

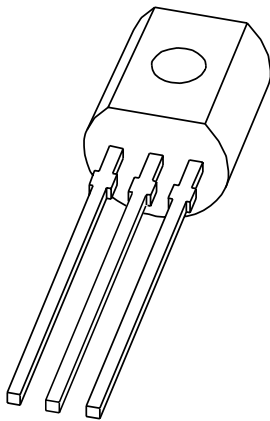
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DATA SHEET



BC517 NPN Darlington transistor

Product specification
Supersedes data of 2003 Oct 16

2004 Nov 05

NPN Darlington transistor

BC517

FEATURES

- High current (max. 500 mA)
- Low voltage (max. 30 V)
- Very high DC current gain (min. 30000).

APPLICATIONS

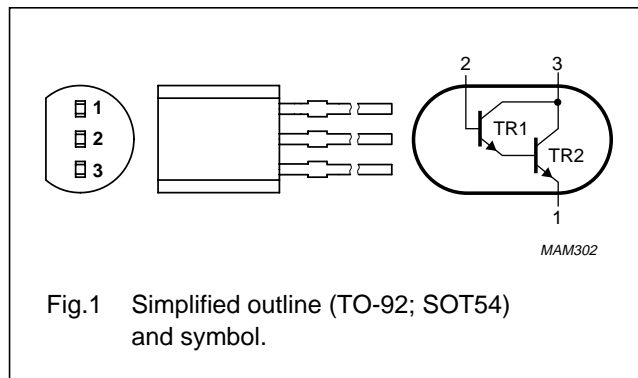
- Where very high amplification is required.

DESCRIPTION

NPN Darlington transistor in a TO-92; SOT54 plastic package. PNP complement: BC516.

PINNING

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



ORDERING INFORMATION

| TYPE NUMBER | PACKAGE | | |
|-------------|---------|---|---------|
| | NAME | DESCRIPTION | VERSION |
| BC517 | SC-43A | plastic single-ended leaded (through hole) package; 3 leads | SOT54 |

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 | – | 40 | V |
| V_{CES} | collector-emitter voltage | $V_{BE} = 0\text{ V}$ | – | 30 | V |
| V_{EBO} | emitter-base voltage | open collector | – | 10 | V |
| I_C | collector current (DC) | | – | 500 | mA |
| I_{CM} | peak collector current | | – | 800 | mA |
| I_B | base current (DC) | | – | 100 | mA |
| P_{tot} | total power dissipation | $T_{amb} \leq 25\text{ °C}$; note 1 | – | 625 | 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.

NPN Darlington transistor

BC517

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|------------|-------|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | note 1 | 200 | K/W |

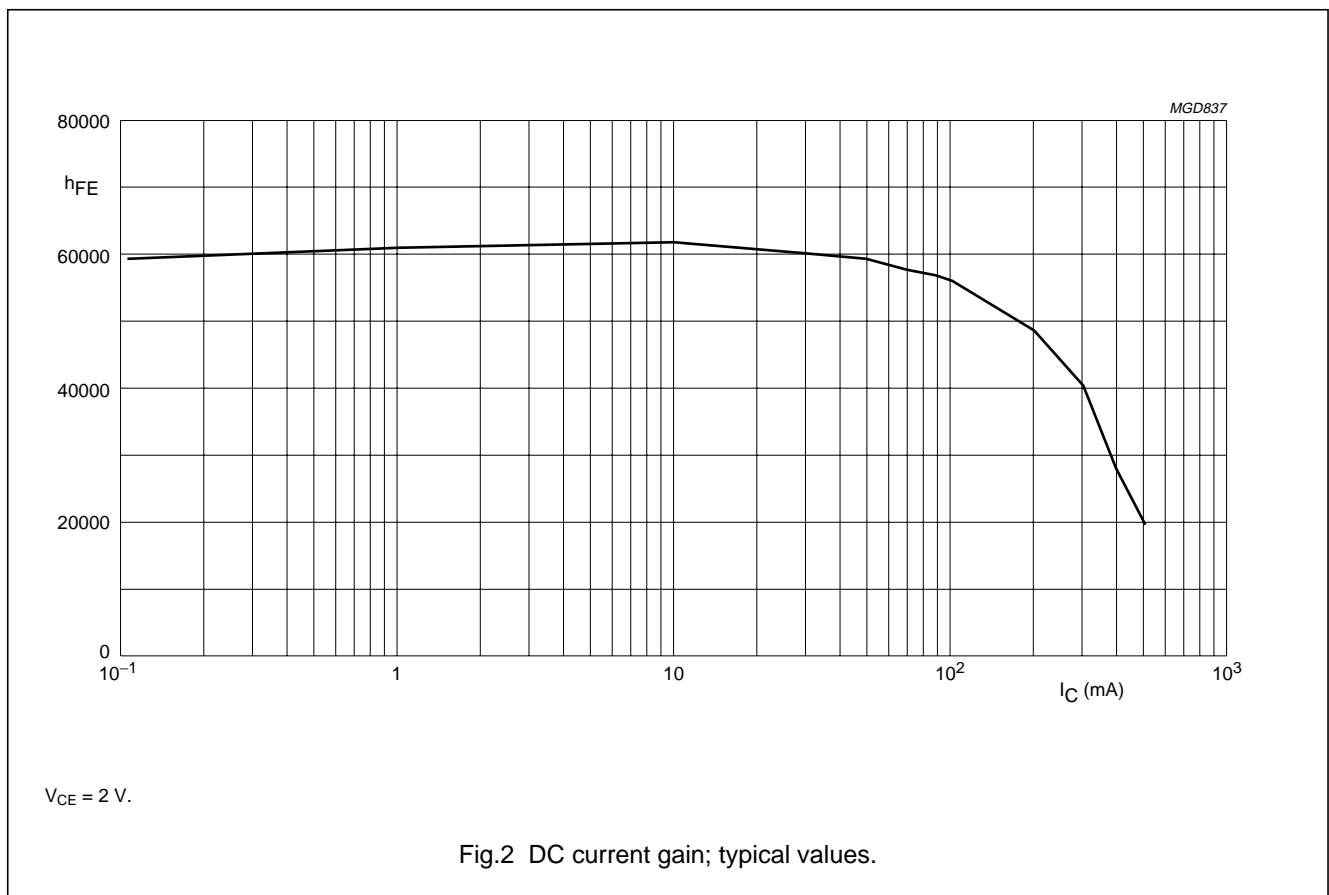
Note

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 | $V_{CB} = 30\text{ V}; I_E = 0\text{ A}$ | – | – | 100 | nA |
| I_{EBO} | emitter-base cut-off current | $V_{EB} = 10\text{ V}; I_C = 0\text{ A}$ | – | – | 100 | nA |
| h_{FE} | DC current gain | $V_{CE} = 2\text{ V}; I_C = 20\text{ mA};$ see Fig.2 | 30000 | – | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 100\text{ mA}; I_B = 0.1\text{ mA}$ | – | – | 1 | V |
| V_{BEsat} | base-emitter saturation voltage | $I_C = 100\text{ mA}; I_B = 0.1\text{ mA}$ | – | – | 1.5 | V |
| V_{BEon} | base-emitter on-state voltage | $V_{CE} = 5\text{ V}; I_C = 10\text{ mA}$ | – | – | 1.4 | V |
| f_T | transition frequency | $V_{CE} = 5\text{ V}; I_C = 30\text{ mA};$ $f = 100\text{ MHz}$ | – | 220 | – | MHz |



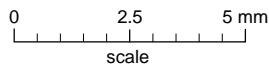
NPN Darlington transistor

BC517

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⁾ max. |
|------|------------|--------------|----------------|--------------|------------|------------|------------|------|----------------|--------------|---------------------------------------|
| mm | 5.2 5.0 | 0.48 0.40 | 0.66 0.55 | 0.45 0.38 | 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 | JEITA | | |
| SOT54 | | TO-92 | SC-43A | | -97-02-28 04-06-28 |

NPN Darlington transistor

BC517

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|-------|----------------------------------|----------------------------------|--|
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