

600 V, 1.0 A Ultrafast Rectifier

MURHS160T3, NRVUHS160V, SURHS8160

Features and Benefits

- Ultrafast 35 Nanosecond Recovery Times
- 175°C Operating Junction Temperature
- High Temperature Glass Passivated Junction
- High Voltage Capability to 600 V
- NRVUHS and SURHS8 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

Applications

- Power Supplies
- Inverters
- Free Wheeling Diodes

Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 95 mg (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Cathode Polarity Band

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|---------------------------------|------------------|------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 600 | V |
| Average Rectified Forward Current (Rated V_R , $T_L = 145^\circ\text{C}$) | $I_{F(AV)}$ | 1.0 | A |
| Nonrepetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | I_{FSM} | 15 | A |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | -65 to +175 | °C |
| ESD Ratings: Charged Device Model Human Body Model = 3B | | > 1000 > 8000 | V |

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.

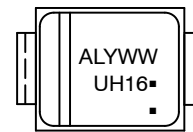
ULTRAFAST RECTIFIER 1.0 AMPERES 600 VOLTS



SMB
CASE 403A
PLASTIC



MARKING DIAGRAM



- UH16 = Specific Device Code
 - AL = Assembly Location
 - Y = Year
 - WW = Work Week
 - = Pb-Free Package
- (Note: Microdot may be in either location)

ORDERING INFORMATION

| Device | Package | Shipping† |
|---|------------------|------------------------|
| MURHS160T3G NRVUHS160VT3G NRVUHS160VT3G-GA01 SURHS8160T3G SURHS8160T3G-GA01 | 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](#).

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THERMAL CHARACTERISTICS

| Rating | Symbol | Value | Unit |
|--|-----------------|-------|------|
| Maximum Thermal Resistance, Junction-to-Lead (Note 1) | $R_{\theta JL}$ | 24 | °C/W |
| Maximum Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 80 | °C/W |

1. Mounted with minimum recommended pad size, PC Board FR4.
2. 1 inch square pad size (1 x 0.5 inch for each lead) on FR4 board.

ELECTRICAL CHARACTERISTICS

| Rating | Symbol | Typ | Max | Unit |
|--|----------|-------------|------------|---------------|
| Maximum Instantaneous Forward Voltage (Note 3) ($I_F = 1.0\text{ A}$, $T_C = 25^\circ\text{C}$) ($I_F = 1.0\text{ A}$, $T_C = 125^\circ\text{C}$) | V_F | 1.5 1.2 | 2.4 1.7 | V |
| Maximum Instantaneous Reverse Current (Note 3) (Rated dc Voltage, $T_C = 25^\circ\text{C}$) (Rated dc Voltage, $T_C = 125^\circ\text{C}$) | I_R | 0.18 5.0 | 20 200 | μA |
| Maximum Reverse Recovery Time ($I_F = 1.0\text{ A}$, $di/dt = 50\text{ A}/\mu\text{s}$) ($I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{REC} = 0.25\text{ A}$) | t_{rr} | 25 16 | 35 30 | 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.

3. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

TYPICAL CHARACTERISTICS

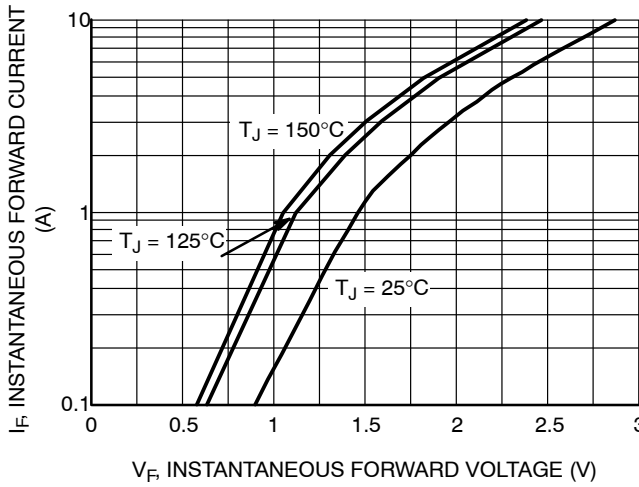


Figure 1. Typical Forward Voltage

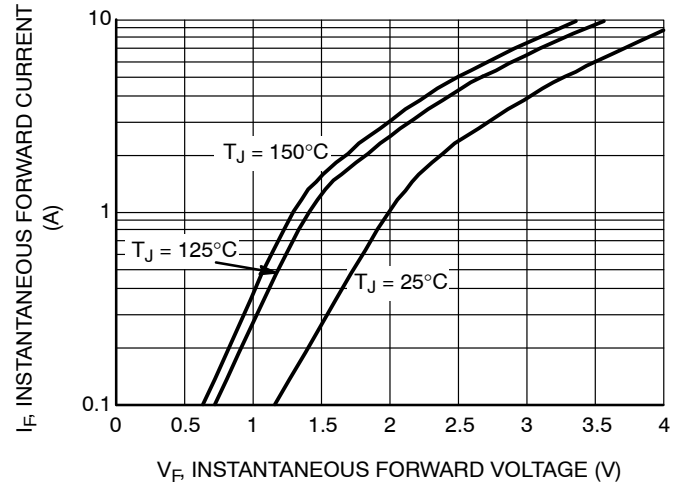


Figure 2. Maximum Forward Voltage

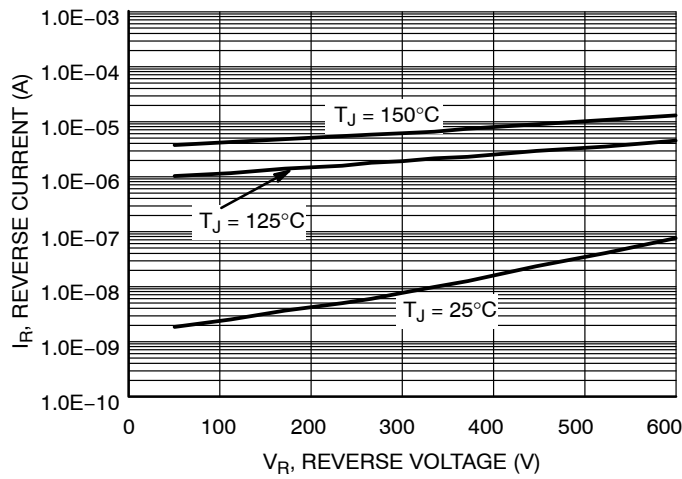


Figure 3. Typical Reverse Current

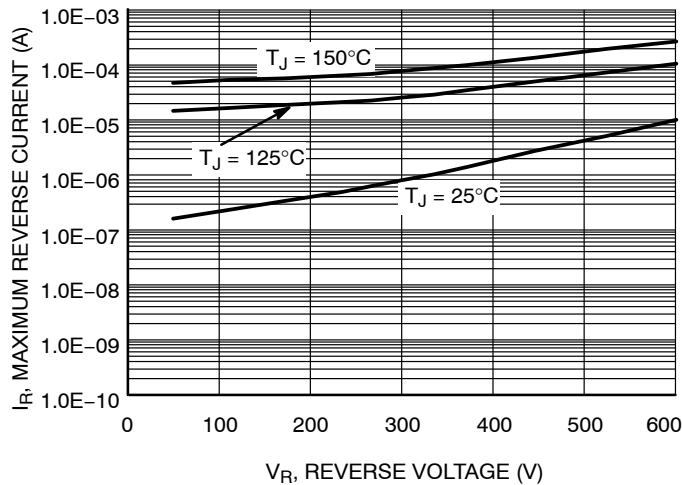
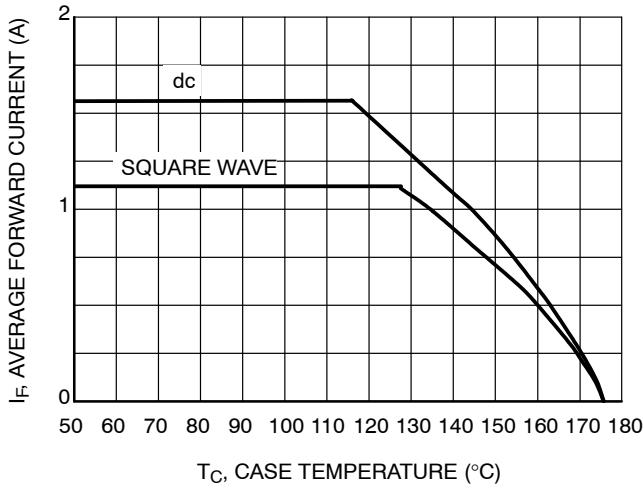


Figure 4. Maximum Reverse Current

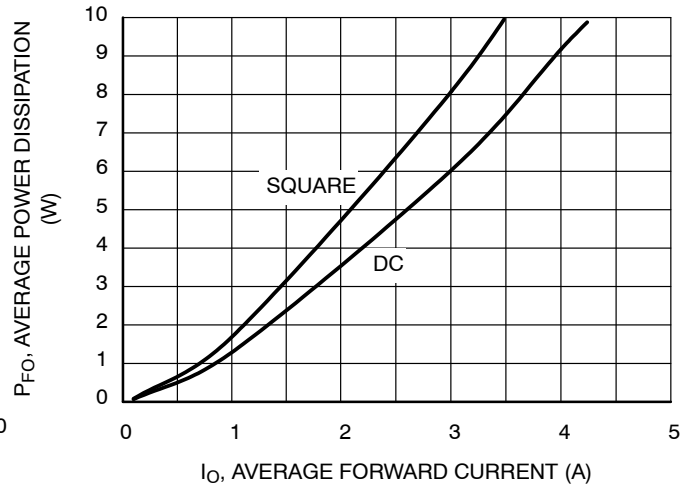
MURHS160T3, NRVUHS160V, SURHS8160

TYPICAL CHARACTERISTICS



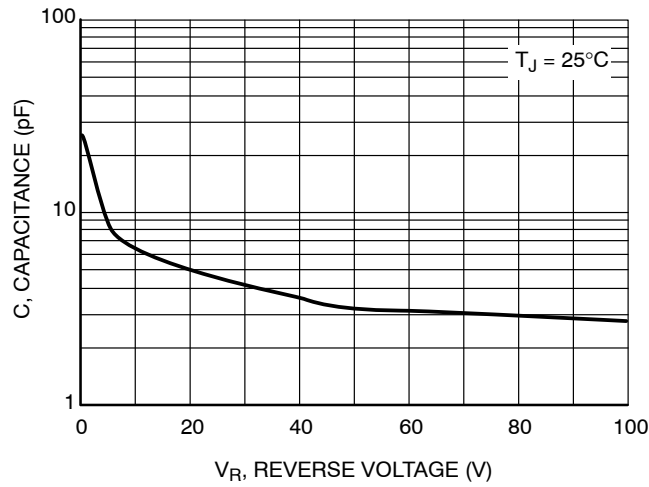
T_C , CASE TEMPERATURE ($^{\circ}C$)

Figure 5. Current Derating



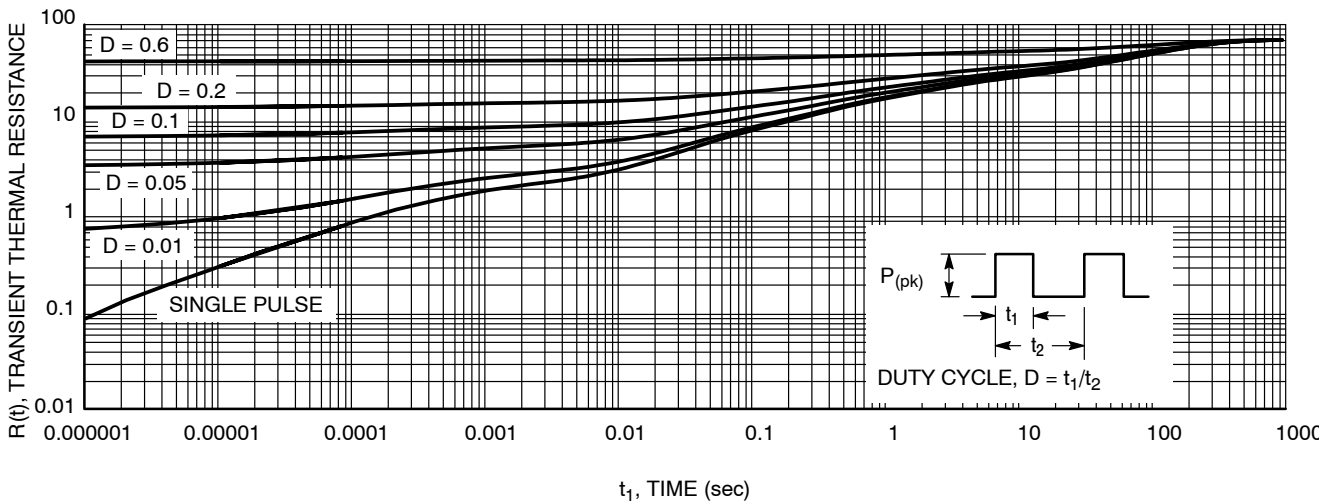
I_O , AVERAGE FORWARD CURRENT (A)

Figure 7. Forward Power Dissipation



V_R , REVERSE VOLTAGE (V)

Figure 6. Capacitance



t_1 , TIME (sec)

Figure 8. Thermal Response Junction-to-Ambient

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

ON Semiconductor®



SCALE 1:1

Polarity Band



SCALE 1:1

Non-Polarity Band

SMB
CASE 403A-03
ISSUE J

DATE 19 JUL 2012

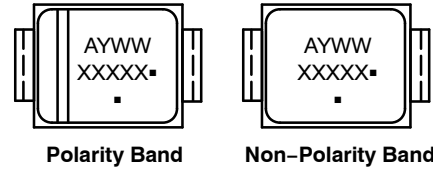


NOTES:

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 |
| HE | 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 | | |

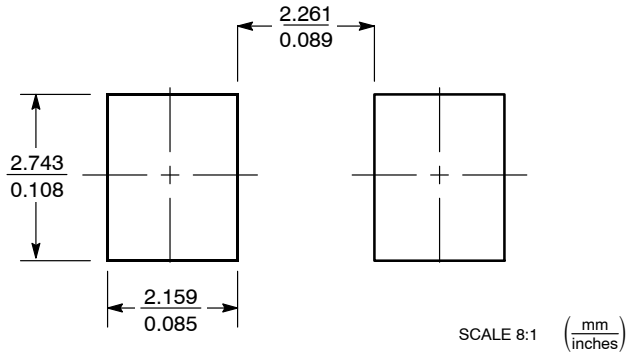
GENERIC MARKING DIAGRAM*



- 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*



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

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