

# MURB1660CTG, MURB1660CTT4G, NRVUB1660CTT4G

## SWITCHMODE Power Rectifier

### D<sup>2</sup>PAK Power Surface Mount Package

These state-of-the-art devices are designed for use in switching power supplies, inverters, and as free wheeling diodes.

#### Features

- Package Designed for Power Surface Mount Applications
- Ultrafast 60 Nanosecond Recovery Times
- 175°C Operating Junction Temperature
- Epoxy Meets UL 94 V-0 @ 0.125 in
- High Temperature Glass Passivated Junction
- High Voltage Capability to 600 V
- Low Leakage Specified @ 150°C Case Temperature
- Short Heat Sink Tab Manufactured – Not Sheared!
- Similar in Size to Industrial Standard TO-220 Package
- AEC-Q101 Qualified and PPAP Capable
- NRVU Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- Pb-Free Packages\*

#### Mechanical Characteristics:

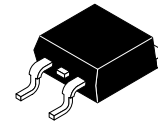
- Case: Epoxy, Molded, Epoxy Meets UL 94 V-0
- Weight: 1.7 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Device Meets MSL1 Requirements
- ESD Ratings:
  - ◆ Machine Model, C > 400 V
  - ◆ Human Body Model, 3B > 8000 V



ON Semiconductor®

<http://onsemi.com>

**ULTRAFAST RECTIFIER  
16 AMPERES, 600 VOLTS**



**D<sup>2</sup>PAK  
CASE 418B  
STYLE 3**



**MARKING DIAGRAM**



A = Assembly Location  
Y = Year  
WW = Work Week  
U1660 = Specific Device Code  
G = Pb-Free Package  
AKA = Diode Polarity

#### ORDERING INFORMATION

| Device         | Package                      | Shipping†         |
|----------------|------------------------------|-------------------|
| MURB1660CTG    | D <sup>2</sup> PAK (Pb-Free) | 50 Units/Rail     |
| MURB1660CTT4G  | D <sup>2</sup> PAK (Pb-Free) | 800 / Tape & Reel |
| NRVUB1660CTT4G | D <sup>2</sup> PAK (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.

\*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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## MAXIMUM RATINGS (Per Leg)

| Rating  | Symbol                          | Value       | Unit             |
|---|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                      | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 600         | V                |
| Average Rectified Forward Current<br>(Rated $V_R$ , $T_C = 150^\circ\text{C}$ ) Total Device                | $I_{F(AV)}$                     | 8.0<br>16   | A                |
| Peak Repetitive Forward Current<br>(Rated $V_R$ , Square Wave, 20 kHz, $T_C = 150^\circ\text{C}$ )          | $I_{FM}$                        | 16          | A                |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | $I_{FSM}$                       | 100         | A                |
| Operating Junction and Storage Temperature Range  | $T_J, T_{stg}$                  | -65 to +175 | $^\circ\text{C}$ |

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.

## THERMAL CHARACTERISTICS (Per Leg)

| Rating   | Symbol          | Value | Unit                      |
|--|-----------------|-------|---------------------------|
| Maximum Thermal Resistance, Junction-to-Case                     | $R_{\theta JC}$ | 2.0   | $^\circ\text{C}/\text{W}$ |
| Maximum Thermal Resistance, Junction-to-Ambient (Note 1)         | $R_{\theta JA}$ | 50    | $^\circ\text{C}/\text{W}$ |
| Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds | $T_L$           | 260   | $^\circ\text{C}$          |

- See Chapter 7 for mounting conditions.

## ELECTRICAL CHARACTERISTICS (Per Leg)

| Characteristic   | Symbol   | Max          | Unit          |
|--|----------|--------------|---------------|
| Maximum Instantaneous Forward Voltage (Note 2)<br>( $i_F = 8.0$ Amp, $T_C = 150^\circ\text{C}$ )<br>( $i_F = 8.0$ Amp, $T_C = 25^\circ\text{C}$ )  | $v_F$    | 1.20<br>1.50 | V             |
| Maximum Instantaneous Reverse Current (Note 2)<br>(Rated dc Voltage, $T_C = 150^\circ\text{C}$ )<br>(Rated dc Voltage, $T_C = 25^\circ\text{C}$ )  | $i_R$    | 500<br>10    | $\mu\text{A}$ |
| Maximum Reverse Recovery Time<br>( $I_F = 1.0$ Amp, $di/dt = 50$ Amp/ $\mu\text{s}$ )<br>( $I_F = 0.5$ Amp, $i_R = 1.0$ Amp, $I_{REC} = 0.25$ Amp) | $t_{rr}$ | 60<br>50     | ns            |

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

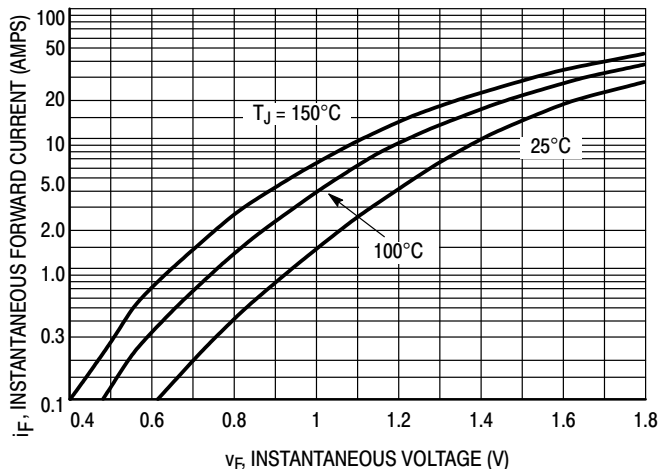


Figure 1. Typical Forward Voltage, Per Leg

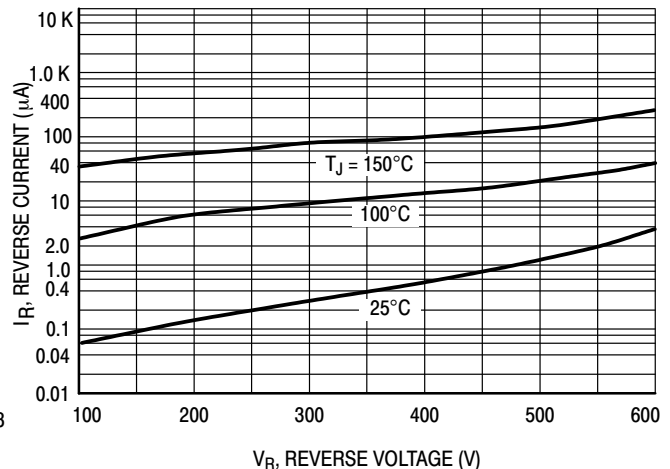


Figure 2. Typical Reverse Current, Per Leg

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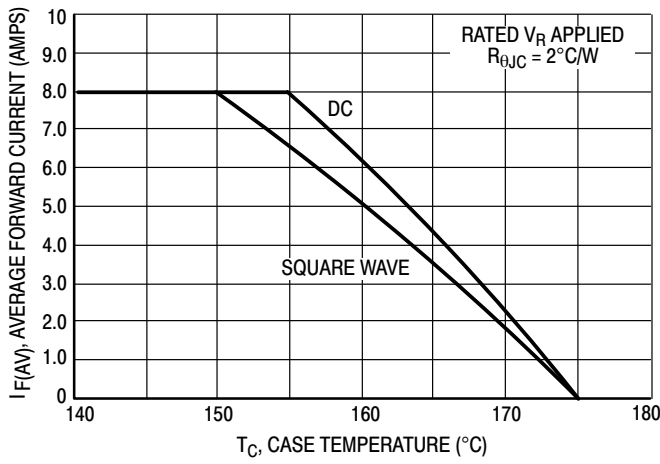


Figure 3. Current Derating, Case, Per Leg

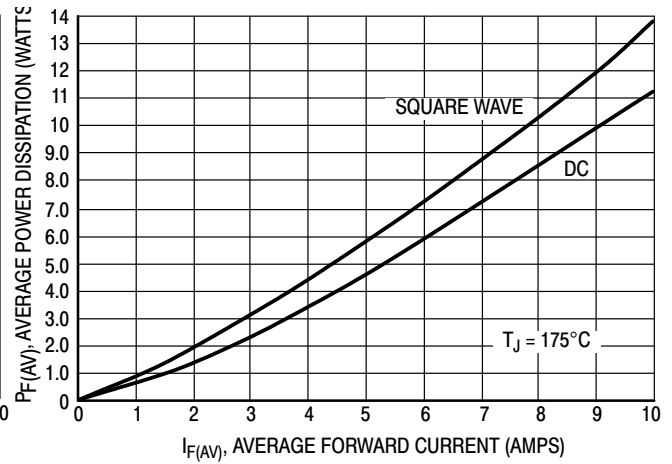


Figure 4. Power Dissipation, Per Leg

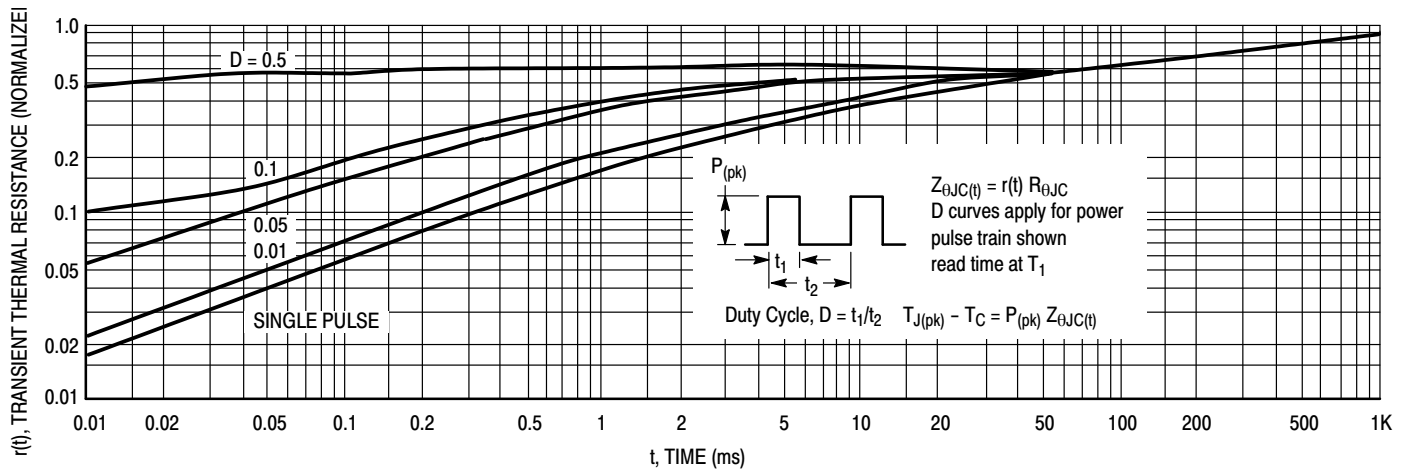


Figure 5. Thermal Response

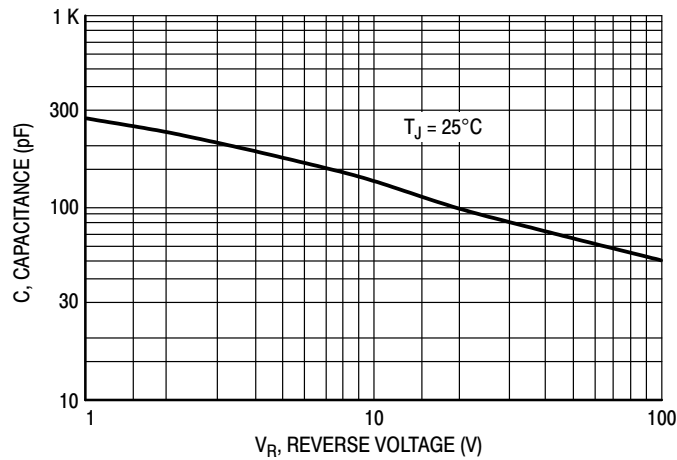
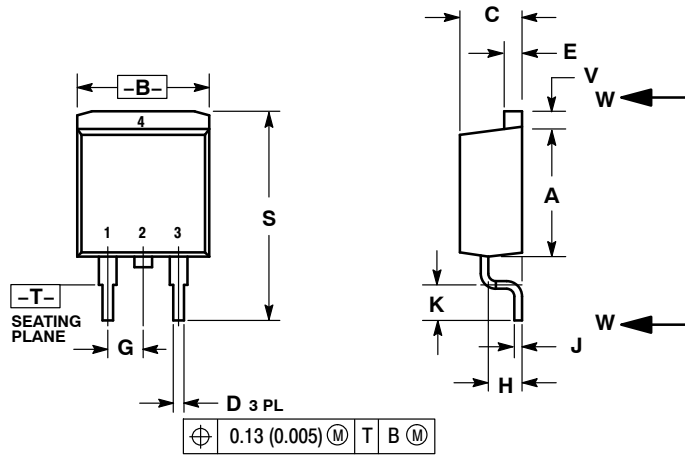


Figure 6. Typical Capacitance, Per Leg

# MURB1660CTG, MURB1660CTT4G, NRVUB1660CTT4G

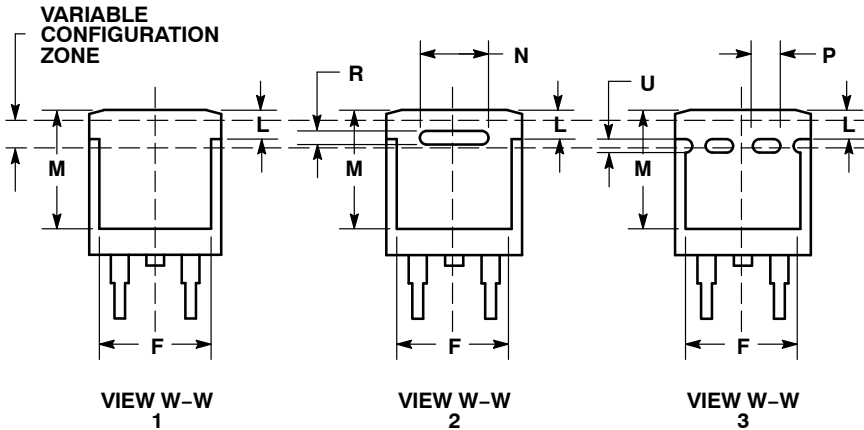
## PACKAGE DIMENSIONS

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



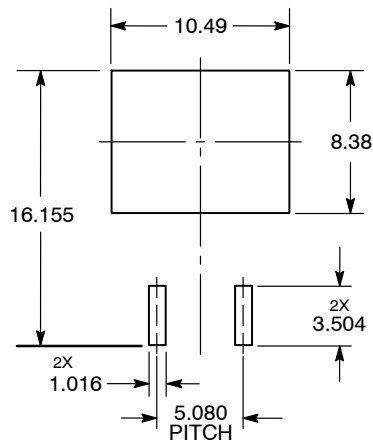
- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. 418B-01 THRU 418B-03 OBSOLETE, NEW STANDARD 418B-04.

| 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:
1. ANODE
  2. CATHODE
  3. ANODE
  4. CATHODE

### SOLDERING FOOTPRINT\*



DIMENSIONS: MILLIMETERS

\*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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