

# NRVBB1060

## SWITCHMODE™ Power Rectifier

This SWITCHMODE power rectifier uses the Schottky Barrier principle with a platinum barrier metal. This state-of-the-art device has the following features:

### Features

- Low Forward Voltage
- 175°C Operating Junction Temperature
- Low Power Loss/High Efficiency
- High Surge Capacity
- This is a Pb-Free Device

### Applications

- Power Supply – Output Rectification
- Power Management

### Mechanical Characteristics

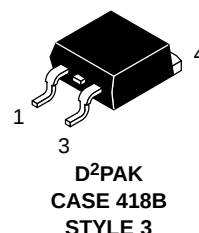
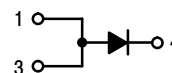
- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 1.7 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds



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## SCHOTTKY BARRIER RECTIFIER 10 AMPERES, 60 VOLTS



### MARKING DIAGRAM



|       |                     |
|-------|---------------------|
| A     | = Assembly Location |
| Y     | = Year              |
| WW    | = Work Week         |
| B1060 | = Device Code       |
| G     | = Pb-Free Package   |
| AKA   | = Diode Polarity    |

### ORDERING INFORMATION

| Device       | Package            | Shipping†       |
|--------------|--------------------|-----------------|
| NRVBB1060T4G | D²PAK<br>(Pb-Free) | 800/Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

## MAXIMUM RATINGS

| Rating                                                                                                     | Symbol                          | Value       | Unit             |
|------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                     | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 60          | V                |
| Average Rectified Forward Current (Rated $V_R$ ) $T_C = 133^\circ\text{C}$                                 | $I_{F(AV)}$                     | 10          | A                |
| Peak Repetitive Forward Current<br>(Rated $V_R$ , Square Wave, 20 kHz) $T_C = 133^\circ\text{C}$           | $I_{FRM}$                       | 20          | A                |
| Nonrepetitive Peak Surge Current<br>(Surge applied at rated load conditions halfwave, single phase, 60 Hz) | $I_{FSM}$                       | 150         | A                |
| Peak Repetitive Reverse Surge Current (2.0 $\mu\text{s}$ , 1.0 kHz)                                        | $I_{RRM}$                       | 0.5         | A                |
| Operating Junction Temperature (Note 1)                                                                    | $T_J$                           | -65 to +175 | $^\circ\text{C}$ |
| Storage Temperature                                                                                        | $T_{stg}$                       | -65 to +175 | $^\circ\text{C}$ |
| Voltage Rate of Change (Rated $V_R$ )                                                                      | $dv/dt$                         | 10,000      | V/ $\mu\text{s}$ |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .

## THERMAL CHARACTERISTICS

|                                                 |                 |     |                    |
|-------------------------------------------------|-----------------|-----|--------------------|
| Maximum Thermal Resistance, Junction-to-Case    | $R_{\theta JC}$ | 2.0 | $^\circ\text{C/W}$ |
| Maximum Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 60  | $^\circ\text{C/W}$ |

## ELECTRICAL CHARACTERISTICS

|                                                                                                                                                                                                                                                      |       |                            |    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------|----|
| Maximum Instantaneous Forward Voltage (Note 2)<br>( $i_F = 10$ Amps, $T_C = 125^\circ\text{C}$ )<br>( $i_F = 10$ Amps, $T_C = 25^\circ\text{C}$ )<br>( $i_F = 20$ Amps, $T_C = 125^\circ\text{C}$ )<br>( $i_F = 20$ Amps, $T_C = 25^\circ\text{C}$ ) | $V_F$ | 0.7<br>0.8<br>0.85<br>0.95 | V  |
| Maximum Instantaneous Reverse Current (Note 2)<br>(Rated dc Voltage, $T_C = 125^\circ\text{C}$ )<br>(Rated dc Voltage, $T_C = 25^\circ\text{C}$ )                                                                                                    | $i_R$ | 25<br>0.10                 | mA |

2. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

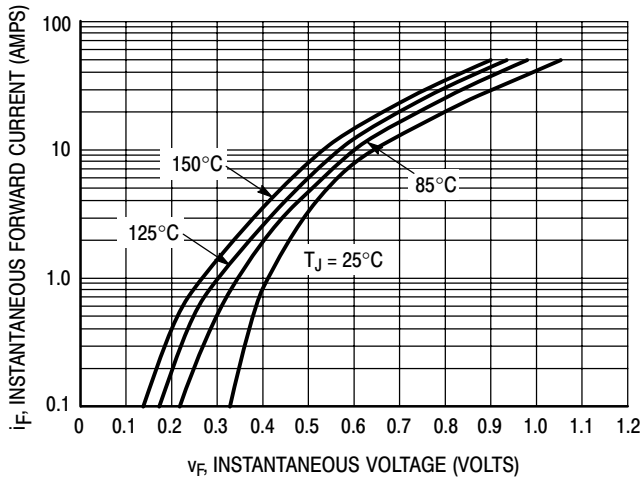


Figure 1. Typical Forward Voltage

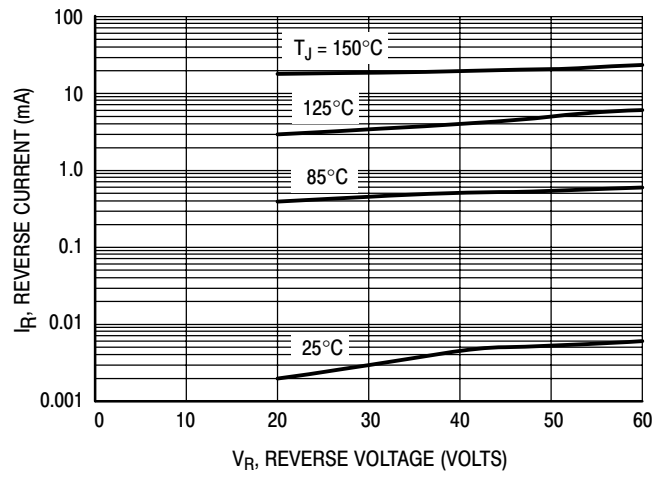


Figure 2. Typical Reverse Current

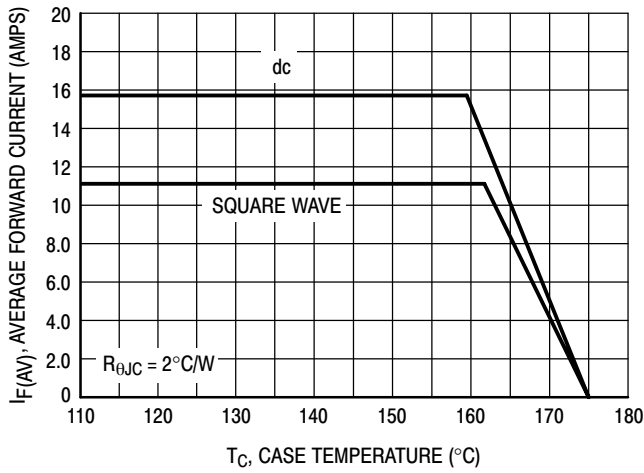


Figure 3. Current Derating, Case

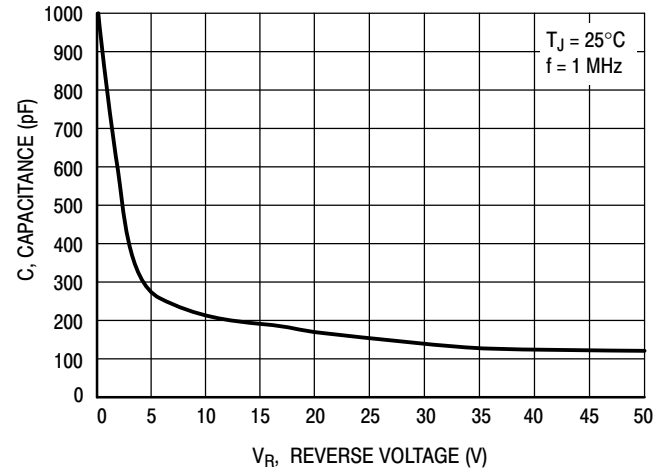


Figure 4. Typical Capacitance

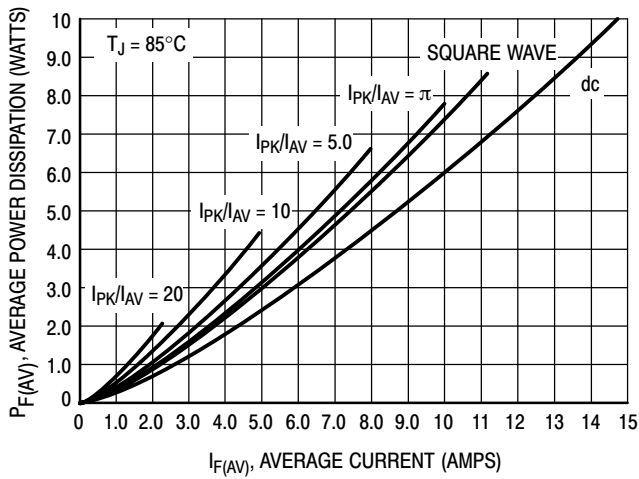


Figure 5. Typical Forward Power Dissipation

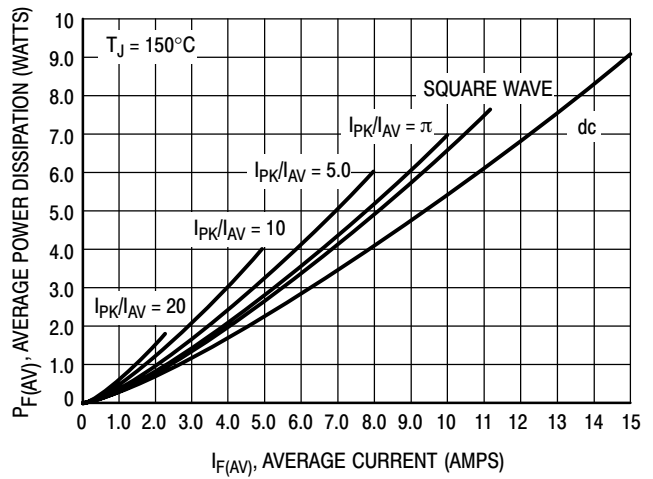
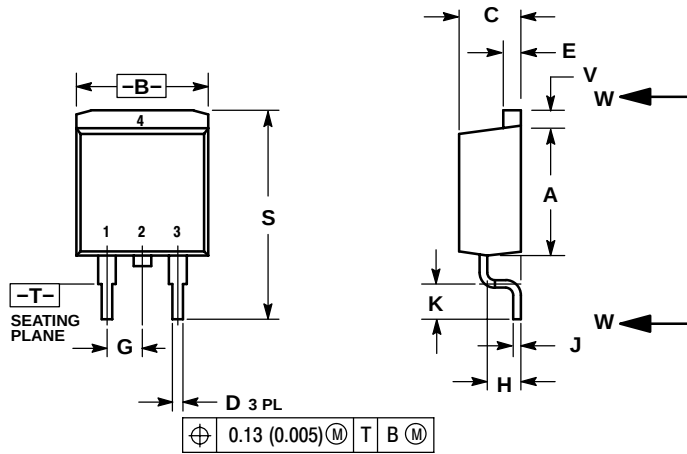


Figure 6. Typical Forward Power Dissipation

# NRVBB1060

## PACKAGE DIMENSIONS

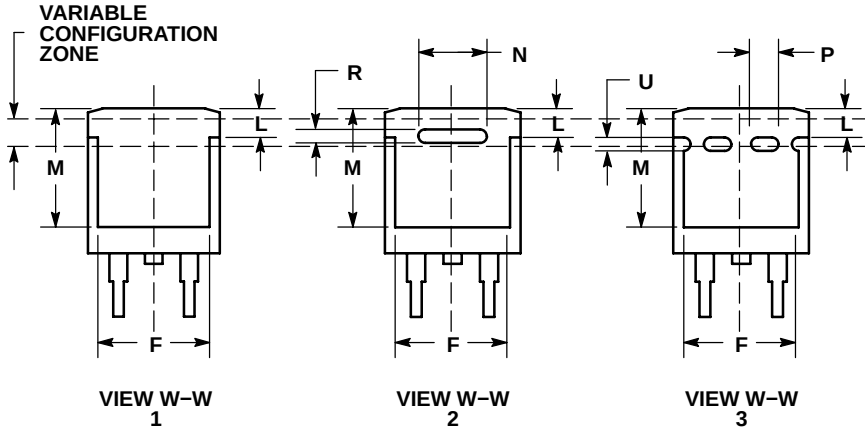
D<sup>2</sup>PAK 3  
CASE 418B-04  
ISSUE J



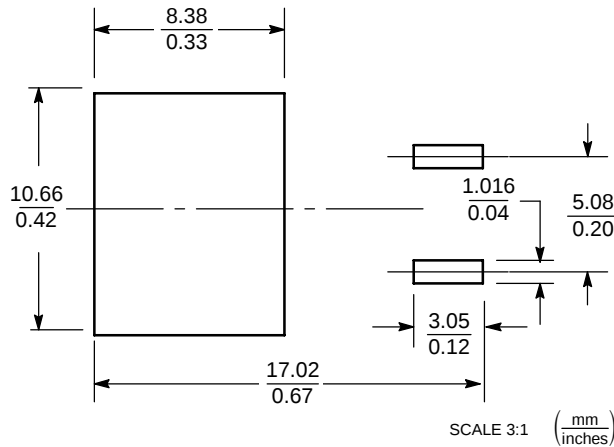
- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. 418B-01 THRU 418B-03 OBSOLETE, NEW STANDARD 418B-04.

| DIM | INCHES    |       | MILLIMETERS |       |
|-----|-----------|-------|-------------|-------|
|     | MIN       | MAX   | MIN         | MAX   |
| A   | 0.340     | 0.380 | 8.64        | 9.65  |
| B   | 0.380     | 0.405 | 9.65        | 10.29 |
| C   | 0.160     | 0.190 | 4.06        | 4.83  |
| D   | 0.020     | 0.035 | 0.51        | 0.89  |
| E   | 0.045     | 0.055 | 1.14        | 1.40  |
| F   | 0.310     | 0.350 | 7.87        | 8.89  |
| G   | 0.100 BSC |       | 2.54 BSC    |       |
| H   | 0.080     | 0.110 | 2.03        | 2.79  |
| J   | 0.018     | 0.025 | 0.46        | 0.64  |
| K   | 0.090     | 0.110 | 2.29        | 2.79  |
| L   | 0.052     | 0.072 | 1.32        | 1.83  |
| M   | 0.280     | 0.320 | 7.11        | 8.13  |
| N   | 0.197 REF |       | 5.00 REF    |       |
| P   | 0.079 REF |       | 2.00 REF    |       |
| R   | 0.039 REF |       | 0.99 REF    |       |
| S   | 0.575     | 0.625 | 14.60       | 15.88 |
| V   | 0.045     | 0.055 | 1.14        | 1.40  |

- STYLE 3:
- PIN 1. ANODE
  - CATHODE
  - ANODE
  - CATHODE



## SOLDERING FOOTPRINT\*



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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