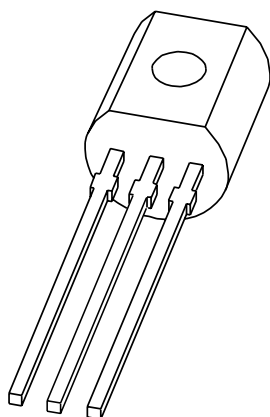


# DATA SHEET



## **BC549; BC550** NPN general purpose transistors

Product data sheet  
Supersedes data of 1999 Apr 22

2004 Oct 11

## NPN general purpose transistors

## BC549; BC550

## FEATURES

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

## APPLICATIONS

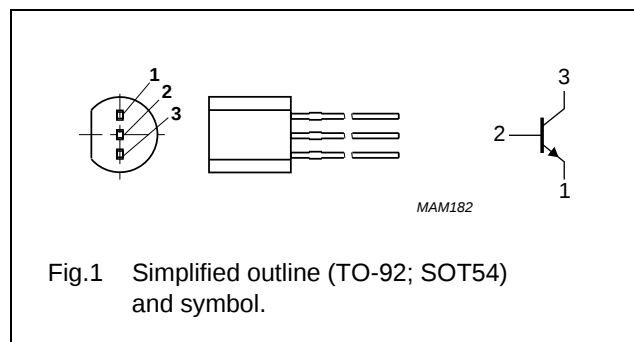
- Low noise stages in audio frequency equipment.

## DESCRIPTION

NPN transistor in a TO-92; SOT54 plastic package.  
PNP complements: BC559 and BC560.

## PINNING

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



## ORDERING INFORMATION

| TYPE NUMBER | PACKAGE |                                                             |         |
|-------------|---------|-------------------------------------------------------------|---------|
|             | NAME    | DESCRIPTION                                                 | VERSION |
| BC549C      | SC-43A  | plastic single-ended leaded (through hole) package; 3 leads | SOT54   |
| BC550C      |         |                                                             |         |

## 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                         |      |      |      |
|           | BC549                     |                                      | –    | 30   | V    |
|           | BC550                     |                                      | –    | 50   | V    |
| $V_{CEO}$ | collector-emitter voltage | open base                            |      |      |      |
|           | BC549                     |                                      | –    | 30   | V    |
|           | BC550                     |                                      | –    | 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   |
| $T_{amb}$ | ambient temperature       |                                      | –65  | +150 | °C   |

## Note

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

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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

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

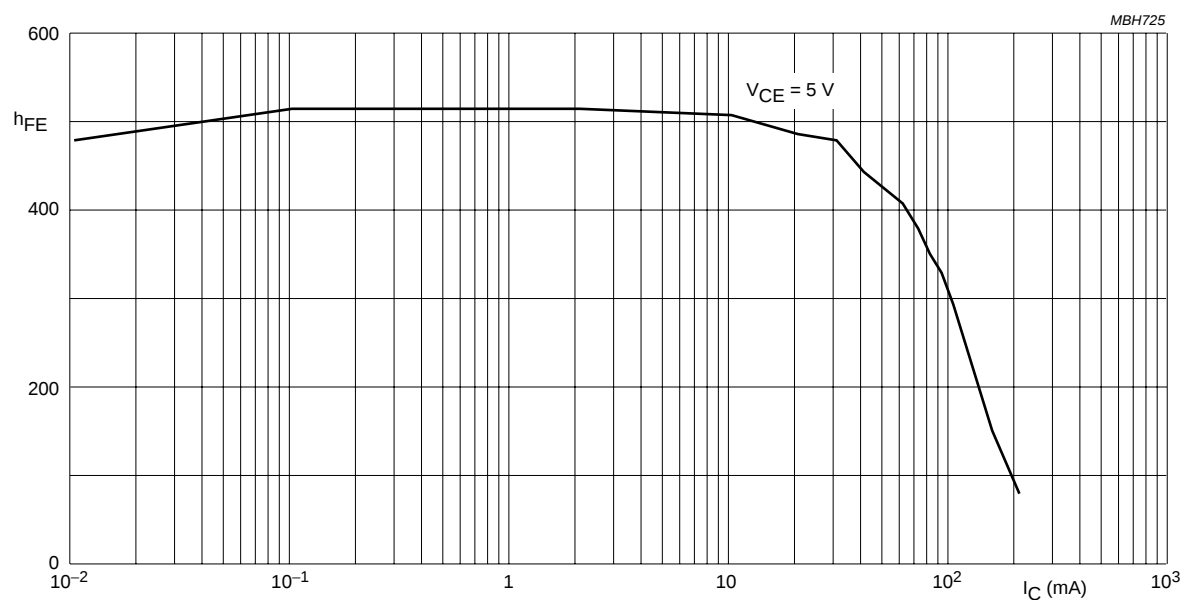
| SYMBOL      | PARAMETER                            | CONDITIONS                                                                                                            | MIN. | TYP. | MAX. | UNIT          |
|-------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------|------|------|------|---------------|
| $I_{CBO}$   | collector-base cut-off current       | $V_{CB} = 30\text{ V}; I_E = 0\text{ A}$                                                                              | –    | –    | 15   | nA            |
|             |                                      | $V_{CB} = 30\text{ V}; I_E = 0\text{ A}; T_j = 150\text{ °C}$                                                         | –    | –    | 5    | $\mu\text{A}$ |
| $I_{EBO}$   | emitter-base cut-off current         | $V_{EB} = 5\text{ V}; I_C = 0\text{ A}$                                                                               | –    | –    | 100  | nA            |
| $h_{FE}$    | DC current gain                      | $V_{CE} = 5\text{ V}$ ; see Fig.2                                                                                     |      |      |      |               |
|             |                                      | $I_C = 10\text{ }\mu\text{A}$                                                                                         | –    | 270  | –    |               |
|             |                                      | $I_C = 2\text{ mA}$                                                                                                   | 420  | 520  | 800  |               |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$                                                                             | –    | 90   | 250  | mV            |
|             |                                      | $I_C = 100\text{ mA}; I_B = 5\text{ mA}$                                                                              | –    | 200  | 600  | mV            |
| $V_{BEsat}$ | base-emitter saturation voltage      | $I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$ ; note 1                                                                    | –    | 700  | –    | mV            |
|             |                                      | $I_C = 100\text{ mA}; I_B = 5\text{ mA}$ ; note 1                                                                     | –    | 900  | –    | mV            |
| $V_{BE}$    | base-emitter voltage                 | $V_{CE} = 5\text{ V}; I_C = 2\text{ mA}$ ; note 2                                                                     | 580  | 660  | 700  | mV            |
|             |                                      | $V_{CE} = 5\text{ V}; I_C = 10\text{ mA}$ ; note 2                                                                    | –    | –    | 770  | mV            |
| $C_c$       | collector capacitance                | $V_{CB} = 10\text{ V}; I_E = I_C = 0\text{ A};$<br>$f = 1\text{ MHz}$                                                 | –    | 1.5  | –    | pF            |
| $C_e$       | emitter capacitance                  | $V_{EB} = 0.5\text{ V}; I_C = I_E = 0\text{ A};$<br>$f = 1\text{ MHz}$                                                | –    | 11   | –    | pF            |
| $f_T$       | transition frequency                 | $V_{CE} = 5\text{ V}; I_C = 10\text{ mA};$<br>$f = 100\text{ MHz}$                                                    | 100  | –    | –    | MHz           |
| F           | noise figure                         | $V_{CE} = 5\text{ V}; I_C = 200\text{ }\mu\text{A};$<br>$R_S = 2\text{ k}\Omega; f = 10\text{ Hz to }15.7\text{ kHz}$ | –    | –    | 4    | dB            |
|             |                                      | $V_{CE} = 5\text{ V}; I_C = 200\text{ }\mu\text{A};$<br>$R_S = 2\text{ k}\Omega; f = 1\text{ kHz}; B = 200\text{ Hz}$ | –    | –    | 4    | dB            |

## Notes

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

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BC549C; BC550C.

Fig.2 DC current gain; typical values.

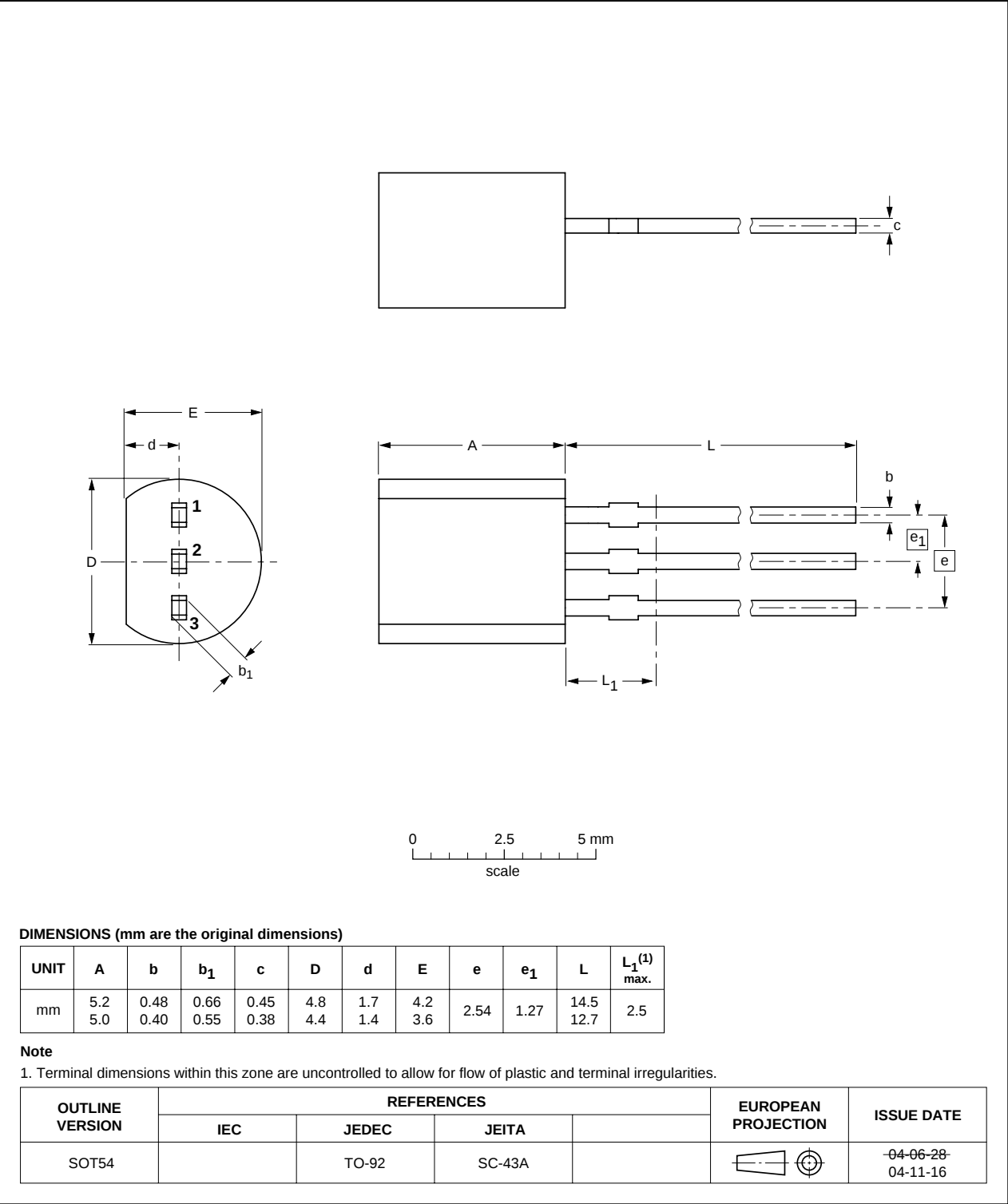
NPN general purpose transistors

BC549; BC550

PACKAGE OUTLINE

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

SOT54



## NPN general purpose transistors

BC549; BC550

## 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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