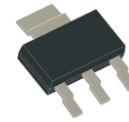


## BCP54-16-HF (NPN)

RoHS Device

Halogen Free



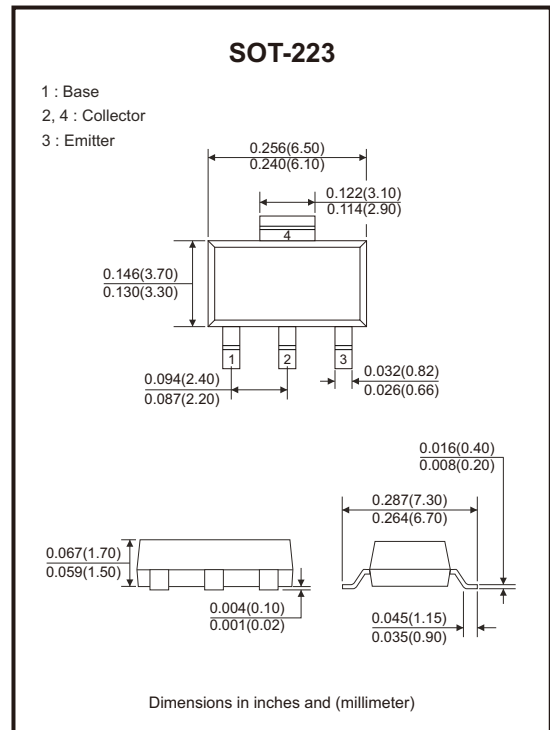
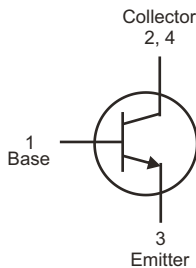
### Features

- High collector current.
- Low collector-emitter saturation voltage.

### Mechanical data

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

### Circuit Diagram



### Maximum Ratings (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter                              | Symbol          | BCP54-16-HF | Unit                 |
|--|-----------------|-------------|----------------------|
| Collector-base breakdown voltage       | $V_{CBO}$       | 45          | V                    |
| Collector-emitter breakdown voltage    | $V_{CEO}$       | 45          | V                    |
| Emitter-base breakdown voltage         | $V_{EBO}$       | 5           | V                    |
| Collector current (continuous)         | $I_C$           | 1           | A                    |
| Collector current (peak)               | $I_{CM}$        | 1.5         | A                    |
| Base current (continuous)              | $I_B$           | 0.1         | A                    |
| Base current (peak)                    | $I_{BM}$        | 0.2         | A                    |
| Power dissipation                      | $P_D$           | 1.5         | W                    |
| Thermal resistance junction to ambient | $R_{\theta JA}$ | 83.3        | $^{\circ}\text{C/W}$ |
| Junction temperature range             | $T_J$           | -55 to +150 | $^{\circ}\text{C}$   |
| Storage temperature range              | $T_{STG}$       | -55 to +150 | $^{\circ}\text{C}$   |

## Electrical Characteristics (Ta=25°C, unless otherwise specified)

| Parameter                            | Conditions                                 | Symbol        | Min. | Max. | Unit    |
|--------------------------------------|--|---------------|------|------|---------|
| Collector-base breakdown voltage     | $I_C = 100\mu A, I_E = 0$                  | $V_{(BR)CBO}$ | 45   |      | V       |
| Collector-emitter breakdown voltage  | $I_C = 10mA, I_B = 0$                      | $V_{(BR)CEO}$ | 45   |      | V       |
| Base-emitter breakdown voltage       | $I_E = 10\mu A, I_C = 0$                   | $V_{(BR)EBO}$ | 5    |      | V       |
| Collector cut-off current            | $V_{CB} = 30V, I_E = 0, T_A = 25^\circ C$  | $I_{CBO}$     |      | 100  | nA      |
|                                      | $V_{CB} = 30V, I_E = 0, T_A = 150^\circ C$ |               |      | 20   | $\mu A$ |
| DC current gain                      | $V_{CE} = 2V, I_C = 5mA$                   | $h_{FE(1)}$   | 25   |      |         |
|                                      | $V_{CE} = 2V, I_C = 150mA$                 | $h_{FE(2)}$   | 100  | 250  |         |
| Collector-emitter saturation voltage | $I_C = 500mA, I_B = 50mA$                  | $V_{CE(sat)}$ |      | 0.5  | V       |
| Base-emitter voltage                 | $I_C = 0.5A, V_{CE} = 2V$                  | $V_{BE(on)}$  |      | 1    | V       |
| Transition frequency                 | $V_{CE} = 10V, I_C = 50mA, f = 20MHz$      | $f_T$         | 100  |      | MHz     |

## Rating and Characteristic Curves (BCP54-16-HF)

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

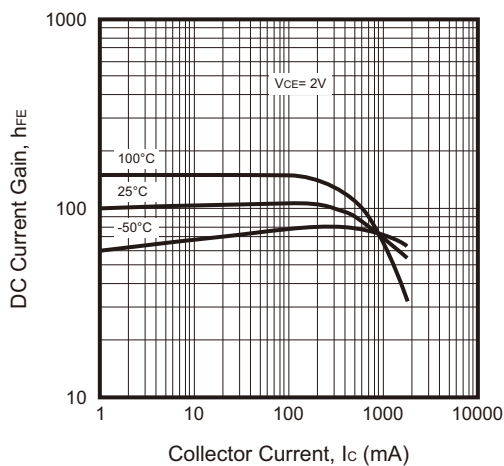
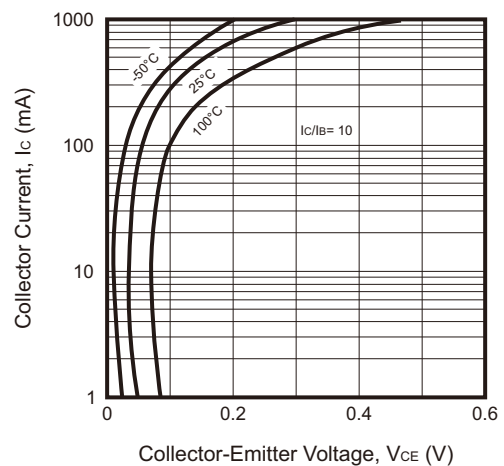
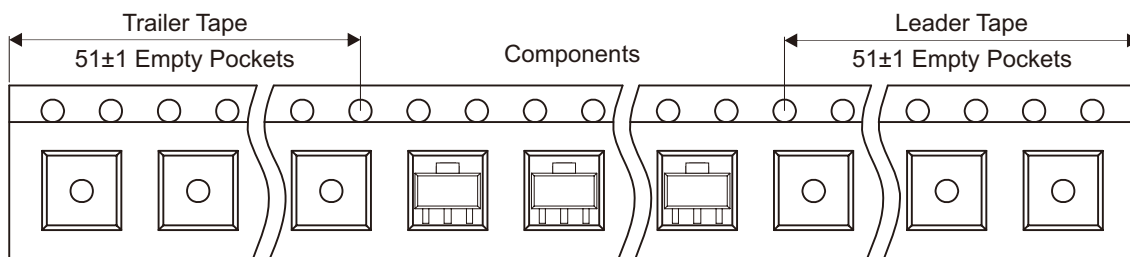
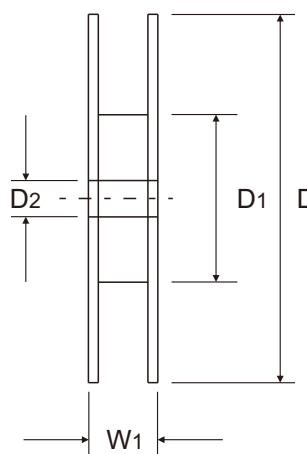
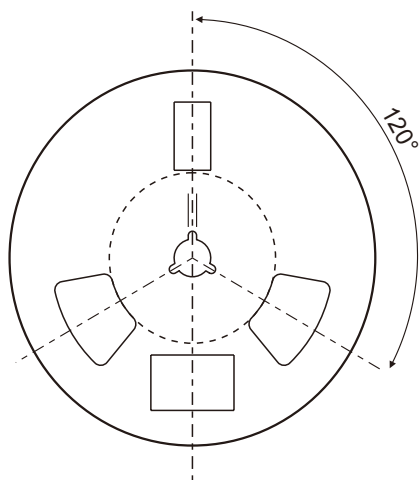
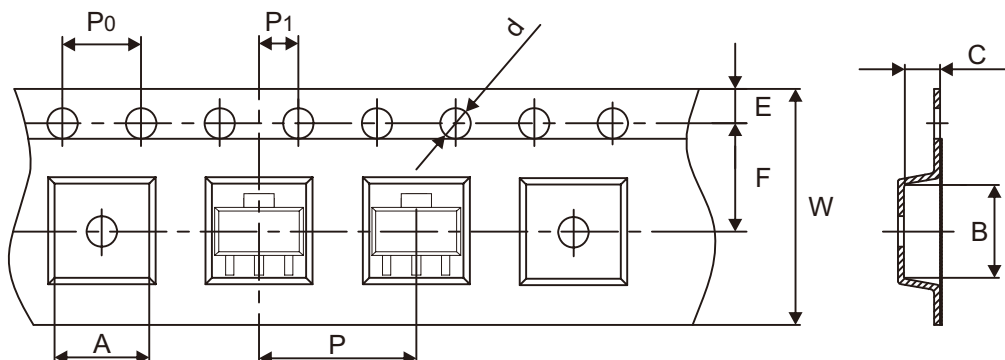


Fig.2 -  $V_{CE(sat)} - I_C$



## Reel Taping Specification

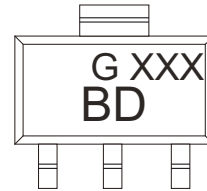


| SOT-223 | SYMBOL | A             | B             | C             | d             | D              | D <sub>1</sub> | D <sub>2</sub> |
|---------|--------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|
|         | (mm)   | 7.05 ± 0.10   | 7.40 ± 0.10   | 1.90 ± 0.10   | 1.55 ± 0.05   | 330.00 ± 1.00  | 100.00 ± 1.00  | 13.00 ± 0.20   |
|         | (inch) | 0.278 ± 0.004 | 0.291 ± 0.004 | 0.075 ± 0.004 | 0.061 ± 0.002 | 12.992 ± 0.039 | 3.937 ± 0.039  | 0.512 ± 0.008  |

| SOT-223 | SYMBOL | E             | F             | P             | P <sub>0</sub> | P <sub>1</sub> | W                        | W <sub>1</sub> |
|---------|--------|---------------|---------------|---------------|----------------|----------------|--------------------------|----------------|
|         | (mm)   | 1.75 ± 0.10   | 5.50 ± 0.10   | 8.00 ± 0.10   | 4.00 ± 0.10    | 2.00 ± 0.10    | 12.00 + 0.30<br>- 0.10   | 16.40 ± 0.30   |
|         | (inch) | 0.069 ± 0.004 | 0.217 ± 0.004 | 0.315 ± 0.004 | 0.157 ± 0.004  | 0.079 ± 0.004  | 0.472 + 0.012<br>- 0.004 | 0.646 ± 0.012  |

## Marking Code

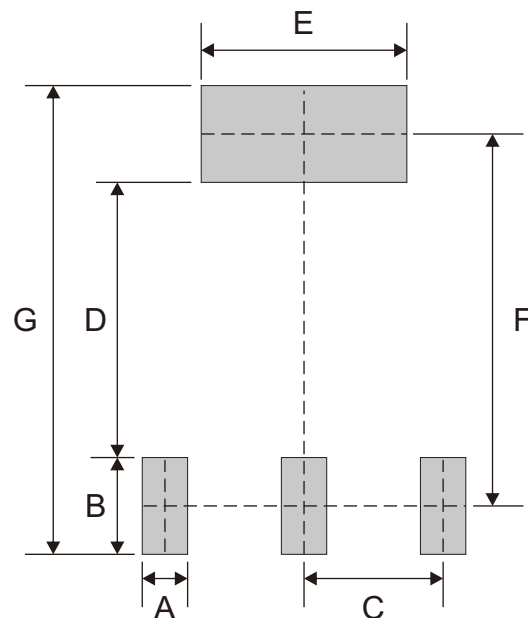
| Part Number | Marking Code |
|-------------|--------------|
| BCP54-16-HF | BD           |



G / XXX = Control code

## Suggested P.C.B. PAD Layout

| SIZE | SOT-223 |        |
|------|---------|--------|
|      | (mm)    | (inch) |
| A    | 0.75    | 0.030  |
| B    | 1.60    | 0.063  |
| C    | 2.30    | 0.091  |
| D    | 4.55    | 0.179  |
| E    | 3.40    | 0.134  |
| F    | 6.15    | 0.242  |
| G    | 7.75    | 0.305  |



## Standard Packaging

| Case Type | REEL PACK    |                  |
|-----------|--------------|------------------|
|           | REEL ( pcs ) | Reel Size (inch) |
| SOT-223   | 4,000        | 13               |