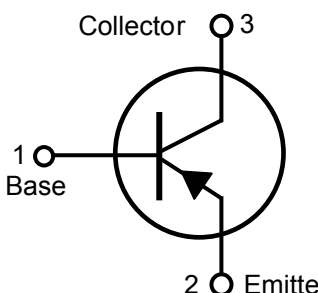




|  |   |
|--|---|
| <p>PNP型 小功率 贴片三极管<br/>PNP High Voltage Transistor SMD</p>  | <p><b>MMBT5401</b><br/>对应其他工业型号<br/><b>5401</b></p> |
| <ul style="list-style-type: none"> <li>■ Transistor Polarity: PNP</li> <li>■ Transistor pinout: BEC</li> <li>■ SOT-23 Package</li> <li>■ Marking Code: 2L</li> <li>■ Ideal for Medium Power Amplification and Switching</li> </ul> |   |

|   |  |   |
|---|--|---|
| <p style="text-align: center;">Inner circuit</p>  <p style="text-align: center;">SOT-23 内部结构</p> | <p style="text-align: center;">MMBT5401</p>  <p style="text-align: center;">SOT-23 管脚排列</p> | <p style="text-align: center;">元件标识 (打印)</p>  <p style="text-align: center;">DEVICE MARKING:</p> |
|---|--|---|

■ CLASSIFICATION OF hFE

|       |         |         |
|-------|---------|---------|
| RANK  | L       | H       |
| RANGE | 100~200 | 200~300 |

■ MAXIMUM RATINGS

| Symbol         | Parameter  | Value    | Unit |
|----------------|--|----------|------|
| $V_{CB0}$      | Collector-Base Voltage                           | -160     | V    |
| $V_{CE0}$      | Collector-Emitter Voltage                        | -150     | V    |
| $V_{EB0}$      | Emitter-Base Voltage                             | -5       | V    |
| $I_c$          | Collector Current                                | -600     | mA   |
| $P_c$          | Collector Power Dissipation                      | 350      | mW   |
| $T_J, T_{stg}$ | Operation Junction and Storage Temperature Range | -55~+150 | °C   |

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

| PARAMETER                            | SYMBOL        | TEST CONDITIONS   | MIN  | TYP | MAX  | UNIT |
|--------------------------------------|---------------|---|------|-----|------|------|
| Collector-Base Breakdown Voltage     | $BV_{CBO}$    | $I_C=-100\mu\text{A}, I_E=0$  | -160 |     |      | V    |
| Collector-Emitter Breakdown Voltage  | $BV_{CEO}$    | $I_C=-1\text{mA}, I_B=0$  | -150 |     |      | V    |
| Emitter-Base Breakdown Voltage       | $BV_{EBO}$    | $I_E=-10\mu\text{A}, I_C=0$   | -5   |     |      | V    |
| Collector Cut-off Current            | $I_{CBO}$     | $V_{CB}=-120\text{V}, I_E=0$  |      |     | -50  | nA   |
| Emitter Cut-off Current              | $I_{EBO}$     | $V_{BE}=-3\text{V}, I_C=0$  |      |     | -50  | nA   |
| DC Current Gain(Note)                | $h_{FE}$      | $V_{CE}=-5\text{V}, I_C=-1\text{mA}$  | 80   |     |      |      |
|                                      |               | $V_{CE}=-5\text{V}, I_C=-10\text{mA}$   | 80   | 160 | 400  |      |
|                                      |               | $V_{CE}=-5\text{V}, I_C=-50\text{mA}$   | 80   |     |      |      |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C=-10\text{mA}, I_B=-1\text{mA}$   |      |     | -0.2 | V    |
|                                      |               | $I_C=-50\text{mA}, I_B=-5\text{mA}$   |      |     | -0.5 |      |
| Base-Emitter Saturation Voltage      | $V_{BE(SAT)}$ | $I_C=-10\text{mA}, I_B=-1\text{mA}$   |      |     | -1   | V    |
|                                      |               | $I_C=-50\text{mA}, I_B=-5\text{mA}$   |      |     | -1   |      |
| Current Gain Bandwidth Product       | $f_T$         | $V_{CE}=-10\text{V}, I_C=-10\text{mA}, f=100\text{MHz}$   | 100  |     | 300  | MHz  |
| Output Capacitance                   | $C_{OB}$      | $V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$  |      |     | 6.0  | pF   |
| Noise Figure                         | NF            | $I_C=-0.25\text{mA}, V_{CE}=-5\text{V}$<br>$R_S=1\text{k}\Omega, f=10\text{Hz} \sim 15.7\text{kHz}$ |      |     | 8    | dB   |

 Note: Pulse test:  $P^W < 300^{\mu}\text{s}$ , Duty Cycle  $< 2\%$

■ TYPICAL CHARACTERISTICS

Fig.1 Collector Output Capacitance

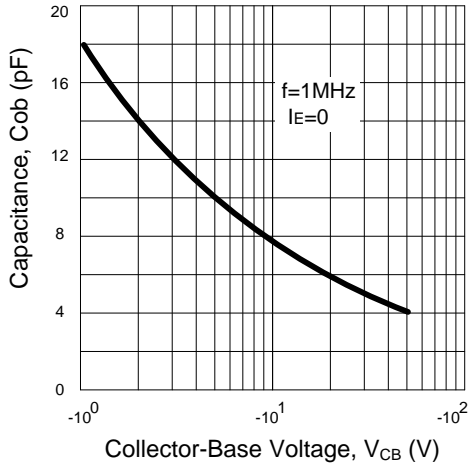


Fig.2 DC Current Gain

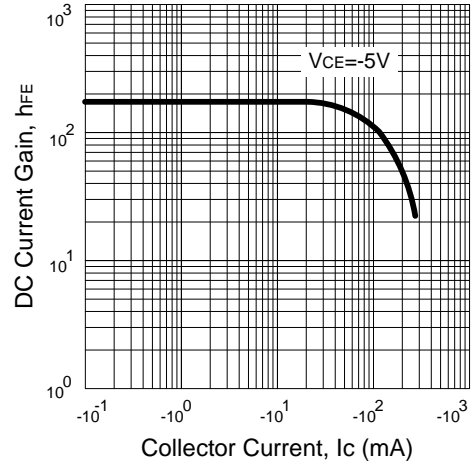


Fig.3 Base-Emitter on Voltage

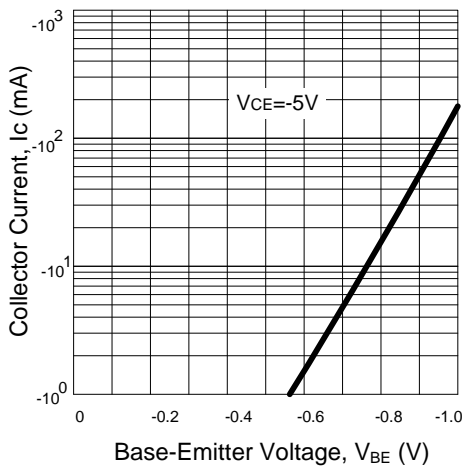


Fig.4 Saturation Voltage

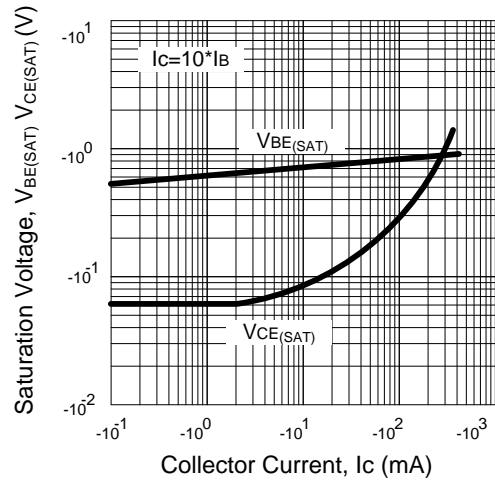
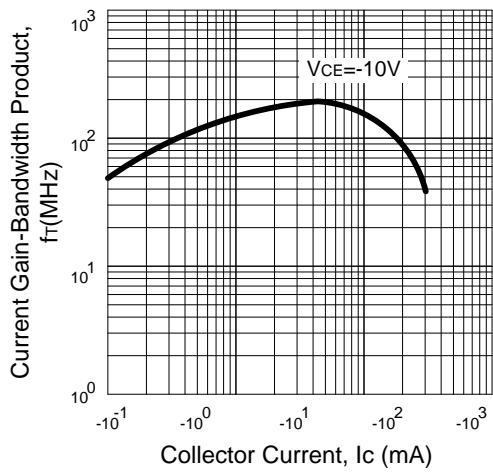
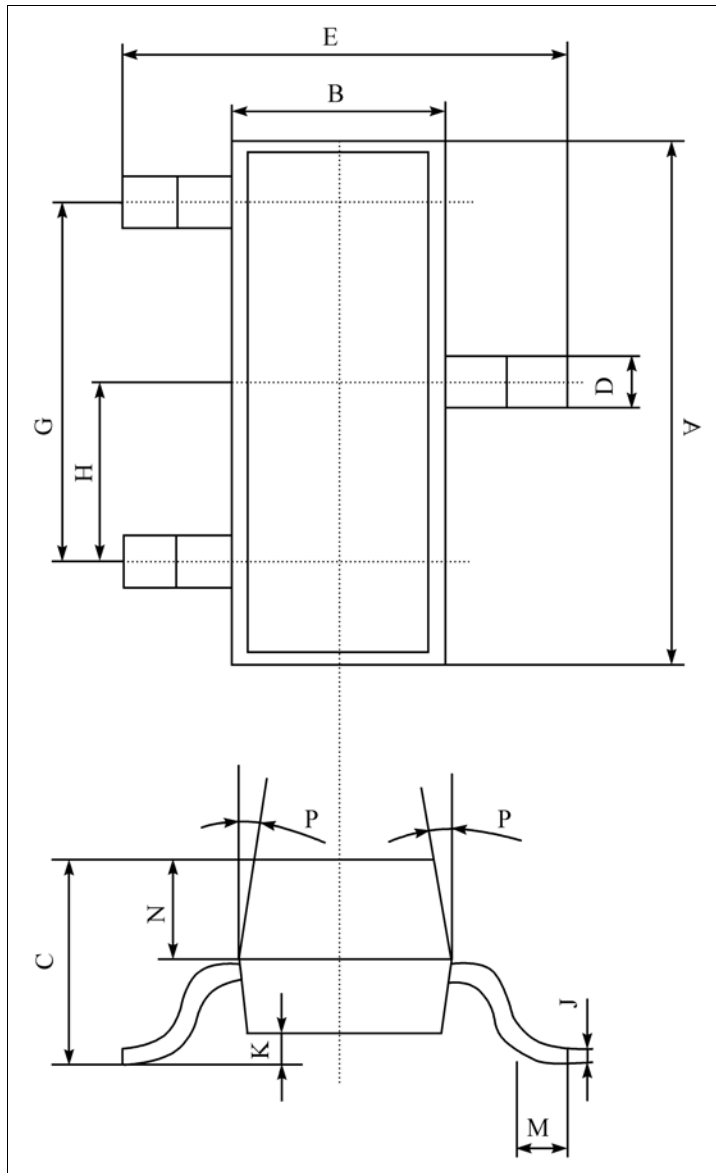


Fig.5 Current Gain-Bandwidth Product



■ DIMENSION

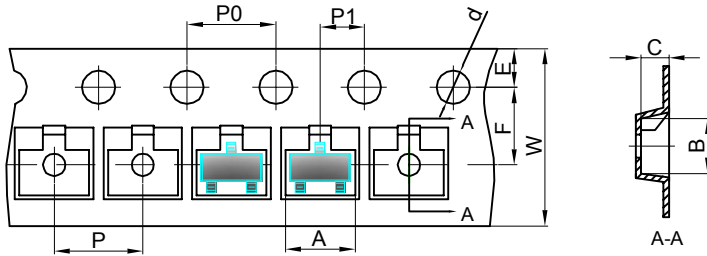


单位 (UNIT) : mm

| 序号  | 数值及公差     |
|---|-----------|
| A   | 2.90±0.10 |
| B   | 1.30±0.10 |
| C   | 1.00±0.10 |
| D   | 0.40±0.10 |
| E   | 2.40±0.20 |
| G   | 1.90±0.10 |
| H   | 0.95±0.05 |
| J   | 0.13±0.05 |
| K   | 0.00-0.10 |
| M   | ≥0.20     |
| N   | 0.60±0.10 |
| P   | 7±2°      |
| Packing<br>SOT-23 包装规格<br>SMD片式表面贴封装<br>包装方式: 载带卷盘包装<br>Tape & Reel, 3Kpcs/Reel<br>每卷数量3000只 (3Kpcs/Reel)<br>每盒数量45000只 (45Kpcs/BOX)<br>每箱数量180000只 (180Kpcs/Cartons) |           |

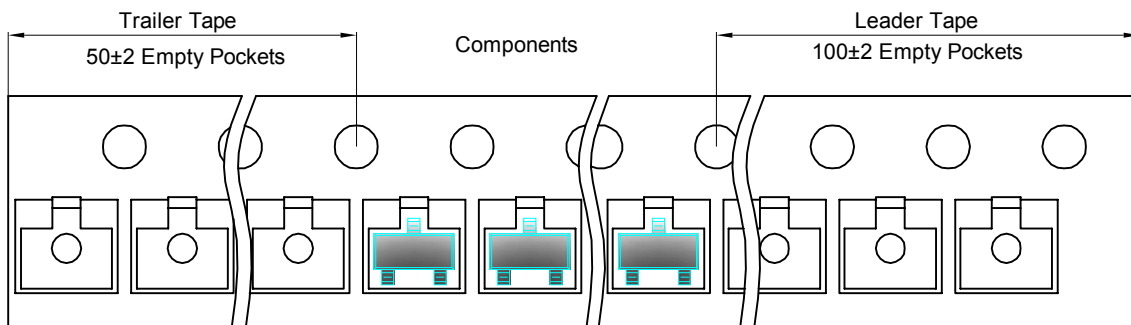
## SOT-23 Tape and reel

SOT-23 Embossed Carrier Tape

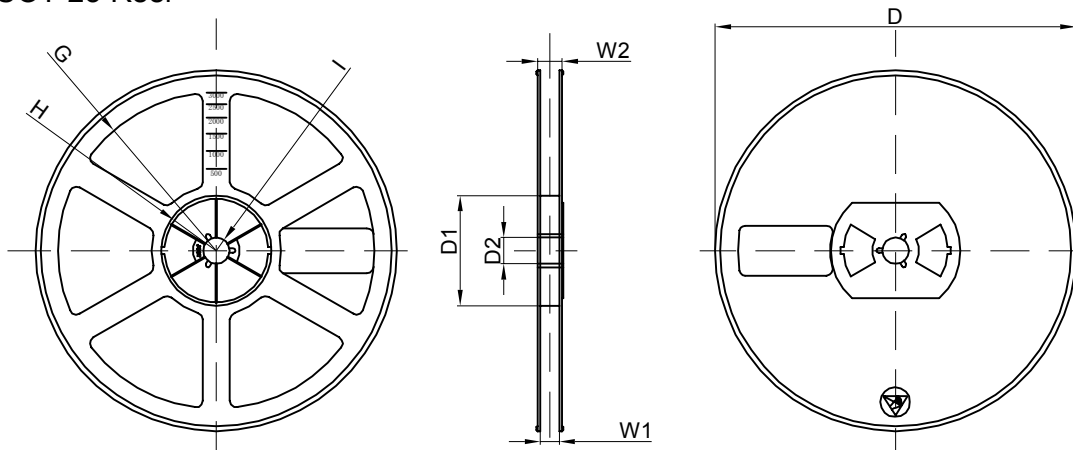


| Dimensions are in millimeter |      |      |      |       |      |      |      |      |      |      |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|
| Pkg type                     | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | W    |
| SOT-23                       | 3.15 | 2.77 | 1.22 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

## SOT-23 Tape Leader and Trailer



## SOT-23 Reel



| Dimensions are in millimeter |         |       |       |        |        |       |      |       |
|------------------------------|---------|-------|-------|--------|--------|-------|------|-------|
| Reel Option                  | D       | D1    | D2    | G      | H      | I     | W1   | W2    |
| 7" Dia                       | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| REEL     | Reel Size | Box        | Box Size(mm) | Carton      | Carton Size(mm) | G.W.(kg) |
|----------|-----------|------------|--------------|-------------|-----------------|----------|
| 3000 pcs | 7 inch    | 45,000 pcs | 192×192×193  | 180,000 pcs | 404×404×214     |          |