

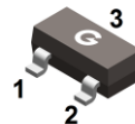
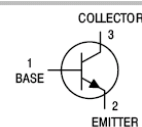
### Features

- Epitaxial planar die construction
- Complementary PNP type available(MMBT5401)

HF

### Mechanical Data

- Case: SOT-23
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208



SOT-23

### Ordering Information

| Part Number | Package | Shipping Quantity      | Marking Code |
|-------------|---------|------------------------|--------------|
| MMBT5551    | SOT-23  | 3000 pcs / Tape & Reel | G1           |

### Maximum Ratings (@ T<sub>A</sub> = 25°C unless otherwise specified)

| Parameter                           | Symbol           | Value | Unit |
|-------------------------------------|------------------|-------|------|
| Collector-Base Voltage              | V <sub>CBO</sub> | 180   | V    |
| Collector-Emitter Breakdown Voltage | V <sub>CEO</sub> | 160   | V    |
| Emitter-Base Breakdown Voltage      | V <sub>EBO</sub> | 6     | V    |
| Collector Current (Continuous)      | I <sub>C</sub>   | 0.6   | A    |

### Thermal Characteristics

| Parameter                                         | Symbol           | Value      | Unit |
|---------------------------------------------------|------------------|------------|------|
| Power Dissipation                                 | P <sub>D</sub>   | 0.35       | W    |
| Thermal Resistance Junction-to-Air <sup>*1</sup>  | R <sub>θJA</sub> | 396        | °C/W |
| Thermal Resistance Junction-to-Case <sup>*1</sup> | R <sub>θJC</sub> | 213        | °C/W |
| Thermal Resistance Junction-to-Lead <sup>*1</sup> | R <sub>θJL</sub> | 186        | °C/W |
| Junction Temperature Range                        | T <sub>J</sub>   | -55 ~ +150 | °C   |
| Storage Temperature Range                         | T <sub>STG</sub> | -55 ~ +150 | °C   |

Note 1: The data tested by surface mounted on a 15mm \* 15mm \* 1mm FR4-epoxy P.C.B

### Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

| Parameter                            | Symbol        | Test Condition                                                  | Min. | Typ. | Max. | Unit |
|--------------------------------------|---------------|-----------------------------------------------------------------|------|------|------|------|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C = 100\mu\text{A}, I_E = 0$                                 | 180  | -    | -    | V    |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C = 0.1\text{mA}, I_B = 0$                                   | 160  | -    | -    | V    |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E = 10\mu\text{A}, I_C = 0$                                  | 6    | -    | -    | V    |
| Collector Cut-off Current            | $I_{CBO}$     | $V_{CB} = 120\text{V}, I_E = 0$                                 | -    | -    | 50   | nA   |
| Emitter Cut-off Current              | $I_{EBO}$     | $V_{EB} = 4\text{V}, I_C = 0$                                   | -    | -    | 50   | nA   |
| DC Current Gain                      | $h_{FE}$      | $V_{CE} = 5\text{V}, I_C = 1\text{mA}$                          | 80   | -    | -    | -    |
|                                      |               | $V_{CE} = 5\text{V}, I_C = 10\text{mA}$                         | 100  | -    | 200  | -    |
|                                      |               | $V_{CE} = 5\text{V}, I_C = 50\text{mA}$                         | 30   | -    | -    | -    |
| Collector-emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 10\text{mA}, I_B = 1\text{mA}$                           | -    | -    | 0.15 | V    |
|                                      |               | $I_C = 50\text{mA}, I_B = 5\text{mA}$                           | -    | -    | 0.2  | V    |
| 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    | V    |
| Collector-base Output Capacitance    | $C_{cbo}$     | $V_{CB} = 10\text{V}, f = 1\text{MHz}, I_E = 10\text{mA}$       | -    | -    | 6    | pF   |
| Current-Gain— Bandwidth Product      | $f_T$         | $I_C = 10\text{mA}, V_{CE} = 10\text{V}$<br>$f = 100\text{MHz}$ | 100  | -    | 300  | MHz  |

Ratings and Characteristics Curves (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)

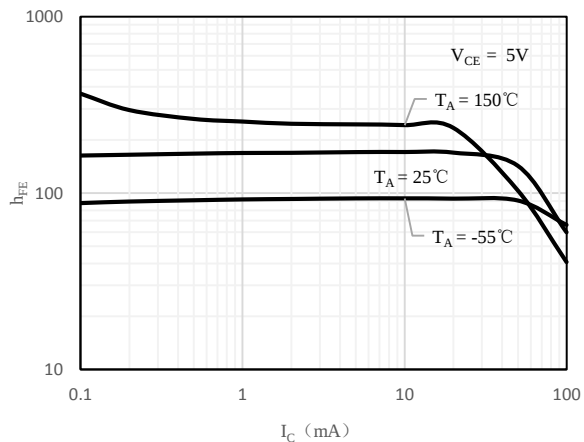


Fig 1  $h_{FE}$  vs.  $I_C$

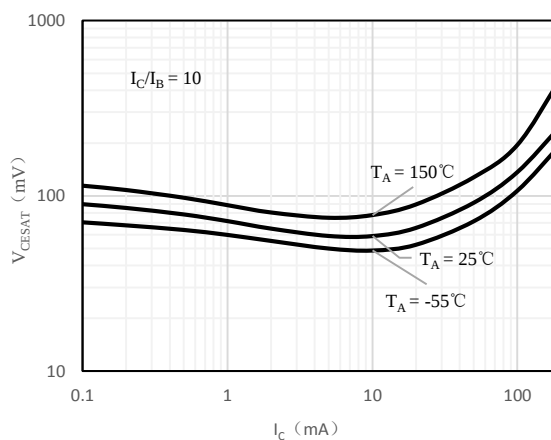


Fig 2  $V_{CE(sat)}$  vs.  $I_C$

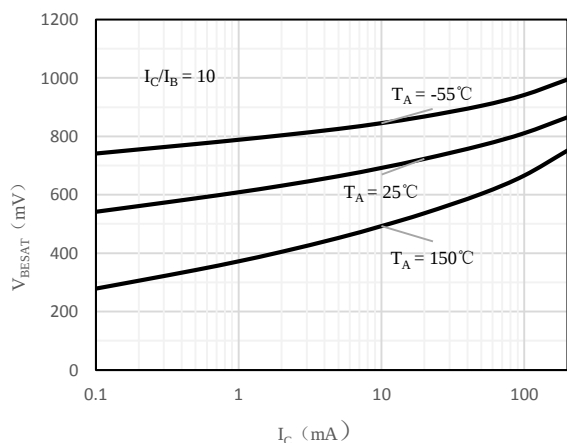


Fig 3  $V_{BE(sat)}$  vs.  $I_C$

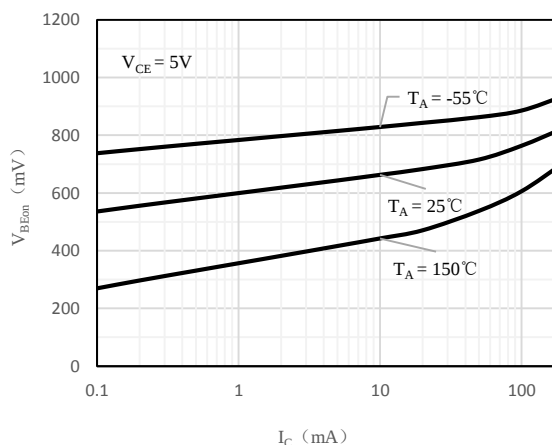
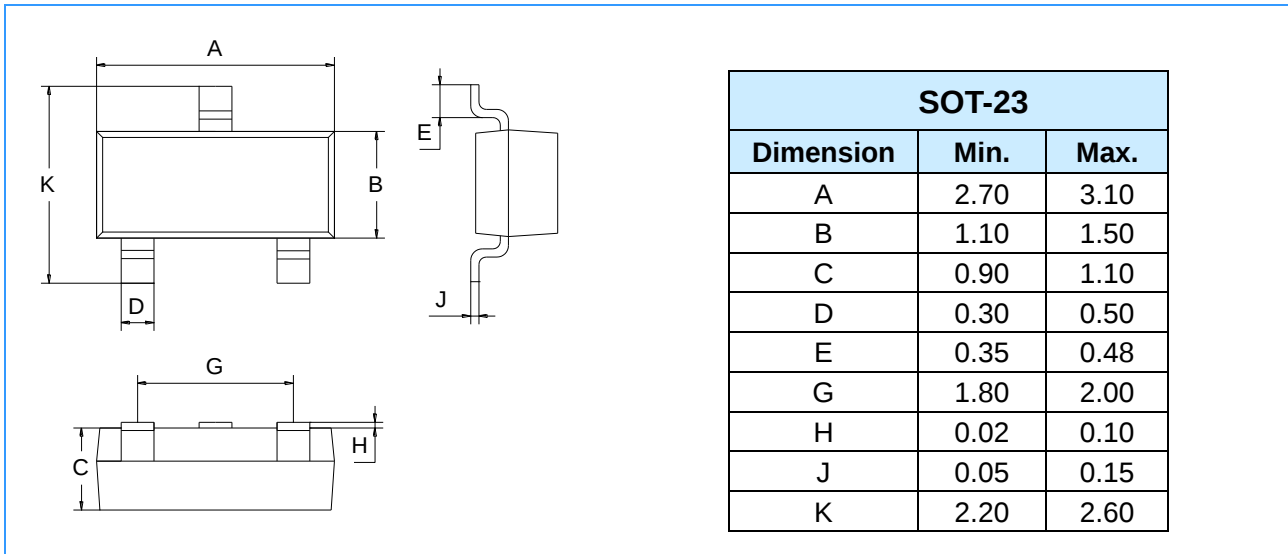
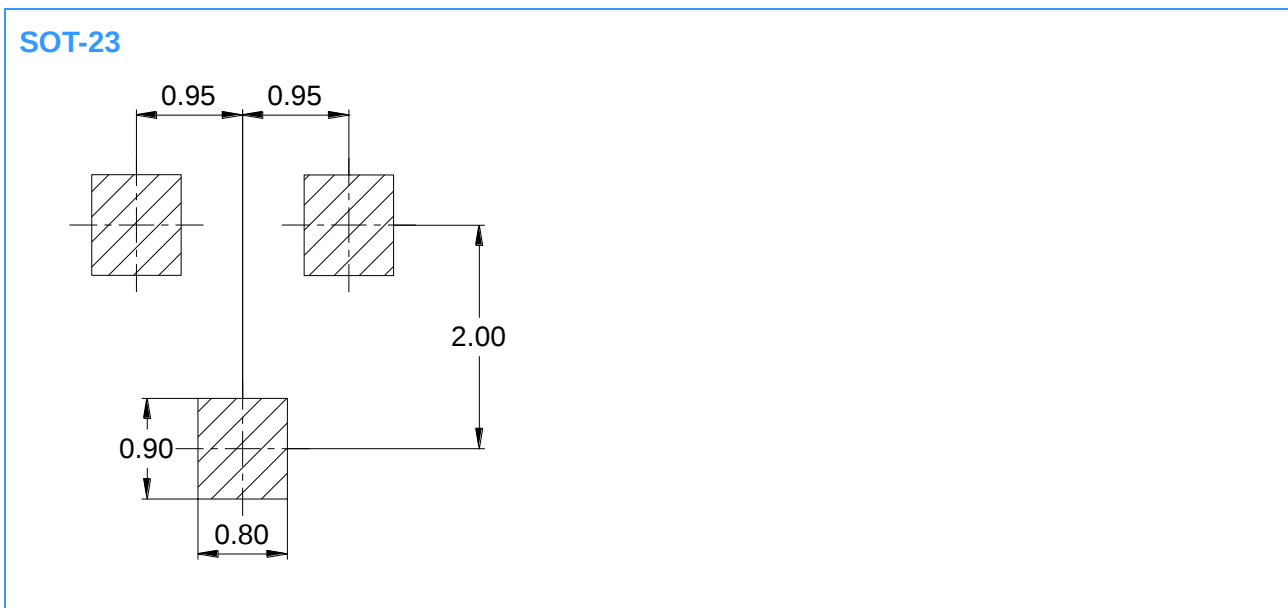


Fig 4  $V_{BE(on)}$  vs.  $I_C$

## Package Outline Dimensions (Unit: mm)



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