

# MURD620CT, NRVUD620CT, SRVUD620CT, SNRVUD620CT

## Switch-mode Power Rectifier

### DPAK Surface Mount Package

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

#### Features

- Ultrafast 35 Nanosecond Recovery Time
- Low Forward Voltage Drop
- Low Leakage
- ESD Rating:
  - ◆ Human Body Model = 3B (> 8 kV)
  - ◆ Machine Model = C (> 400 V)
- NRVUD, SRVUD and SNRVUD Prefixes for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

#### Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 0.4 Gram (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



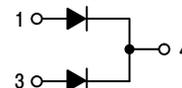
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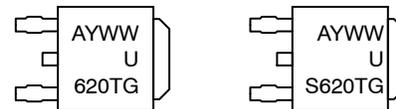
**ULTRAFAST RECTIFIER**  
**6.0 AMPERES**  
**200 VOLTS**



DPAK  
CASE 369C



#### MARKING DIAGRAMS



A = Assembly Location\*  
Y = Year  
WW = Work Week  
U620T = Device Code (MURD/NRVUD/  
SNRVUD620CT)  
US620T = Device Code (SRVUD620CT)  
G = Pb-Free Package

\* The Assembly Location Code (A) is front side optional. In cases where the Assembly Location is stamped in the package bottom (molding ejector pin), the front side assembly code may be blank.

#### ORDERING INFORMATION

| Device           | Package           | Shipping <sup>†</sup>  |
|------------------|-------------------|------------------------|
| MURD620CTG       | DPAK<br>(Pb-Free) | 75 Units / Rail        |
| NRVUD620CTG      | DPAK<br>(Pb-Free) | 75 Units / Rail        |
| MURD620CTT4G     | DPAK<br>(Pb-Free) | 2,500 /<br>Tape & Reel |
| NRVUD620CTT4G    | DPAK<br>(Pb-Free) | 2,500 /<br>Tape & Reel |
| SRVUD620CTT4G    | DPAK<br>(Pb-Free) | 2,500 /<br>Tape & Reel |
| SNRVUD620CTT4G   | DPAK<br>(Pb-Free) | 2,500 /<br>Tape & Reel |
| NRVUD620CTG-VF01 | DPAK<br>(Pb-Free) | 2,500 /<br>Tape & Reel |

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

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## 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>$V_R$ | 200         | V                |
| Average Rectified Forward Current<br>(Rated $V_R$ , $T_C = 140^\circ\text{C}$ )<br>Per Diode<br>Per Device      | $I_{F(AV)}$                     | 3.0<br>6.0  | A                |
| Peak Repetitive Forward Current<br>(Rated $V_R$ , Square Wave, 20 kHz, $T_C = 145^\circ\text{C}$ )<br>Per Diode | $I_F$                           | 6.0         | A                |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, 60 Hz)                   | $I_{FSM}$                       | 50          | A                |
| Operating Junction and Storage Temperature Range  | $T_J, T_{stg}$                  | -65 to +175 | $^\circ\text{C}$ |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

## THERMAL CHARACTERISTICS (Per Diode)

| Characteristic                                   | Symbol          | Value | Unit               |
|--|-----------------|-------|--------------------|
| Thermal Resistance, Junction-to-Case             | $R_{\theta JC}$ | 9     | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 1) | $R_{\theta JA}$ | 80    | $^\circ\text{C/W}$ |

1. Rating applies when surface mounted on the minimum pad sizes recommended.

## ELECTRICAL CHARACTERISTICS (Per Diode)

| Characteristic  | Symbol   | Value                    | Unit          |
|---|----------|--------------------------|---------------|
| Maximum Instantaneous Forward Voltage Drop (Note 2)<br>( $I_F = 3$ Amps, $T_C = 25^\circ\text{C}$ )<br>( $I_F = 3$ Amps, $T_C = 125^\circ\text{C}$ )<br>( $I_F = 6$ Amps, $T_C = 25^\circ\text{C}$ )<br>( $I_F = 6$ Amps, $T_C = 125^\circ\text{C}$ ) | $V_F$    | 1<br>0.96<br>1.2<br>1.13 | V             |
| Maximum Instantaneous Reverse Current (Note 2)<br>( $T_J = 25^\circ\text{C}$ , Rated dc Voltage)<br>( $T_J = 125^\circ\text{C}$ , Rated dc Voltage)   | $i_R$    | 5<br>250                 | $\mu\text{A}$ |
| Maximum Reverse Recovery Time<br>( $I_F = 1$ Amp, $di/dt = 50$ Amps/ $\mu\text{s}$ , $V_R = 30$ V, $T_J = 25^\circ\text{C}$ )<br>( $I_F = 0.5$ Amp, $i_R = 1$ Amp, $I_{REC} = 0.25$ A, $V_R = 30$ V, $T_J = 25^\circ\text{C}$ )                       | $t_{rr}$ | 35<br>25                 | ns            |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

TYPICAL CHARACTERISTICS

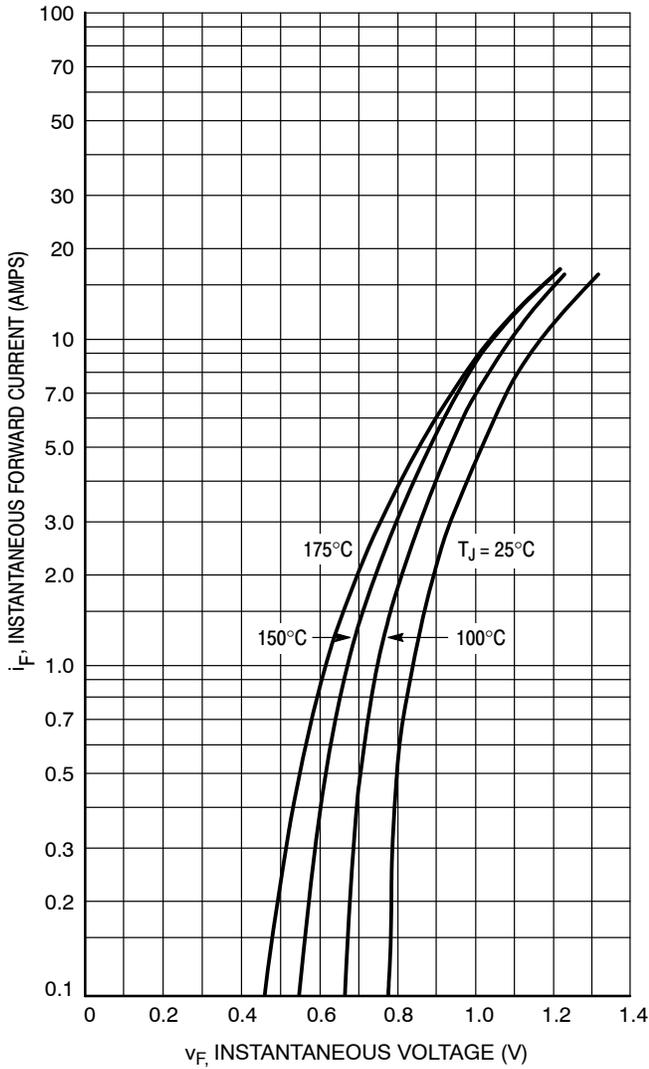


Figure 1. Typical Forward Voltage (Per Leg)

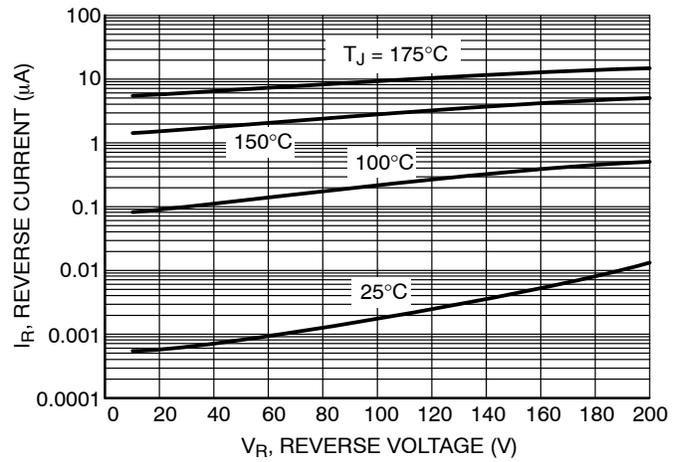


Figure 2. Typical Leakage Current\* (Per Leg)

\* The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these curves if  $V_R$  is sufficiently below rated  $V_R$ .

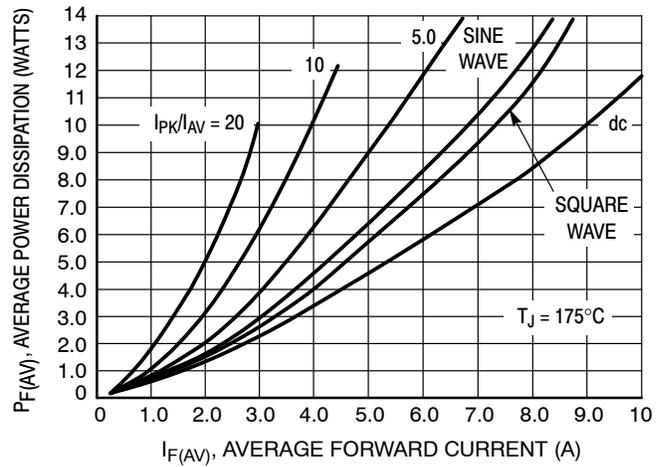


Figure 3. Average Power Dissipation (Per Leg)

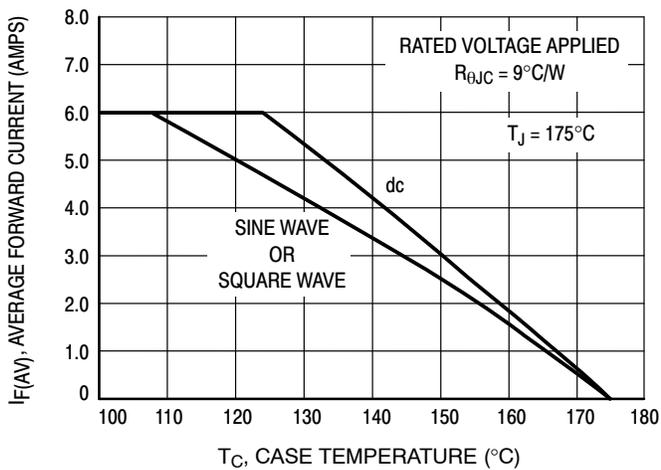


Figure 4. Current Derating, Case (Per Leg)

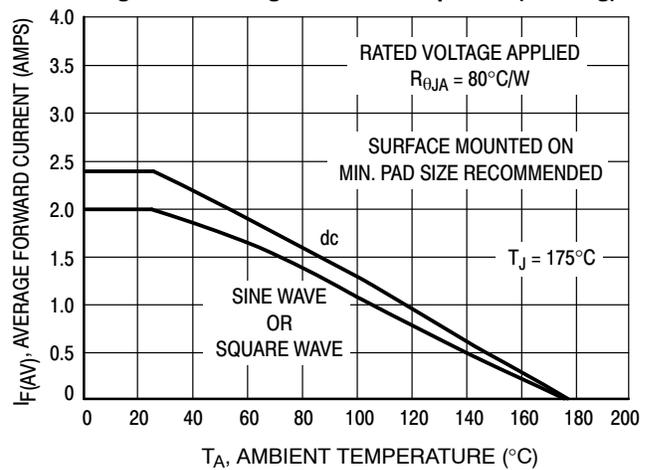


Figure 5. Current Derating, Ambient (Per Leg)

TYPICAL CHARACTERISTICS

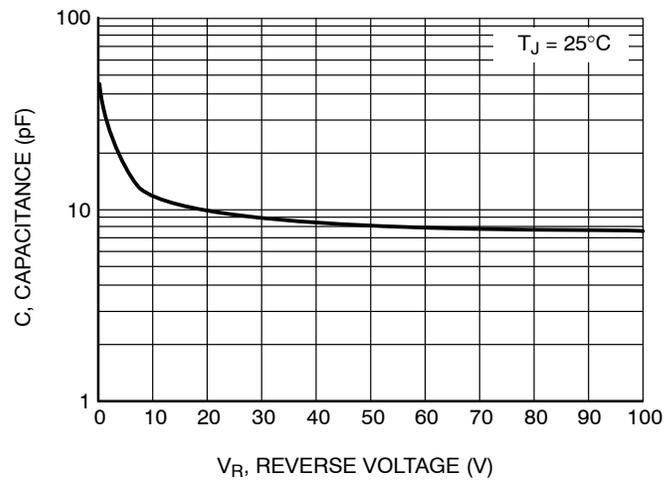
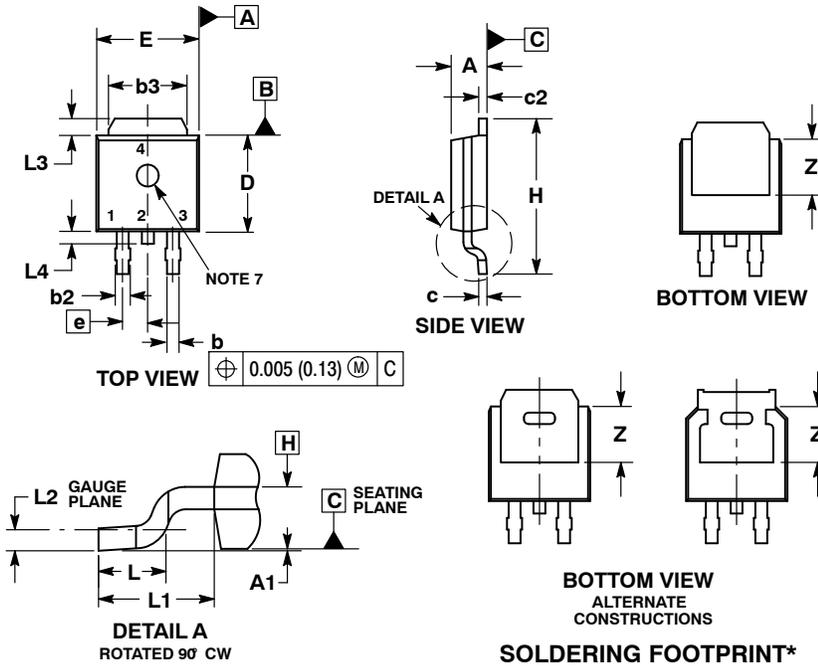


Figure 6. Typical Capacitance (Per Leg)

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## PACKAGE DIMENSIONS

### DPAK (SINGLE GAUGE) CASE 369C ISSUE F



**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3 and Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.006 INCHES PER SIDE.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
7. OPTIONAL MOLD FEATURE.

| DIM | INCHES    |       | MILLIMETERS |       |
|-----|-----------|-------|-------------|-------|
|     | MIN       | MAX   | MIN         | MAX   |
| A   | 0.086     | 0.094 | 2.18        | 2.38  |
| A1  | 0.000     | 0.005 | 0.00        | 0.13  |
| b   | 0.025     | 0.035 | 0.63        | 0.89  |
| b2  | 0.028     | 0.045 | 0.72        | 1.14  |
| b3  | 0.180     | 0.215 | 4.57        | 5.46  |
| c   | 0.018     | 0.024 | 0.46        | 0.61  |
| c2  | 0.018     | 0.024 | 0.46        | 0.61  |
| D   | 0.235     | 0.245 | 5.97        | 6.22  |
| E   | 0.250     | 0.265 | 6.35        | 6.73  |
| e   | 0.090 BSC |       | 2.29 BSC    |       |
| H   | 0.370     | 0.410 | 9.40        | 10.41 |
| L   | 0.055     | 0.070 | 1.40        | 1.78  |
| L1  | 0.114 REF |       | 2.90 REF    |       |
| L2  | 0.020 BSC |       | 0.51 BSC    |       |
| L3  | 0.035     | 0.050 | 0.89        | 1.27  |
| L4  | ---       | 0.040 | ---         | 1.01  |
| Z   | 0.155     | ---   | 3.93        | ---   |

SCALE 3:1 (mm/inches)

\*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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