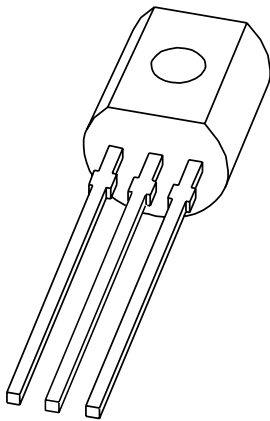


# DATA SHEET



## **BC556; BC557** PNP general purpose transistors

Product data sheet  
Supersedes data of 1999 Apr 15

2004 Oct 11

## PNP general purpose transistors

## BC556; BC557

## FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 65 V).

## APPLICATIONS

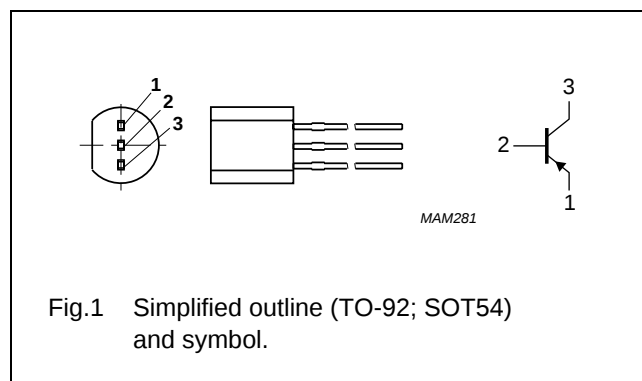
- General purpose switching and amplification.

## DESCRIPTION

PNP transistor in a TO-92; SOT54 plastic package.  
NPN complements: BC546 and BC547.

## PINNING

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



## ORDERING INFORMATION

| TYPE NUMBER | PACKAGE |                                                             |         |
|-------------|---------|-------------------------------------------------------------|---------|
|             | NAME    | DESCRIPTION                                                 | VERSION |
| BC556       | SC-43A  | plastic single-ended leaded (through hole) package; 3 leads | SOT54   |
| BC557       |         |                                                             |         |

## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

| SYMBOL    | PARAMETER                 | CONDITIONS                  | MIN. | MAX. | UNIT |
|-----------|---------------------------|-----------------------------|------|------|------|
| $V_{CBO}$ | collector-base voltage    | open emitter                |      |      |      |
|           | BC556                     |                             | –    | –80  | V    |
|           | BC557                     |                             | –    | –50  | V    |
| $V_{CEO}$ | collector-emitter voltage | open base                   |      |      |      |
|           | BC556                     |                             | –    | –65  | V    |
|           | BC557                     |                             | –    | –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   | $T_{amb} \leq 25\text{ °C}$ | –    | 500  | mW   |
| $T_{stg}$ | storage temperature       |                             | –65  | +150 | °C   |
| $T_j$     | junction temperature      |                             | –    | 150  | °C   |
| $T_{amb}$ | ambient temperature       |                             | –65  | +150 | °C   |

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## 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.

## CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

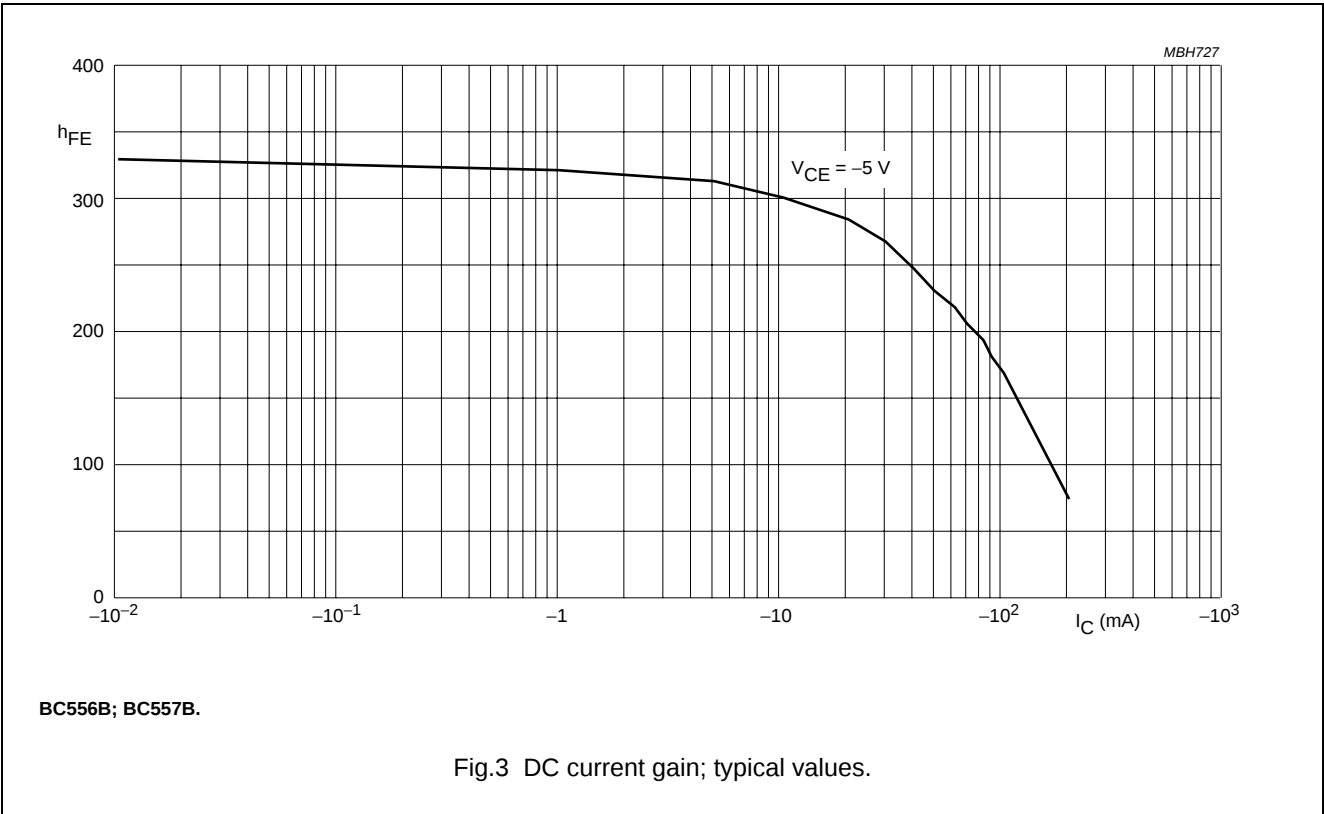
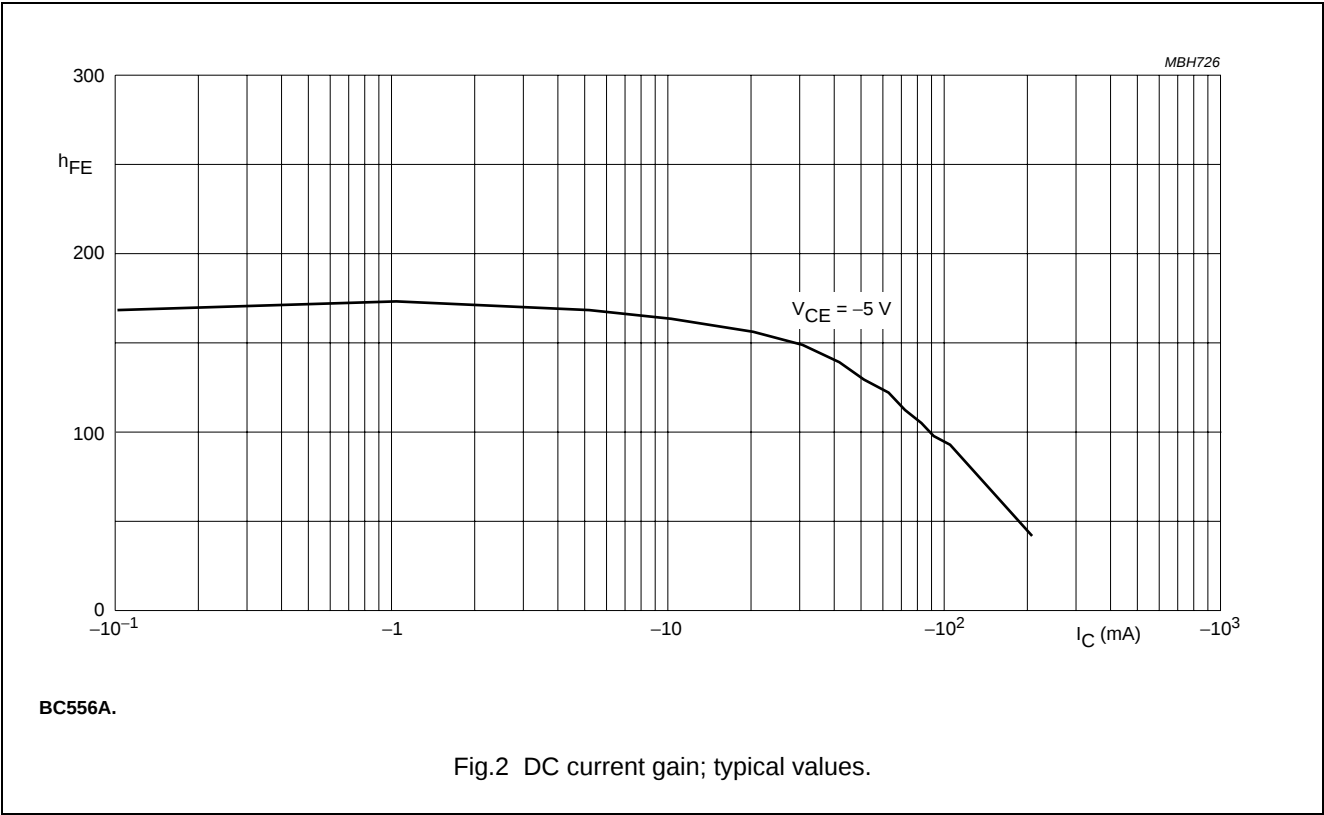
| SYMBOL      | PARAMETER                            | CONDITIONS                                                                                                              | MIN. | TYP. | MAX. | UNIT          |
|-------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------|------|------|---------------|
| $I_{CBO}$   | collector-base cut-off current       | $V_{CB} = -30\text{ V}; I_E = 0\text{ A}$                                                                               | –    | –1   | –15  | nA            |
|             |                                      | $V_{CB} = -30\text{ V}; I_E = 0\text{ A}; T_j = 150\text{ }^{\circ}\text{C}$                                            | –    | –    | –4   | $\mu\text{A}$ |
| $I_{EBO}$   | emitter-base cut-off current         | $V_{EB} = -5\text{ V}; I_C = 0\text{ V}$                                                                                | –    | –    | –100 | nA            |
| $h_{FE}$    | DC current gain                      | $I_C = -2\text{ mA}; V_{CE} = -5\text{ V};$<br>see Figs 2, 3 and 4                                                      | 125  | –    | 475  |               |
|             | BC556                                |                                                                                                                         |      |      |      |               |
|             | BC557                                |                                                                                                                         |      |      |      |               |
|             | BC556A                               |                                                                                                                         |      |      |      |               |
|             | BC556B; BC557B                       |                                                                                                                         |      |      |      |               |
|             | BC557C                               |                                                                                                                         | 420  | –    | 800  |               |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$                                                                             | –    | –60  | –300 | mV            |
|             |                                      | $I_C = -100\text{ mA}; I_B = -5\text{ mA}$                                                                              | –    | –180 | –650 | mV            |
| $V_{BEsat}$ | base-emitter saturation voltage      | $I_C = -10\text{ mA}; I_B = -0.5\text{ mA};$ note 1                                                                     | –    | –750 | –    | mV            |
|             |                                      | $I_C = -100\text{ mA}; I_B = -5\text{ mA};$ note 1                                                                      | –    | –930 | –    | mV            |
| $V_{BE}$    | base-emitter voltage                 | $V_{CE} = -5\text{ V}; I_C = -2\text{ mA};$ note 2                                                                      | –600 | –650 | –750 | mV            |
|             |                                      | $V_{CE} = -5\text{ V}; I_C = -10\text{ mA};$ note 2                                                                     | –    | –    | –820 | mV            |
| $C_c$       | collector capacitance                | $V_{CB} = -10\text{ V}; I_E = I_C = 0\text{ A}; f = 1\text{ MHz}$                                                       | –    | 3    | –    | pF            |
| $C_e$       | emitter capacitance                  | $V_{EB} = -0.5\text{ V}; I_C = I_E = 0\text{ A}; f = 1\text{ MHz}$                                                      | –    | 10   | –    | pF            |
| $f_T$       | transition frequency                 | $V_{CE} = -5\text{ V}; I_C = -10\text{ mA}; f = 100\text{ MHz}$                                                         | 100  | –    | –    | MHz           |
| F           | noise figure                         | $V_{CE} = -5\text{ V}; I_C = -200\text{ }\mu\text{A}; R_S = 2\text{ k}\Omega;$<br>$f = 1\text{ kHz}; B = 200\text{ Hz}$ | –    | 2    | 10   | dB            |

## Notes

1.  $V_{BEsat}$  decreases by about  $-1.7\text{ mV/K}$  with increasing temperature.
2.  $V_{BE}$  decreases by about  $-2\text{ mV/K}$  with increasing temperature.

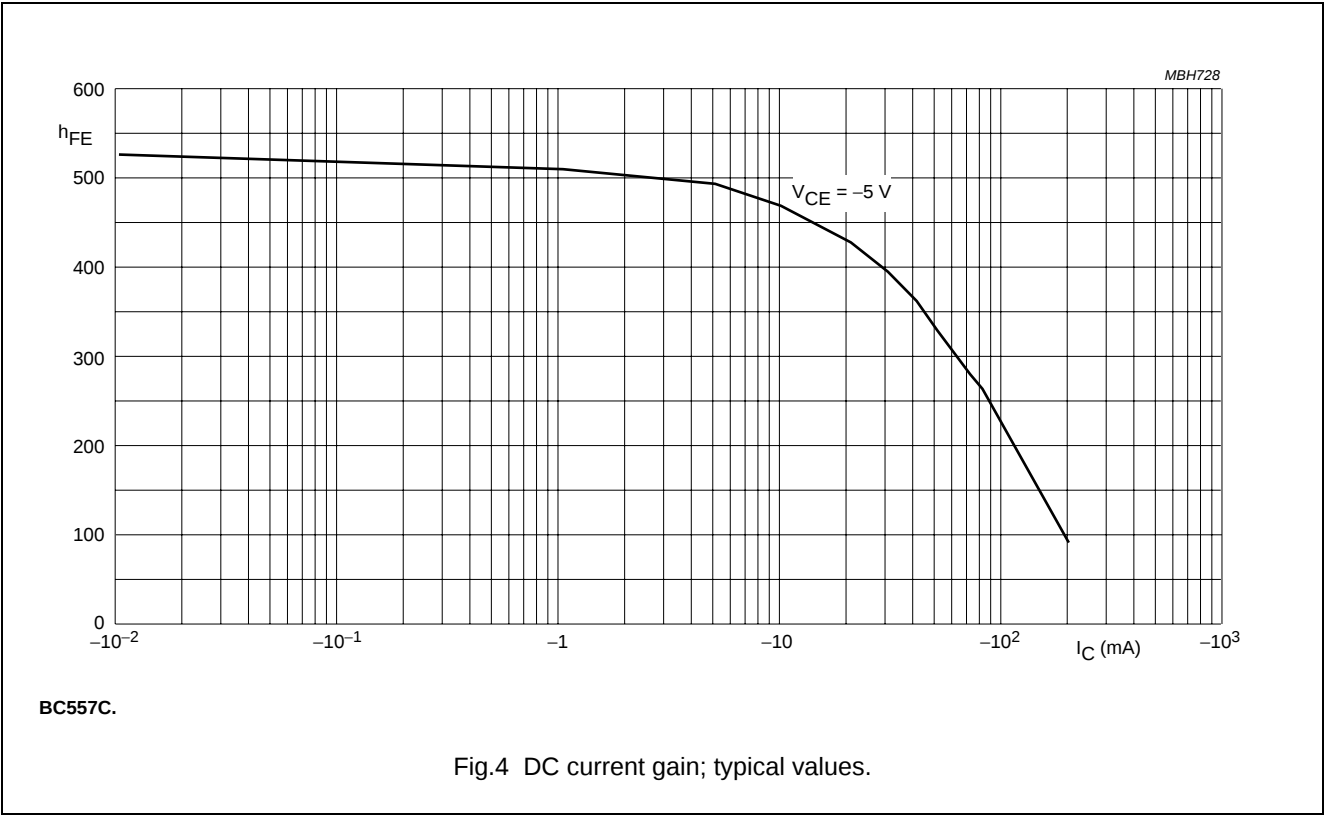
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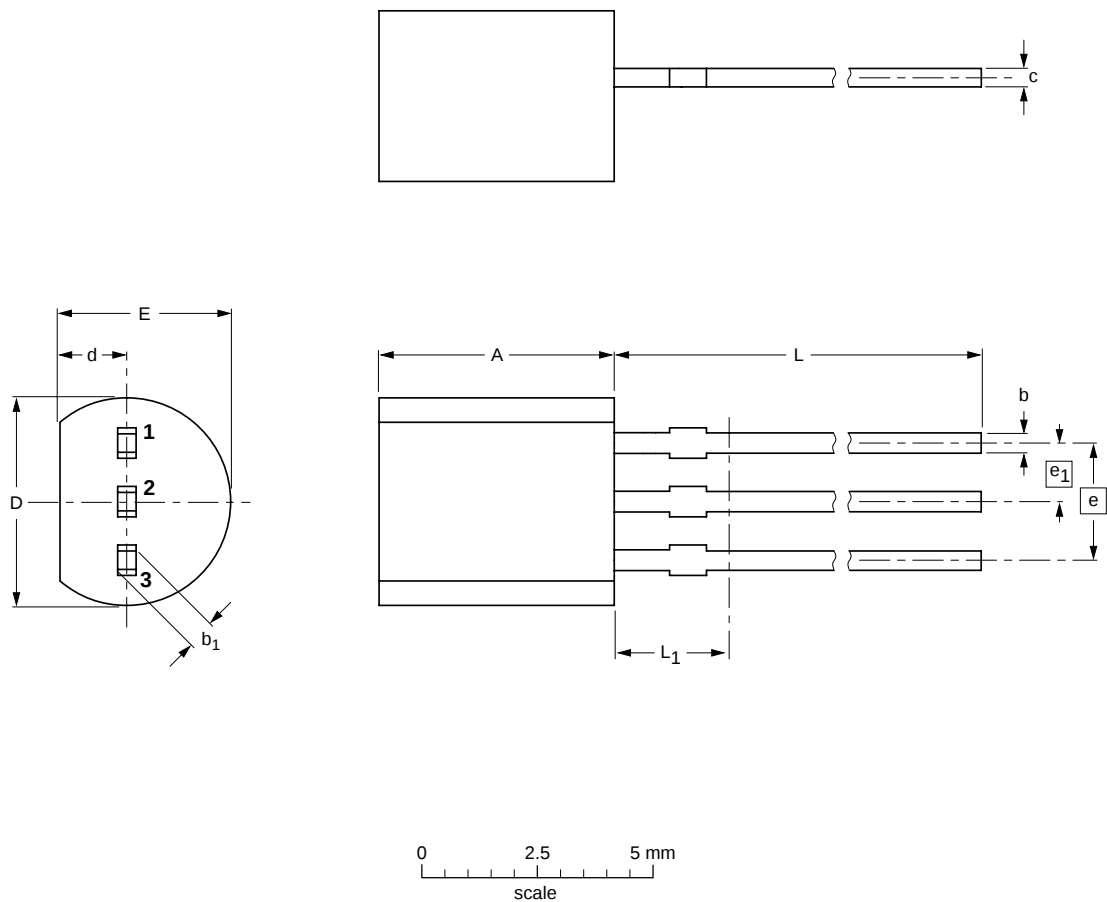
PNP general purpose transistors

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PACKAGE OUTLINE

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

SOT54



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | b            | b <sub>1</sub> | c            | D          | d          | E          | e    | e <sub>1</sub> | L            | L <sub>1</sub> <sup>(1)</sup><br>max. |
|------|------------|--------------|----------------|--------------|------------|------------|------------|------|----------------|--------------|---------------------------------------|
| mm   | 5.2<br>5.0 | 0.48<br>0.40 | 0.66<br>0.55   | 0.45<br>0.38 | 4.8<br>4.4 | 1.7<br>1.4 | 4.2<br>3.6 | 2.54 | 1.27           | 14.5<br>12.7 | 2.5                                   |

Note

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

| OUTLINE<br>VERSION | REFERENCES |       |        |  | EUROPEAN<br>PROJECTION                                                                | ISSUE DATE           |
|--------------------|------------|-------|--------|--|---------------------------------------------------------------------------------------|----------------------|
|                    | IEC        | JEDEC | JEITA  |  |                                                                                       |                      |
| SOT54              |            | TO-92 | SC-43A |  |  | 04-06-28<br>04-11-16 |

## PNP general purpose transistors

BC556; BC557

## DATA SHEET STATUS

| DOCUMENT STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | DEFINITION                                                                            |
|--------------------------------|-------------------------------|---------------------------------------------------------------------------------------|
| Objective data sheet           | Development                   | This document contains data from the objective specification for product development. |
| Preliminary data sheet         | Qualification                 | This document contains data from the preliminary specification.                       |
| Product data sheet             | Production                    | This document contains the product specification.                                     |

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## **Contact information**

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