

# Power Rectifier, Ultra-Fast Recovery, 1 A, 300-400 V

## MURA130, SURA8130, MURA140, NRVUA140V, SURA8140

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 (0.89 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 (Class C5)

## ULTRAFAST RECTIFIERS 1 AMPERE, 300-400 VOLTS



SMA  
CASE 403D

### MARKING DIAGRAM



U4x = Device Code  
 x = F for MURA130  
     = G for MURA140  
 A = Assembly Location\*\*  
 Y = Year  
 WW = Work Week  
 ■ = 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>  |
|--------------------|------------------|------------------------|
| SURA8130T3G-VF01*  | SMA<br>(Pb-Free) | 5,000 / Tape<br>& Reel |
| SURA8130T3G-GA01*  |                  |                        |
| MURA140T3G         |                  |                        |
| NRVUA140VT3G*      |                  |                        |
| NRVUA140VT3G-GA01* |                  |                        |

### DISCONTINUED (Note 1)

|              |                  |                        |
|--------------|------------------|------------------------|
| MURA130T3G   | SMA<br>(Pb-Free) | 5,000 / Tape<br>& Reel |
| SURA8130T3G* |                  |                        |
| SURA8140T3G* |                  |                        |

<sup>†</sup>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](#).

1. **DISCONTINUED:** These devices are not recommended for new design. Please contact your onsemi representative for information. The most current information on these devices may be available on [www.onsemi.com](http://www.onsemi.com).

# MURA130, SURA8130, MURA140, NRVUA140V, SURA8140

## MAXIMUM RATINGS

| Symbol                          | Rating                                                                                                                                                                                                      | Value       | Unit             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------|
| $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage<br>MURA130T3G/SURA8130T3G/SURA8130T3G-VF01/SURA8130T3G-GA01<br>MURA140T3G/SURA8140T3G/NRVUA140VT3G/NRVUA140VT3G-GA01 | 300<br>400  | V                |
| $I_{F(AV)}$                     | Average Rectified Forward Current<br>@ $T_L = 150^\circ\text{C}$<br>@ $T_L = 125^\circ\text{C}$                                                                                                             | 1.0<br>2.0  | A                |
| $I_{FSM}$                       | Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)                                                                                                 | 35          | A                |
| $T_J$                           | Operating Junction Temperature Range                                                                                                                                                                        | -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

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

## ELECTRICAL CHARACTERISTICS

| Symbol   | Characteristic                                                                                                                                                | Max         | Unit          |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------|
| $V_F$    | Maximum Instantaneous Forward Voltage (Note 3)<br>( $I_F = 1.0\text{ A}$ , $T_J = 25^\circ\text{C}$ )<br>( $I_F = 1.0\text{ A}$ , $T_J = 150^\circ\text{C}$ ) | 1.1<br>0.89 | V             |
| $i_R$    | Maximum Instantaneous Reverse Current (Note 3)<br>(Rated DC Voltage, $T_J = 25^\circ\text{C}$ )<br>(Rated DC Voltage, $T_J = 150^\circ\text{C}$ )             | 5.0<br>150  | $\mu\text{A}$ |
| $t_{rr}$ | Maximum Reverse Recovery Time<br>( $I_F = 1.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ )                                                                 | 65          | 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  $\leq 2.0\%$ .

TYPICAL CHARACTERISTICS

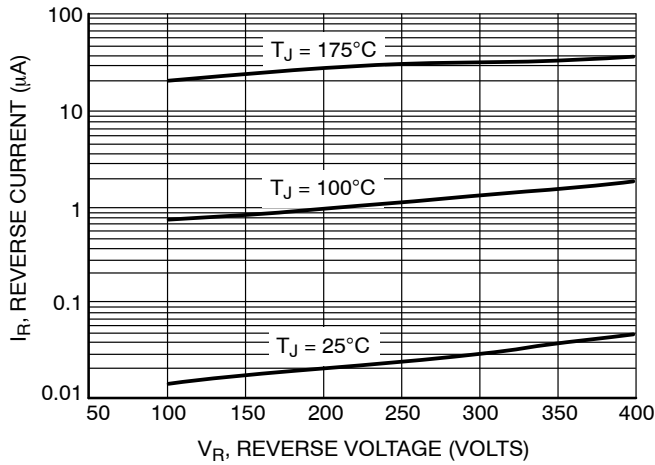


Figure 1. Typical Reverse Current

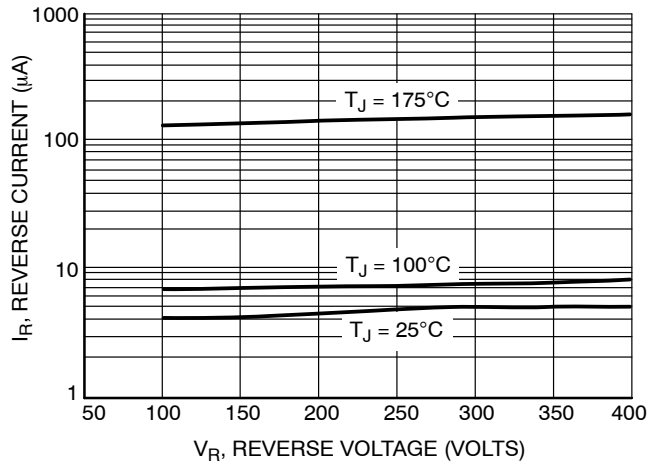


Figure 2. Maximum Reverse Current

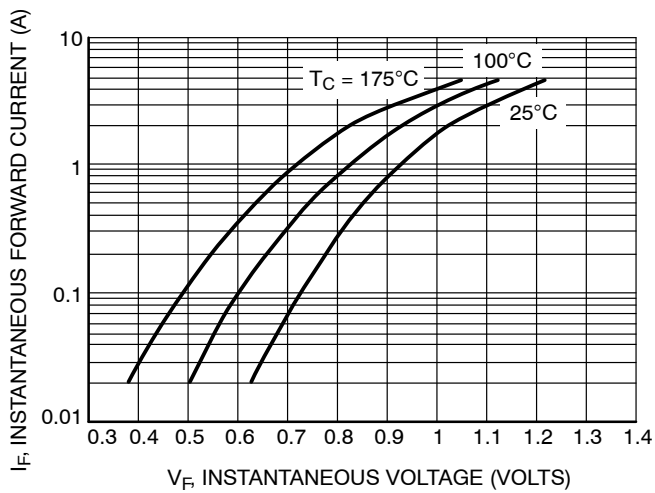


Figure 3. Typical Forward Voltage

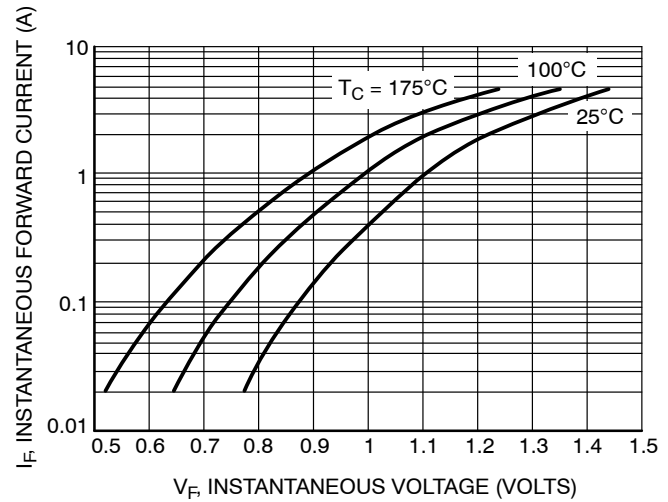


Figure 4. Maximum Forward Voltage

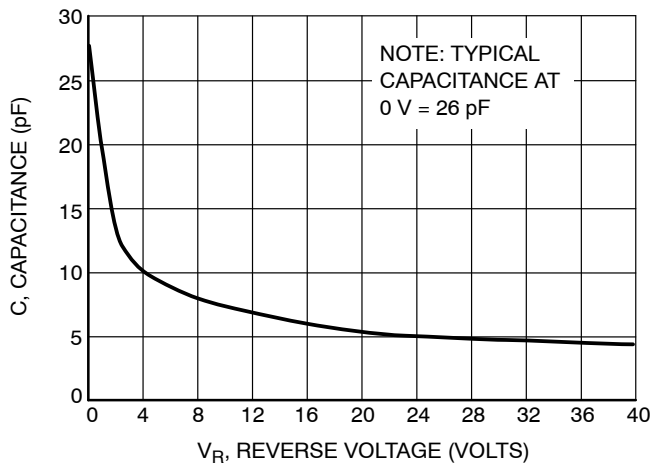


Figure 5. Typical Capacitance

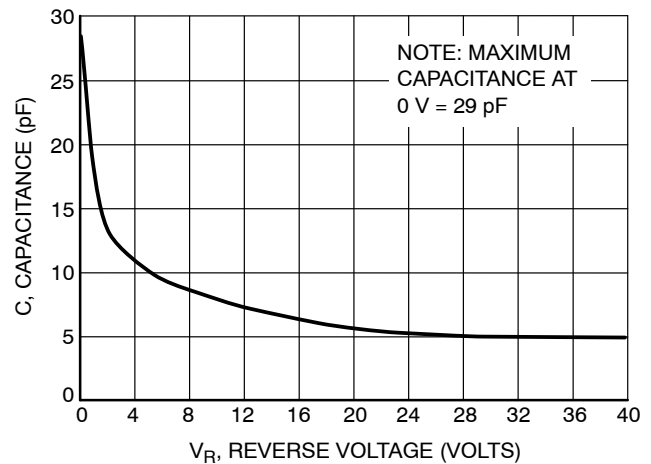


Figure 6. Maximum Capacitance

TYPICAL CHARACTERISTICS (continued)

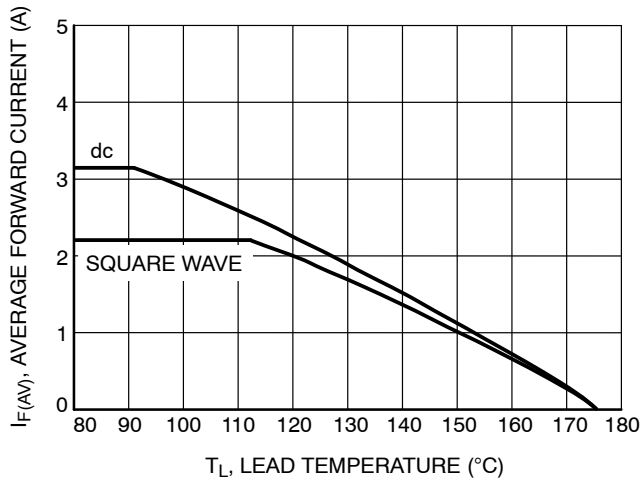


Figure 7. Current Derating, Lead

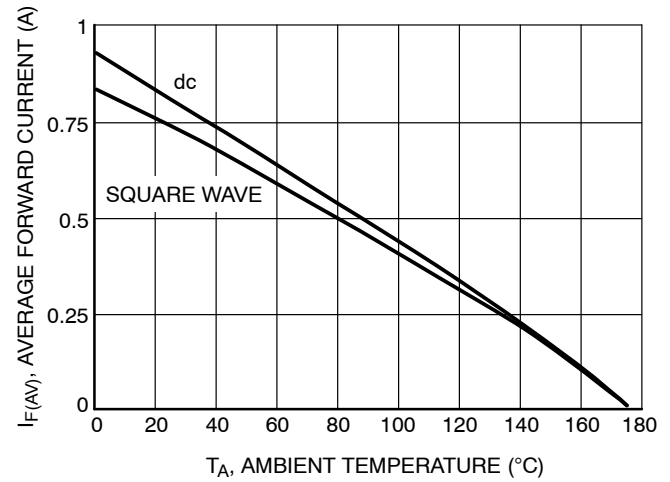


Figure 8. Current Derating, Ambient  
(FR-4 Board with Minimum Pad)

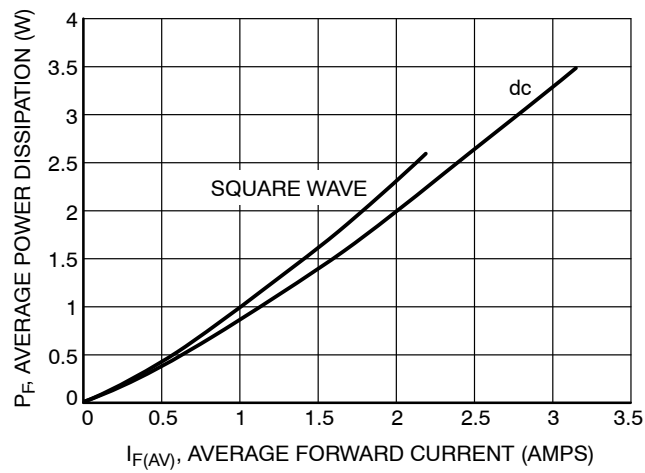


Figure 9. Power Dissipation



STYLE 1

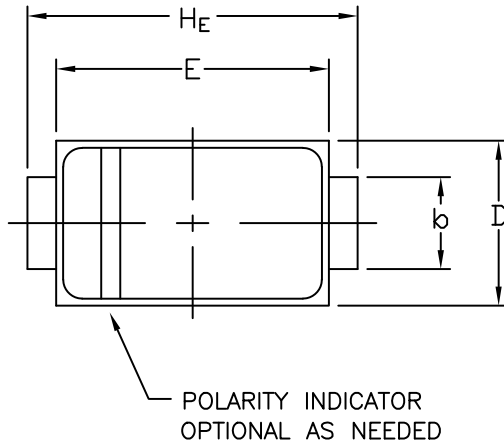


STYLE 2

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\*

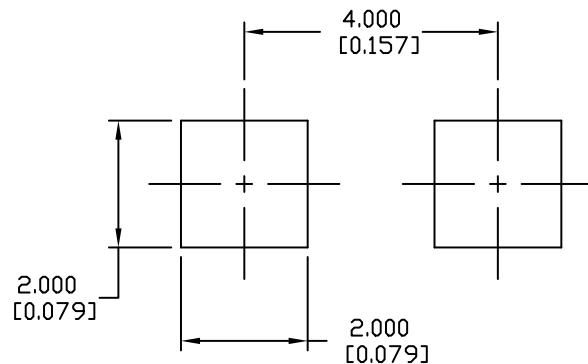


STYLE 1

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

|                         |                    |                                                                                                                                                                                  |
|-------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DOCUMENT NUMBER:</b> | <b>98AON04079D</b> | Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| <b>DESCRIPTION:</b>     | <b>SMA</b>         | <b>PAGE 1 OF 1</b>                                                                                                                                                               |

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

### ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at  
[www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)