

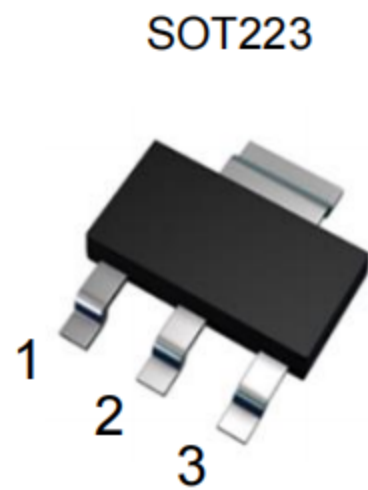


### Features

- High Collector Current
- Low Collector-emitter Saturation Voltage

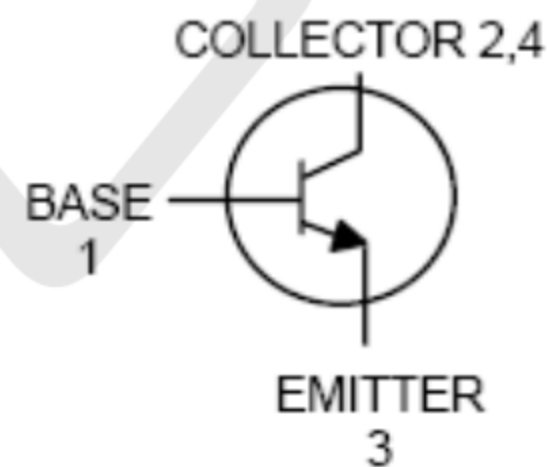
### Mechanical Data

- Case: SOT-223
- Molding compound, UL flammability classification rating 94V-0
- Terminals: Matte tin plated leads, solderable per MIL-STD-202, Method 208



Marking:BCP54-16

### Circuit Diagram



### Absolute Maximum Ratings (Tamb=25°C unless otherwise specified)

| Parameter                           | Symbol           | Value | Unit |
|-------------------------------------|------------------|-------|------|
| Collector-Base Breakdown Voltage    | V <sub>CB0</sub> | 45    | V    |
| Collector-Emitter Breakdown Voltage | V <sub>CEO</sub> | 45    | V    |
| Emitter-Base Breakdown Voltage      | V <sub>EBO</sub> | 5     | V    |
| Collector Current (Continuous)      | I <sub>C</sub>   | 1     | A    |
| Collector Current (Peak)            | I <sub>CM</sub>  | 1.5   | A    |
| Base Current (Continuous)           | I <sub>B</sub>   | 0.1   | A    |
| Base Current (Peak)                 | I <sub>BM</sub>  | 0.2   | A    |



**Thermal Characteristic**

| Parameter                          | Symbol          | Value      | Unit          |
|------------------------------------|-----------------|------------|---------------|
| Power Dissipation                  | $P_D$           | 1.5        | W             |
| Thermal Resistance Junction-to-Air | $R_{\theta JA}$ | 83.3       | $^{\circ}C/W$ |
| Junction Temperature Range         | $T_J$           | -55 ~ +150 | $^{\circ}C$   |
| Storage Temperature Range          | $T_{STG}$       | -55 ~ +150 | $^{\circ}C$   |

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

| Parameter                            | Symbol        | Test Condition                              | Min. | Typ. | Max. | Unit    |
|--------------------------------------|---------------|---|------|------|------|---------|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C = 100\mu A, I_E = 0$                   | 45   | -    | -    | V       |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C = 10mA, I_B = 0$                       | 45   | -    | -    | V       |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E = 10\mu A, I_C = 0$                    | 5    | -    | -    | V       |
| Collector Cut-off Current            | $I_{CBO}$     | $V_{CB} = 30V, I_E = 0, T_A = 25^{\circ}C$  | -    | -    | 100  | nA      |
|                                      |               | $V_{CB} = 30V, I_E = 0, T_A = 150^{\circ}C$ | -    | -    | 20   | $\mu A$ |
| DC Current Gain                      | $h_{FE}$      | $V_{CE} = 2V, I_C = 5mA$                    | 25   | -    | -    | -       |
|                                      |               | $V_{CE} = 2V, I_C = 150mA$                  | 100  | -    | 250  | -       |
| Collector-emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 500mA, I_B = 50mA$                   | -    | -    | 0.5  | V       |
| Base-emitter Voltage                 | $V_{BE(on)}$  | $I_C = 0.5A, V_{CE} = 2V$                   | -    | -    | 1    | V       |
| Transition Frequency                 | $f_T$         | $V_{CE} = 10V, I_C = 50mA$<br>$f = 20MHz$   | 100  | -    | -    | MHz     |

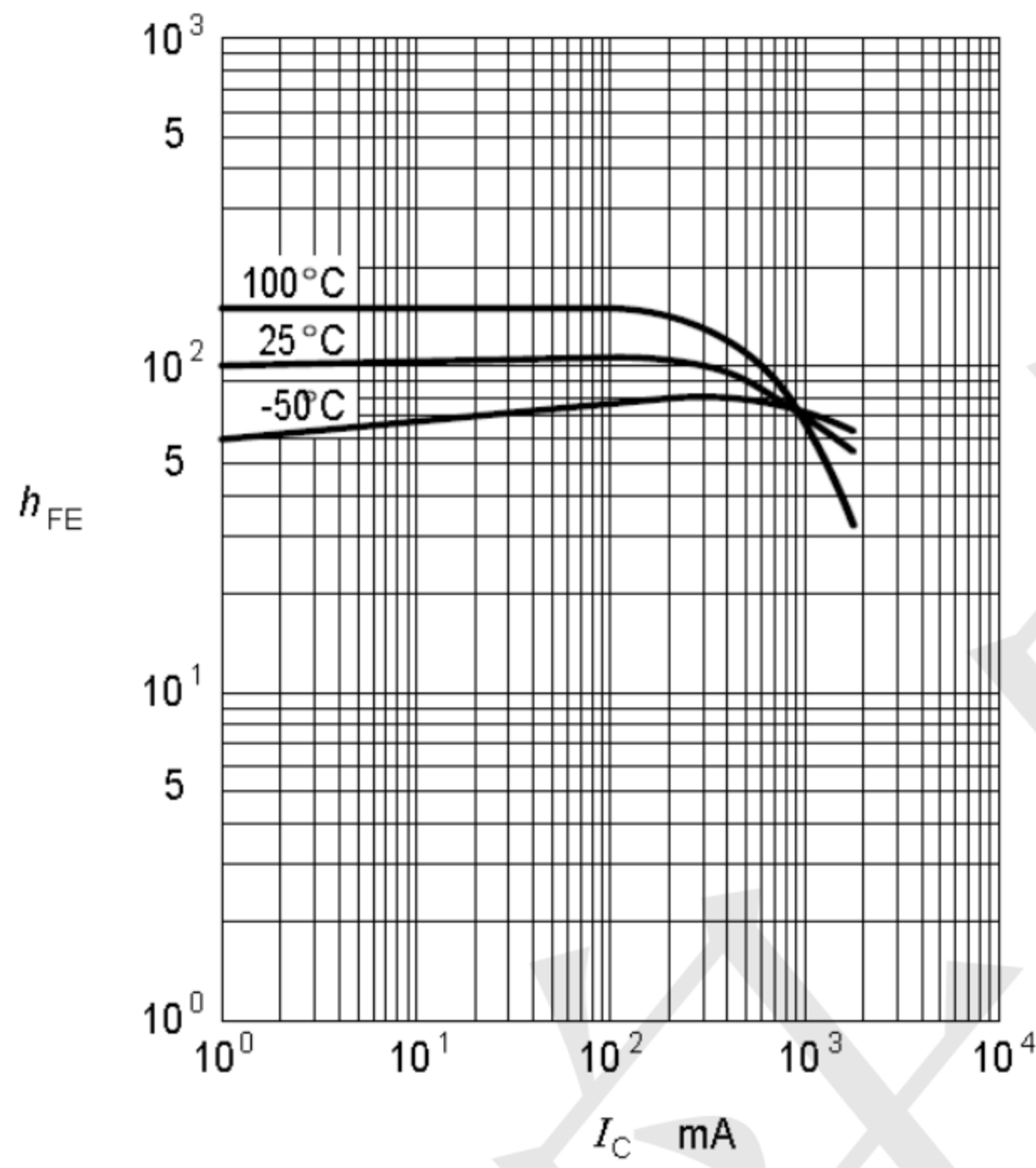


Fig. 1  $h_{FE}$  vs.  $I_C$  ( $V_{CE} = 2V$ )

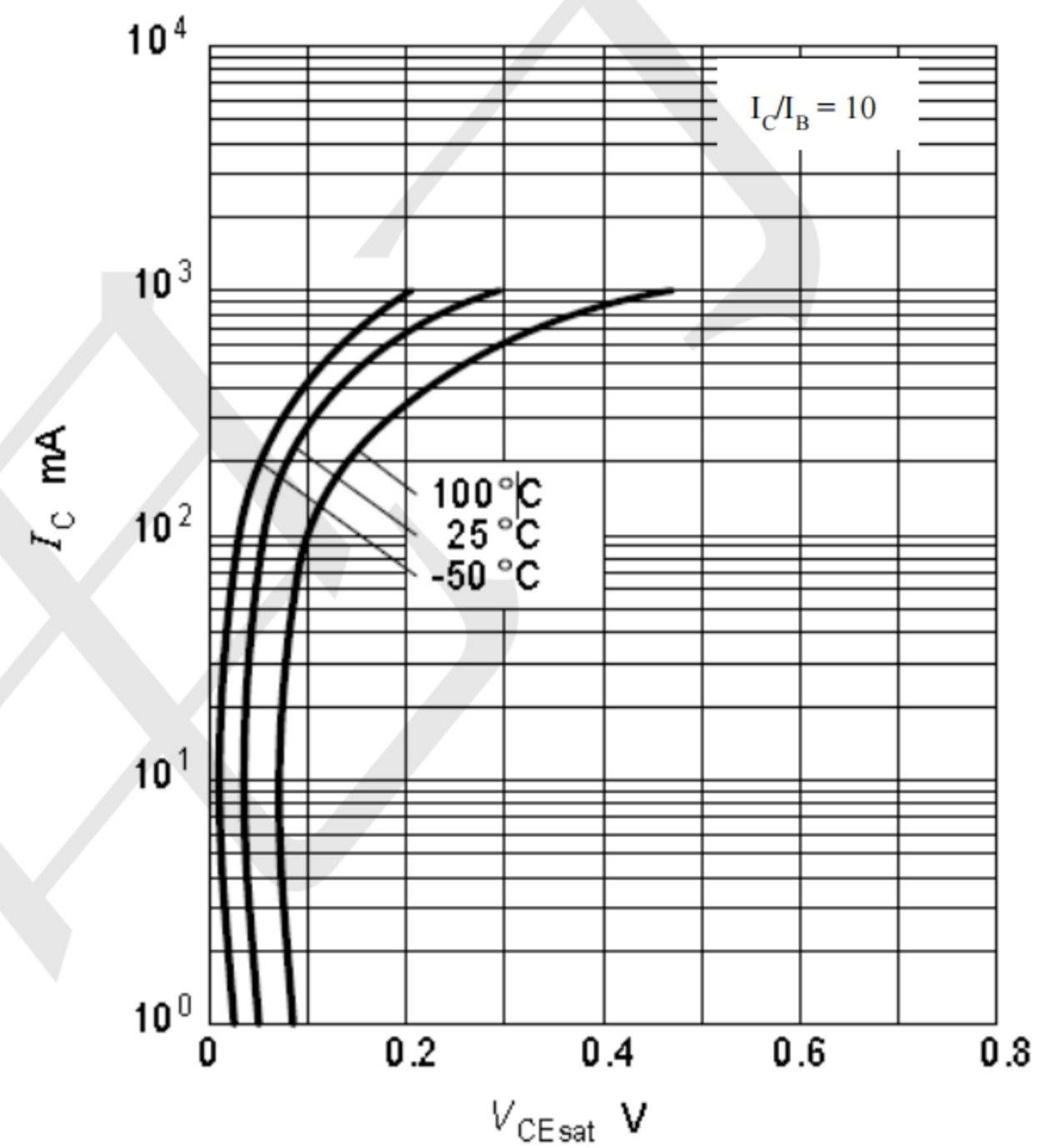
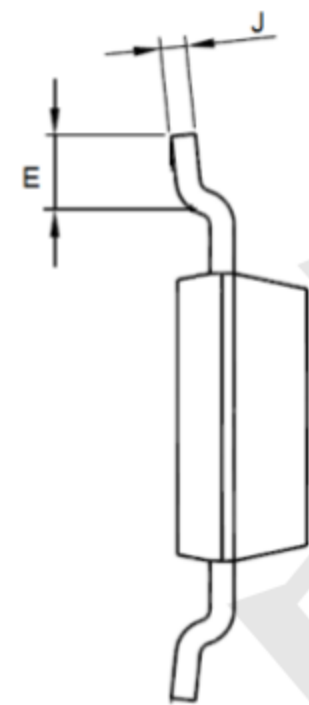
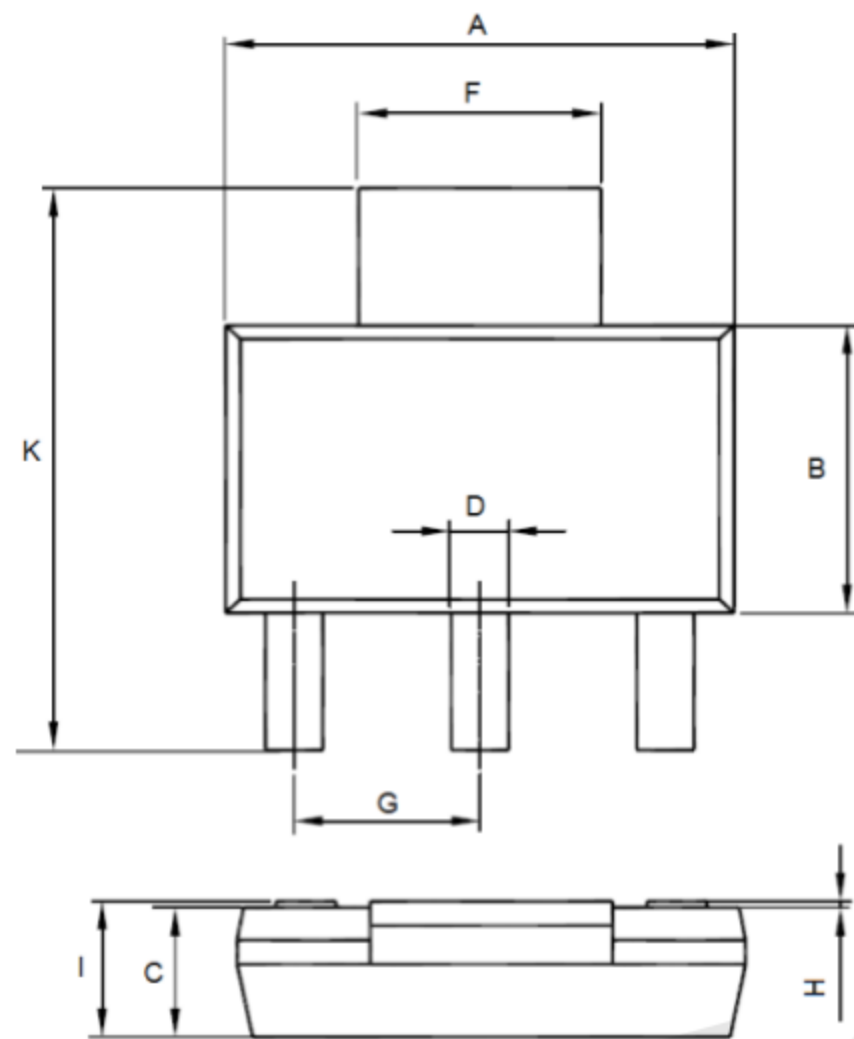


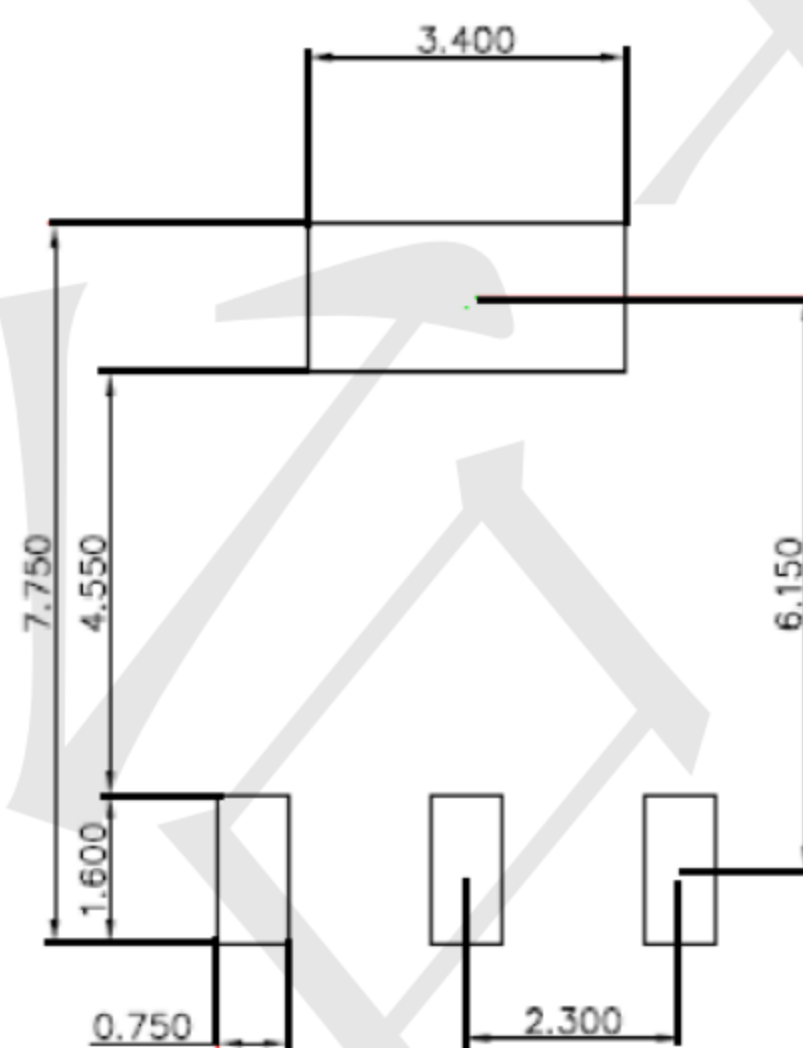
Fig. 2  $V_{CE(sat)}$  vs.  $I_C$



### Outline Drawing - SOT223



| SOT-223 |      |      |
|---------|------|------|
| Dim     | 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 |





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