

# MURHS160T3G, SURHS8160T3G

## Power Rectifier

### Features and Benefits

- Ultrafast 35 Nanosecond Recovery Times
- 175°C Operating Junction Temperature
- High Temperature Glass Passivated Junction
- High Voltage Capability to 600 V
- AEC-Q101 Qualified and PPAP Capable
- SURHS8 Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- This is a Pb-Free Device\*

### 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: Machine Model = C Human Body Model = 3B		> 400 > 8000	V

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.

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



**ON Semiconductor®**

<http://onsemi.com>

**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	SMB (Pb-Free)	2,500 / Tape & Reel
SURHS8160T3G	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 Specification 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

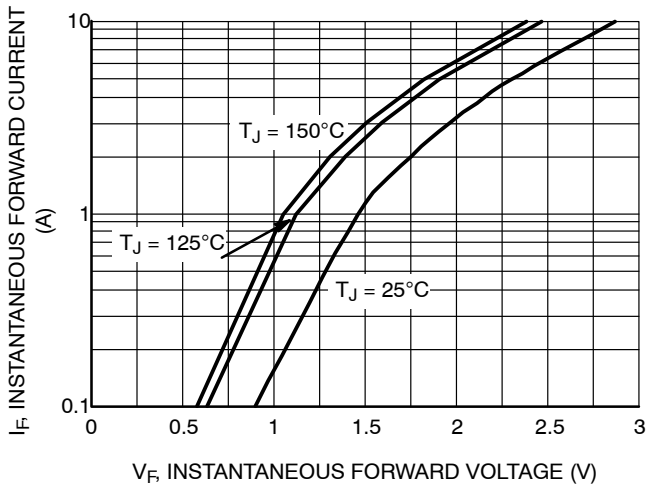
1. Mounted with minimum recommended pad size, PC Board FR4.
2. 1 inch square pad size (1 x 0.5 inch for each lead) on FR4 board.

## ELECTRICAL CHARACTERISTICS

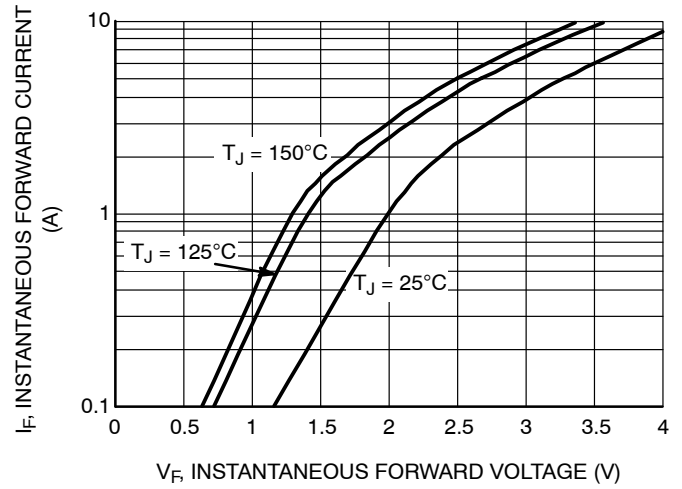
Rating	Symbol	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 3) ( $I_F = 1.0\text{ A}$ , $T_C = 25^\circ\text{C}$ ) ( $I_F = 1.0\text{ A}$ , $T_C = 125^\circ\text{C}$ )	$V_F$	1.5 1.2	2.4 1.7	V
Maximum Instantaneous Reverse Current (Note 3) (Rated dc Voltage, $T_C = 25^\circ\text{C}$ ) (Rated dc Voltage, $T_C = 125^\circ\text{C}$ )	$I_R$	0.18 5.0	20 200	$\mu\text{A}$
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

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

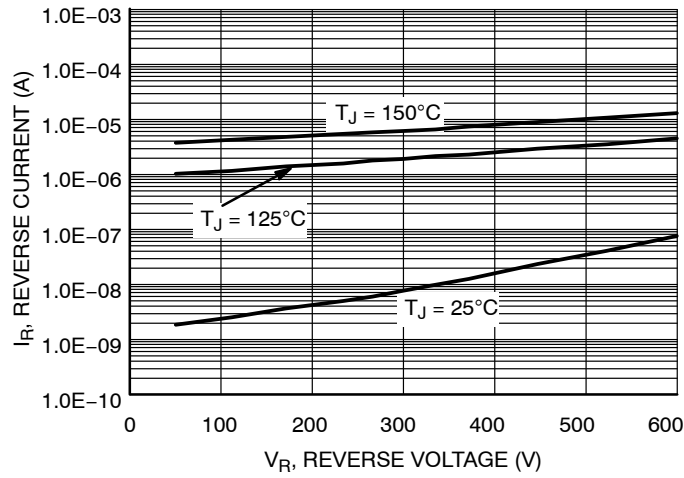
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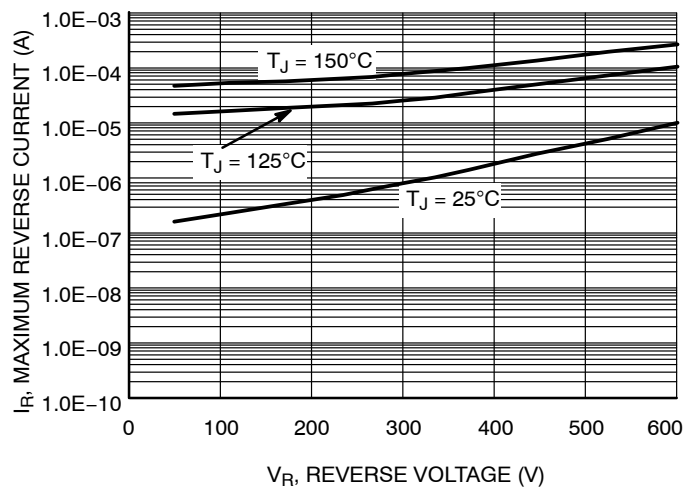
**Figure 1. Typical Forward Voltage**



**Figure 2. Maximum Forward Voltage**



**Figure 3. Typical Reverse Current**



**Figure 4. Maximum Reverse Current**

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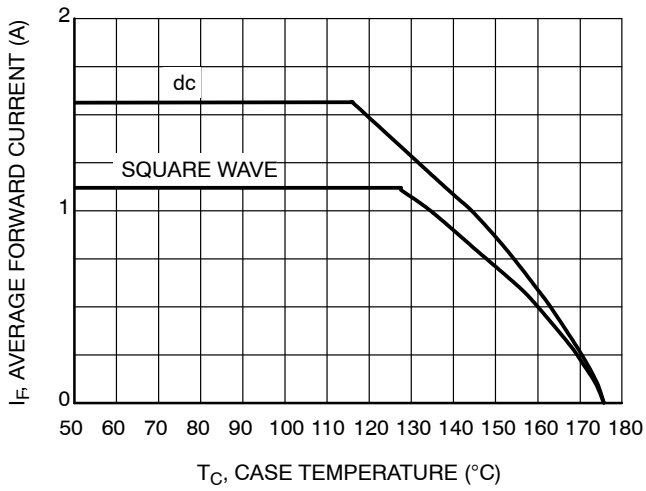


Figure 5. Current Derating

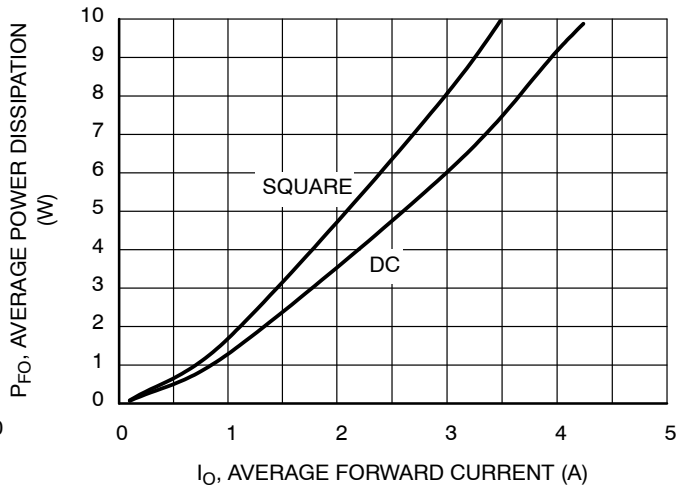


Figure 7. Forward Power Dissipation

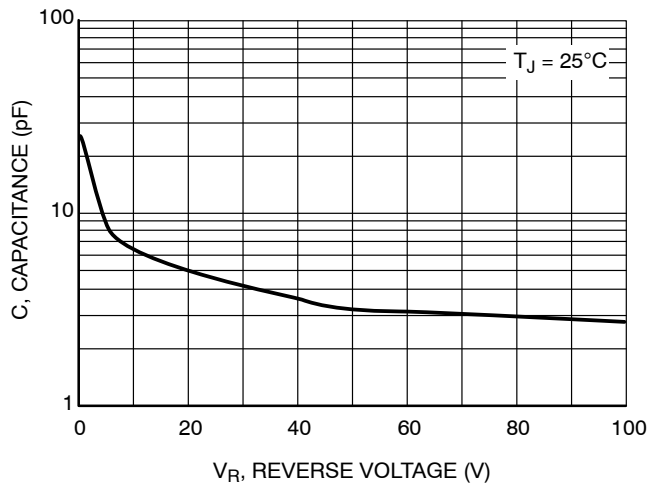


Figure 6. Capacitance

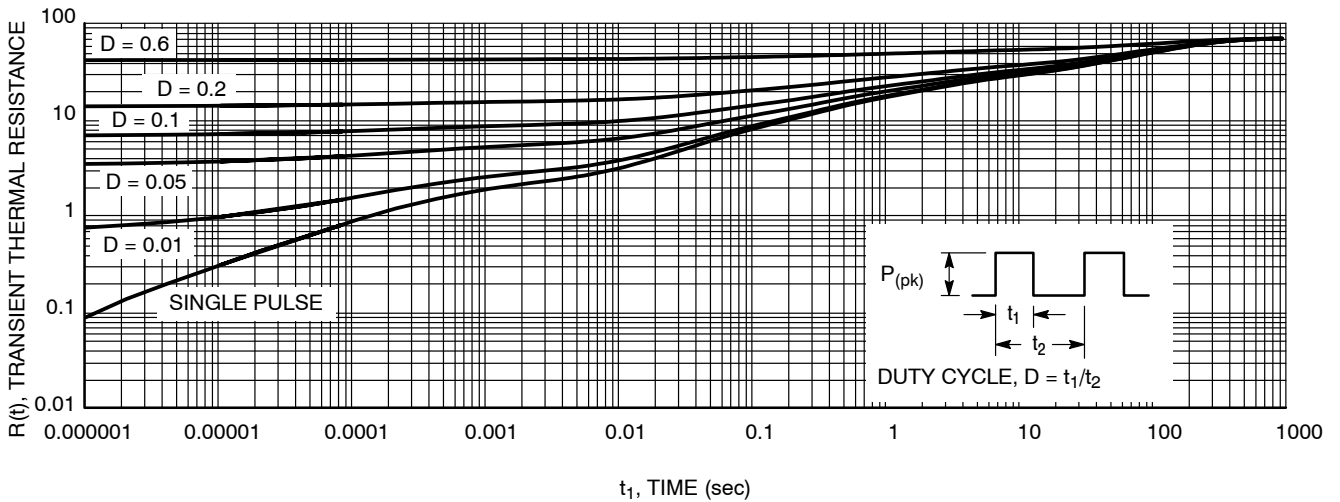
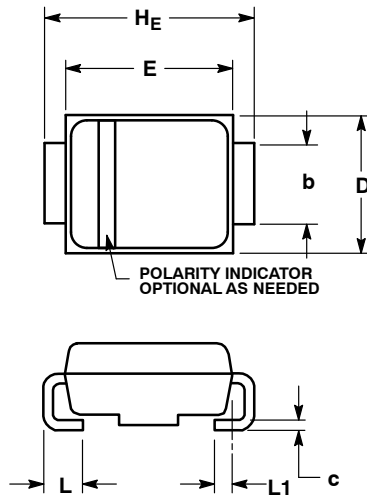


Figure 8. Thermal Response Junction-to-Ambient

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## PACKAGE DIMENSIONS

### SMB CASE 403A-03 ISSUE H

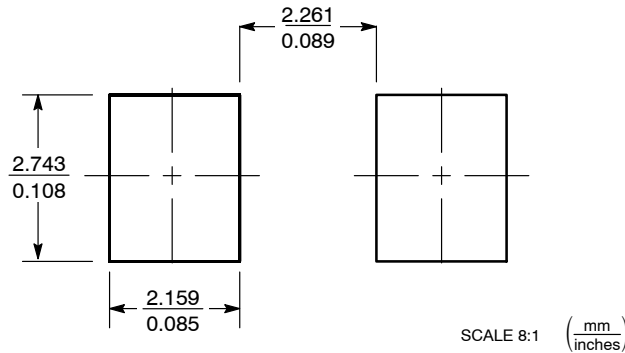


NOTES:

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

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.90	2.20	2.28	0.075	0.087	0.090
A1	0.05	0.10	0.19	0.002	0.004	0.007
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		

### 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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