

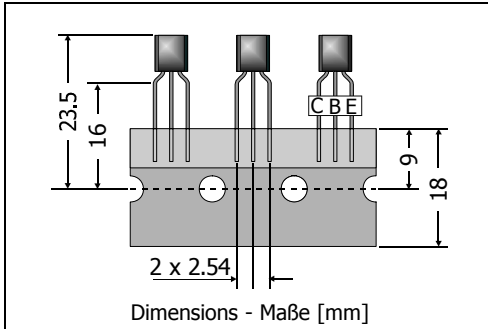
**BC546 ... BC549**

**NPN**

**General Purpose Si-Epitaxial Planar Transistors  
Si-Epitaxial Planar-Transistoren für universellen Einsatz**

**NPN**

Version 2006-05-31



Power dissipation – Verlustleistung 500 mW  
 Plastic case TO-92  
 Kunststoffgehäuse (10D3)  
 Weight approx. – Gewicht ca. 0.18 g  
 Plastic material has UL classification 94V-0  
 Gehäusematerial UL94V-0 klassifiziert  
 Standard packaging taped in ammo pack  
 Standard Lieferform gegurtet in Ammo-Pack



**Maximum ratings (T<sub>A</sub> = 25°C)**

**Grenzwerte (T<sub>A</sub> = 25°C)**

|   |           |                   | BC546                | BC547 | BC548/549 |
|---|-----------|-------------------|----------------------|-------|-----------|
| Collector-Emitter-voltage                       | E-B short | V <sub>CES</sub>  | 85 V                 | 50 V  | 30 V      |
| Collector-Emitter-voltage                       | B open    | V <sub>CEO</sub>  | 65 V                 | 45 V  | 30 V      |
| Collector-Base-voltage                          | E open    | V <sub>CBO</sub>  | 80 V                 | 50 V  | 30 V      |
| Emitter-Base-voltage                            | C open    | V <sub>EBO</sub>  | 5 V                  |       |           |
| Power dissipation – Verlustleistung             |           | P <sub>tot</sub>  | 500 mW <sup>1)</sup> |       |           |
| Collector current – Kollektorstrom (dc)         |           | I <sub>C</sub>    | 100 mA               |       |           |
| Peak Collector current – Kollektor-Spitzenstrom |           | I <sub>CM</sub>   | 200 mA               |       |           |
| Peak Base current – Basis-Spitzenstrom          |           | I <sub>BM</sub>   | 200 mA               |       |           |
| Peak Emitter current – Emitter-Spitzenstrom     |           | - I <sub>EM</sub> | 200 mA               |       |           |
| Junction temperature – Sperrschichttemperatur   |           | T <sub>j</sub>    | -55...+150°C         |       |           |
| Storage temperature – Lagerungstemperatur       |           | T <sub>s</sub>    | -55...+150°C         |       |           |

**Characteristics (T<sub>j</sub> = 25°C)**

**Kennwerte (T<sub>j</sub> = 25°C)**

|   |                 | Group A                   | Group B                 | Group C                 |
|---|-----------------|---------------------------|-------------------------|-------------------------|
| DC current gain – Kollektor-Basis-Stromverhältnis <sup>2)</sup>             |                 |                           |                         |                         |
| V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 µA                               | h <sub>FE</sub> | typ. 90                   | typ. 150                | typ. 270                |
| V <sub>CE</sub> = 5 V, I <sub>C</sub> = 2 mA                                | h <sub>FE</sub> | 110 ... 220               | 200 ... 450             | 420 ... 800             |
| V <sub>CE</sub> = 5 V, I <sub>C</sub> = 100 mA                              | h <sub>FE</sub> | typ. 120                  | typ. 200                | typ. 400                |
| h-Parameters at/bei V <sub>CE</sub> = 5 V, I <sub>C</sub> = 2 mA, f = 1 kHz |                 |                           |                         |                         |
| Small signal current gain<br>Kleinsignal-Stromverstärkung                   | h <sub>fe</sub> | typ. 220                  | typ. 330                | typ. 600                |
| Input impedance – Eingangs-Impedanz   | h <sub>ie</sub> | 1.6 ... 4.5 kΩ            | 3.2 ... 8.5 kΩ          | 6 ... 15 kΩ             |
| Output admittance – Ausgangs-Leitwert                                       | h <sub>oe</sub> | 18 < 30 µS                | 30 < 60 µS              | 60 < 110 µS             |
| Reverser voltage transfer ratio<br>Spannungsrückwirkung                     | h <sub>re</sub> | typ. 1.5*10 <sup>-4</sup> | typ. 2*10 <sup>-4</sup> | typ. 3*10 <sup>-4</sup> |

1 Valid, if leads are kept at ambient temperature at a distance of 2 mm from case  
 Gültig wenn die Anschlussdrähte in 2 mm Abstand vom Gehäuse auf Umgebungstemperatur gehalten werden

**Characteristics (T<sub>j</sub> = 25°C)**
**Kennwerte (T<sub>j</sub> = 25°C)**

|   |               |                    | Min.                       | Typ.                                 | Max.                       |
|---|---------------|--------------------|----------------------------|--------------------------------------|----------------------------|
| <b>Collector-Emitter cutoff current – Kollektor-Emitter-Reststrom</b>                               |               |                    |                            |                                      |                            |
| V <sub>CE</sub> = 80 V, (B-E short)   | BC546         | I <sub>CES</sub>   | –                          | 0.2 nA                               | 15 nA                      |
| V <sub>CE</sub> = 50 V, (B-E short)   | BC547         | I <sub>CES</sub>   | –                          | 0.2 nA                               | 15 nA                      |
| V <sub>CE</sub> = 30 V, (B-E short)   | BC548 / BC549 | I <sub>CES</sub>   | –                          | 0.2 nA                               | 15 nA                      |
| V <sub>CE</sub> = 80 V, T <sub>j</sub> = 125°C, (B-E short)   | BC546         | I <sub>CES</sub>   | –                          | –                                    | 4 µA                       |
| V <sub>CE</sub> = 50 V, T <sub>j</sub> = 125°C, (B-E short)   | BC547         | I <sub>CES</sub>   | –                          | –                                    | 4 µA                       |
| V <sub>CE</sub> = 30 V, T <sub>j</sub> = 125°C, (B-E short)   | BC548 / BC549 | I <sub>CES</sub>   | –                          | –                                    | 4 µA                       |
| <b>Collector-Emitter saturation voltage – Kollektor-Emitter-Sättigungsspg. <sup>2)</sup></b>        |               |                    |                            |                                      |                            |
| I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0.5 mA   |               | V <sub>CEsat</sub> | –                          | 80 mV                                | 200 mV                     |
| I <sub>C</sub> = 100 mA, I <sub>B</sub> = 5 mA  |               | V <sub>CEsat</sub> | –                          | 200 mV                               | 600 mV                     |
| <b>Base saturation voltage – Basis-Sättigungsspannung <sup>2)</sup></b>                             |               |                    |                            |                                      |                            |
| I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0.5 mA   |               | V <sub>BEsat</sub> | –                          | 700 mV                               | –                          |
| I <sub>C</sub> = 100 mA, I <sub>B</sub> = 5 mA  |               | V <sub>BEsat</sub> | –                          | 900 mV                               | –                          |
| <b>Base-Emitter-voltage – Basis-Emitter-Spannung <sup>2)</sup></b>                                  |               |                    |                            |                                      |                            |
| V <sub>CE</sub> = 5 V, I <sub>C</sub> = 2 mA  |               | V <sub>BE</sub>    | 580 mV                     | 660 mV                               | 700 mV                     |
| V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 mA   |               | V <sub>BE</sub>    | –                          | –                                    | 720 mV                     |
| <b>Gain-Bandwidth Product – Transitfrequenz</b>   |               |                    |                            |                                      |                            |
| V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 mA, f = 100 MHz  |               | f <sub>T</sub>     | –                          | 300 MHz                              | –                          |
| <b>Collector-Base Capacitance – Kollektor-Basis-Kapazität</b>                                       |               |                    |                            |                                      |                            |
| V <sub>CB</sub> = 10 V, I <sub>E</sub> = i <sub>e</sub> = 0, f = 1 MHz                              |               | C <sub>CB0</sub>   | –                          | 3.5 pF                               | 6 pF                       |
| <b>Emitter-Base Capacitance – Emitter-Basis-Kapazität</b>   |               |                    |                            |                                      |                            |
| V <sub>EB</sub> = 0.5 V, I <sub>C</sub> = i <sub>c</sub> = 0, f = 1 MHz                             |               | C <sub>EB0</sub>   | –                          | 9 pF                                 | –                          |
| <b>Noise figure – Rauschzahl</b>  |               |                    |                            |                                      |                            |
| V <sub>CE</sub> = 5 V, I <sub>C</sub> = 200 µA, R <sub>G</sub> = 2 kΩ                               | BC546 / BC547 | F                  | –                          | 2 dB                                 | 10 dB                      |
| f = 1 kHz, Δf = 200 Hz  | BC548 / BC549 | F                  | –                          | 1.2 dB                               | 4 dB                       |
| <b>Thermal resistance junction to ambient air<br/>Wärmewiderstand Sperrschicht – umgebende Luft</b> |               |                    |                            |                                      |                            |
|   |               | R <sub>thA</sub>   | < 200 K/W <sup>1)</sup>    |                                      |                            |
| <b>Recommended complementary PNP transistors<br/>Empfohlene komplementäre PNP-Transistoren</b>      |               |                    |                            |                                      |                            |
|   |               |                    | BC556 ... BC559            |                                      |                            |
| <b>Available current gain groups per type<br/>Lieferbare Stromverstärkungsgruppen pro Typ</b>       |               |                    |                            |                                      |                            |
|   |               |                    | BC546A<br>BC547A<br>BC548A | BC546B<br>BC547B<br>BC548B<br>BC549B | BC547C<br>BC548C<br>BC549C |

<sup>2)</sup> Tested with pulses t<sub>p</sub> = 300 µs, duty cycle ≤ 2% – Gemessen mit Impulsen t<sub>p</sub> = 300 µs, Schaltverhältnis ≤ 2%

<sup>1)</sup> Valid, if leads are kept at ambient temperature at a distance of 2 mm from case

Gültig wenn die Anschlussdrähte in 2 mm Abstand vom Gehäuse auf Umgebungstemperatur gehalten werden