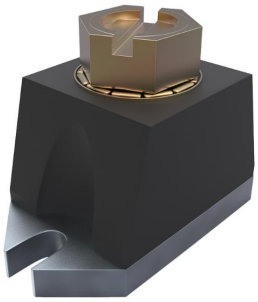
Technical Data
Data Sheet N1177, Rev. A

# 189NQ135/R-1 189NQ135/R-1
# SCHOTTKY RECTIFIER



PRM1-1(HALF PAK Module)

## Features

- 175℃ $T_J$ operation
- Unique high power, Half-Pak module
- Replaces three parallel DO-5’ S
- Easier to mount and lower profile than DO-5’ S
- 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
- This is a Pb − Free Device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request

## Circuit Diagram


189NQ...-1 189NQ...R-1

The top side is terminal, the bottom side is base plate.

## Applications

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

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

| Characteristics | Symbol | Condition | Max. | | Units |
|---|---|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | - | 135 | 189NQ135/R-1 | V |
| | | | 150 | 189NQ150/R-1 | |
| Average Forward Current | $I_{F(AV)}$ | 50% duty cycle @$T_C$ =110°C, rectangular wave form | 180 | | A |
| Peak One Cycle Non-Repetitive Surge Current | $I_{FSM}$ | 8.3 ms, half Sine pulse | 1860 | | A |

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## Electrical Characteristics:

| Characteristics | Symbol | Condition | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Forward Voltage Drop* | $V_{F1}$ | @ 180A, Pulse, $T_J$ = 25 °C<br>@ 360A, Pulse, $T_J$ = 25 °C | 0.85<br>0.96 | 1.07<br>1.27 | V |
| | $V_{F2}$ | @ 180A, Pulse, $T_J$ = 125 °C<br>@ 360A, Pulse, $T_J$ = 125 °C | 0.74<br>0.81 | 0.80<br>0.86 | V |
| Reverse Current* | $I_{R1}$ | @$V_R$ = rated $V_R$ $T_J$ = 25 °C | 0.06 | 4.5 | mA |
| | $I_{R2}$ | @$V_R$ = rated $V_R$ $T_J$ = 125 °C | 3.40 | 65 | mA |
| Junction Capacitance | $C_T$ | @$V_R$ = 5V, $T_C$ = 25 °C<br>$f_{SIG}$ = 1MHz | 2989 | 4500 | 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 | $T_J$ | - | -55 to +175 | | °C |
| Storage Temperature | $T_{stg}$ | - | -55 to +175 | | °C |
| Typical Thermal Resistance Junction to Case | $R_{\theta JC}$ | DC operation | 0.25 | | °C/W |
| Typical Thermal Resistance, case to Heat Sink | $R_{\theta cs}$ | Mounting surface, smooth and greased | 0.07 | | °C/W |
| Mounting Torque | $T_M$ | Non-lubricated threads | Mounting Torque | 23(min)<br>29(max) | Kg-cm |
| | | | Terminal Torque | 35(min)<br>46(max) | |
| Approximate Weight | wt | - | 36 | | g |
| Case Style | PRM1-1 | | | | |

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## Ratings and Characteristics Curves

Figure1
Typical Forward Characteristics

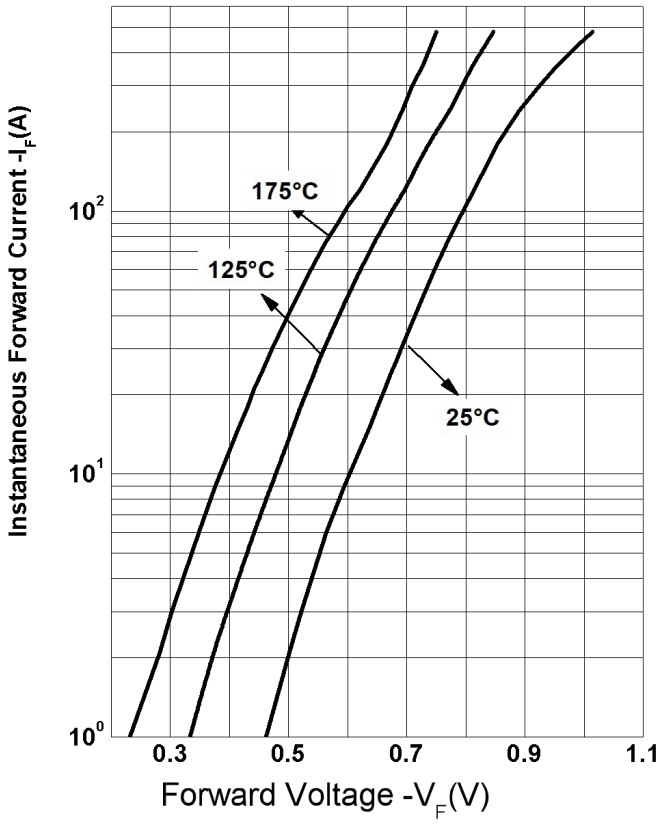



Figure 2
Typical Reverse Characteristics

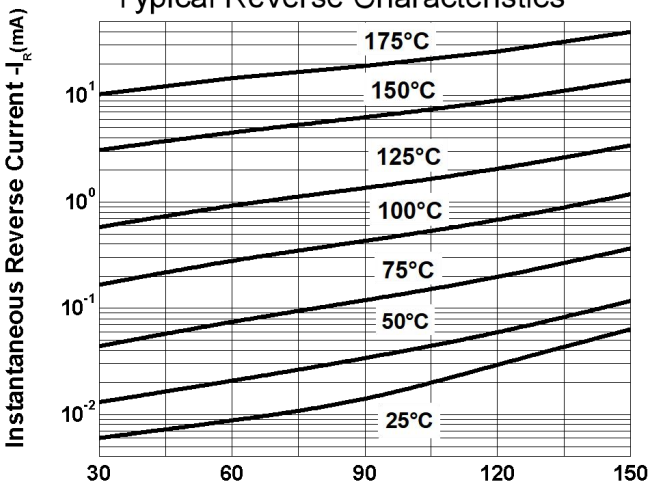
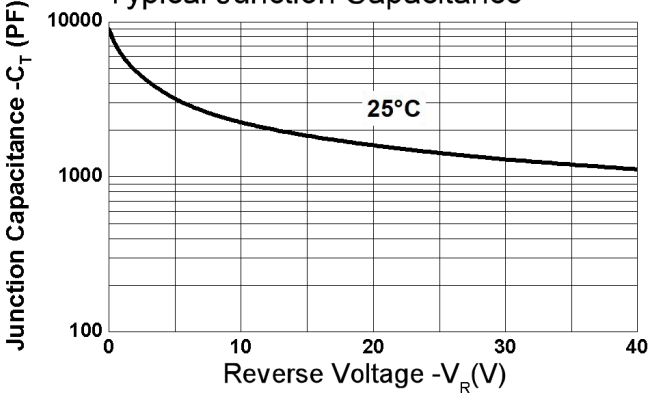


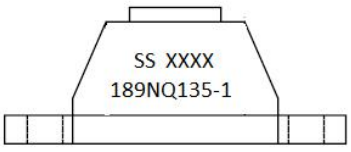

Figure 3
Typical Junction Capacitance




## Ordering Information

| Device | Package | Shipping |
|---|---|---|
| 189NQ SERIES | PRM1-1(Pb-Free) | 27pcs/ box |

## Marking Diagram




Where XXXX is YYWW

1st row SS YYWW
2nd row 189NQ135-1
SS = SS
YY = Year
WW = Week

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

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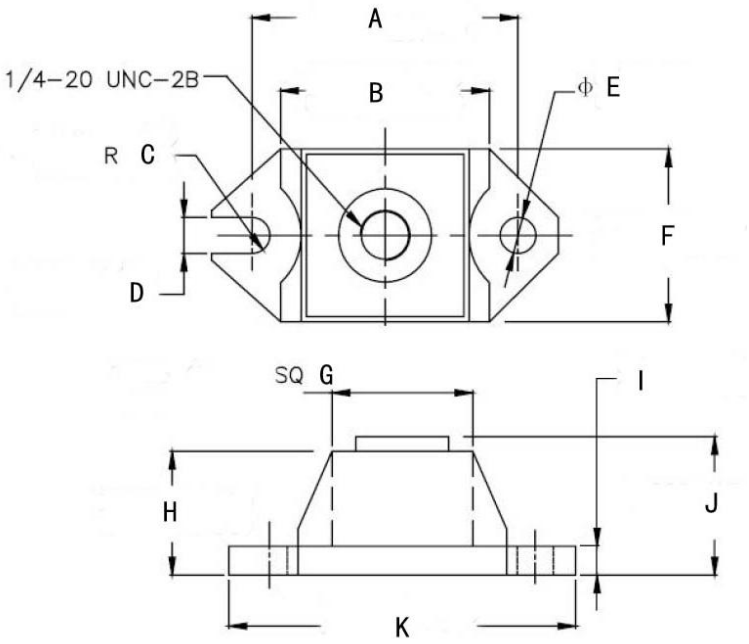
## Mechanical Dimensions PRM1-1 (Inches/Millimeters)




| SYMBOL | Millimeters | | Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 29.35 | 30.95 | 1.155 | 1.219 |
| B | 24.77 | 26.04 | 0.975 | 1.026 |
| C | 1.79 | 2.19 | 0.070 | 0.087 |
| D | 3.73 | 4.24 | 0.146 | 0.167 |
| E | 3.73 | 4.24 | 0.146 | 0.167 |
| F | 18.42 | 19.69 | 0.725 | 0.775 |
| G | 18.55 | 19.55 | 0.730 | 0.770 |
| H | 13.59 | 14.47 | 0.535 | 70.500 |
| I | 3.05 | 3.90 | 0.120 | 0.154 |
| J | 14.87 | 15.87 | 0.585 | 0.625 |
| K | 38.61 | 39.62 | 1.520 | 1.560 |

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