

# Power Rectifier, Ultra-Fast Recovery, 1 A, 600 V

## MURA160, NRVUA160V, SURA8160

Ideally suited for high voltage, high frequency rectification, or as free wheeling and protection diodes in surface mount applications where compact size and weight are critical to the system.

### Features

- Small Compact Surface Mountable Package with J-Bend Leads
- Rectangular Package for Automated Handling
- High Temperature Glass Passivated Junction
- Low Forward Voltage Drop (1.05 V Max @ 1.0 A,  $T_J = 150^\circ\text{C}$ )
- NRVUA and SURA8 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

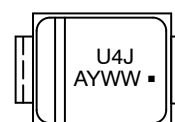
### Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 70 mg (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes:  $260^\circ\text{C}$  Max. for 10 Seconds
- Polarity: Polarity Band Indicates Cathode Lead
- ESD Protection:
  - ◆ Human Body Model > 4000 V (Class 3)
  - ◆ Charged Device Model > 1000 V



SMA  
CASE 403D

### MARKING DIAGRAM



U4J = Device Code  
 A = Assembly Location  
 Y = Year  
 WW = Work Week  
 ■ = Pb-Free Package

### ORDERING INFORMATION

| Device             | Package          | Shipping <sup>†</sup> |
|--------------------|------------------|-----------------------|
| MURA160T3G         | SMA<br>(Pb-Free) | 5,000/<br>Tape & Reel |
| NRVUA160VT3G*      |                  |                       |
| NRVUA160VT3G-GA01* |                  |                       |
| SURA8160T3G*       |                  |                       |

<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](http://www.onsemi.com/BRD8011/D).

# MURA160, NRVUA160V, SURA8160

## 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>$V_R$ | 600         | V                |
| Average Rectified Forward Current<br>@ $T_L = 145^\circ\text{C}$<br>@ $T_L = 110^\circ\text{C}$             | $I_{F(AV)}$                     | 1.0<br>2.0  | A                |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | $I_{FSM}$                       | 30          | A                |
| Operating Junction Temperature Range                                                                        | $T_J$                           | -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

| Characteristic                                                             | Symbol                   | Max | Unit               |
|----------------------------------------------------------------------------|--------------------------|-----|--------------------|
| Thermal Resistance, Junction-to-Lead ( $T_L = 25^\circ\text{C}$ ) (Note 1) | $\Psi_{iJL}$<br>(Note 2) | 24  | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 1)                           | $R_{\theta JA}$          | 216 |                    |
| Thermal Resistance, Junction-to-Case Top (Note 1)                          | $\Psi_{JCT}$             | 16  | $^\circ\text{C/W}$ |

- Rating applies when surface mounted on the minimum pad size recommended, PC Board FR-4.
- In compliance with JEDEC 51, these values (historically represented by  $R_{\theta JL}$ ) are now referenced as  $\Psi_{iJL}$ .

## ELECTRICAL CHARACTERISTICS

| Characteristic                                                                                                                                                | Symbol   | Max          | Unit          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|---------------|
| Maximum Instantaneous Forward Voltage (Note 3)<br>( $i_F = 1.0\text{ A}$ , $T_J = 25^\circ\text{C}$ )<br>( $i_F = 1.0\text{ A}$ , $T_J = 150^\circ\text{C}$ ) | $V_F$    | 1.25<br>1.05 | V             |
| Maximum Instantaneous Reverse Current (Note 3)<br>(Rated dc Voltage, $T_J = 25^\circ\text{C}$ )<br>(Rated dc Voltage, $T_J = 150^\circ\text{C}$ )             | $i_R$    | 5.0<br>150   | $\mu\text{A}$ |
| Maximum Reverse Recovery Time<br>( $i_F = 1.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ )                                                                 | $t_{rr}$ | 75           | 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.

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

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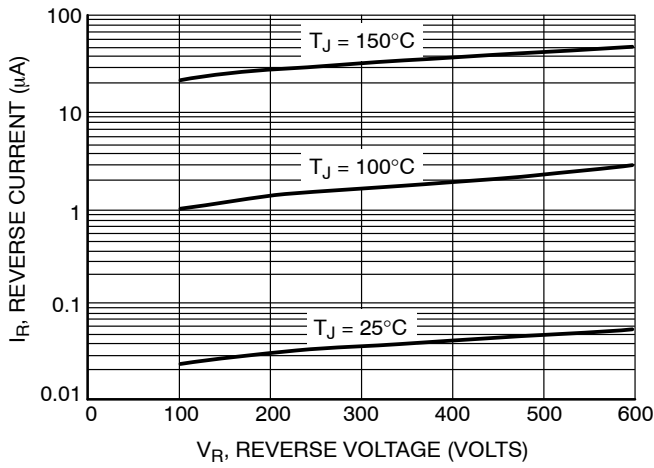


Figure 1. Typical Reverse Current

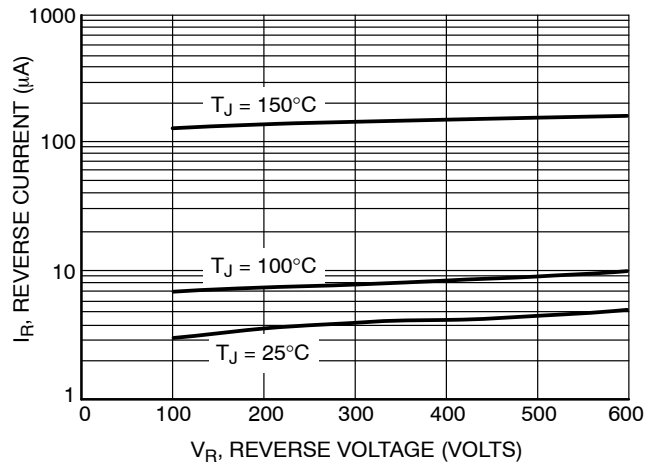


Figure 2. Maximum Reverse Current

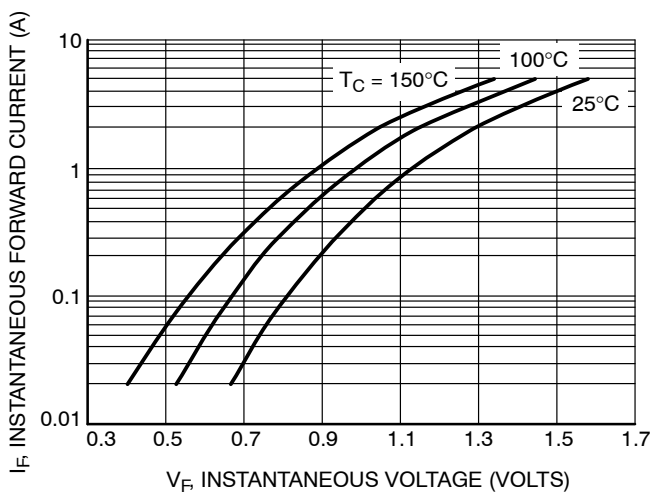


Figure 3. Typical Forward Voltage

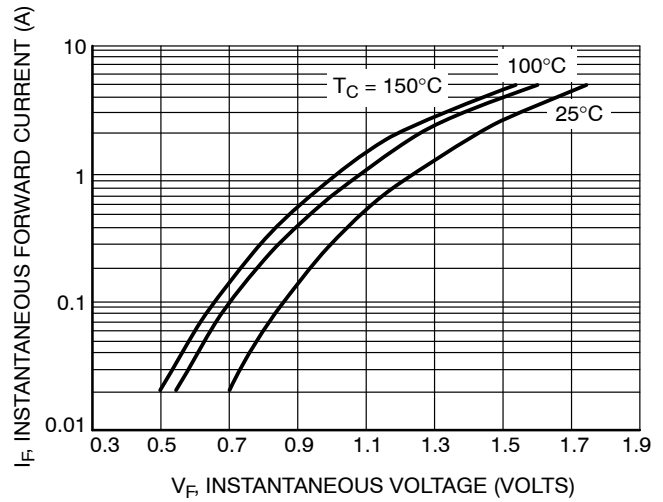
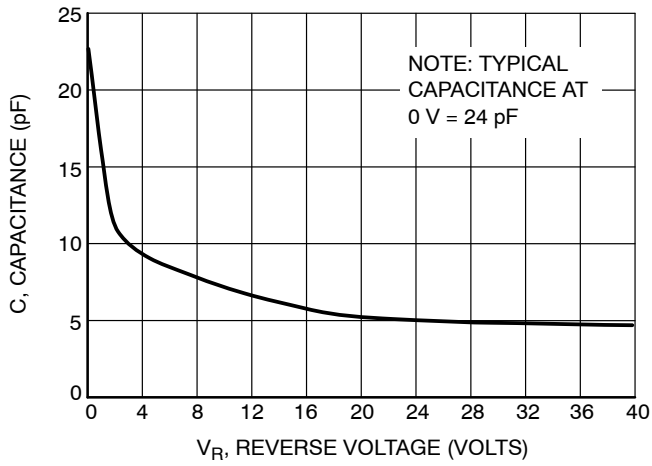
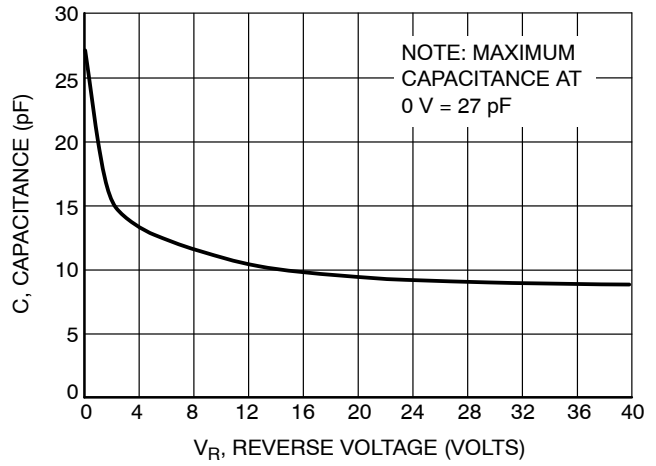


Figure 4. Maximum Forward Voltage

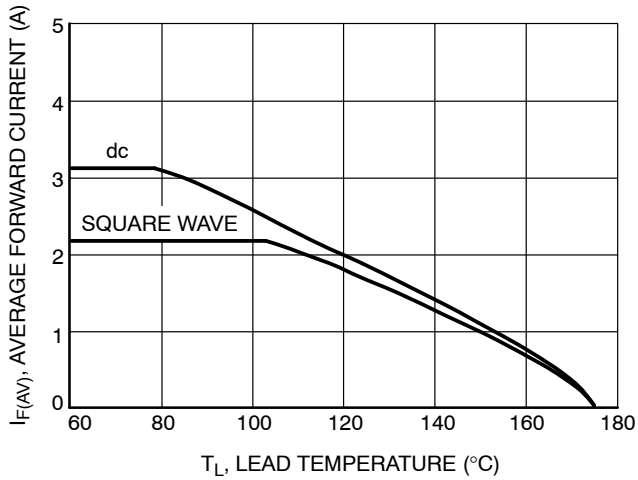
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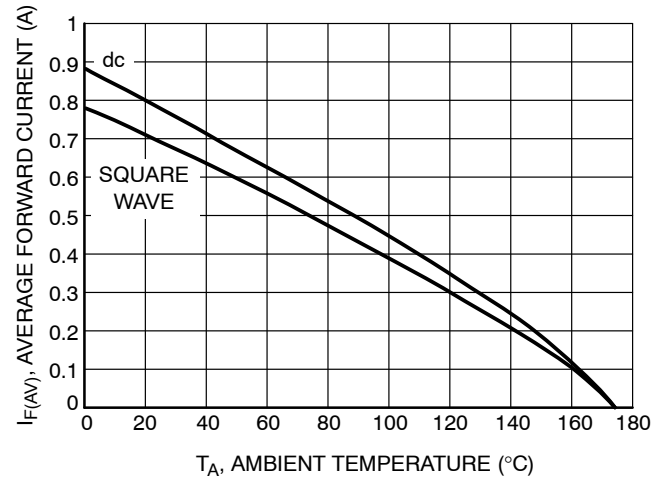
**Figure 5. Typical Capacitance**



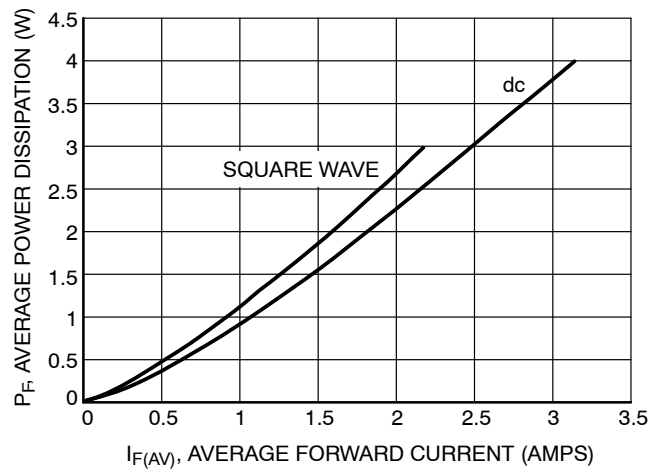
**Figure 6. Maximum Capacitance**



**Figure 7. Current Derating, Lead**



**Figure 8. Current Derating, Ambient  
(FR-4 Board with Minimum Pad)**



**Figure 9. Power Dissipation**

# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

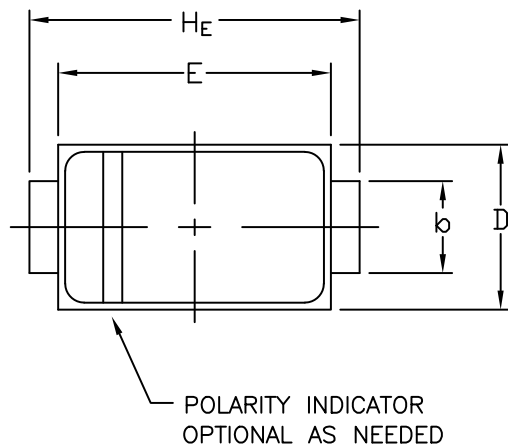


STYLE 1    STYLE 2

SCALE 1:1

## SMA CASE 403D ISSUE J

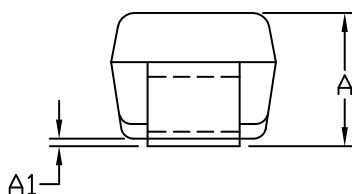
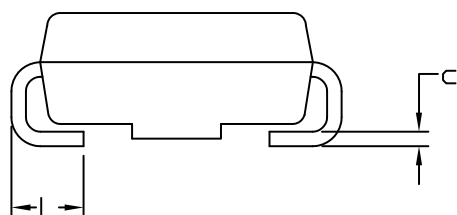
DATE 22 OCT 2021



### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCHES
3. DIMENSION  $b$  SHALL BE MEASURED WITHIN DIMENSION  $L$ .

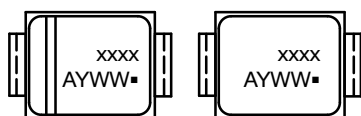
| DIM   | MILLIMETERS |      |      | INCHES |       |       |
|-------|-------------|------|------|--------|-------|-------|
|       | MIN.        | NOM. | MAX. | MIN.   | NOM.  | MAX.  |
| A     | 1.97        | 2.10 | 2.20 | 0.078  | 0.083 | 0.087 |
| A1    | 0.05        | 0.10 | 0.20 | 0.002  | 0.004 | 0.008 |
| $b$   | 1.27        | 1.45 | 1.63 | 0.050  | 0.057 | 0.064 |
| c     | 0.15        | 0.28 | 0.41 | 0.006  | 0.011 | 0.016 |
| D     | 2.29        | 2.60 | 2.92 | 0.090  | 0.103 | 0.115 |
| E     | 4.06        | 4.32 | 4.57 | 0.160  | 0.170 | 0.180 |
| $H_E$ | 4.83        | 5.21 | 5.59 | 0.190  | 0.205 | 0.220 |
| L     | 0.76        | 1.14 | 1.52 | 0.030  | 0.045 | 0.060 |



STYLE 1:  
PIN 1. CATHODE (POLARITY BAND)  
2. ANODE

STYLE 2:  
NO POLARITY

### GENERIC MARKING DIAGRAM\*

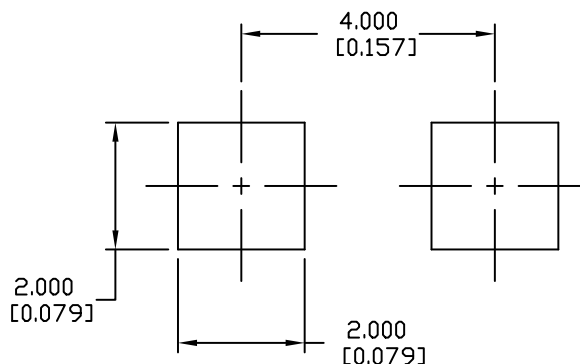


STYLE 1

STYLE 2

xxxx = Specific Device Code  
A = Assembly Location  
Y = Year  
WW = Work Week  
▪ = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.



### RECOMMENDED MOUNTING FOOTPRINT

|                  |             |                                                                                                                                                                                  |
|------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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