# MURS230T3G,
# NRVUS230T3G,
# MURS240T3G,
# NRVUS240T3G

# 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 (0.95 Volts Max @ 2.0 A, $T_J = 150°C$)
- NRVUS and SURS8 Prefixes for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free and are RoHS Compliant

## Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 95 mg (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
- Polarity: Polarity Band Indicates Cathode Lead
- ESD Rating:
  - Human Body Model = 3A (> 4 kV)
  - Machine Model = C (> 400 V)

## ON Semiconductor®

## ULTRAFAST RECTIFIERS
## 2 AMPERES, 300−400 VOLTS



**SMB**
**CASE 403A**

## MARKING DIAGRAM



AYWW
U2x ▪
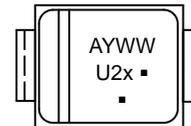
| | | |
|---|---|---|
| A | = | Assembly Location |
| Y | = | Year |
| WW | = | Work Week |
| U2x | = | Device Code |
| | | x= F for MURS230T3 |
| | | = G for MURS240T3 |
| ▪ | = | Pb−Free Package |

(Note: Microdot may be in either location)

## ORDERING INFORMATION

| Device | Package | Shipping† |
|---|---|---|
| MURS230T3G | SMB (Pb−Free) | 2,500 / Tape & Reel |
| NRVUS230T3G,- NRVUS230VT3G | SMB (Pb−Free) | 2,500 / Tape & Reel |
| MURS240T3G | SMB (Pb−Free) | 2,500 / Tape & Reel |
| NRVUS240T3G, NRVUS240VT3G | SMB (Pb−Free) | 2,500 / 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.

**MAXIMUM RATINGS**

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage<br>    MURS230T3G/NRVUS230T3G<br>    MURS240T3G/NRVUS240T3G | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$<br><br>300<br>400 |  | V |
| Average Rectified Forward Current<br>    @ $T_L$ = 150°C<br>    @ $T_L$ = 125°C | $I_{F(AV)}$ | <br>1.0<br>2.0 | A |
| Non–Repetitive Peak Surge Current<br>   (Surge applied at rated load conditions halfwave, single phase, 60 Hz) | $I_{FSM}$ | 35 | A |
| Operating Junction Temperature Range | $T_J$ | −65 to +175 | °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**

| Rating | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance, Junction–to–Lead ($T_L$ = 25°C) | $R_{\theta JL}$ | 13 | °C/W |

**ELECTRICAL CHARACTERISTICS**

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Maximum Instantaneous Forward Voltage (Note 1)<br>   ($i_F$ = 2.0 A, $T_J$ = 25°C)<br>   ($i_F$ = 2.0 A, $T_J$ = 150°C) | $v_F$ | <br>1.30<br>1.05 | V |
| Maximum Instantaneous Reverse Current (Note 1)<br>   (Rated DC Voltage, $T_J$ = 25°C)<br>   (Rated DC Voltage, $T_J$ = 150°C) | $i_R$ | <br>5.0<br>150 | μA |
| Maximum Reverse Recovery Time<br>   ($i_F$ = 1.0 A, di/dt = 50 A/μs)<br>   ($i_F$ = 0.5 A, $i_R$ = 1.0 A, $I_R$ to 0.25 A) | $t_{rr}$ | <br>65<br>50 | ns |
| Maximum Forward Recovery Time<br>   ($i_F$ = 1.0 A, di/dt = 100 A/μs, Rec. to 1.0 V) | $t_{fr}$ | <br>50 | 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.
1.  Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.
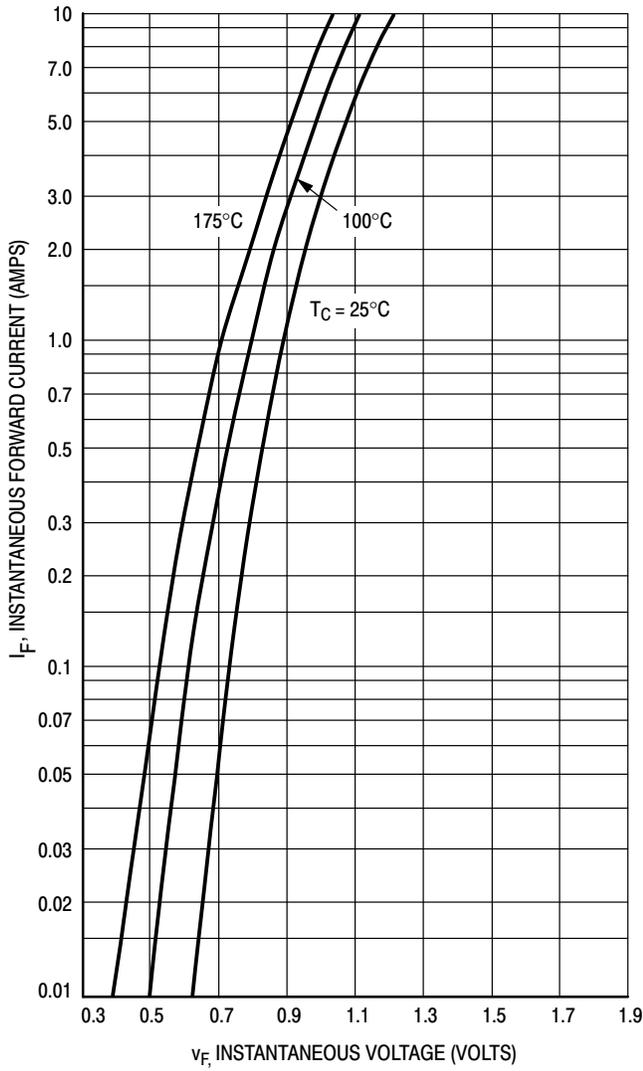
**Figure 1. Typical Forward Voltage**
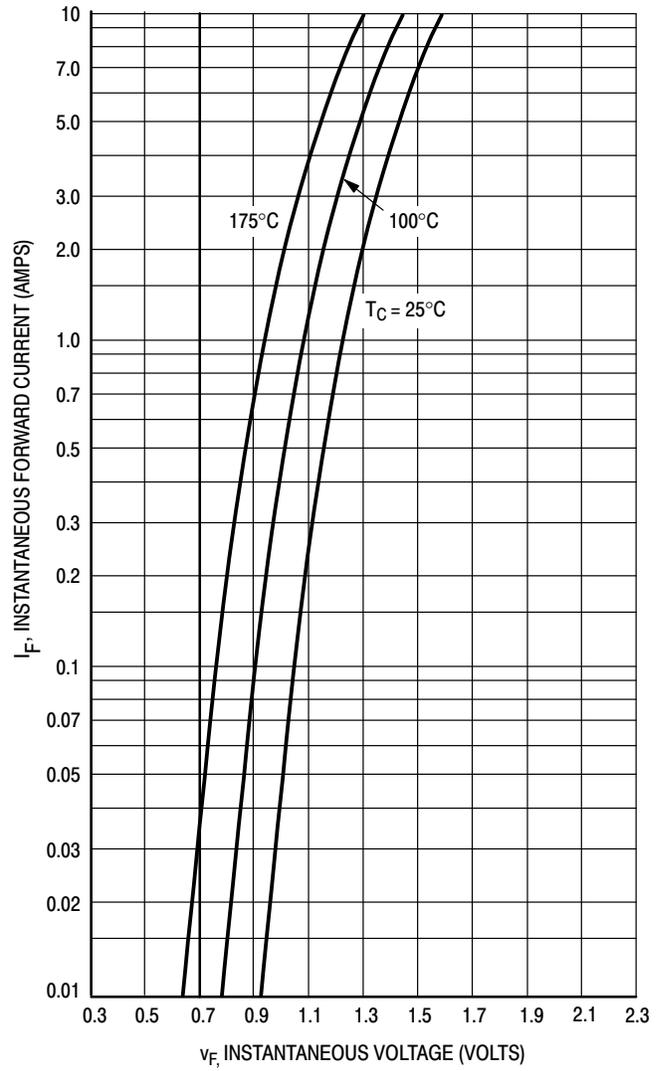


**Figure 2. Maximum Forward Voltage**
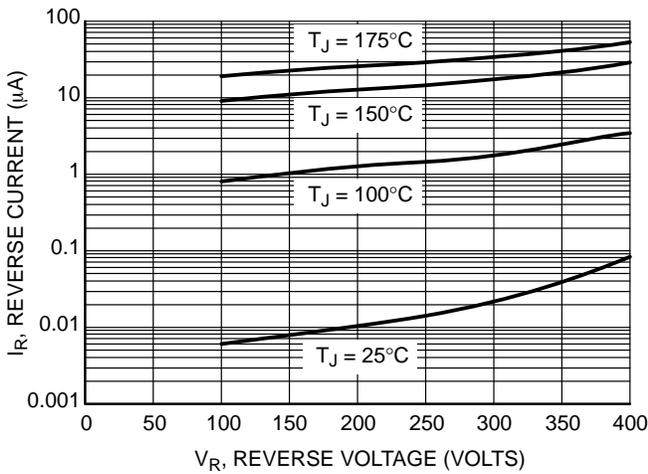


**Figure 3. Typical Reverse Current***



**Figure 4. Maximum Reverse Current for
MURS230T3G, NRVUS230T3G**

\* 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 same curves if applied $V_R$ is sufficiently below rated $V_R$.

# MURS230T3G, NRVUS230T3G, MURS240T3G, NRVUS240T3G
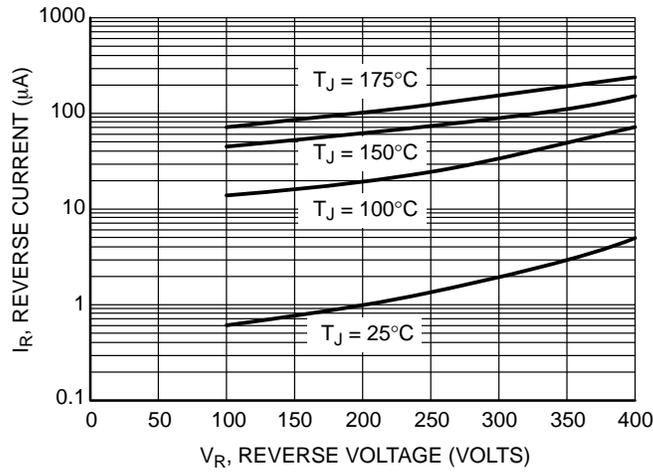


**Figure 5. Maximum Reverse Current for
MURS240T3G, NRVUS240T3G**
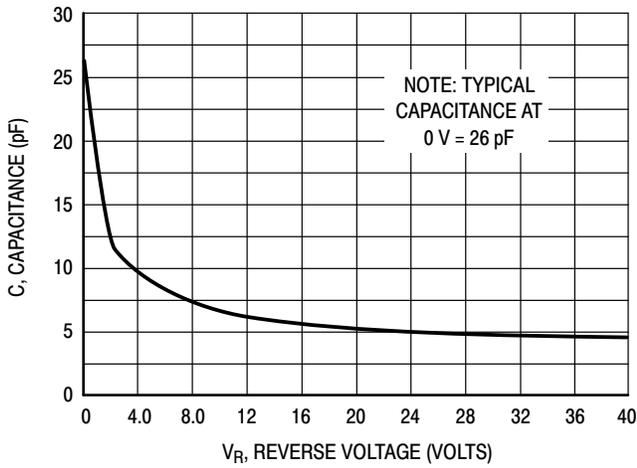


**Figure 6. Typical Capacitance**
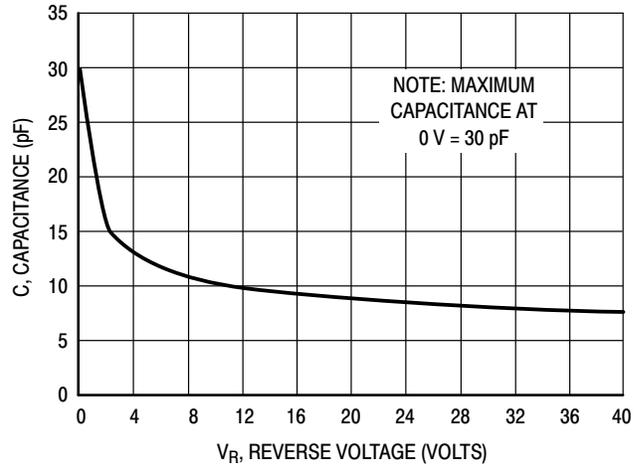


**Figure 7. Maximum Capacitance**
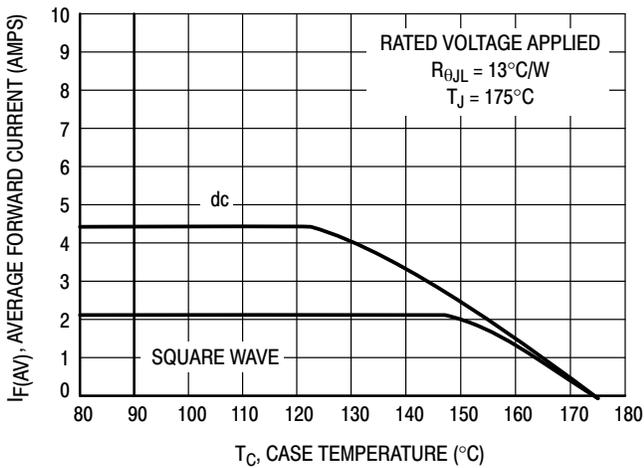


**Figure 8. Current Derating, Case**
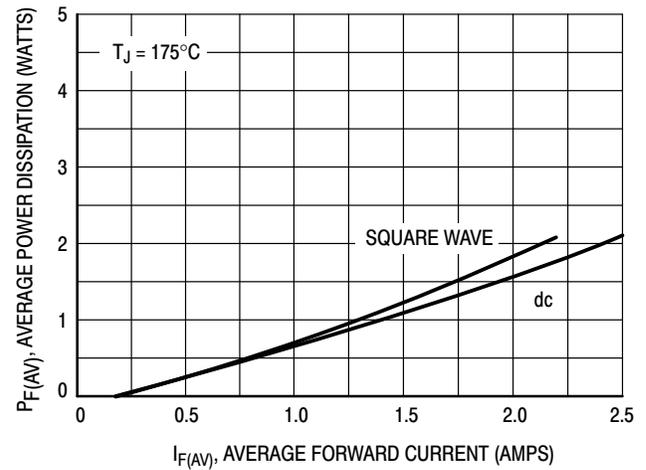


**Figure 9. Power Dissipation**

# MURS230T3G, NRVUS230T3G, MURS240T3G, NRVUS240T3G

## PACKAGE DIMENSIONS

**SMB**
CASE 403A–03
ISSUE J

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-----|-----|-----|-----|-----|-----|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 1.95 | 2.30 | 2.47 | 0.077 | 0.091 | 0.097 |
| A1 | 0.05 | 0.10 | 0.20 | 0.002 | 0.004 | 0.008 |
| b | 1.96 | 2.03 | 2.20 | 0.077 | 0.080 | 0.087 |
| c | 0.15 | 0.23 | 0.31 | 0.006 | 0.009 | 0.012 |
| D | 3.30 | 3.56 | 3.95 | 0.130 | 0.140 | 0.156 |
| E | 4.06 | 4.32 | 4.60 | 0.160 | 0.170 | 0.181 |
| H$_E$ | 5.21 | 5.44 | 5.60 | 0.205 | 0.214 | 0.220 |
| L | 0.76 | 1.02 | 1.60 | 0.030 | 0.040 | 0.063 |
| L1 | 0.51 REF | | | 0.020 REF | | |

**POLARITY INDICATOR OPTIONAL AS NEEDED**

## SOLDERING FOOTPRINT*

$\frac{2.261}{0.089}$

$\frac{2.743}{0.108}$

$\frac{2.159}{0.085}$

SCALE 8:1  $\left(\frac{mm}{inches}\right)$

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

**MURS230T3/D**

**SMB**
CASE 403A–03
ISSUE J

DATE 19 JUL 2012
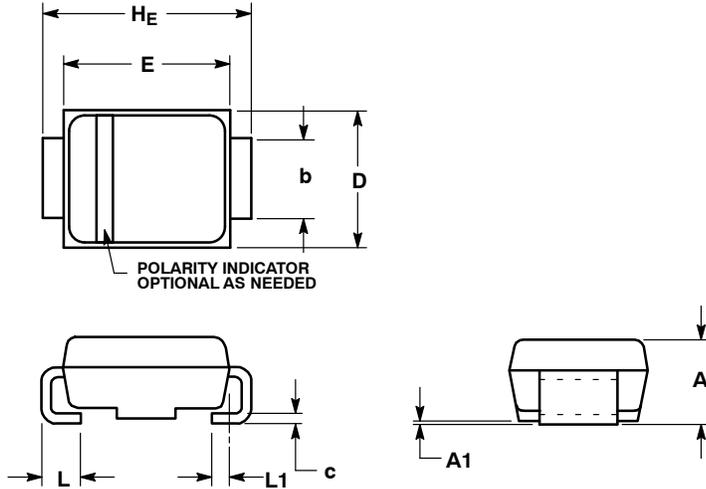
**SCALE 1:1**
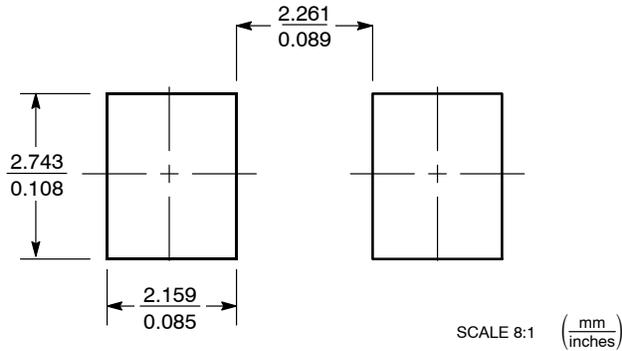
**Polarity Band**

**SCALE 1:1**

**Non–Polarity Band**

POLARITY INDICATOR
OPTIONAL AS NEEDED

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION b SHALL BE MEASURED WITHIN DIMENSION L1.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-----|-----|-----|-----|-----|-----|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 1.95 | 2.30 | 2.47 | 0.077 | 0.091 | 0.097 |
| A1 | 0.05 | 0.10 | 0.20 | 0.002 | 0.004 | 0.008 |
| b | 1.96 | 2.03 | 2.20 | 0.077 | 0.080 | 0.087 |
| c | 0.15 | 0.23 | 0.31 | 0.006 | 0.009 | 0.012 |
| D | 3.30 | 3.56 | 3.95 | 0.130 | 0.140 | 0.156 |
| E | 4.06 | 4.32 | 4.60 | 0.160 | 0.170 | 0.181 |
| H_E | 5.21 | 5.44 | 5.60 | 0.205 | 0.214 | 0.220 |
| L | 0.76 | 1.02 | 1.60 | 0.030 | 0.040 | 0.063 |
| L1 | 0.51 REF | | | 0.020 REF | | |

## GENERIC
## MARKING DIAGRAM*

AYWW
XXXXX▪
▪

AYWW
XXXXX▪
▪

**Polarity Band**    **Non–Polarity Band**
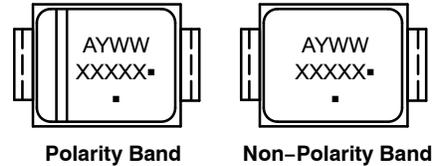
XXXXX = Specific Device Code
A     = Assembly Location
Y     = Year
WW    = Work Week
▪     = Pb–Free Package
(Note: Microdot may be in either location)

*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.

## SOLDERING FOOTPRINT*

2.261
0.089

2.743
0.108

2.159
0.085

SCALE 8:1    $\left(\dfrac{mm}{inches}\right)$

*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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|---|---|---|---|
| DESCRIPTION: | SMB | | PAGE 1 OF 1 |

## PUBLICATION ORDERING INFORMATION

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Authorized Distributor

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[NRVUS240VT3G](#)