

# MURHD560T4G, SURHD8560T4G, MURHD560W1T4G, SURHD8560W1T4G, SURHD8560T4G-VF01

## 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

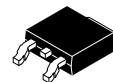
- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 0.4 g (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- ESD Ratings:
  - ♦ Machine Model = C (> 400 V)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



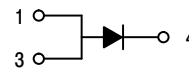
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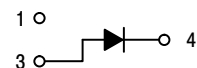
### ULTRAFAST RECTIFIER 5.0 AMPERES 600 VOLTS



DPAK  
CASE 369C  
STYLES 3, 8

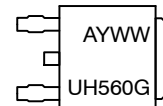


STYLE 3

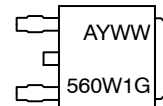


STYLE 8

### 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<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                      | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 600         | V                |
| Average Rectified Forward Current<br>(Rated $V_R$ , $T_C = 159^\circ\text{C}$ )                             | $I_{F(AV)}$                     | 5.0         | A                |
| Non-Repetitive Peak Surge Current<br>(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 mm<sup>2</sup> Cu area.

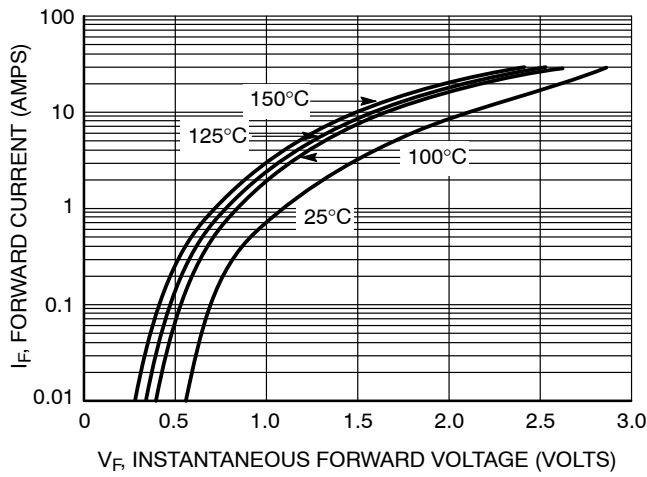
## ELECTRICAL CHARACTERISTICS

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

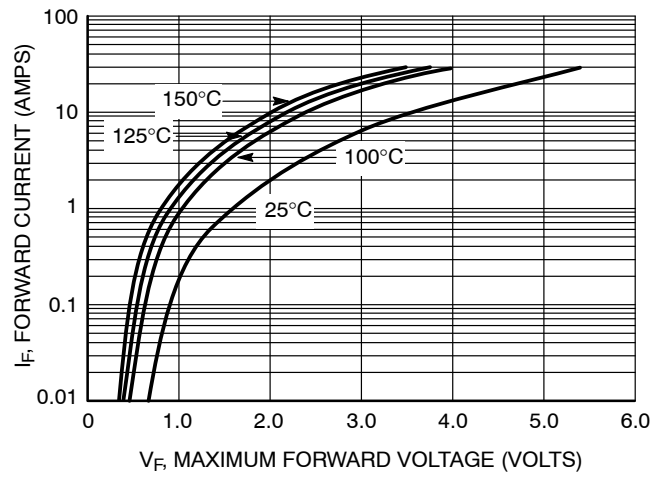
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

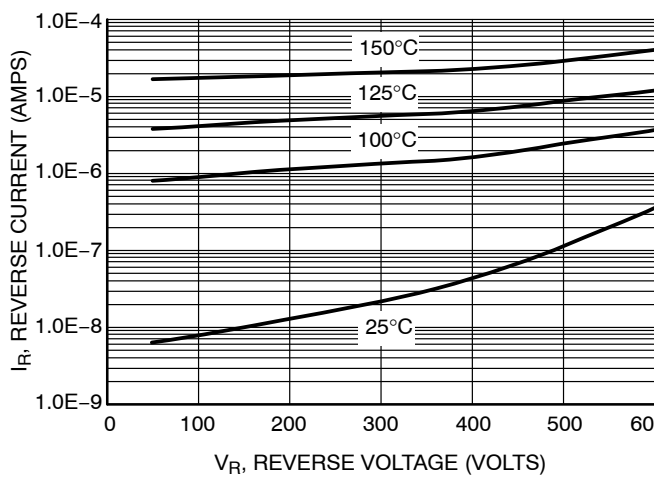
**MURHD560T4G, SURHD8560T4G, MURHD560W1T4G, SURHD8560W1T4G,**



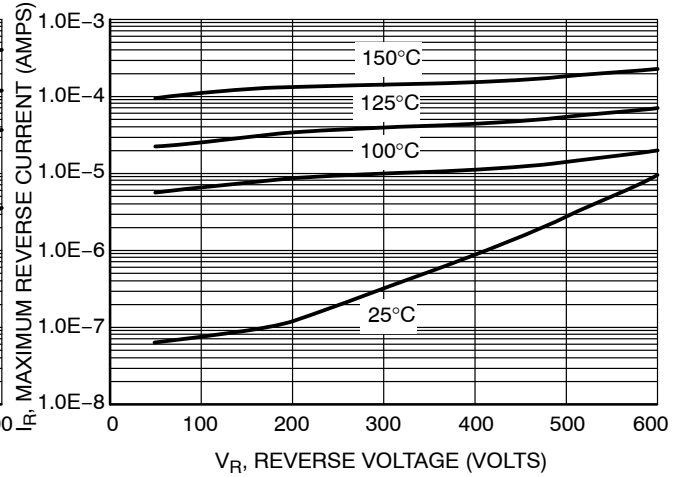
**Figure 1. Typical Forward Voltage**



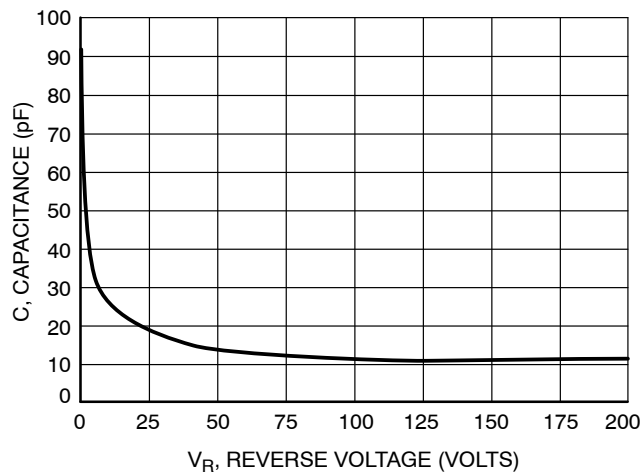
**Figure 2. Maximum Forward Voltage**



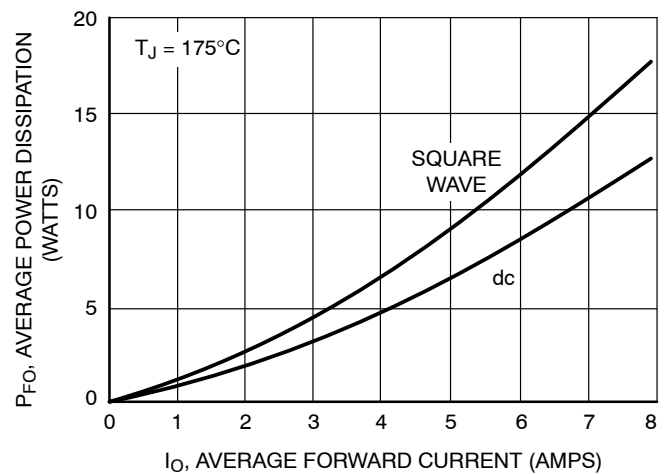
**Figure 3. Typical Reverse Current**



**Figure 4. Maximum Reverse Current**



**Figure 5. Typical Capacitance**



**Figure 6. Forward Power Dissipation**

# MURHD560T4G, SURHD8560T4G, MURHD560W1T4G, SURHD8560W1T4G,

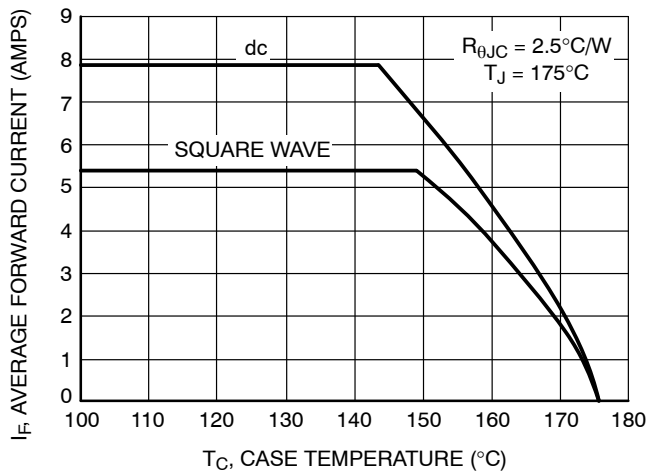


Figure 7. Current Derating

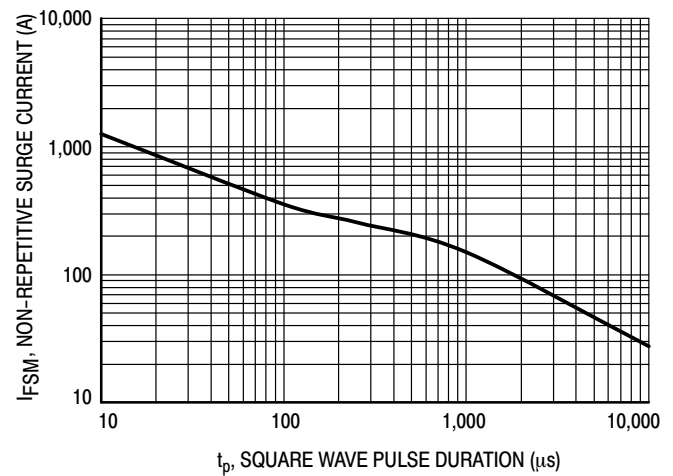


Figure 8. Typical Non-Repetitive Surge Current

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

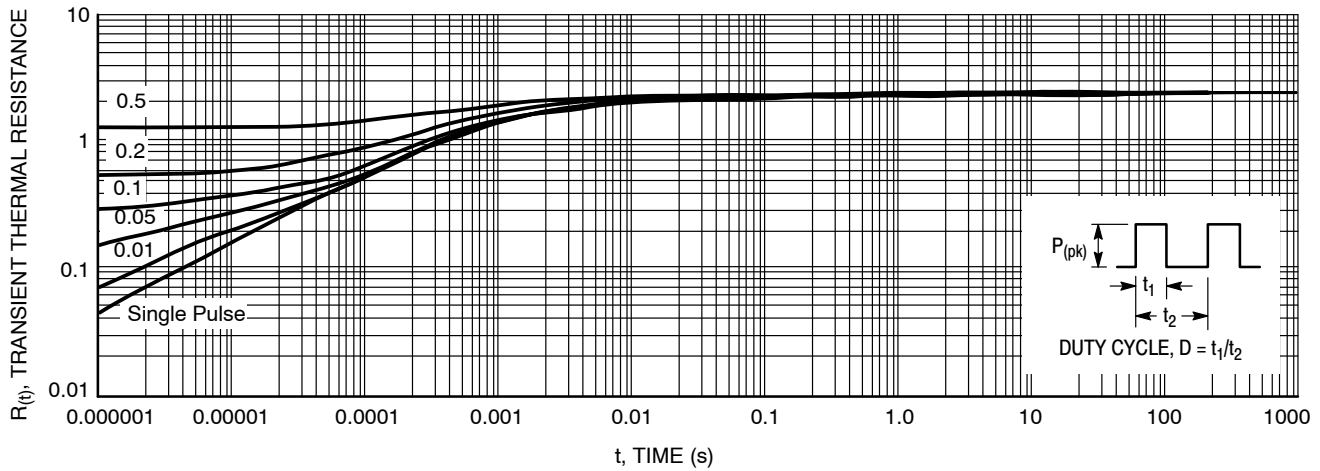


Figure 9. Thermal Response, Junction to Case

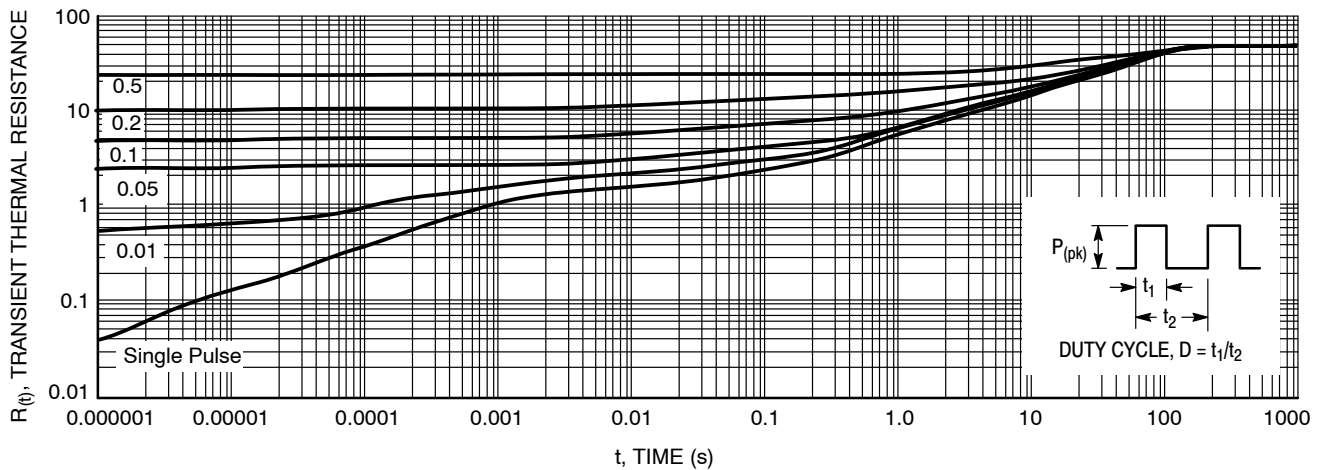


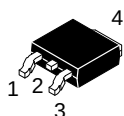
Figure 10. Thermal Response, Junction to Ambient

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

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ON



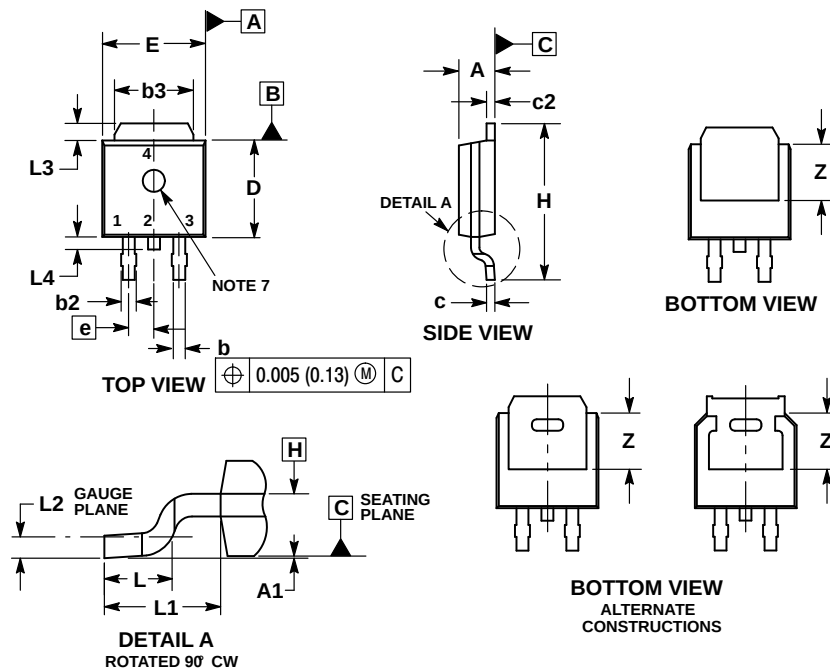
SCALE 1:1

### DPAK (SINGLE GAUGE)

#### CASE 369C

#### ISSUE F

DATE 21 JUL 2015

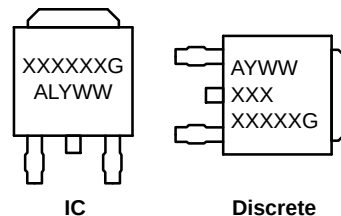


#### NOTES:

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  | ---       | 0.040 | ---         | 1.01  |
| Z   | 0.155     | ---   | 3.93        | ---   |

### GENERIC MARKING DIAGRAM\*

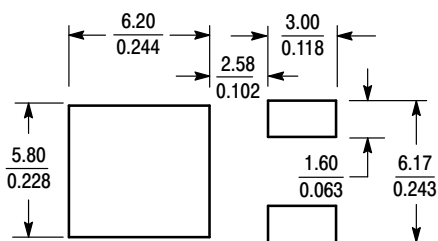


XXXXXX = Device Code  
 A = Assembly Location  
 L = Wafer Lot  
 Y = Year  
 WW = Work Week  
 G = Pb-Free Package

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

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

### 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.

|                         |                                        |                                                                                                                                                                                  |
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| <b>NEW STANDARD:</b>    | <b>REF TO JEDEC TO-252</b>             |                                                                                                                                                                                  |
| <b>DESCRIPTION:</b>     | <b>DPAK SINGLE GAUGE SURFACE MOUNT</b> | <b>PAGE 1 OF 2</b>                                                                                                                                                               |

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