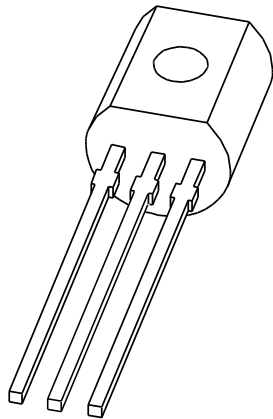


DATA SHEET



BC307; BC307B PNP general purpose transistors

Product specification
File under Discrete Semiconductors, SC04

1997 Mar 07

PNP general purpose transistors

BC307; BC307B

FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 45 V).

APPLICATIONS

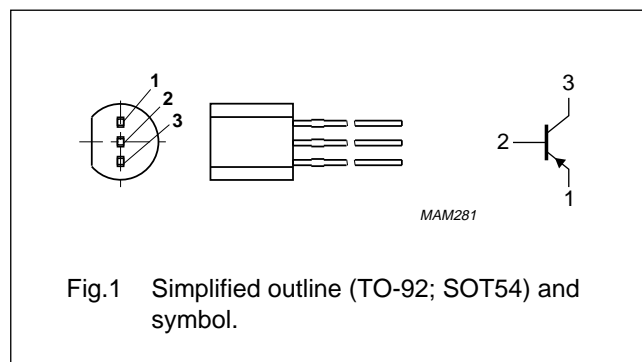
- General purpose switching and amplification.

DESCRIPTION

PNP transistor in a TO-92; SOT54 plastic package.
NPN complements: BC237 and BC237B.

PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | emitter |
| 2 | base |
| 3 | collector |



QUICK REFERENCE DATA

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|---------------------------|---|------|------|------|
| V_{CBO} | collector-base voltage | open emitter | – | –50 | V |
| V_{CEO} | collector-emitter voltage | open base | – | –45 | V |
| I_{CM} | peak collector current | | – | –200 | mA |
| P_{tot} | total power dissipation | $T_{amb} \leq 25\text{ }^\circ\text{C}$ | – | 500 | mW |
| h_{FE} | DC current gain | $I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$ | | | |
| | BC307 | | 125 | 455 | |
| | BC307B | | 222 | 455 | |
| f_T | transition frequency | $I_C = -10\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$ | 100 | – | MHz |

PNP general purpose transistors

BC307; BC307B

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|-------------------------------|--------------------------------------|------|------|------|
| V_{CBO} | collector-base voltage | open emitter | – | –50 | V |
| V_{CEO} | collector-emitter voltage | open base | – | –45 | V |
| V_{EBO} | emitter-base voltage | open collector | – | –5 | V |
| I_C | collector current (DC) | | – | –100 | mA |
| I_{CM} | peak collector current | | – | –200 | mA |
| I_{BM} | peak base current | | – | –200 | mA |
| P_{tot} | total power dissipation | $T_{amb} \leq 25\text{ °C}$; note 1 | – | 500 | mW |
| T_{stg} | storage temperature | | –65 | +150 | °C |
| T_j | junction temperature | | – | 150 | °C |
| T_{amb} | operating ambient temperature | | –65 | +150 | °C |

Note

1. Transistor mounted on an FR4 printed-circuit board.

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1 | 250 | K/W |

Note

1. Transistor mounted on an FR4 printed-circuit board.

PNP general purpose transistors

BC307; BC307B

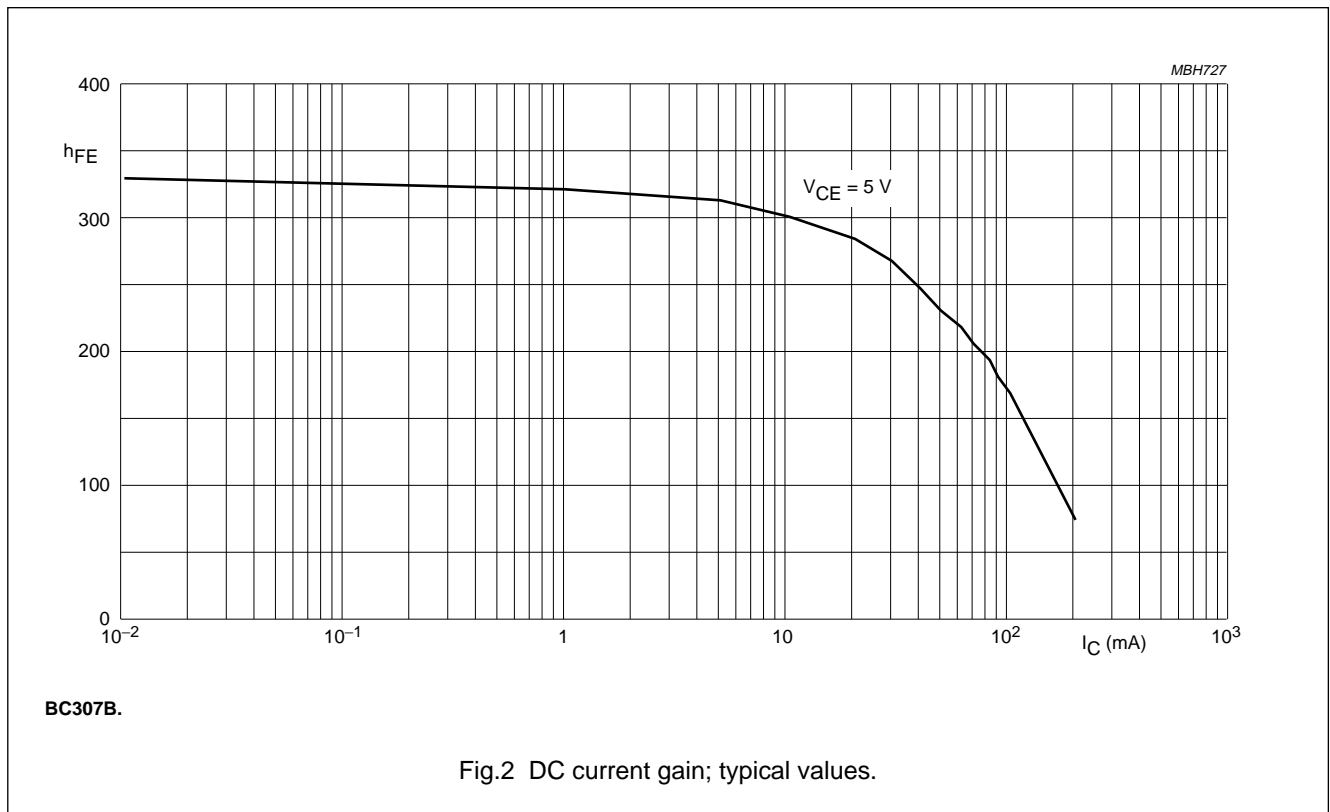
CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|--------------------|--------------------------------------|--|------|------|------|
| I _{CBO} | collector cut-off current | I _E = 0; V _{CB} = -30 V; | - | -15 | nA |
| | | I _E = 0; V _{CB} = -30 V; T _j = 150 °C | - | -4 | μA |
| I _{EBO} | emitter cut-off current | I _C = 0; V _{EB} = -4 V | - | -15 | nA |
| h _{FE} | DC current gain BC307 BC307B | I _C = -2 mA; V _{CE} = -5 V; see Fig.2 | 125 | 455 | |
| | | | 222 | 455 | |
| V _{CEsat} | collector-emitter saturation voltage | I _C = -100 mA; I _B = -5 mA; note 1 | - | -600 | mV |
| V _{BEsat} | base-emitter saturation voltage | I _C = -100 mA; I _B = -5 mA; note 1 | - | -1.1 | V |
| V _{BE} | base-emitter voltage | I _C = -2 mA; V _{CE} = -5 V; note 1 | 600 | 720 | mV |
| C _c | collector capacitance | I _E = i _e = 0; V _{CB} = -10 V; f = 1 MHz | - | 3 | pF |
| f _T | transition frequency | I _C = -10 mA; V _{CE} = -5 V; f = 100 MHz; note 1 | 100 | - | MHz |
| F | noise figure | I _C = -200 μA; V _{CE} = -5 V; R _S = 2 kΩ; f = 1 kHz; B = 200 Hz | - | 10 | dB |

Note

1. Pulse test: t_p ≤ 300 μs; δ ≤ 0.02.



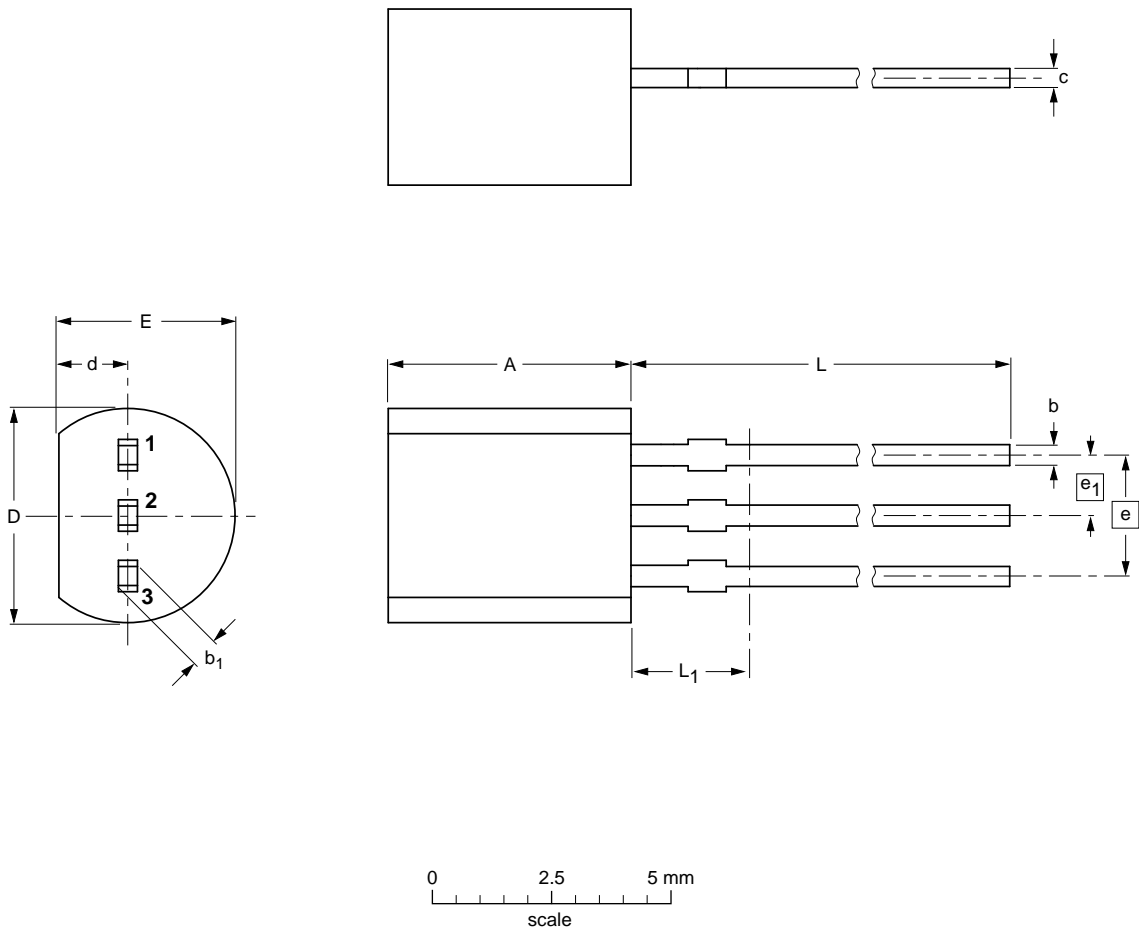
PNP general purpose transistors

BC307; BC307B

PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



DIMENSIONS (mm are the original dimensions)

| UNIT | A | b | b ₁ | c | D | d | E | e | e ₁ | L | L ₁ ⁽¹⁾ |
|------|------------|--------------|----------------|--------------|------------|------------|------------|------|----------------|--------------|-------------------------------|
| mm | 5.2 5.0 | 0.48 0.40 | 0.66 0.56 | 0.45 0.40 | 4.8 4.4 | 1.7 1.4 | 4.2 3.6 | 2.54 | 1.27 | 14.5 12.7 | 2.5 |

Note

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|-------|--|---------------------|------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT54 | | TO-92 | SC-43 | | | 97-02-28 |

PNP general purpose transistors

BC307; BC307B

DEFINITIONS

| | |
|---|---|
| Data sheet status | |
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| Limiting values | |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| Application information | |
| Where application information is given, it is advisory and does not form part of the specification. | |

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PNP general purpose transistors

BC307; BC307B

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