

# BAT54AW

## Schottky Barrier Diodes

These Schottky barrier diodes are 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.

### Features

- Extremely Fast Switching Speed
- Low Forward Voltage – 0.35 V (Typ) @  $I_F = 10$  mA
- S 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>1.6      | mW<br>mW/ $^\circ\text{C}$ |
| Forward Current (DC)                                                                       | $I_F$     | 200 Max         | mA                         |
| Non-Repetitive Peak Forward Current<br>$t_p < 10$ msec                                     | $I_{FSM}$ | 600             | mA                         |
| Repetitive Peak Forward Current<br>Pulse Wave = 1 sec,<br>Duty Cycle = 66%                 | $I_{FRM}$ | 300             | mA                         |
| Junction Temperature                                                                       | $T_J$     | $-55$ to $150$  | $^\circ\text{C}$           |
| 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.

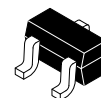
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



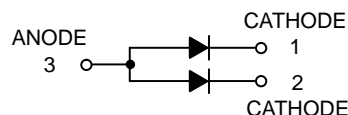
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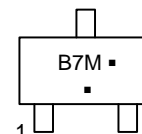
## 30 VOLT SCHOTTKY BARRIER DETECTOR AND SWITCHING DIODES



SOT-323  
CASE 419  
STYLE 4



### MARKING DIAGRAM



B7 = Device Code  
M = Date Code\*  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation may vary depending upon manufacturing location.

### ORDERING INFORMATION

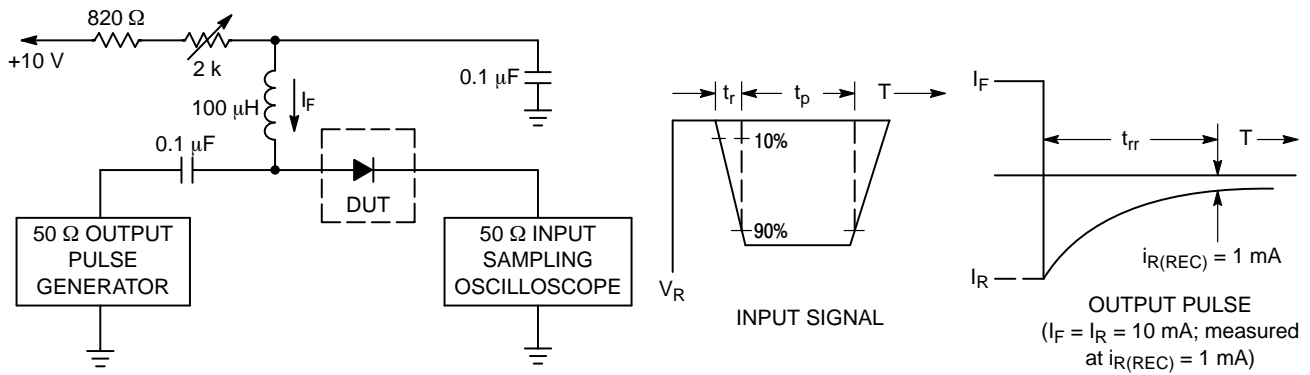
| Device      | Package              | Shipping†         |
|-------------|----------------------|-------------------|
| BAT54AWT1G  | SOT-323<br>(Pb-Free) | 3,000/Tape & Reel |
| SBAT54AWT1G | SOT-323<br>(Pb-Free) | 3,000/Tape & Reel |

†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.

# BAT54AW

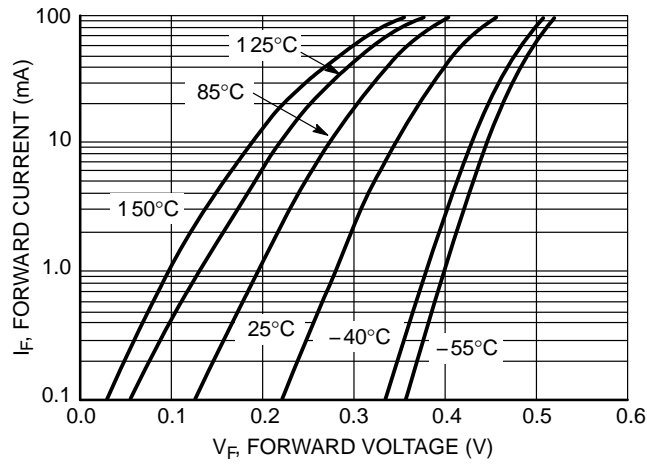
## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted) (EACH DIODE)

| Characteristic                                                                                                                                                 | Symbol      | Min                   | Typ                                  | Max                                  | Unit             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------|--------------------------------------|--------------------------------------|------------------|
| Reverse Breakdown Voltage<br>( $I_R = 10\text{ }\mu\text{A}$ )                                                                                                 | $V_{(BR)R}$ | 30                    | –                                    | –                                    | V                |
| Total Capacitance<br>( $V_R = 1.0\text{ V}$ , $f = 1.0\text{ MHz}$ )                                                                                           | $C_T$       | –                     | 7.6                                  | 10                                   | pF               |
| Reverse Leakage<br>( $V_R = 25\text{ V}$ )                                                                                                                     | $I_R$       | –                     | 0.5                                  | 2.0                                  | $\mu\text{A}$ dc |
| 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>( $I_F = 100\text{ mA}$ ) | $V_F$       | –<br>–<br>–<br>–<br>– | 0.22<br>0.29<br>0.35<br>0.41<br>0.52 | 0.24<br>0.32<br>0.40<br>0.50<br>0.80 | V                |
| Reverse Recovery Time<br>( $I_F = I_R = 10\text{ mA}$ dc, $I_{R(REC)} = 1.0\text{ mA}$ dc, Figure 1)                                                           | $t_{rr}$    | –                     | –                                    | 5.0                                  | ns               |

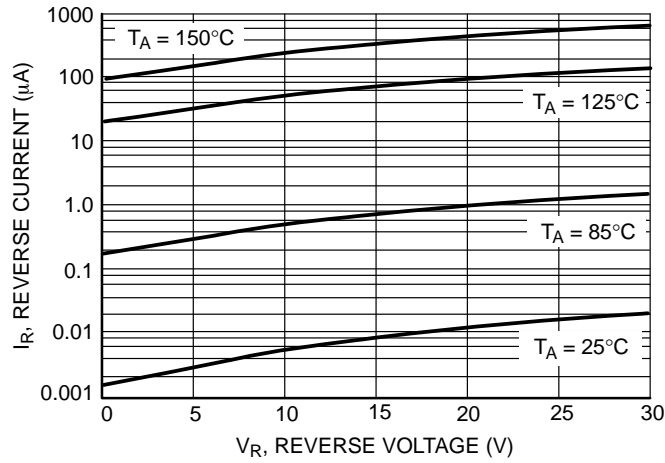


**Figure 1. Recovery Time Equivalent Test Circuit**

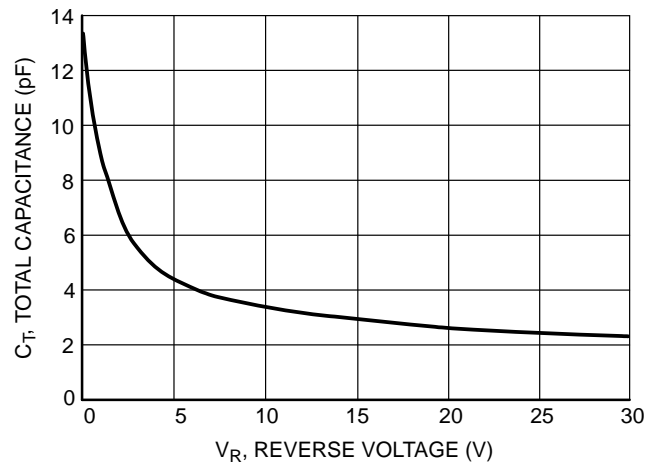
# BAT54AW



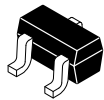
**Figure 2. Forward Voltage**



**Figure 3. Leakage Current**



**Figure 4. Total Capacitance**



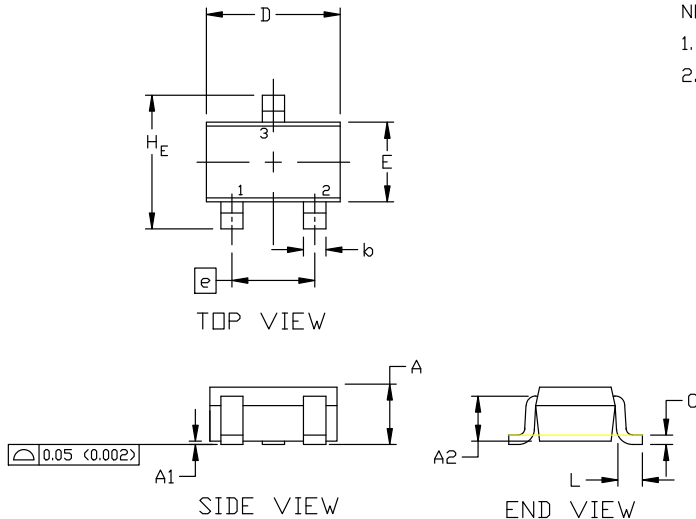
SCALE 4:1

### SC-70 (SOT-323)

#### CASE 419

#### ISSUE R

DATE 11 OCT 2022



#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH

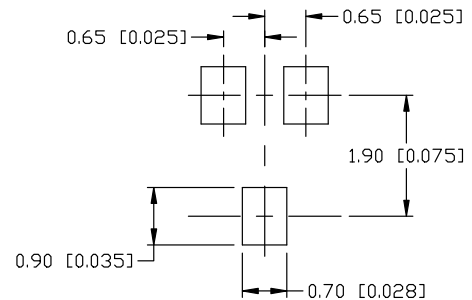
| DIM            | MILLIMETERS |      |      | INCHES    |       |       |
|----------------|-------------|------|------|-----------|-------|-------|
|                | MIN.        | NOM. | MAX. | MIN.      | NOM.  | MAX.  |
| A              | 0.80        | 0.90 | 1.00 | 0.032     | 0.035 | 0.040 |
| A1             | 0.00        | 0.05 | 0.10 | 0.000     | 0.002 | 0.004 |
| A2             | 0.70 REF    |      |      | 0.028 BSC |       |       |
| b              | 0.30        | 0.35 | 0.40 | 0.012     | 0.014 | 0.016 |
| c              | 0.10        | 0.18 | 0.25 | 0.004     | 0.007 | 0.010 |
| D              | 1.80        | 2.00 | 2.20 | 0.071     | 0.080 | 0.087 |
| E              | 1.15        | 1.24 | 1.35 | 0.045     | 0.049 | 0.053 |
| e              | 1.20        | 1.30 | 1.40 | 0.047     | 0.051 | 0.055 |
| e1             | 0.65 BSC    |      |      | 0.026 BSC |       |       |
| L              | 0.20        | 0.38 | 0.56 | 0.008     | 0.015 | 0.022 |
| H <sub>E</sub> | 2.00        | 2.10 | 2.40 | 0.079     | 0.083 | 0.095 |

#### GENERIC MARKING DIAGRAM



XX = Specific Device Code  
M = Date Code  
▪ = 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.



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

#### SOLDERING FOOTPRINT

STYLE 1:  
CANCELLED

STYLE 2:  
PIN 1. ANODE  
2. N.C.  
3. CATHODE

STYLE 3:  
PIN 1. BASE  
2. EMITTER  
3. COLLECTOR

STYLE 4:  
PIN 1. CATHODE  
2. CATHODE  
3. ANODE

STYLE 5:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE

STYLE 6:  
PIN 1. EMITTER  
2. BASE  
3. COLLECTOR

STYLE 7:  
PIN 1. BASE  
2. EMITTER  
3. COLLECTOR

STYLE 8:  
PIN 1. GATE  
2. SOURCE  
3. DRAIN

STYLE 9:  
PIN 1. ANODE  
2. CATHODE  
3. CATHODE-ANODE

STYLE 10:  
PIN 1. CATHODE  
2. ANODE  
3. ANODE-CATHODE

STYLE 11:  
PIN 1. CATHODE  
2. CATHODE  
3. CATHODE

|                  |                 |                                                                                                                                                                                     |
|------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| DESCRIPTION:     | SC-70 (SOT-323) | PAGE 1 OF 1                                                                                                                                                                         |

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