

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

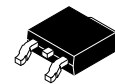
Applications

- Power Supplies
- Inverters
- Free Wheeling Diodes

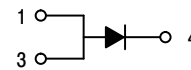
Mechanical Characteristics

- 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)

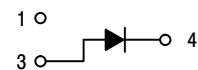
ULTRAFAST RECTIFIER 5.0 AMPERES 600 VOLTS



DPAK
CASE 369C
STYLES 3, 8

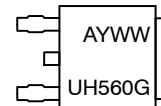


STYLE 3

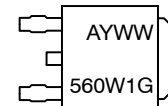


STYLE 8

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

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 $\leq 2.0\%$.

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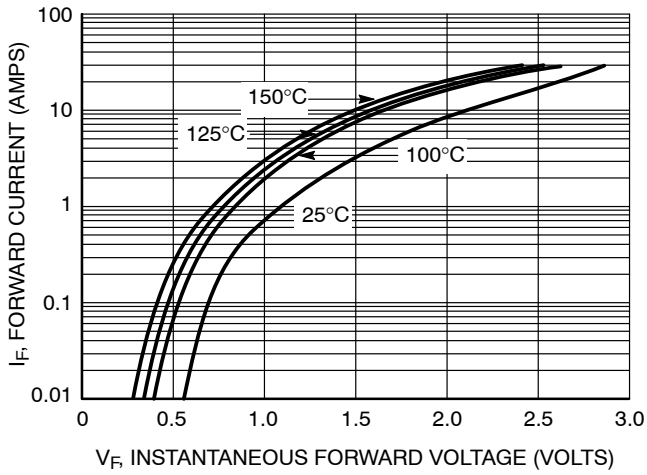


Figure 1. Typical Forward Voltage

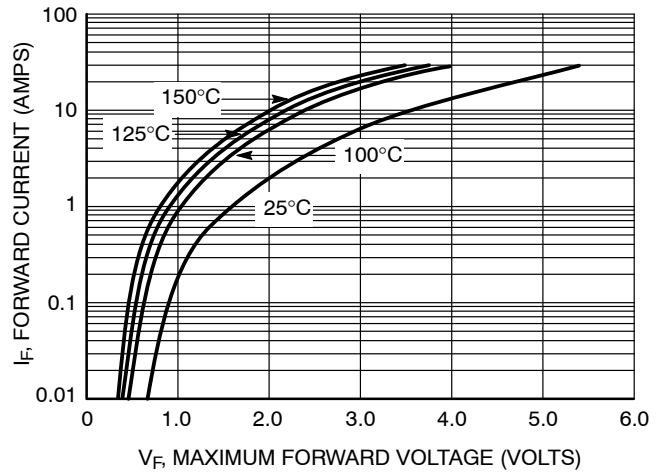


Figure 2. Maximum Forward Voltage

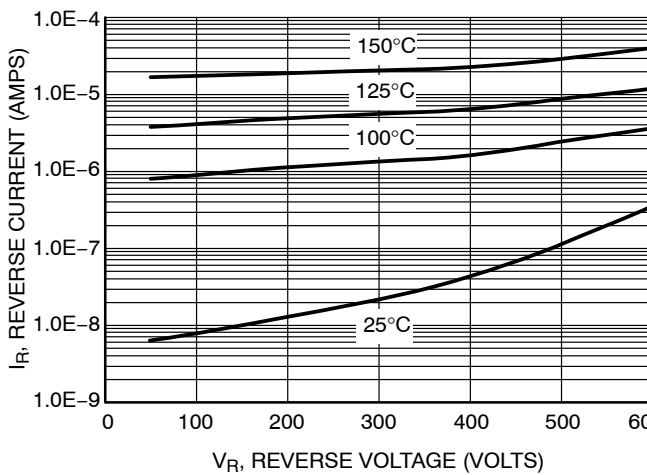


Figure 3. Typical Reverse Current

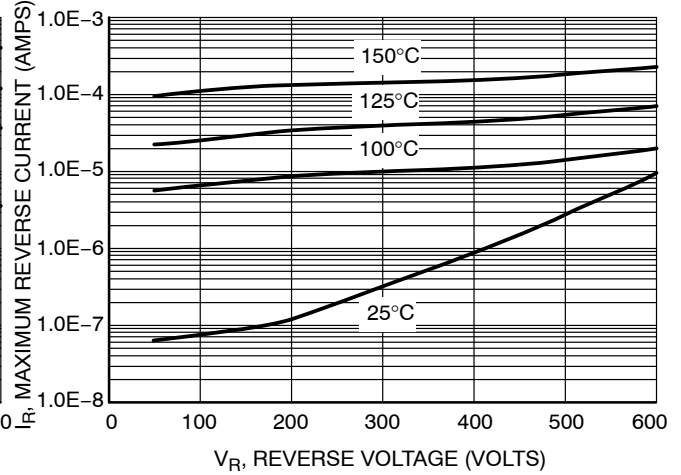


Figure 4. Maximum Reverse Current

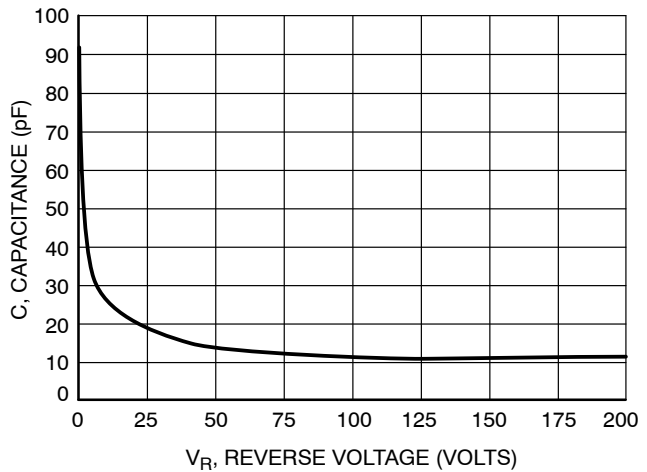


Figure 5. Typical Capacitance

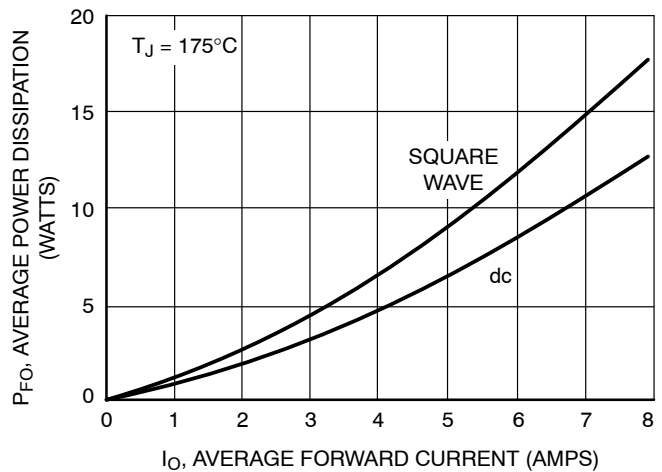


Figure 6. Forward Power Dissipation

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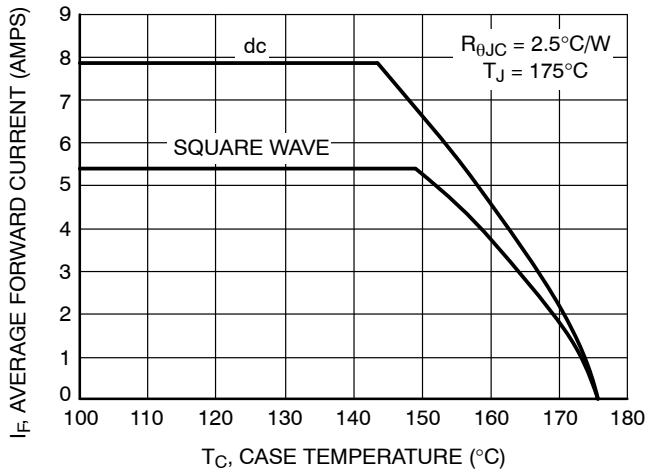


Figure 7. Current Derating

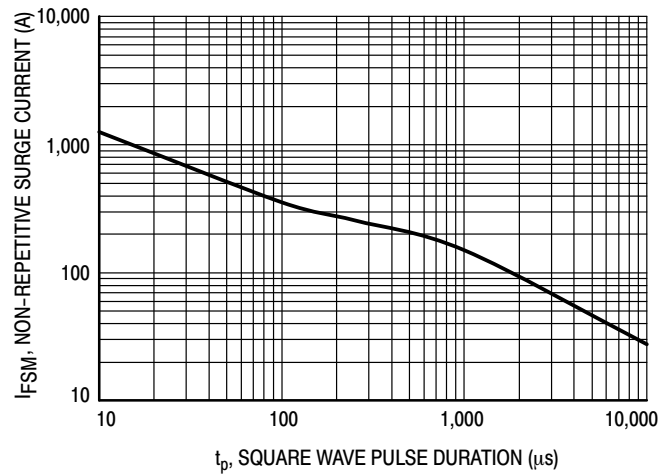


Figure 8. Typical Non-Repetitive Surge Current

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

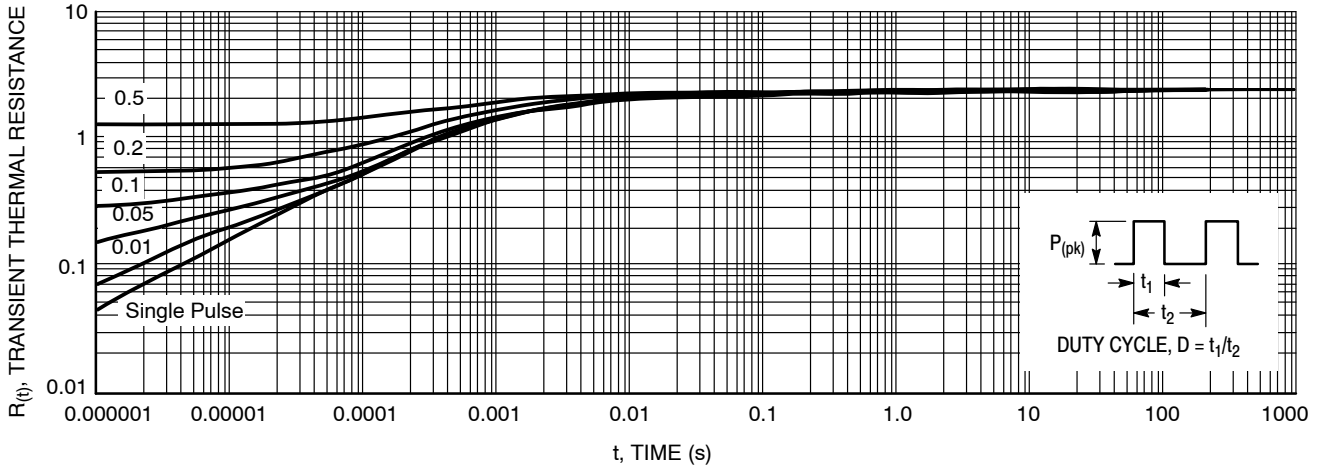


Figure 9. Thermal Response, Junction to Case

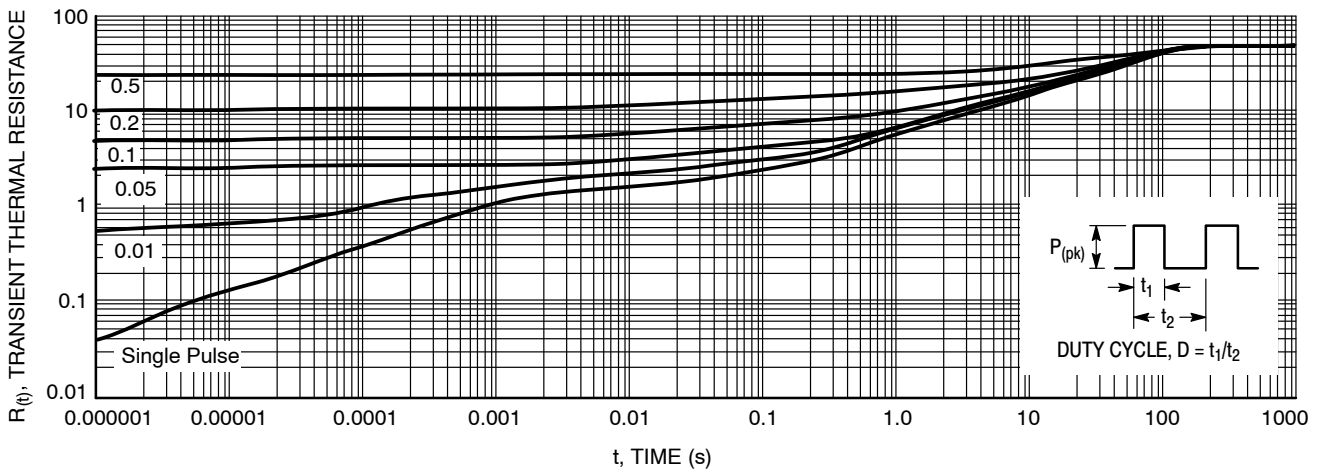


Figure 10. Thermal Response, Junction to Ambient

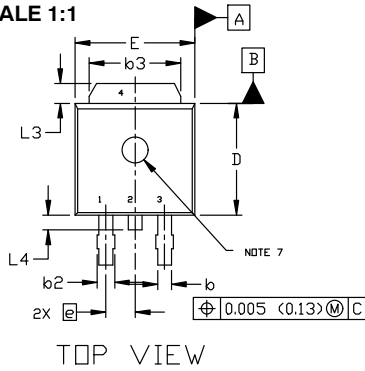
MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



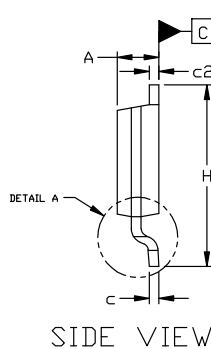
DPAK (SINGLE GAUGE) CASE 369C ISSUE G

DATE 31 MAY 2023

SCALE 1:1



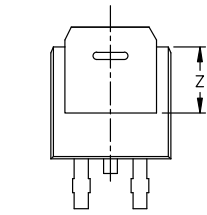
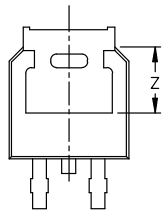
TOP VIEW



SIDE VIEW



BOTTOM VIEW



BOTTOM VIEW

ALTERNATE CONSTRUCTIONS



RECOMMENDED MOUNTING FOOTPRINT*

*FOR ADDITIONAL INFORMATION ON OUR Pb-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ON SEMICONDUCTOR SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERM/D.

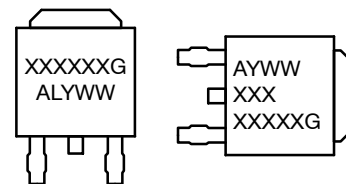
- | | | | | |
|--|--|---|---|--|
| <p>STYLE 1: PIN 1. BASE 2. COLLECTOR 3. EMITTER 4. COLLECTOR</p> | <p>STYLE 2: PIN 1. GATE 2. DRAIN 3. SOURCE 4. DRAIN</p> | <p>STYLE 3: PIN 1. ANODE 2. CATHODE 3. ANODE 4. CATHODE</p> | <p>STYLE 4: PIN 1. CATHODE 2. ANODE 3. GATE 4. ANODE</p> | <p>STYLE 5: PIN 1. GATE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

NOTES:

- DIMENSIONING AND TOLERANCING ASME Y14.5M, 1994.
- CONTROLLING DIMENSION: INCHES
- THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3, AND Z.
- 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.
- DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
- DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
- 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 | ---- | 0.040 | --- | 1.01 |
| Z | 0.155 | ---- | 3.93 | --- |

GENERIC MARKING DIAGRAM*



IC

Discrete

- 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. Pb-Free indicator, "G" or microdot "•", may or may not be present. Some products may not follow the Generic Marking.

| | | |
|------------------|---------------------|--|
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