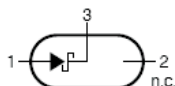


## FEATURES

Extremely Fast Switching Speed

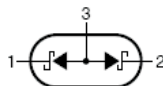
Low forward voltage



**BAT54W**

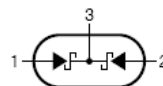
Marking

KL5 or L4



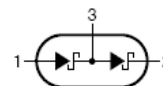
**BAT54AW**

KL6 or L42



**BAT54CW**

KL7 or L43



**BAT54SW**

KL8 or L44

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

### Absolute Maximum Ratings

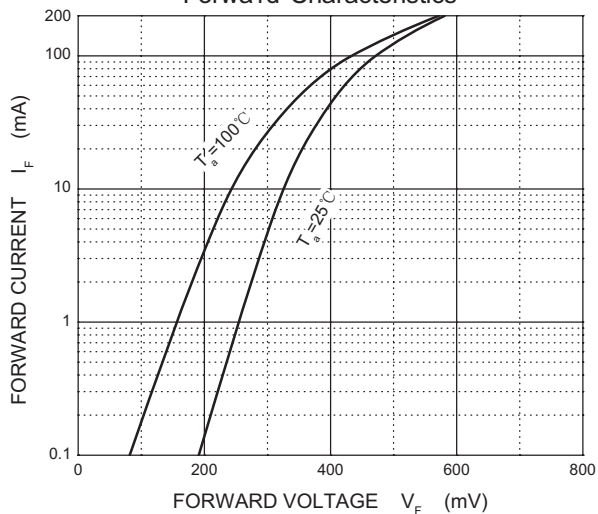
| Parameter                                                      | Symbol          | Rating     | Unit          |
|----------------------------------------------------------------|-----------------|------------|---------------|
| Peak Repetitive Reverse Voltage                                | $V_{RRM}$       | 30         | V             |
| Working Peak Reverse Voltage                                   | $V_{RWM}$       |            |               |
| DC Blocking Voltage                                            | $V_R$           |            |               |
| Forward Continuous Current                                     | $I_{FM}$        | 200        | mA            |
| Non-repetitive Peak Forward Surge Current @ $t=8.3ms$          | $I_{FSM}$       | 600        |               |
| Repetitive Peak Forward Current @ $t \leq 1s, \delta \leq 0.5$ | $I_{FRM}$       | 300        |               |
| Power Dissipation                                              | $P_D$           | 200        | mW            |
| Thermal Resistance Junction to Ambient                         | $R_{\theta JA}$ | 500        | $^{\circ}C/W$ |
| Junction Temperature                                           | $T_J$           | 125        | $^{\circ}C$   |
| Storage Temperature range                                      | $T_{stg}$       | -55 to 150 |               |

ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted.)

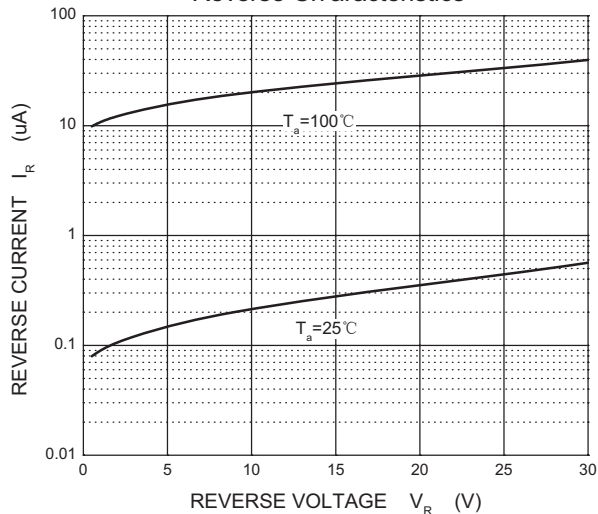
| Parameter             | Symbol            | Test Conditions                                                                                          | Min | Typ | Max  | Unit |
|-----------------------|-------------------|----------------------------------------------------------------------------------------------------------|-----|-----|------|------|
| Reverse Voltage       | V <sub>(BR)</sub> | I <sub>R</sub> = 100 μA                                                                                  | 30  |     |      |      |
| Forward Voltage       | V <sub>F1</sub>   | I <sub>F</sub> = 0.1 mA                                                                                  |     |     | 0.24 | V    |
|                       | V <sub>F2</sub>   | I <sub>F</sub> = 1 mA                                                                                    |     |     | 0.32 |      |
|                       | V <sub>F3</sub>   | I <sub>F</sub> = 10 mA                                                                                   |     |     | 0.40 |      |
|                       | V <sub>F4</sub>   | I <sub>F</sub> = 30 mA                                                                                   |     |     | 0.50 |      |
|                       | V <sub>F5</sub>   | I <sub>F</sub> = 100 mA                                                                                  |     |     | 1    |      |
| Leakage Current       | I <sub>R</sub>    | V <sub>R</sub> = 25 V                                                                                    |     |     | 2    | μA   |
| Diode Capacitance     | C <sub>D</sub>    | V <sub>R</sub> = 0 V, f = 1 MHz                                                                          |     |     | 10   | pF   |
| Reverse Recovery Time | t <sub>rr</sub>   | I <sub>F</sub> = I <sub>R</sub> = 10 mA, I <sub>rr</sub> = 0.1 × I <sub>R</sub> , R <sub>L</sub> = 100 Ω |     |     | 5    | ns   |

## RATING AND CHARACTERISTIC CURVES

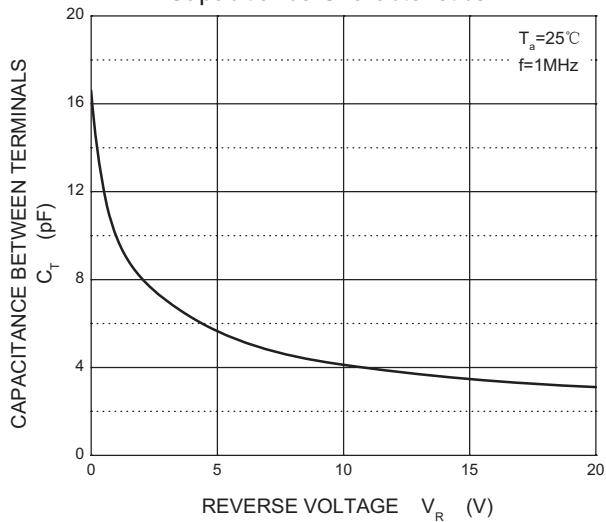
Forward Characteristics



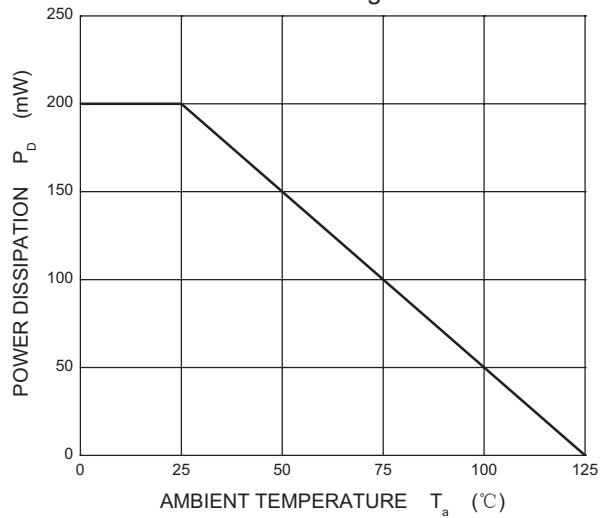
Reverse Characteristics



Capacitance Characteristics

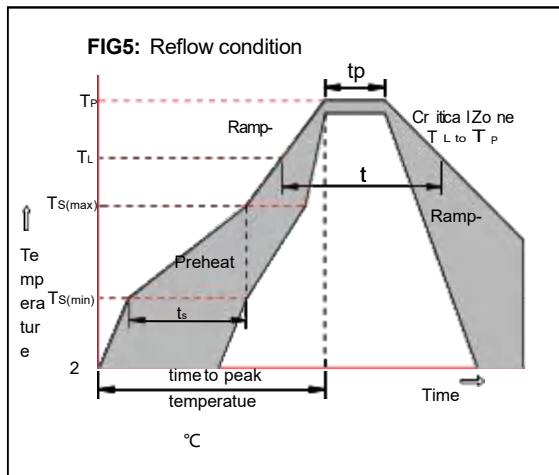


Power Derating Curve



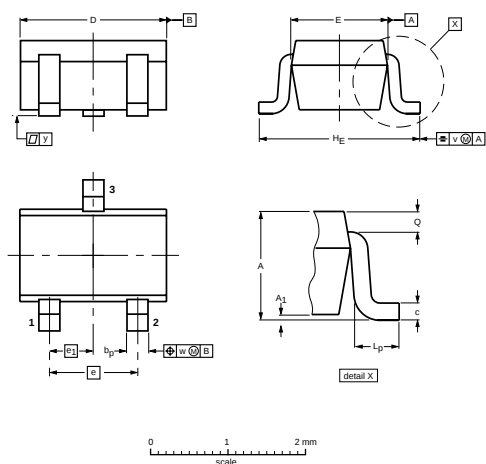
## Soldering parameters

| Reflow Condition                                        |                                   | Pb-Free assembly<br>(see as below) |
|---------------------------------------------------------|-----------------------------------|------------------------------------|
| Pre Heat                                                | -Temperature Min ( $T_{s(min)}$ ) | +150°C                             |
|                                                         | -Temperature Max( $T_{s(max)}$ )  | +200°C                             |
|                                                         | -Time (Min to Max) (ts)           | 60-180 secs.                       |
| Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak) |                                   | 3°C/sec. Max                       |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                    |                                   | 3°C/sec. Max                       |
| Reflow                                                  | -Temperature( $T_L$ )(Liquid us)  | +217°C                             |
|                                                         | -Temperature( $t_L$ )             | 60-150 secs.                       |
| Peak Temp ( $T_P$ )                                     |                                   | +260(+0/-5)°C                      |
| Time within 5°C of actual Peak Temp ( $t_P$ )           |                                   | 30 secs. Max                       |
| Ramp-down Rate                                          |                                   | 6°C/sec. Max                       |
| Time 25°C to Peak Temp ( $T_P$ )                        |                                   | 8 min. Max                         |
| Do not exceed                                           |                                   | +260°C                             |



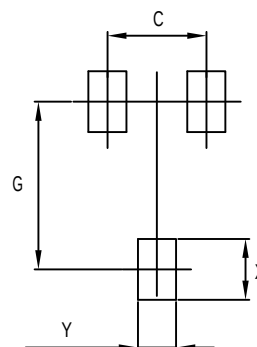
## Package Dimensions & Suggested Pad Layout

### SOT-323



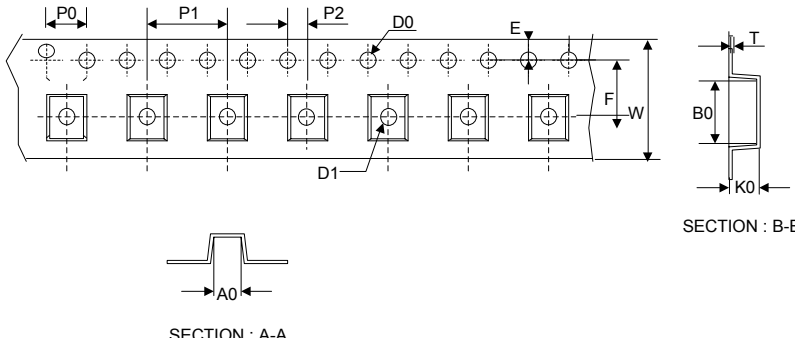
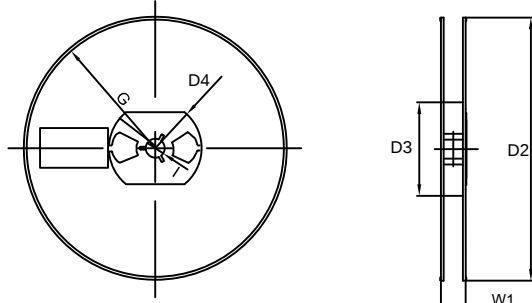
DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub><br>max | b <sub>p</sub> | c            | D          | E            | e   | e <sub>1</sub> | H <sub>E</sub> | L <sub>P</sub> | Q            | v   | w   |
|------|------------|-----------------------|----------------|--------------|------------|--------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm   | 1.1<br>0.8 | 0.1                   | 0.4<br>0.3     | 0.25<br>0.10 | 2.2<br>1.8 | 1.35<br>1.15 | 1.3 | 0.65           | 2.2<br>2.0     | 0.45<br>0.15   | 0.23<br>0.13 | 0.2 | 0.2 |



| Dimensions | Value<br>(in mm) |
|------------|------------------|
| C          | 1.30             |
| G          | 2.00             |
| X          | 0.90             |
| Y          | 0.65             |

## Tape & reel specification

| Tape                                                                                                                        |  | Symbol            | Dimension (mm) |
|-----------------------------------------------------------------------------------------------------------------------------|--|-------------------|----------------|
|  <p>SECTION : A-A</p> <p>SECTION : B-B</p> |  | P0                | 4.00±0.20      |
|                                                                                                                             |  | P1                | 4.00±0.20      |
|                                                                                                                             |  | P2                | 2.00±0.20      |
|                                                                                                                             |  | D0                | 1.55±0.20      |
|                                                                                                                             |  | D1                | 1.00±0.20      |
|                                                                                                                             |  | E                 | 1.55±0.25      |
|                                                                                                                             |  | F                 | 3.60±0.20      |
|                                                                                                                             |  | W                 | 8.00±0.20      |
|                                                                                                                             |  | A0                | 2.50±0.20      |
|                                                                                                                             |  | B0                | 2.60±0.20      |
|                                                                                                                             |  | K0                | 1.40±0.20      |
|                                                                                                                             |  | T                 | 0.20±0.20      |
|                                                                                                                             |  | D2                | 177.0±5.0      |
|                                                                                                                             |  | D3                | 55Min.         |
|                                                                                                                             |  | D4                | R24.6±2.0      |
| 7" Reel                                                                                                                     |  | G                 | R82.0±2.0      |
|                                          |  | I                 | 13.0±2.0       |
|                                                                                                                             |  | W1                | 10.20±3.0      |
|                                                                                                                             |  | Quantity: 3000PCS |                |