

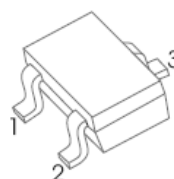
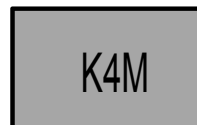


## FEATURES

Complementary to MMBT5551W

Small Surface Mount Package

Ideal for Medium Power Amplification and Switching



SOT-323

- 1. BASE
- 2. EMITTER
- 3. COLLECTOR

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

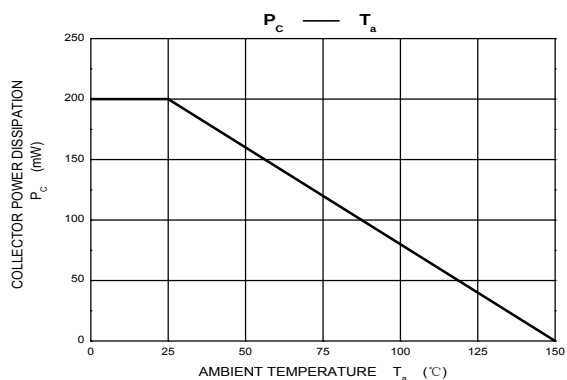
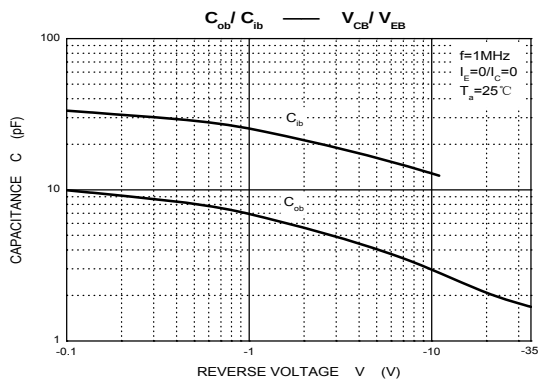
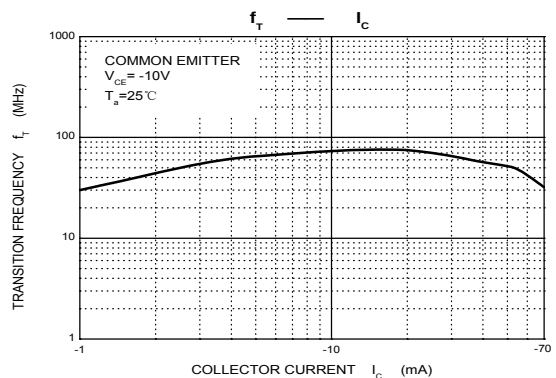
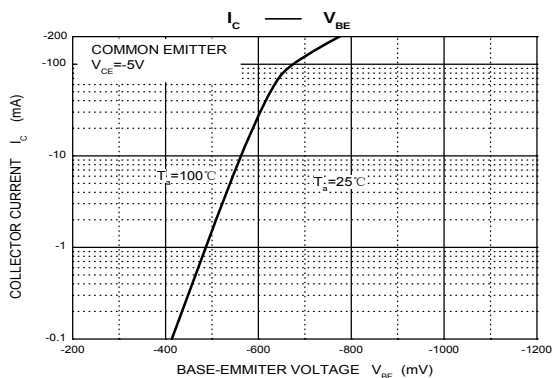
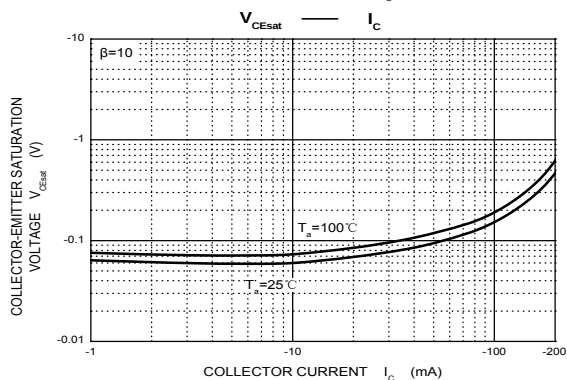
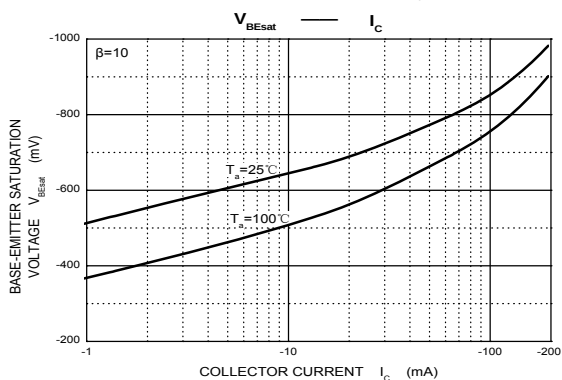
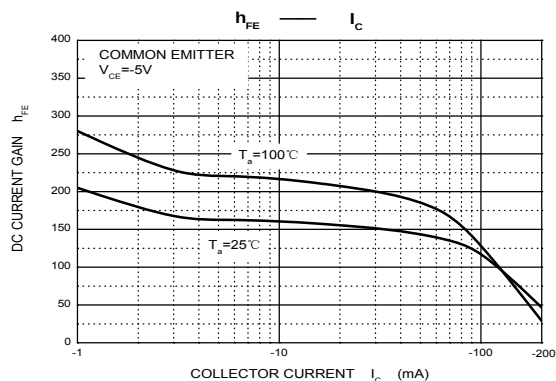
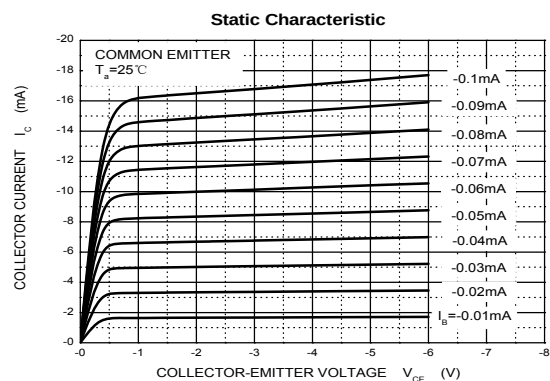
MAXIMUM RATINGS (T = 25°C unless otherwise noted)

| Symbol          | Parameter                                   | Value    | Unit |
|-----------------|---------------------------------------------|----------|------|
| $V_{CBO}$       | Collector-Base Voltage                      | -160     | V    |
| $V_{CEO}$       | Collector-Emitter Voltage                   | -150     | V    |
| $V_{EBO}$       | Emitter-Base Voltage                        | -5       | V    |
| $I_C$           | Collector Current                           | -600     | mA   |
| $P_C$           | Collector Power Dissipation                 | 200      | mW   |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient | 625      | °C/W |
| $T_j$           | Junction Temperature                        | 150      | °C   |
| $T_{stg}$       | Storage Temperature                         | -55~+150 | °C   |

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

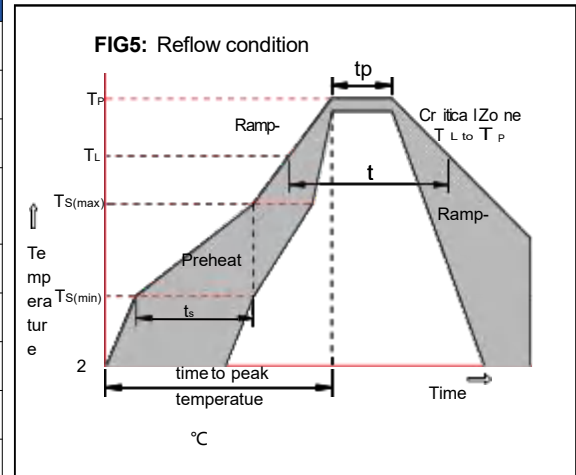
| Parameter                            | Symbol        | Test conditions                          | Min  | Typ | Max  | Unit |
|--------------------------------------|---------------|------------------------------------------|------|-----|------|------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C = -100\mu A, I_E = 0$               | -160 |     |      | V    |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C = -1mA, I_B = 0$                    | -150 |     |      | V    |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E = -10\mu A, I_C = 0$                | -5   |     |      | V    |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB} = -120V, I_E = 0$                |      |     | -50  | nA   |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = -3V, I_C = 0$                  |      |     | -50  | nA   |
| DC current gain                      | $h_{FE}$      | $V_{CE} = -5V, I_C = -1mA$               | 80   |     |      |      |
|                                      |               | $V_{CE} = -5V, I_C = -10mA$              | 100  |     | 300  |      |
|                                      |               | $V_{CE} = -5V, I_C = -50mA$              | 50   |     |      |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -50mA, I_B = -5mA$                |      |     | -0.5 | V    |
|                                      |               | $I_C = -10mA, I_B = -1mA$                |      |     | -0.2 | V    |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = -50mA, I_B = -5mA$                |      |     | -1   | V    |
|                                      |               | $I_C = -10mA, I_B = -1mA$                |      |     | -1   | V    |
| Transition frequency                 | $f_T$         | $V_{CE} = -10V, I_C = -10mA, f = 100MHz$ | 100  |     |      | MHz  |
| Collector output capacitance         | $C_{ob}$      | $V_{CB} = -10V, I_E = 0, f = 1MHz$       |      |     | 6    | pF   |

RATING AND CHARACTERISTIC CURVES



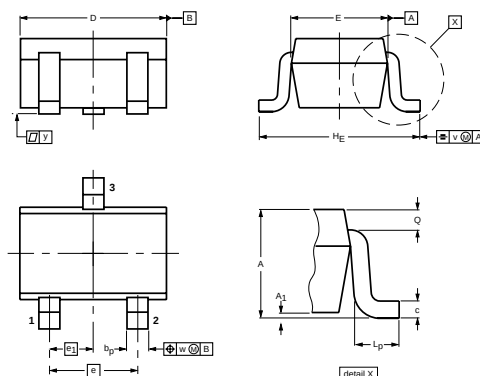
## Soldering parameters

| 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

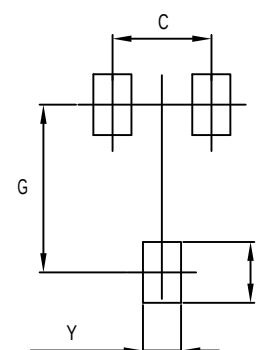
### SOT-323



0 1 2 mm  
scale

DIMENSIONS (mm are the original dimensions)

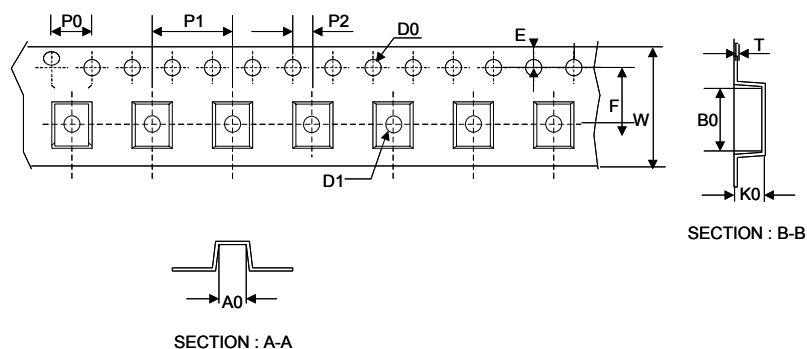
| UNIT | A          | A <sub>1</sub><br>max | b <sub>p</sub> | c            | D          | E            | e   | e <sub>1</sub> | H <sub>E</sub> | L <sub>P</sub> | Q            | v   | w   |
|------|------------|-----------------------|----------------|--------------|------------|--------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| 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             |

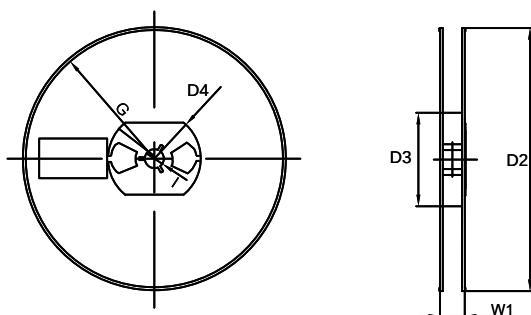
## Tape & reel specification

### Tape



| Symbol | Dimension (mm) |
|--------|----------------|
| 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      |
| G      | R82.0±2.0      |
| I      | 13.0±2.0       |
| W1     | 10.20±3.0      |

### 7" Reel



Quantity: 3000PCS