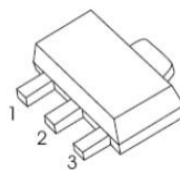


## FEATURES

- PNP Complements to BCX51,BCX52,BCX53
- Low Voltage
- High Current



1.Base  
2.Collector  
3.Emitter

■ Simplified outline(SOT-89)

**MARKING:BCX54:BA, BCX54-10:BC, BCX54-16:BD**  
**BCX55:BE, BCX55-10:BG, BCX55-16:BM**  
**BCX56:BH, BCX56-10:BK, BCX56-16:BL**

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

**MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$  unless otherwise noted)**

| Symbol          | Parameter                                   |       | Value    | Unit                 |
|-----------------|---------------------------------------------|-------|----------|----------------------|
| $V_{CBO}$       | Collector-Base Voltage                      | BCX54 | 45       | V                    |
|                 |                                             | BCX55 | 60       |                      |
|                 |                                             | BCX56 | 100      |                      |
| $V_{CEO}$       | Collector-Emitter Voltage                   | BCX54 | 45       | V                    |
|                 |                                             | BCX55 | 60       |                      |
|                 |                                             | BCX56 | 80       |                      |
| $V_{EBO}$       | Emitter-Base Voltage                        |       | 5        | V                    |
| $I_C$           | Collector Current                           |       | 1        | A                    |
| $P_C$           | Collector Power Dissipation                 |       | 500      | mW                   |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient |       | 250      | $^{\circ}\text{C/W}$ |
| $T_j$           | Junction Temperature                        |       | 150      | $^{\circ}\text{C}$   |
| $T_{stg}$       | Storage Temperature                         |       | -55~+150 | $^{\circ}\text{C}$   |

### ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

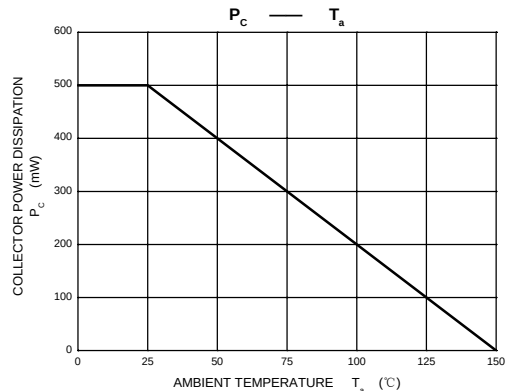
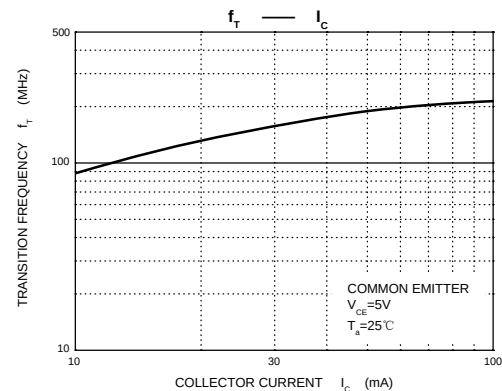
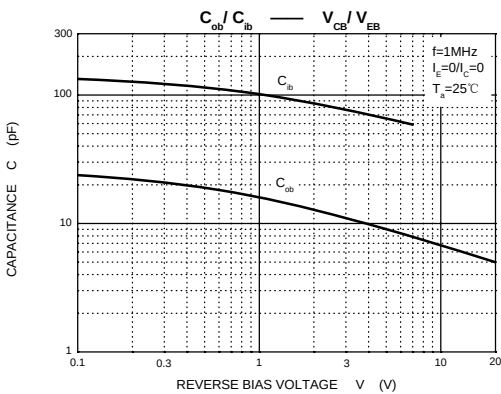
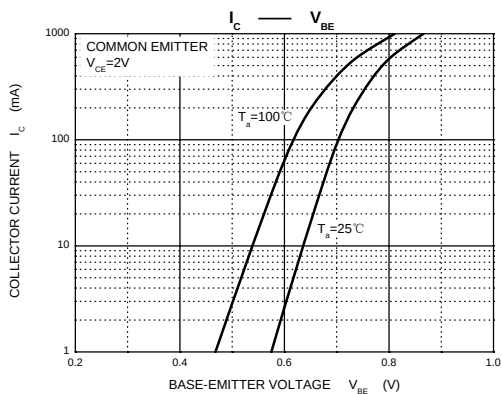
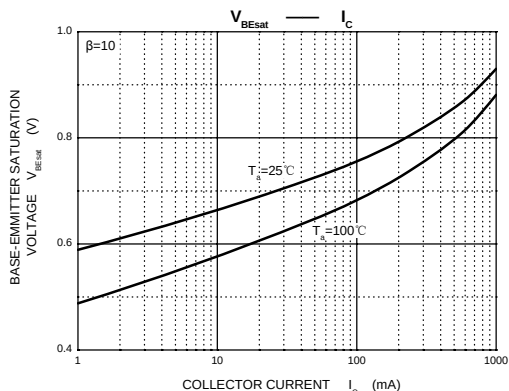
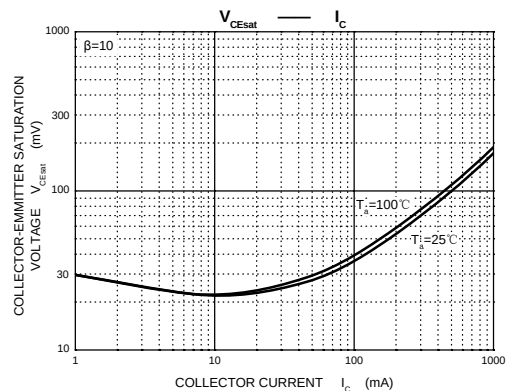
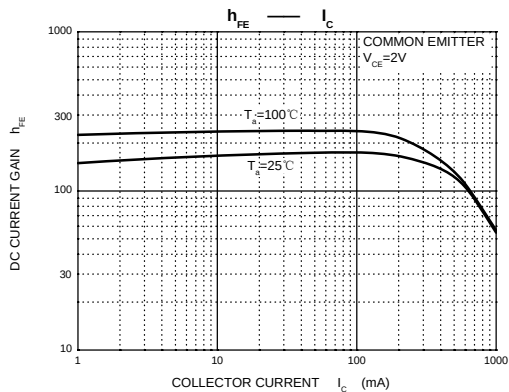
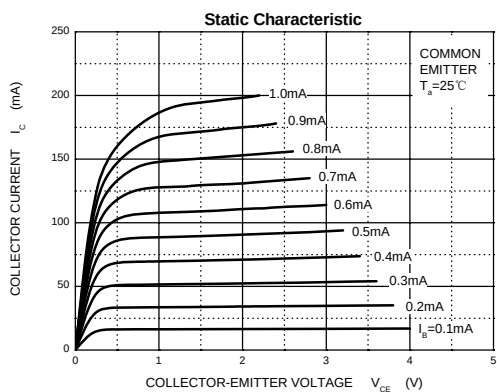
| Parameter                            | Symbol          | Test conditions                                      | Min   | Typ | Max | Unit          |
|--------------------------------------|-----------------|------------------------------------------------------|-------|-----|-----|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$   | $I_C=100\mu\text{A}, I_E=0$                          | BCX54 | 45  |     | V             |
|                                      |                 |                                                      | BCX55 | 60  |     |               |
|                                      |                 |                                                      | BCX56 | 100 |     |               |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}^*$ | $I_C=10\text{mA}, I_B=0$                             | BCX54 | 45  |     | V             |
|                                      |                 |                                                      | BCX55 | 60  |     |               |
|                                      |                 |                                                      | BCX56 | 80  |     |               |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$   | $I_E=100\mu\text{A}, I_C=0$                          | 5     |     |     | V             |
| Collector cut-off current            | $I_{CBO}$       | $V_{CB}=30\text{V}, I_E=0$                           |       |     | 0.1 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$       | $V_{EB}=5\text{V}, I_C=0$                            |       |     | 0.1 | $\mu\text{A}$ |
| DC current gain                      | $h_{FE(1)}^*$   | $V_{CE}=2\text{V}, I_C=5\text{mA}$                   | 40    |     |     |               |
|                                      | $h_{FE(2)}^*$   | $V_{CE}=2\text{V}, I_C=150\text{mA}$                 | 63    |     | 250 |               |
|                                      | $h_{FE(3)}^*$   | $V_{CE}=2\text{V}, I_C=0.5\text{A}$                  | 25    |     |     |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}^*$ | $I_C=0.5\text{A}, I_B=50\text{mA}$                   |       |     | 0.5 | V             |
| Base-emitter voltage                 | $V_{BE}^*$      | $V_{CE}=2\text{V}, I_C=0.5\text{A}$                  |       |     | 1   | V             |
| Transition frequency                 | $f_T$           | $V_{CE}=5\text{V}, I_C=10\text{mA}, f=100\text{MHz}$ |       | 130 |     | MHz           |

### CLASSIFICATION OF $h_{FE(2)}$

| RANK  | BCX54<br>BCX55<br>BCX56 | BCX54-10<br>BCX55-10<br>BCX56-10 | BCX54-16<br>BCX55-16<br>BCX56-16 |
|-------|-------------------------|----------------------------------|----------------------------------|
| RANGE | 63 - 250                | 63 - 160                         | 100 - 250                        |

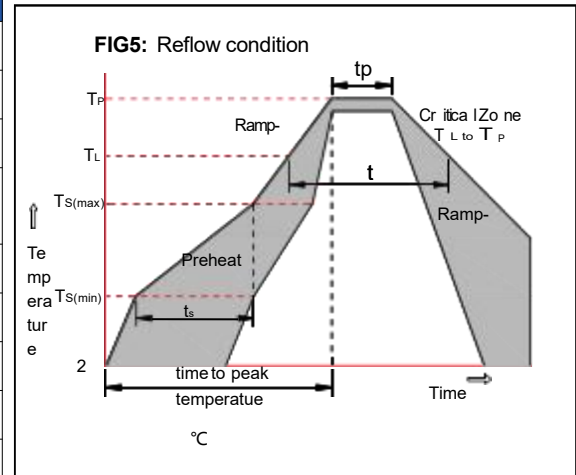


**RATING AND CHARACTERISTIC CURVES**



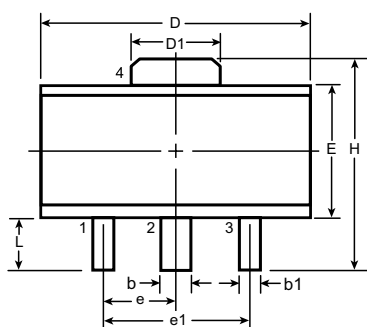
## Soldering parameters

| Reflow Condition                                        |                                    | Pb-Free assembly<br>(see as below) |
|---------------------------------------------------------|------------------------------------|------------------------------------|
| Pre Heat                                                | -Temperature Min ( $T_{s(min)}$ )  | +150 °C                            |
|                                                         | -Temperature Max ( $T_{s(max)}$ )  | +200 °C                            |
|                                                         | -Time (Min to Max) (ts)            | 60-180 secs.                       |
| Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak) |                                    | 3 °C/sec. Max                      |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                    |                                    | 3 °C/sec. Max                      |
| Reflow                                                  | -Temperature ( $T_L$ ) (Liquid us) | +217 °C                            |
|                                                         | -Temperature ( $t_L$ )             | 60-150 secs.                       |
| Peak Temp ( $T_P$ )                                     |                                    | +260(+0/-5) °C                     |
| Time within 5 °C of actual Peak Temp ( $t_P$ )          |                                    | 30 secs. Max                       |
| Ramp-down Rate                                          |                                    | 6 °C/sec. Max                      |
| Time 25 °C to Peak Temp ( $T_P$ )                       |                                    | 8 min. Max                         |
| Do not exceed                                           |                                    | +260 °C                            |

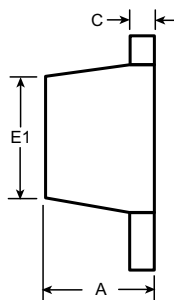


## Package Dimensions & Suggested Pad Layout

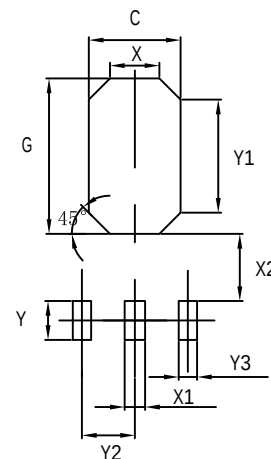
### SOT89



Top View



Side View

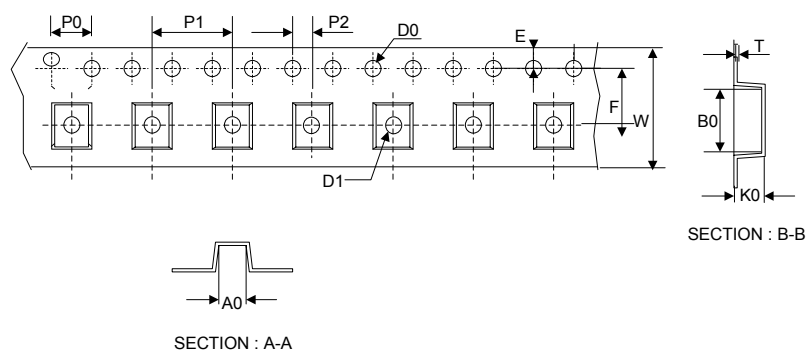


| Symbol             |     | A    | b    | b1   | C   | D    | D1   | E    | E1                | e           | e1          | H    | L    |
|--------------------|-----|------|------|------|-----|------|------|------|-------------------|-------------|-------------|------|------|
| Dimensions<br>(mm) | MIN | 1.40 | 0.44 | 0.36 | 0.3 | 4.40 | 1.50 | 2.29 | 2.00 <sup>†</sup> | 1.50<br>BSC | 3.00<br>BSC | 3.94 | 0.89 |
|                    | NOM | -    | -    | -    | -   | -    | -    | -    | -                 |             |             | -    | -    |
|                    | MAX | 1.60 | 0.56 | 0.48 | 0.5 | 4.60 | 1.75 | 2.60 | 2.29              |             |             | 4.25 | 1.20 |

| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 2.50          |
| G          | 3.60          |
| X          | 1.40          |
| X1         | 0.90          |
| X2         | 0.90          |
| Y          | 1.40          |
| Y1         | 2.60          |
| Y2         | 1.50          |
| Y3         | 0.90          |

**Tape & reel specification**

**Tape**



| Symbol            | Dimension (mm) |
|-------------------|----------------|
| P0                | 4.00±0.20      |
| P1                | 8.00±0.20      |
| P2                | 2.00±0.20      |
| D0                | 1.60±0.20      |
| D1                | 1.60±0.20      |
| E                 | 1.75±0.20      |
| F                 | 7.50±0.15      |
| W                 | 16.00±0.20     |
| A0                | 6.30±0.20      |
| B0                | 8.25±0.20      |
| K0                | 2.60±0.20      |
| T                 | 0.23±0.10      |
| D2                | 180.0±5.0      |
| D3                | 60Min.         |
| D4                | R32.0±2.0      |
| G                 | R86.5±2.0      |
| H                 | R30.0±2.0      |
| I                 | 13.0±2.0       |
| W1                | 13.20±2.0      |
| W2                | 16.50±2.0      |
| Quantity: 1000PCS |                |

**13" Reel**

