

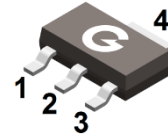
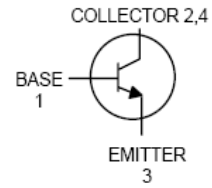
### Features

- High collector current
- Low collector-emitter saturation voltage
- RoHS compliant with Halogen-free

HF

### Mechanical Data

- Case: SOT-223
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208



SOT-223

### Ordering Information

| Part Number | Package | Shipping Quantity      | Marking Code |
|-------------|---------|------------------------|--------------|
| BCP56-16    | SOT-223 | 4000 pcs / Tape & Reel | BL           |

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

| Parameter                                     | Symbol           | Value      | Unit |
|-----------------------------------------------|------------------|------------|------|
| Collector-Base Voltage                        | V <sub>CBO</sub> | 100        | V    |
| Collector-Emitter Voltage                     | V <sub>CEO</sub> | 80         | V    |
| Emitter-Base Voltage                          | V <sub>EBO</sub> | 5          | V    |
| Continuous Collector Current                  | I <sub>C</sub>   | 1          | A    |
| Peak Collector Current (t <sub>p</sub> ≤ 1ms) | I <sub>CM</sub>  | 2          | A    |
| Base Current (Continuous)                     | I <sub>B</sub>   | 0.1        | A    |
| Base Current (Peak)                           | I <sub>BM</sub>  | 0.2        | A    |
| Power Dissipation (T <sub>A</sub> = 25°C) *1  | P <sub>D</sub>   | 2          | W    |
| Operating junction Temperature                | T <sub>J</sub>   | -55 ~ +150 | °C   |
| Storage Temperature Range                     | T <sub>STG</sub> | -55 ~ +150 | °C   |

### Thermal Characteristics

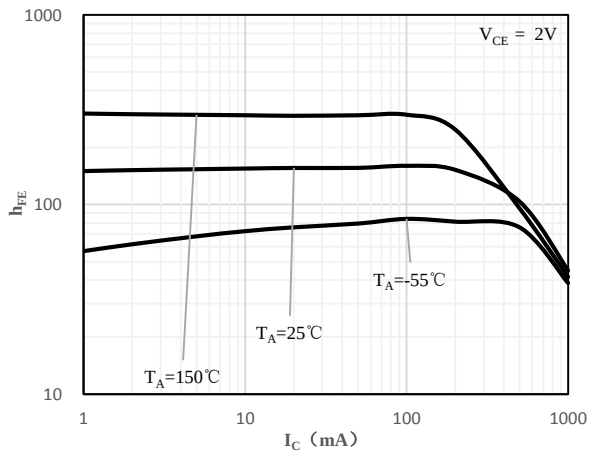
| Parameter                              | Symbol           | Value | Unit |
|----------------------------------------|------------------|-------|------|
| Thermal Resistance Junction-to-Air *1  | R <sub>θJA</sub> | 60    | °C/W |
| Thermal Resistance Junction-to-Case *1 | R <sub>θJC</sub> | 25    | °C/W |
| Thermal Resistance Junction-to-Lead *1 | R <sub>θJL</sub> | 20    | °C/W |

Note 1: The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper

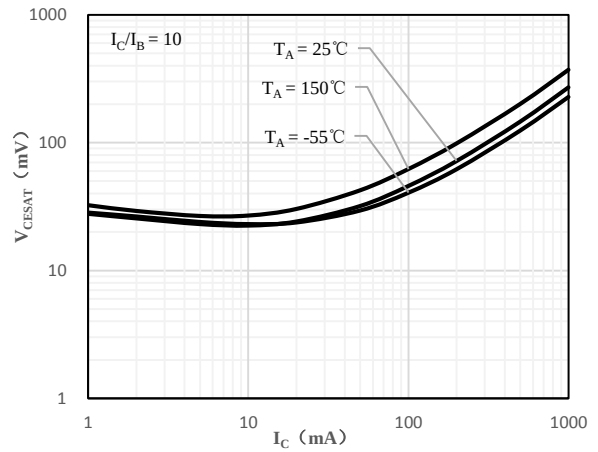
### Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

| Parameter                            | Symbol        | Test Condition                                                  | Min. | Typ. | Max. | Unit |
|--------------------------------------|---------------|-----------------------------------------------------------------|------|------|------|------|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C = 100\mu\text{A}, I_E = 0$                                 | 100  | -    | -    | V    |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C = 10\text{mA}, I_B = 0$                                    | 80   | -    | -    | V    |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E = 10\mu\text{A}, I_C = 0$                                  | 5    | -    | -    | V    |
| Collector Cut-off Current            | $I_{CBO}$     | $V_{CB} = 30\text{V}, I_E = 0$                                  | -    | -    | 100  | nA   |
| Emitter Cut-off Current              | $I_{EBO}$     | $V_{EB} = 5\text{V}, I_C = 0$                                   | -    | -    | 100  | nA   |
| DC Current Gain                      | $h_{FE}$      | $V_{CE} = 2\text{V}, I_C = 150\text{mA}$                        | 100  | -    | 250  | -    |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 500\text{mA}, I_B = 50\text{mA}$                         | -    | -    | 0.5  | V    |
| Base-emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = 500\text{mA}, I_B = 50\text{mA}$                         | -    | -    | 1.2  | V    |
| Base-Emitter Voltage                 | $V_{BE(on)}$  | $I_C = 500\text{mA}, V_{CE} = 2\text{V}$                        | -    | -    | 1    | V    |
| Transition Frequency                 | $f_T$         | $V_{CE} = 10\text{V}, I_C = 50\text{mA}$<br>$f = 100\text{MHz}$ | 100  | -    | -    | MHz  |

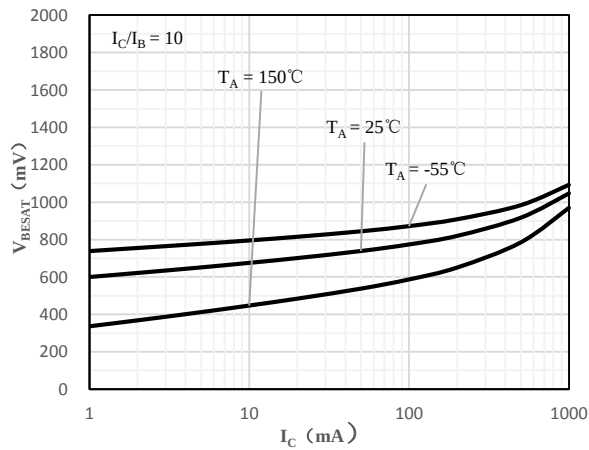
**Ratings and Characteristic Curves** (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)



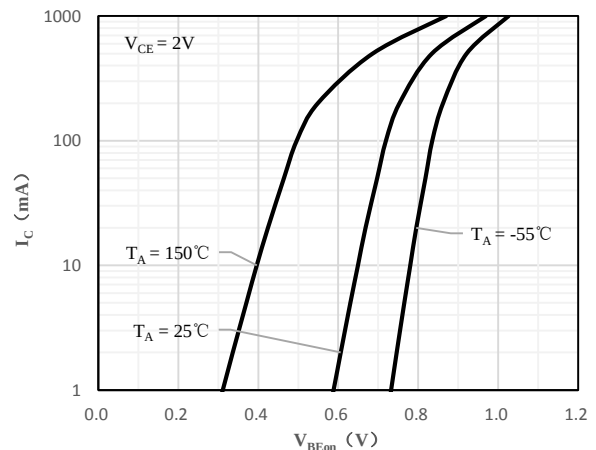
**Fig 1  $h_{FE}$  vs.  $I_C$**



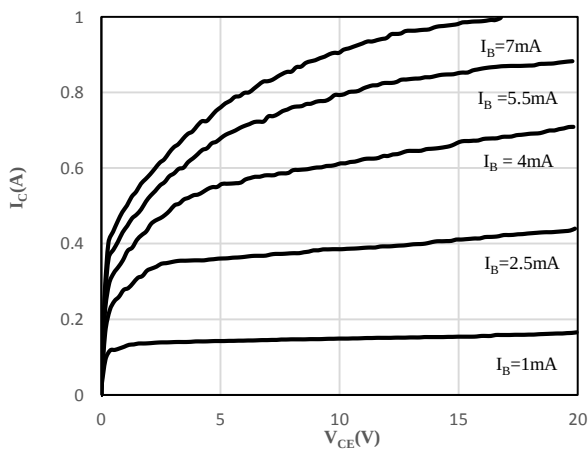
**Fig 2  $V_{CE(sat)}$  vs.  $I_C$**



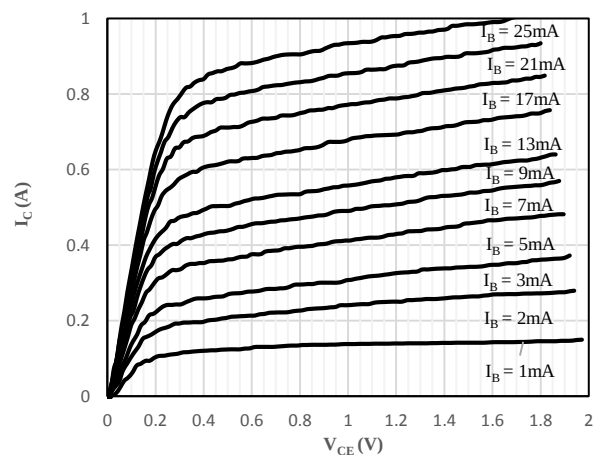
**Fig 3  $V_{BE(sat)}$  vs.  $I_C$**



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



**Fig 5  $I_C$  vs.  $V_{CE}$**



**Fig 6  $I_C$  vs.  $V_{CE}$**

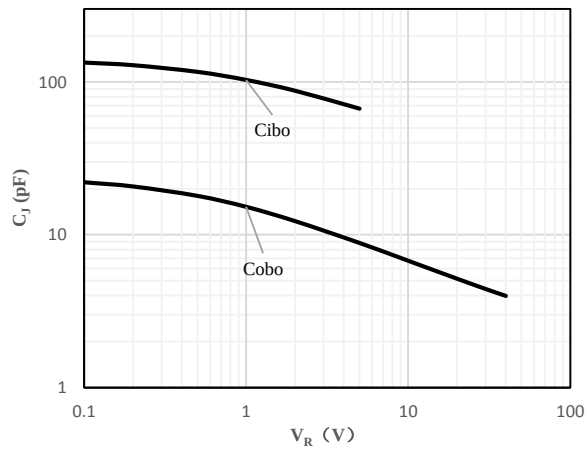


Fig 7  $C_j$  vs.  $V_R$

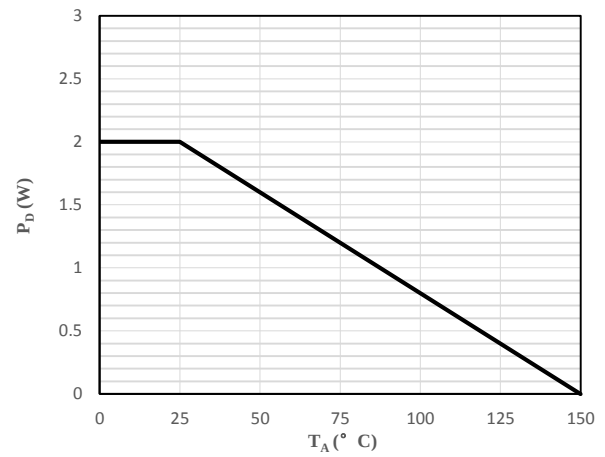


Fig 8  $P_D$  vs.  $T_A$

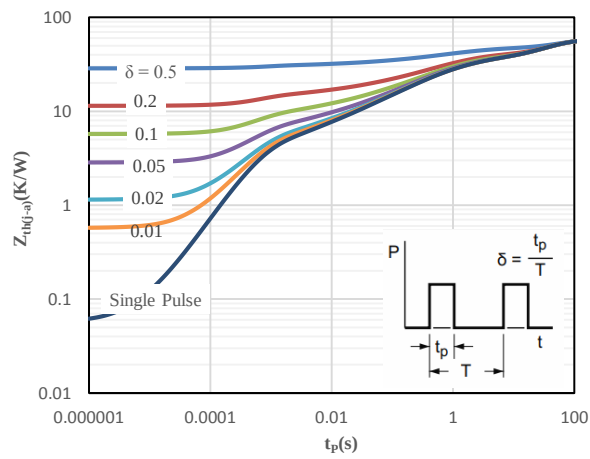
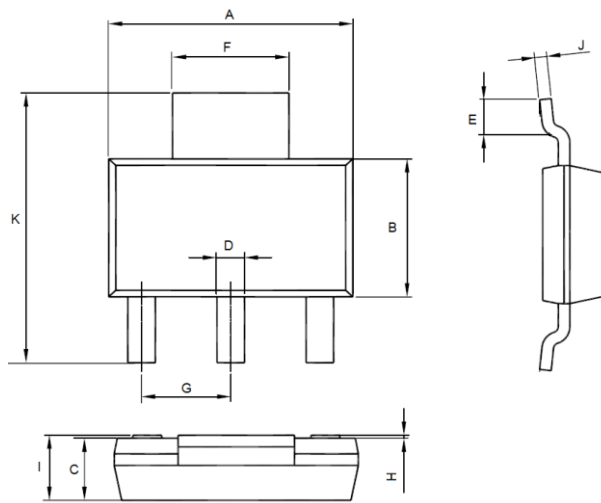


Fig 9 Maximum transient thermal impedance

**Package Outline Dimensions** (Unit: mm)



| SOT-223   |      |      |
|-----------|------|------|
| Dimension | Min. | Max. |
| A         | 6.10 | 6.50 |
| B         | 3.30 | 3.70 |
| C         | 1.50 | 1.70 |
| D         | 0.66 | 0.82 |
| E         | 0.90 | 1.15 |
| F         | 2.90 | 3.10 |
| G         | 2.20 | 2.40 |
| H         | 0.02 | 0.10 |
| I         | 1.52 | 1.80 |
| J         | 0.20 | 0.40 |
| K         | 6.70 | 7.30 |

**Mounting Pad Layout** (Unit: mm)

**SOT-223**

