

MURHD560T4G, SURHD8560T4G, MURHD560W1T4G, SURHD8560W1T4G, SURHD8560T4G-VF01



ON Semiconductor®

www.onsemi.com

600 V, 5 A Power Rectifier

Features and Benefits

- Ultrafast 30 Nanosecond Recovery Times
- 175°C Operating Junction Temperature
- High Temperature Glass Passivated Junction
- High Voltage Capability to 600 Volts
- SURHD8 Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

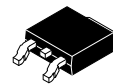
Applications

- Power Supplies
- Inverters
- Free Wheeling Diodes

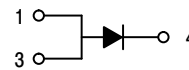
Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 0.4 g (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- ESD Ratings:
 - ◆ Machine Model = C (> 400 V)
 - ◆ Human Body Model = 3B (> 8000 V)

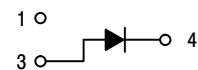
ULTRAFAST RECTIFIER 5.0 AMPERES 600 VOLTS



DPAK
CASE 369C
STYLES 3, 8

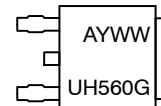


STYLE 3

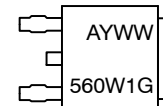


STYLE 8

MARKING DIAGRAMS



STYLE 3



STYLE 8

UH560 = MURHD560T4
560W1 = MURHD560W1T4
A = Assembly Location
Y = Year
WW = Work Week
G = Pb-Free Package

* The Assembly Location code (A) is front side optional. In cases where the Assembly Location is stamped in the package bottom (molding ejector pin), the front side assembly code may be blank.

ORDERING INFORMATION

Device	Package	Shipping†
MURHD560T4G	DPAK (Pb-Free)	2,500 / Tape & Reel
SURHD8560T4G	DPAK (Pb-Free)	2,500 / Tape & Reel
MURHD560W1T4G	DPAK (Pb-Free)	2,500 / Tape & Reel
SURHD8560W1T4G	DPAK (Pb-Free)	2,500 / Tape & Reel
SSURHD8560W1T4G	DPAK (Pb-Free)	2,500 / Tape & Reel
SSURHD8560T4G-VF01	DPAK (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.

MURHD560T4G, SURHD8560T4G, MURHD560W1T4G, SURHD8560W1T4G,

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 , $T_C = 159^\circ\text{C}$)	$I_{F(AV)}$	5.0	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	50	A
Operating Junction and Storage Temperature Range	T_J , T_{stg}	-65 to +175	$^\circ\text{C}$

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	Value	Unit
Maximum Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.5	$^\circ\text{C}/\text{W}$
Maximum Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	49.5	$^\circ\text{C}/\text{W}$

1. Rating applies when surface mounted on a 1.5 mm FR4 PC board with a 1 oz. thick, 700 mm² Cu area.

ELECTRICAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 2) ($I_F = 5.0$ Amps, $T_C = 25^\circ\text{C}$) ($I_F = 5.0$ Amps, $T_C = 125^\circ\text{C}$)	V_F	2.7 1.65	V
Maximum Instantaneous Reverse Current (Note 2) (Rated dc Voltage, $T_C = 25^\circ\text{C}$) (Rated dc Voltage, $T_C = 125^\circ\text{C}$)	I_R	10 70	μA
Maximum Reverse Recovery Time ($I_F = 1.0$ Amp, $di/dt = 50$ Amps/ μs , $V_R = 30$ V, $T_J = 25^\circ\text{C}$)	t_{rr}	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.

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

MURHD560T4G, SURHD8560T4G, MURHD560W1T4G, SURHD8560W1T4G,

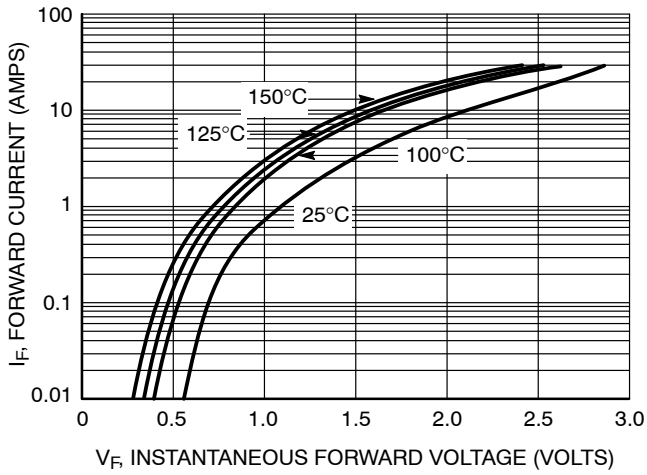


Figure 1. Typical Forward Voltage

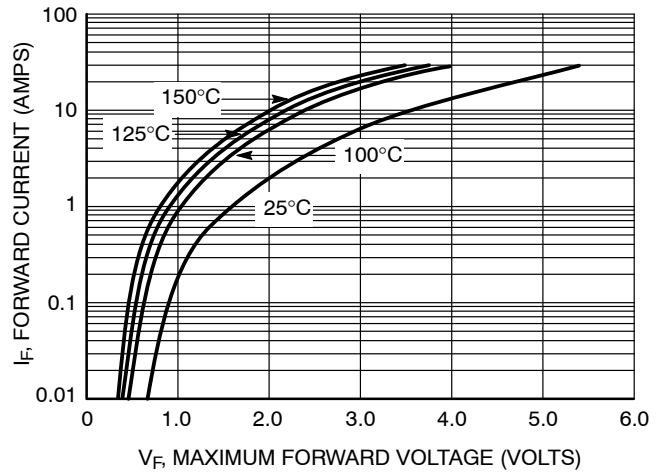


Figure 2. Maximum Forward Voltage

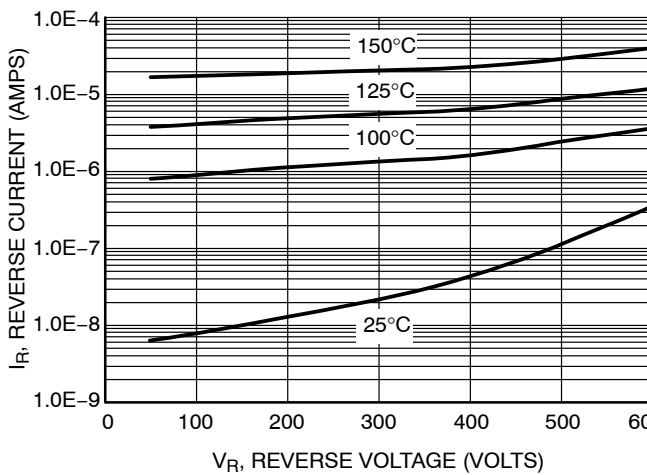


Figure 3. Typical Reverse Current

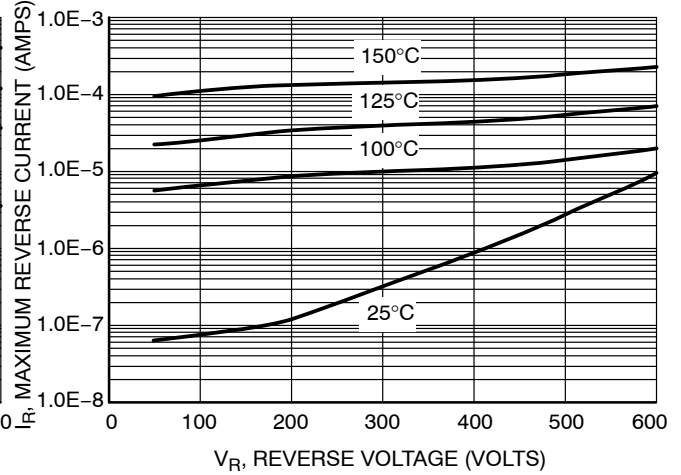


Figure 4. Maximum Reverse Current

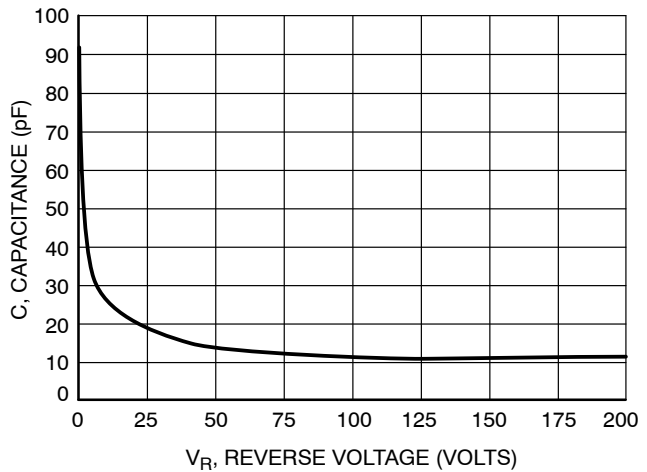


Figure 5. Typical Capacitance

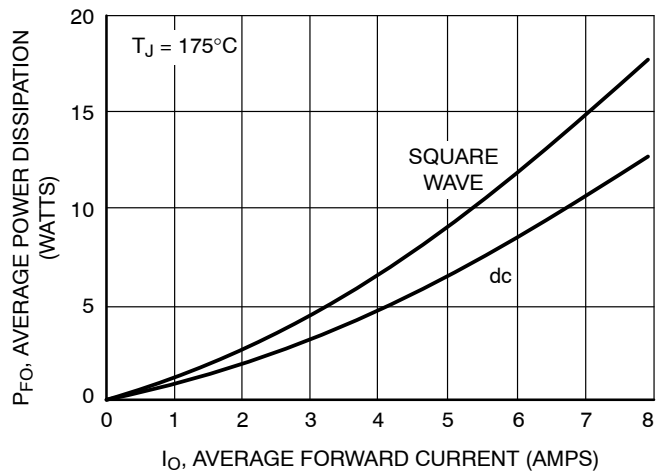


Figure 6. Forward Power Dissipation

MURHD560T4G, SURHD8560T4G, MURHD560W1T4G, SURHD8560W1T4G,

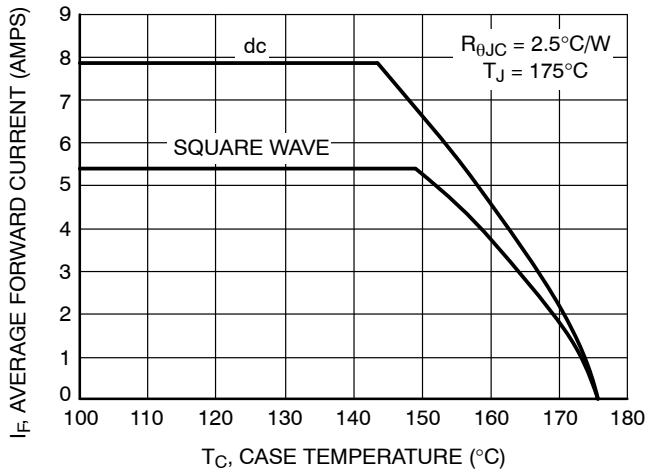


Figure 7. Current Derating

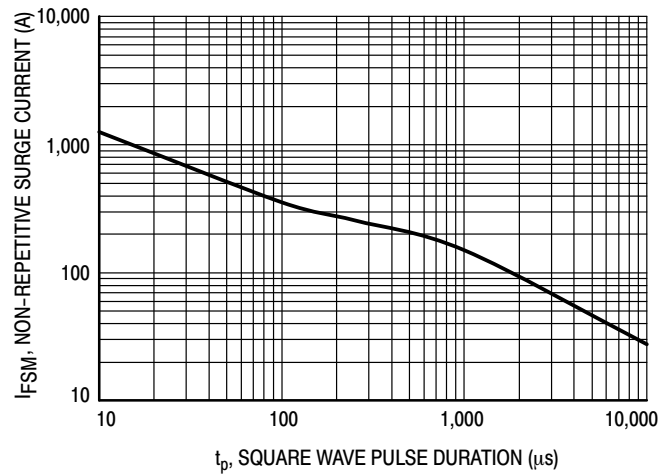


Figure 8. Typical Non-Repetitive Surge Current

* Typical performance based on a limited sample size. ON Semiconductor does not guarantee ratings not listed in the Maximum Ratings table.

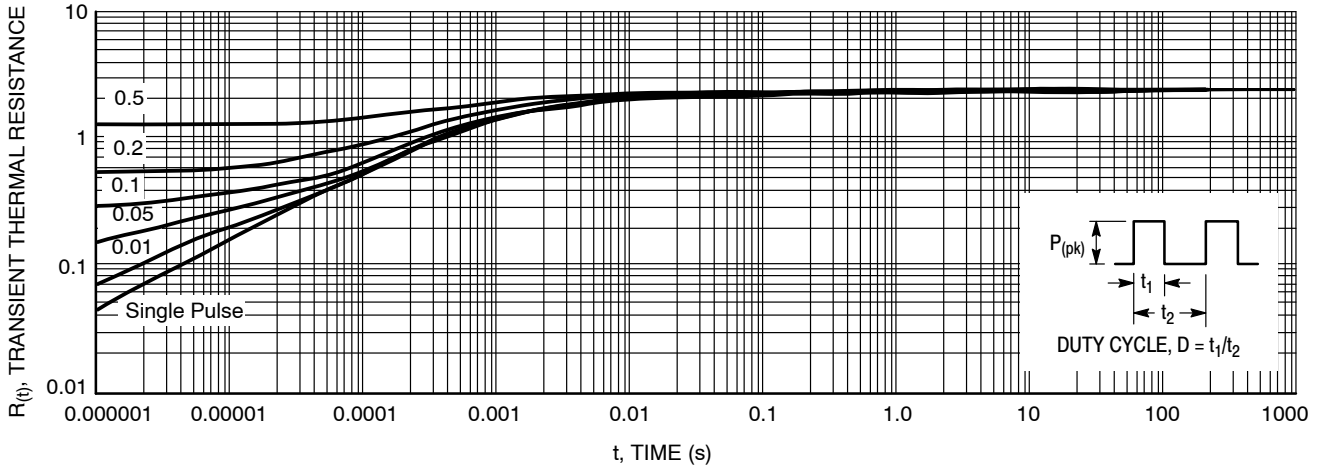


Figure 9. Thermal Response, Junction to Case

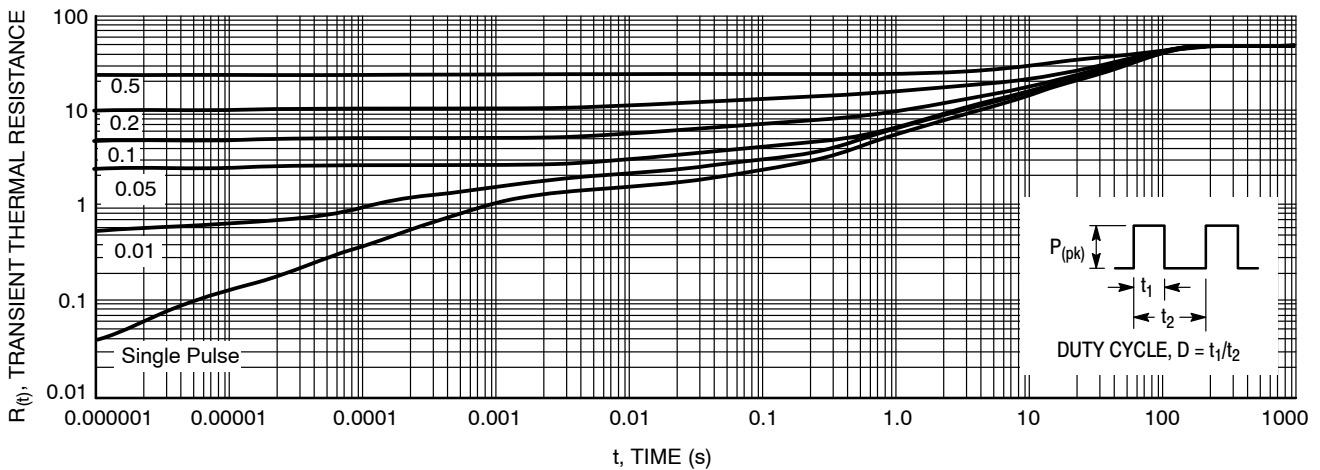


Figure 10. Thermal Response, Junction to Ambient

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

ON Semiconductor®



SCALE 1:1

DPAK (SINGLE GAUGE)

CASE 369C

ISSUE F

DATE 21 JUL 2015

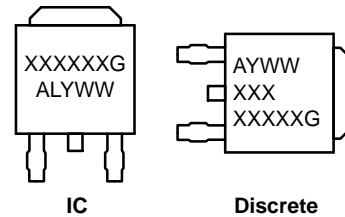


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3 and Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.006 INCHES PER SIDE.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
7. OPTIONAL MOLD FEATURE.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.086	0.094	2.18	2.38
A1	0.000	0.005	0.00	0.13
b	0.025	0.035	0.63	0.89
b2	0.028	0.045	0.72	1.14
b3	0.180	0.215	4.57	5.46
c	0.018	0.024	0.46	0.61
c2	0.018	0.024	0.46	0.61
D	0.235	0.245	5.97	6.22
E	0.250	0.265	6.35	6.73
e	0.090 BSC		2.29 BSC	
H	0.370	0.410	9.40	10.41
L	0.055	0.070	1.40	1.78
L1	0.114 REF		2.90 REF	
L2	0.020 BSC		0.51 BSC	
L3	0.035	0.050	0.89	1.27
L4	---		---	
Z	0.155	---	3.93	---

GENERIC MARKING DIAGRAM*

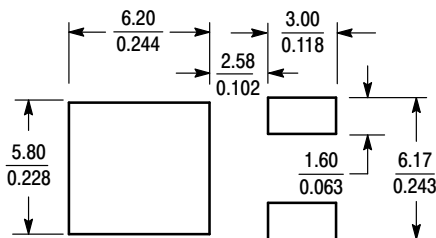


- XXXXXX = Device Code
- A = Assembly Location
- L = Wafer Lot
- Y = Year
- WW = Work Week
- G = Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking.

- | | | | | |
|--|--|---|---|--|
| <p>STYLE 1:</p> <p>PIN 1. BASE</p> <p>2. COLLECTOR</p> <p>3. EMITTER</p> <p>4. COLLECTOR</p> | <p>STYLE 2:</p> <p>PIN 1. GATE</p> <p>2. DRAIN</p> <p>3. SOURCE</p> <p>4. DRAIN</p> | <p>STYLE 3:</p> <p>PIN 1. ANODE</p> <p>2. CATHODE</p> <p>3. ANODE</p> <p>4. CATHODE</p> | <p>STYLE 4:</p> <p>PIN 1. CATHODE</p> <p>2. ANODE</p> <p>3. GATE</p> <p>4. ANODE</p> | <p>STYLE 5:</p> <p>PIN 1. GATE</p> <p>2. ANODE</p> <p>3. CATHODE</p> <p>4. ANODE</p> |
| <p>STYLE 6:</p> <p>PIN 1. MT1</p> <p>2. MT2</p> <p>3. GATE</p> <p>4. MT2</p> | <p>STYLE 7:</p> <p>PIN 1. GATE</p> <p>2. COLLECTOR</p> <p>3. EMITTER</p> <p>4. COLLECTOR</p> | <p>STYLE 8:</p> <p>PIN 1. N/C</p> <p>2. CATHODE</p> <p>3. ANODE</p> <p>4. CATHODE</p> | <p>STYLE 9:</p> <p>PIN 1. ANODE</p> <p>2. CATHODE</p> <p>3. RESISTOR ADJUST</p> <p>4. CATHODE</p> | <p>STYLE 10:</p> <p>PIN 1. CATHODE</p> <p>2. ANODE</p> <p>3. CATHODE</p> <p>4. ANODE</p> |

SOLDERING FOOTPRINT*



SCALE 3:1 (mm/inches)

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

DOCUMENT NUMBER:	98AON10527D	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
STATUS:	ON SEMICONDUCTOR STANDARD	
NEW STANDARD:	REF TO JEDEC TO-252	
DESCRIPTION:	DPAK SINGLE GAUGE SURFACE MOUNT	PAGE 1 OF 2

ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Email Requests to: orderlit@onsemi.com

ON Semiconductor Website: www.onsemi.com

TECHNICAL SUPPORT

North American Technical Support:
Voice Mail: 1 800-282-9855 Toll Free USA/Canada
Phone: 011 421 33 790 2910

Europe, Middle East and Africa Technical Support:

Phone: 00421 33 790 2910

For additional information, please contact your local Sales Representative