

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 [†]
NRVUHS160VT3G	SMB (Pb-Free)	2,500 / Tape & Reel
NRVUHS160VT3G-GA01		
SURHS8160T3G-GA01		

DISCONTINUED (Note 1)

Device	Package	Shipping [†]
MURHS160T3G	SMB (Pb-Free)	2,500 / Tape & Reel
SURHS8160T3G		

[†]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.

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.

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THERMAL CHARACTERISTICS

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

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

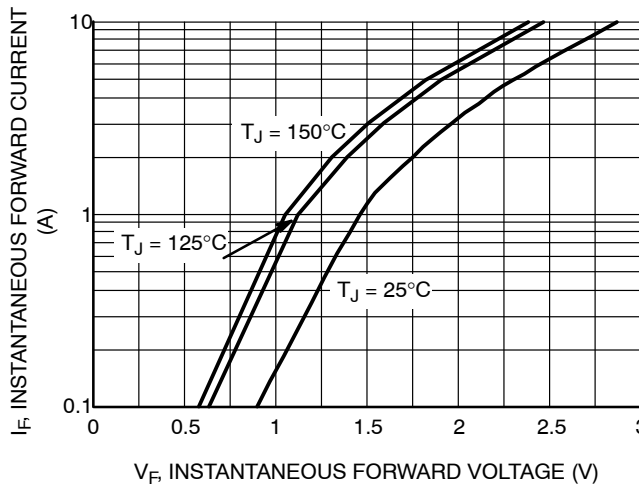


Figure 1. Typical Forward Voltage

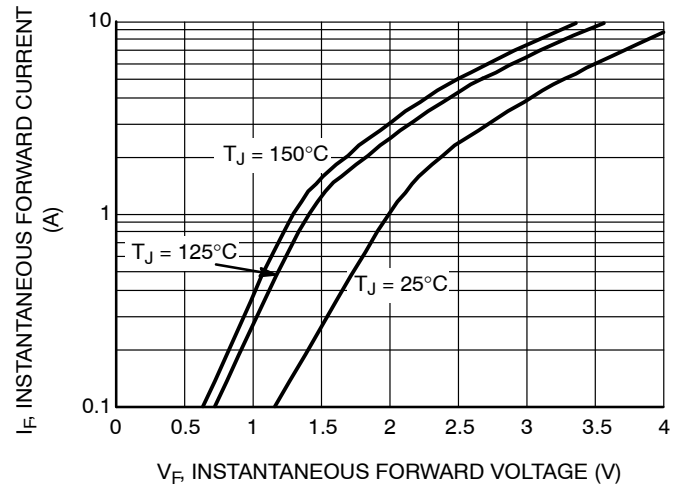


Figure 2. Maximum Forward Voltage

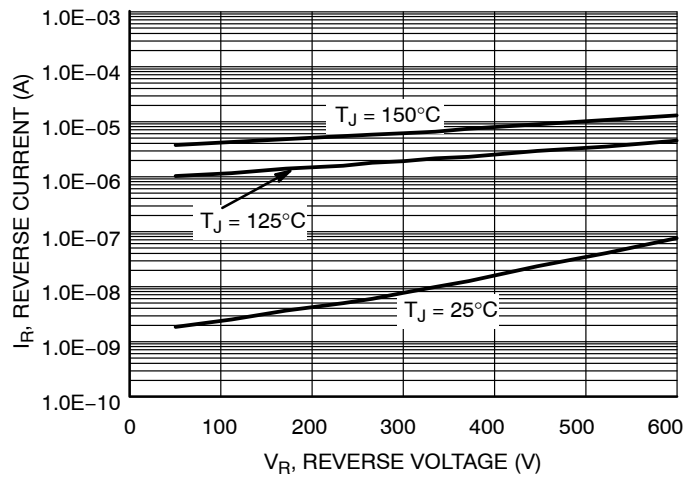


Figure 3. Typical Reverse Current

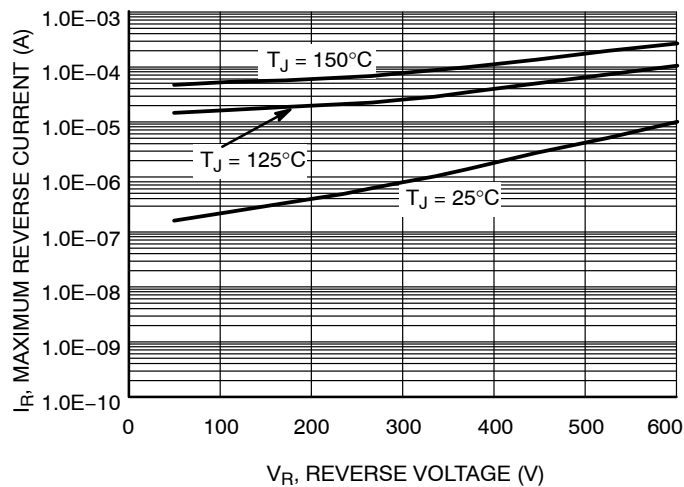


Figure 4. Maximum Reverse Current

TYPICAL CHARACTERISTICS

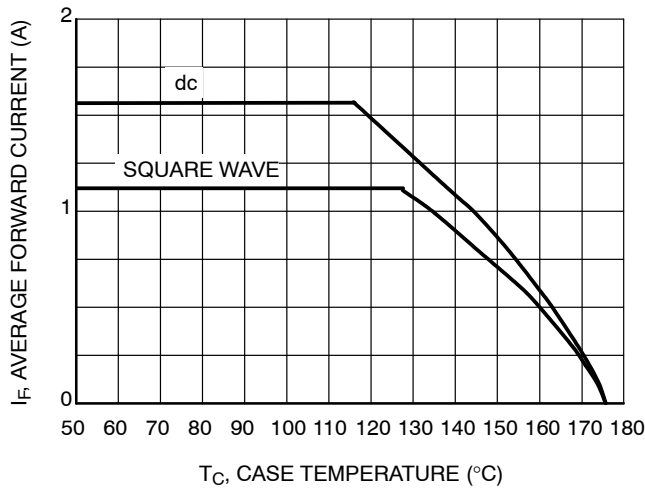


Figure 5. Current Derating

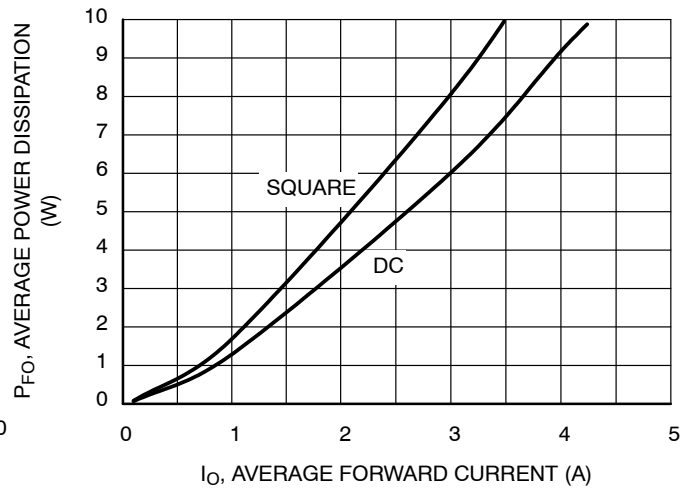


Figure 7. Forward Power Dissipation

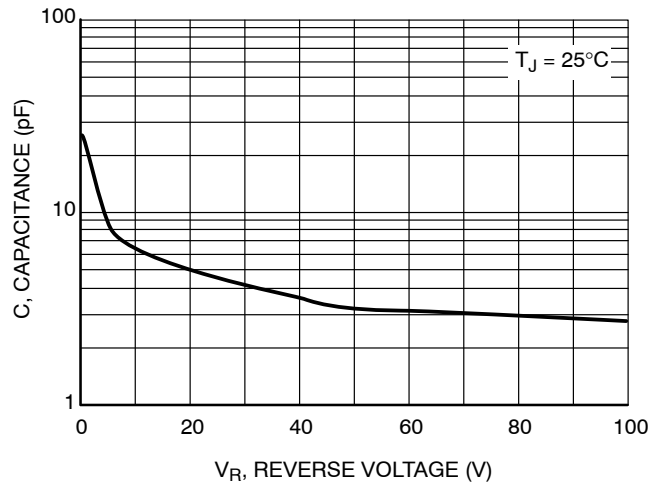


Figure 6. Capacitance

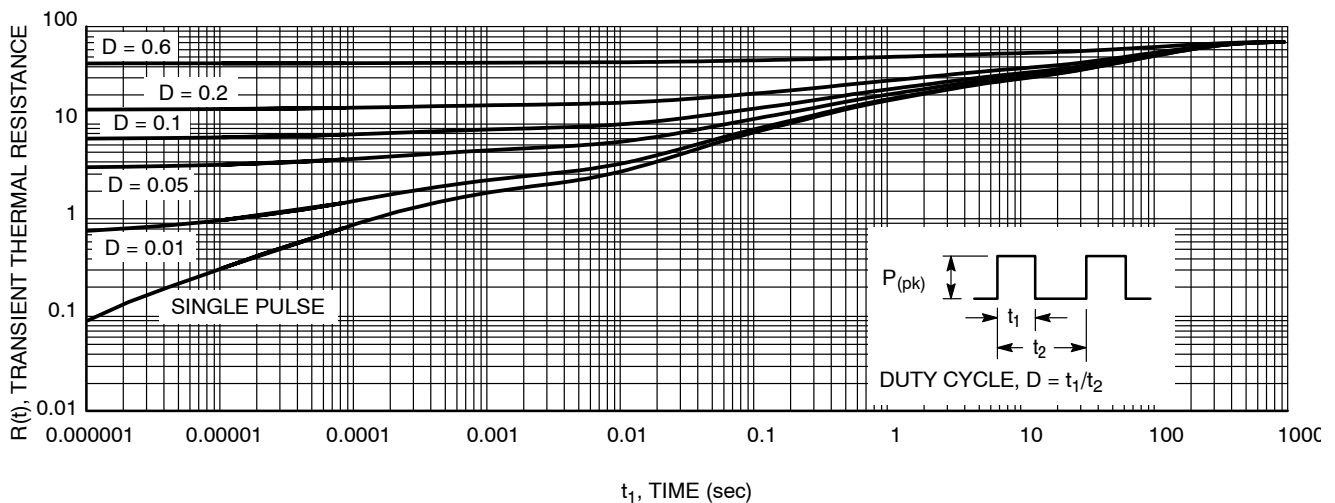


Figure 8. Thermal Response Junction-to-Ambient



SCALE 1:1

Polarity Band



SCALE 1:1

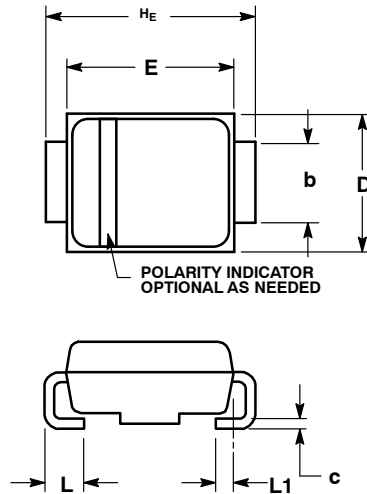
Non-Polarity Band

SMB

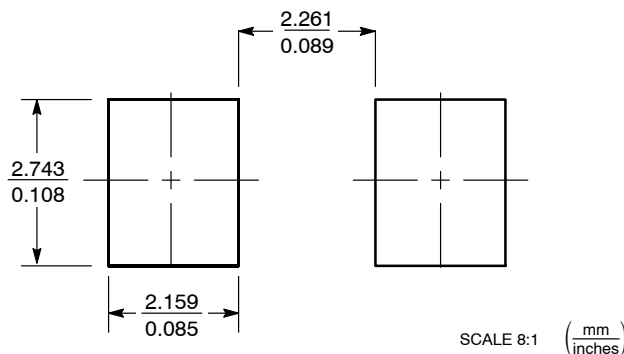
CASE 403A-03

ISSUE J

DATE 19 JUL 2012



SOLDERING FOOTPRINT*



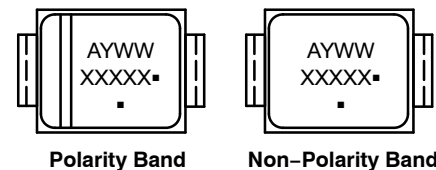
*For additional information on our Pb-Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERM/D.

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. Some products may not follow the Generic Marking.

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