

# BAT54M3T5G

## Schottky Barrier Diode

This Schottky barrier diode is designed for high speed switching applications, circuit protection, and voltage clamping. Extremely low forward voltage reduces conduction loss. Miniature surface mount package is excellent for hand held and portable applications where space is limited.

The BAT54M3T5G device is a spin-off of our popular SOT-23 three-leaded device and is housed in the SOT-723 surface mount package. This device is ideal for low-power surface mount applications where board space is at a premium.

### Features

- Extremely Fast Switching Speed
- Low Forward Voltage – 0.35 Volts (Typ) @  $I_F = 10 \text{ mAdc}$
- Reduces Board Space
- NSV 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

### MAXIMUM RATINGS ( $T_J = 125^\circ\text{C}$ unless otherwise noted)

| Rating                                                                                     | Symbol    | Value           | Unit                       |
|--------------------------------------------------------------------------------------------|-----------|-----------------|----------------------------|
| Reverse Voltage                                                                            | $V_R$     | 30              | V                          |
| Forward Power Dissipation<br>@ $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_F$     | 200<br>2.0      | mW<br>mW/ $^\circ\text{C}$ |
| Forward Current (DC)                                                                       | $I_F$     | 200 Max         | mA                         |
| Non-Repetitive Peak Forward Current<br>$t_p < 10 \text{ msec}$                             | $I_{FSM}$ | 600             | mA                         |
| Repetitive Peak Forward Current<br>Pulse Wave = 1 sec, Duty Cycle = 66%                    | $I_{FRM}$ | 300             | mA                         |
| Junction Temperature                                                                       | $T_J$     | $-55$ to $+125$ | $^\circ\text{C}$           |
| Storage Temperature Range                                                                  | $T_{stg}$ | $-55$ to $+150$ | $^\circ\text{C}$           |

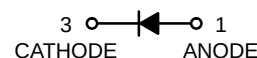
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



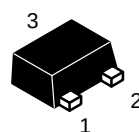
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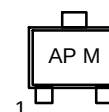
### 30 V SILICON HOT-CARRIER DETECTOR AND SWITCHING DIODE



### MARKING DIAGRAM



SOT-723  
CASE 631AA  
STYLE 2



AP = Specific Device Code  
M = Date Code

### ORDERING INFORMATION

| Device        | Package              | Shipping†        |
|---------------|----------------------|------------------|
| BAT54M3T5G    | SOT-723<br>(Pb-Free) | 8000/Tape & Reel |
| NSVBAT54M3T5G | SOT-723<br>(Pb-Free) | 8000/Tape & Reel |

†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.

# BAT54M3T5G

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic                                                                                                                                                      | Symbol      | Min | Typ  | Max  | Unit          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----|------|------|---------------|
| Reverse Breakdown Voltage ( $I_R = 10\ \mu\text{A}$ )                                                                                                               | $V_{(BR)R}$ | 30  | –    | –    | V             |
| Total Capacitance ( $V_R = 1.0\ \text{V}$ , $f = 1.0\ \text{MHz}$ )                                                                                                 | $C_T$       | –   | 7.6  | 10   | pF            |
| Reverse Leakage ( $V_R = 25\ \text{V}$ )                                                                                                                            | $I_R$       | –   | 0.5  | 2.0  | $\mu\text{A}$ |
| Forward Voltage<br>( $I_F = 0.1\ \text{mA}$ )<br>( $I_F = 1.0\ \text{mA}$ )<br>( $I_F = 10\ \text{mA}$ )<br>( $I_F = 30\ \text{mA}$ )<br>( $I_F = 100\ \text{mA}$ ) | $V_F$       | –   | 0.22 | 0.24 | V             |
|                                                                                                                                                                     |             | –   | 0.29 | 0.32 |               |
|                                                                                                                                                                     |             | –   | 0.35 | 0.40 |               |
|                                                                                                                                                                     |             | –   | 0.41 | 0.5  |               |
|                                                                                                                                                                     |             | –   | 0.52 | 0.8  |               |
| Reverse Recovery Time ( $I_F = I_R = 10\ \text{mA}$ , $I_{R(REC)} = 1.0\ \text{mA}$ , Figure 1)                                                                     | $t_{rr}$    | –   | –    | 5.0  | 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.

# BAT54M3T5G

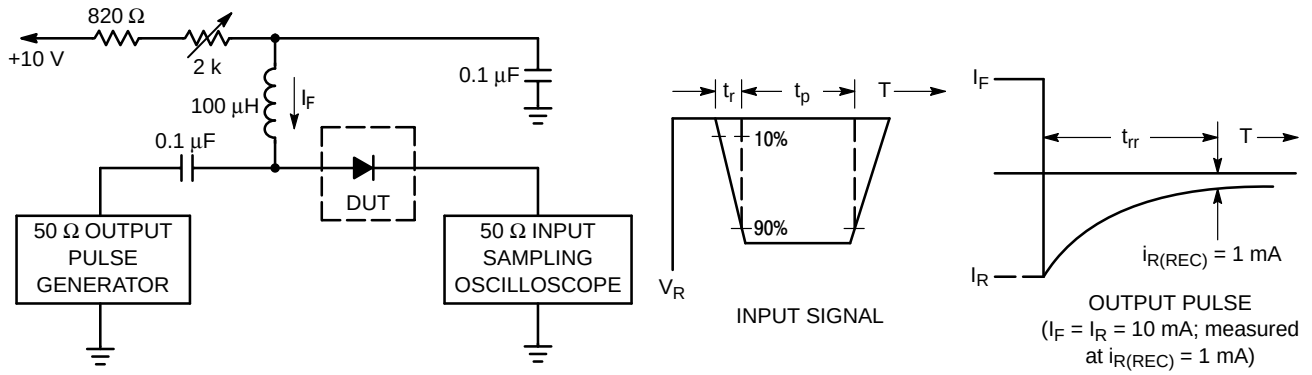


Figure 1. Recovery Time Equivalent Test Circuit

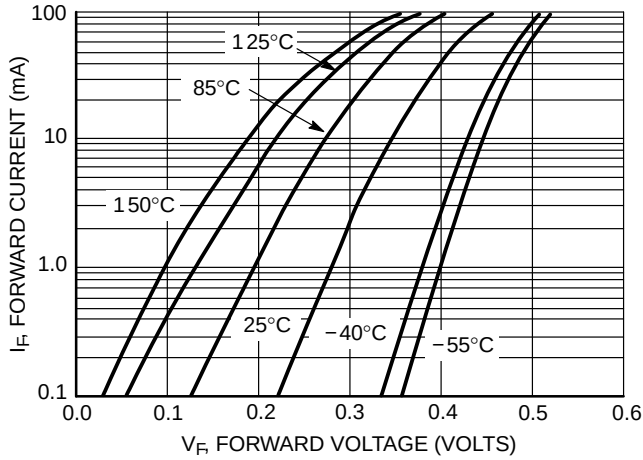


Figure 2. Forward Voltage

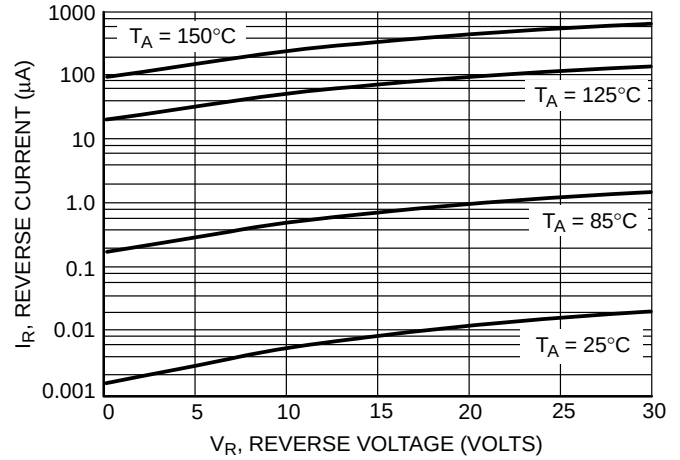


Figure 3. Leakage Current

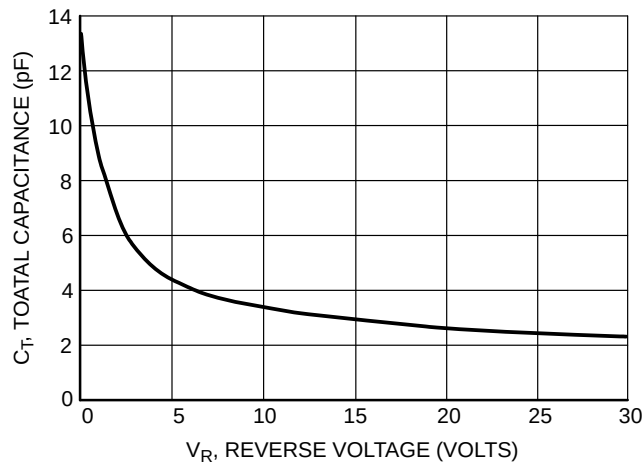
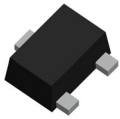


Figure 4. Total Capacitance

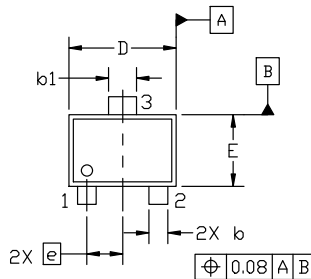


**SOT-723 1.20x0.80x0.50, 0.40P**  
**CASE 631AA**  
**ISSUE E**

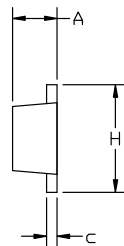
DATE 24 JAN 2024

NOTES:

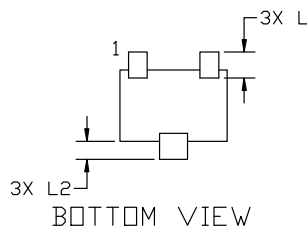
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



TOP VIEW

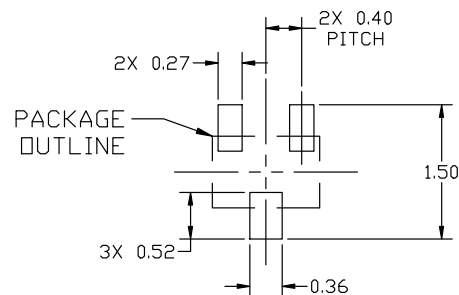


SIDE VIEW



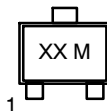
BOTTOM VIEW

| DIM | MILLIMETERS |      |      |
|-----|-------------|------|------|
|     | MIN.        | NOM. | MAX. |
| A   | 0.45        | 0.50 | 0.55 |
| b   | 0.15        | 0.21 | 0.27 |
| b1  | 0.25        | 0.31 | 0.37 |
| c   | 0.07        | 0.12 | 0.17 |
| D   | 1.15        | 1.20 | 1.25 |
| E   | 0.75        | 0.80 | 0.85 |
| e   | 0.40 BSC    |      |      |
| H   | 1.15        | 1.20 | 1.25 |
| L   | 0.29 REF    |      |      |
| L2  | 0.15        | 0.20 | 0.25 |



RECOMMENDED MOUNTING  
FOOTPRINT

**GENERIC  
MARKING DIAGRAM\***



XX = Specific Device Code  
M = Date Code

\*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.

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

|                                                       |                                                  |                                                    |                                                      |                                                  |
|-------------------------------------------------------|--------------------------------------------------|----------------------------------------------------|------------------------------------------------------|--------------------------------------------------|
| STYLE 1:<br>PIN 1. BASE<br>2. EMITTER<br>3. COLLECTOR | STYLE 2:<br>PIN 1. ANODE<br>2. N/C<br>3. CATHODE | STYLE 3:<br>PIN 1. ANODE<br>2. ANODE<br>3. CATHODE | STYLE 4:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. ANODE | STYLE 5:<br>PIN 1. GATE<br>2. SOURCE<br>3. DRAIN |
|-------------------------------------------------------|--------------------------------------------------|----------------------------------------------------|------------------------------------------------------|--------------------------------------------------|

|                         |                                      |                                                                                                                                                                                  |
|-------------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| <b>DESCRIPTION:</b>     | <b>SOT-723 1.20x0.80x0.50, 0.40P</b> | <b>PAGE 1 OF 1</b>                                                                                                                                                               |

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