inches)**



| SYMBOL | Millimeters |       | Inches |       |
|--------|-------------|-------|--------|-------|
|        | Min.        | Max.  | Min.   | Max.  |
| A      | 78.74       | 81.28 | 3.100  | 3.200 |
| B      | 37.47       | 42.55 | 1.475  | 1.675 |
| C      | 6.89        | 7.69  | 0.271  | 0.303 |
| D      | 19.51       | 24.59 | 0.768  | 0.968 |
| E      | 33.02       | 38.10 | 1.300  | 1.500 |
| F      | 17.78       | 20.32 | 0.700  | 0.800 |
| G      | 60.96       | 64.77 | 2.400  | 2.550 |
| H      | 17.56       | 23.55 | 0.691  | 0.927 |
| I      | 90.17       | 92.71 | 3.550  | 3.650 |
| J      | 3.02        | 3.68  | 0.119  | 0.145 |
| K      | 15.75       | 17.50 | 0.620  | 0.689 |

**1/4-20 screws (Millimeters)**



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