

# MURA215T3G, SURA8215T3G, MURA220T3G, SURA8220T3G

Preferred Devices

## Surface Mount Ultrafast Power Rectifiers

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 (0.77 V Max @ 2.0 A,  $T_J = 150^\circ\text{C}$ )
- Low Forward Voltage Drop (0.71 V Max @ 1.0 A,  $T_J = 150^\circ\text{C}$ )
- AEC-Q101 Qualified and PPAP Capable
- SURAS Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- All Packages are Pb-Free\*

### 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)
  - ◆ Machine Model > 400 V (Class C)



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## ULTRAFAST RECTIFIERS 2 AMPERES, 150–200 VOLTS



SMA  
CASE 403D  
PLASTIC

### MARKING DIAGRAM



U5x = Device Code  
x = C for MURA215T3  
= D for MURA220T3  
A = Assembly Location  
Y = Year  
WW = Work Week  
■ = Pb-Free Package

### ORDERING INFORMATION

| Device      | Package          | Shipping†         |
|-------------|------------------|-------------------|
| MURA215T3G  | SMA<br>(Pb-Free) | 5,000/Tape & Reel |
| SURA8215T3G | SMA<br>(Pb-Free) | 5,000/Tape & Reel |
| MURA220T3G  | SMA<br>(Pb-Free) | 5,000/Tape & Reel |
| SURA8220T3G | SMA<br>(Pb-Free) | 5,000/Tape & Reel |

†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.

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

Preferred devices are recommended choices for future use and best overall value.

# MURA215T3G, SURA8215T3G, MURA220T3G, SURA8220T3G

## MAXIMUM RATINGS

| Rating                                                                                                                                     | Symbol                          | Value       | Unit             |
|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage<br>MURA215T3G/SURA8215T3G<br>MURA220T3G/SURA8220T3G | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 150<br>200  | V                |
| Average Rectified Forward Current<br>@ $T_L = 155^\circ\text{C}$<br>@ $T_L = 135^\circ\text{C}$                                            | $I_{F(AV)}$                     | 1.0<br>2.0  | A                |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)                                | $I_{FSM}$                       | 40          | A                |
| Operating Junction Temperature Range                                                                                                       | $T_J$                           | -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

| 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 |                    |

- 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>( $I_F = 2.0\text{ A}$ , $T_J = 25^\circ\text{C}$ )<br>( $I_F = 2.0\text{ A}$ , $T_J = 150^\circ\text{C}$ ) | $V_F$    | 0.95<br>0.77 | V             |
| Maximum Instantaneous Reverse Current (Note 3)<br>(Rated DC Voltage, $T_J = 25^\circ\text{C}$ )<br>(Rated DC Voltage, $T_J = 150^\circ\text{C}$ )             | $i_R$    | 2.0<br>50    | $\mu\text{A}$ |
| Maximum Reverse Recovery Time<br>( $I_F = 1.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ )                                                                 | $t_{rr}$ | 35           | ns            |

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

# MURA215T3G, SURA8215T3G, MURA220T3G, SURA8220T3G

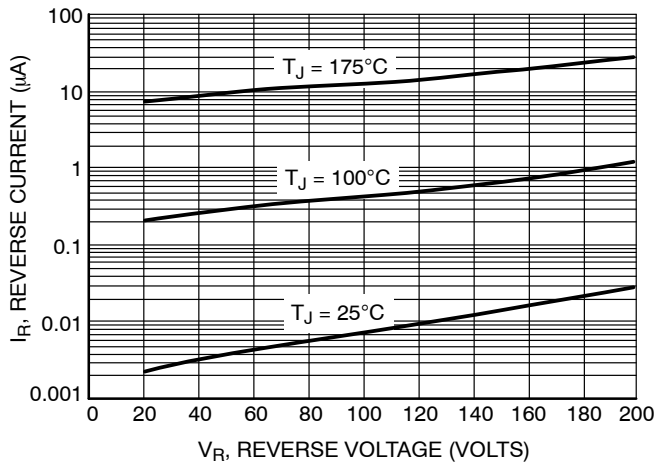


Figure 1. Typical Reverse Current

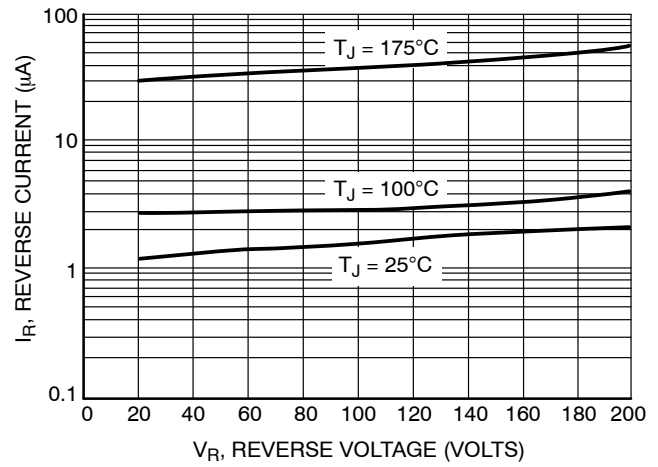


Figure 2. Maximum Reverse Current

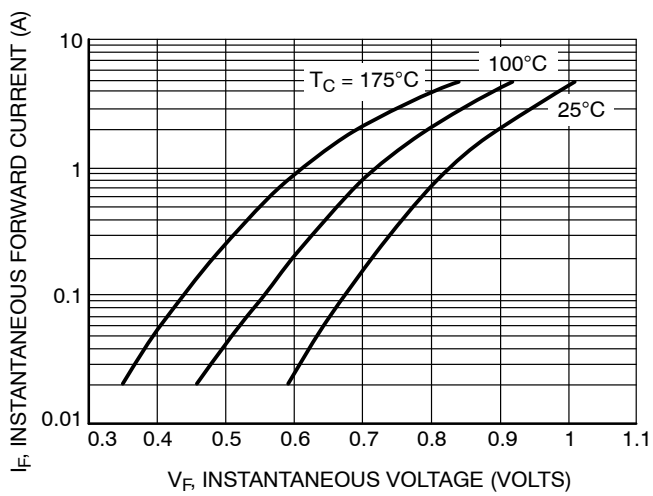


Figure 3. Typical Forward Voltage

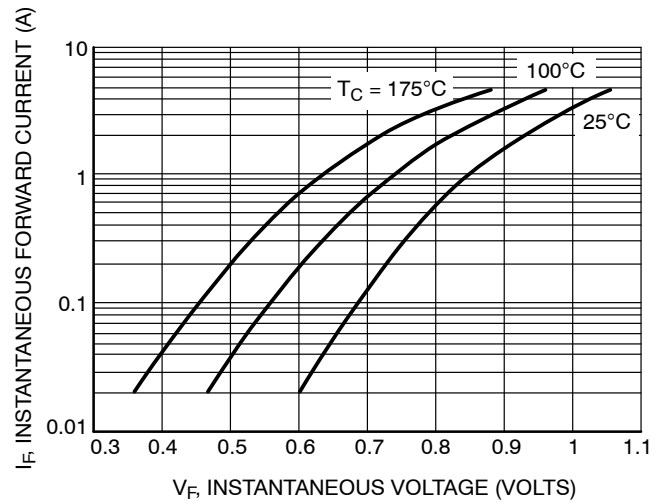
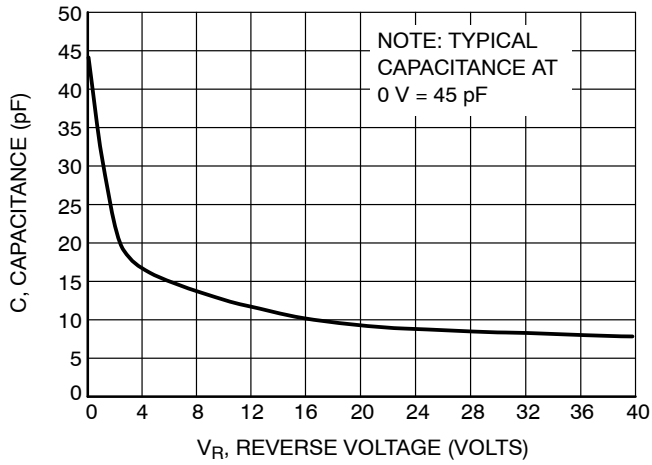
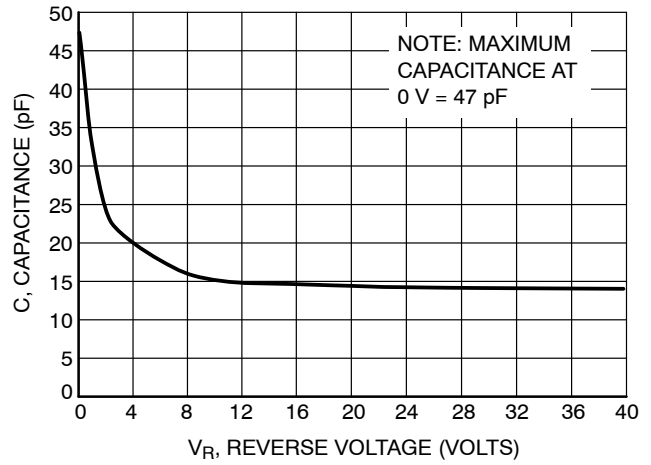


Figure 4. Maximum Forward Voltage

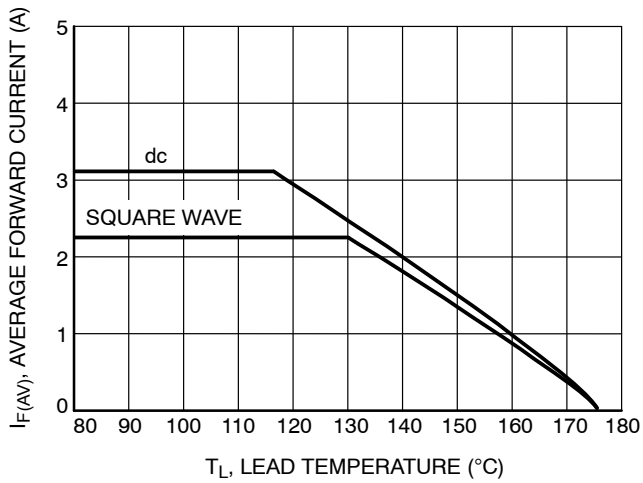
# MURA215T3G, SURA8215T3G, MURA220T3G, SURA8220T3G



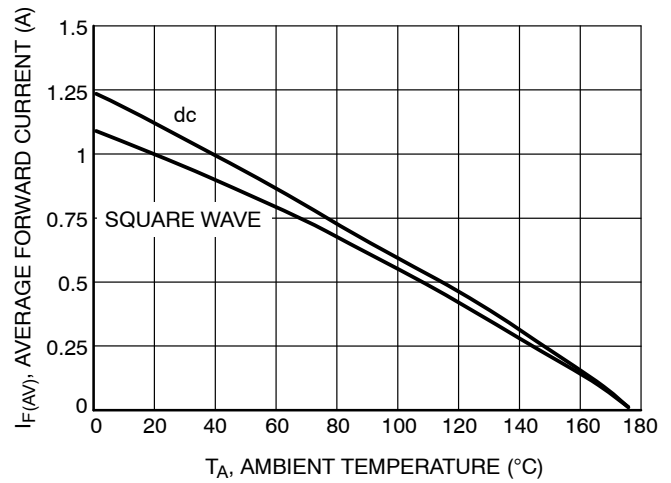
**Figure 5. Typical Capacitance**



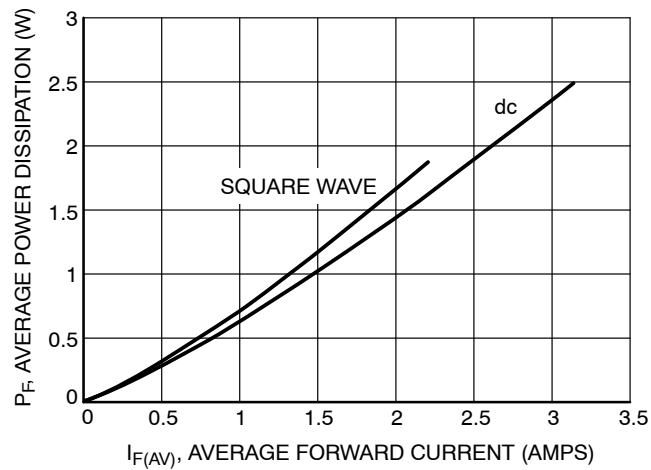
**Figure 6. Maximum Capacitance**



**Figure 7. Current Derating, Lead**



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

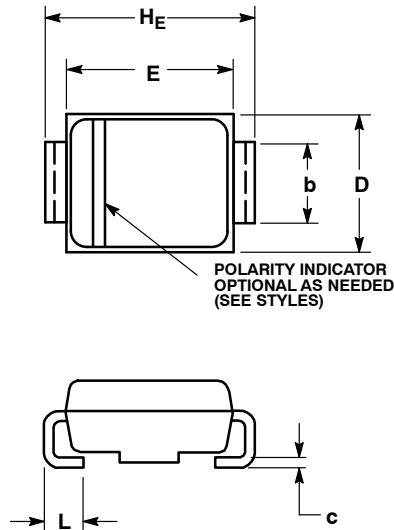


**Figure 9. Power Dissipation**

# MURA215T3G, SURA8215T3G, MURA220T3G, SURA8220T3G

## PACKAGE DIMENSIONS

### SMA CASE 403D-02 ISSUE F



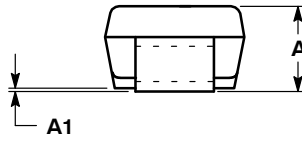
#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 403D-01 OBSOLETE, NEW STANDARD IS 403D-02.

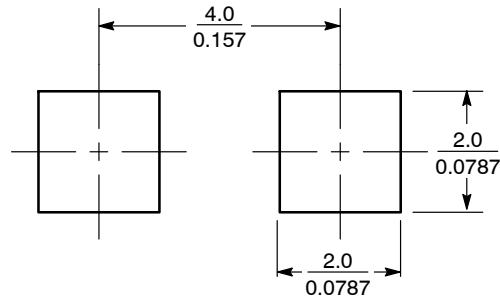
| DIM | MILLIMETERS |      |      | INCHES |       |       |
|-----|-------------|------|------|--------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN    | NOM   | MAX   |
| A   | 1.97        | 2.10 | 2.20 | 0.078  | 0.083 | 0.087 |
| A1  | 0.05        | 0.10 | 0.15 | 0.002  | 0.004 | 0.006 |
| 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 |
| HE  | 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:

1. CATHODE (POLARITY BAND)
2. ANODE



### SOLDERING FOOTPRINT\*



SCALE 8:1 (mm/inches)

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

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MURA215T3/D

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