

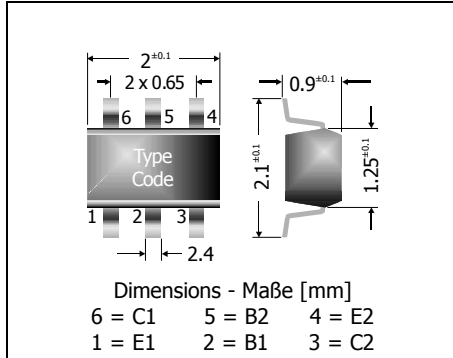
## BC847PN

**NPN**  
**PNP**

**Complementary Surface Mount General Purpose Si-Planar Transistors**  
**Komplementäre Si-Planar Transistoren für die Oberflächenmontage**

**NPN**  
**PNP**

Version 2006-09-05



Power dissipation  
Verlustleistung

300 mW

Plastic case  
Kunststoffgehäuse

SOT-363

Weight approx. – Gewicht ca.

0.01 g

Plastic material has UL classification 94V-0  
Gehäusematerial UL94V-0 klassifiziert

Standard packaging taped and reeled  
Standard Lieferform getupet auf Rolle



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

### Grenzwerte (T<sub>A</sub> = 25°C)

| per transistor – pro Transistor                      |        |                  | <b>BC847PN</b>       |
|--|--------|------------------|----------------------|
| Collector-Emitter-volt. – Kollektor-Emitter-Spannung | B open | V <sub>CE0</sub> | 45 V                 |
| Collector-Base-voltage – Kollektor-Basis-Spannung    | E open | V <sub>CEO</sub> | 50 V                 |
| Emitter-Base-voltage – Emitter-Basis-Spannung        | C open | V <sub>EB0</sub> | 6 V                  |
| Power dissipation – Verlustleistung                  |        | P <sub>tot</sub> | 300 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               |
| 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)

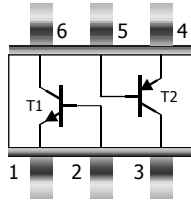
### Kennwerte (T<sub>j</sub> = 25°C)

|   |          |                      | <b>Min.</b> | <b>Typ.</b> | <b>Max.</b> |
|---|----------|----------------------|-------------|-------------|-------------|
| DC current gain – Kollektor-Basis-Stromverhältnis                                 |          |                      |             |             |             |
| V <sub>CE</sub> = 5 V, I <sub>C</sub> = 2 mA                                      | T1 - NPN | h <sub>FE</sub>      | 200         | –           | 450         |
| - V <sub>CE</sub> = 5 V, - I <sub>C</sub> = 2 mA                                  | T2 - PNP | h <sub>FE</sub>      | 220         | –           | 475         |
| Collector-Emitter saturation voltage – Kollektor-Sättigungsspannung <sup>2)</sup> |          |                      |             |             |             |
| I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0.5 mA                                   | T1 - NPN | V <sub>CEsat</sub>   | –           | –           | 250 mV      |
| I <sub>C</sub> = 100 mA, I <sub>B</sub> = 5 mA                                    |          | V <sub>CEsat</sub>   | –           | –           | 600 mV      |
| - I <sub>C</sub> = 10 mA, - I <sub>B</sub> = 0.5 mA                               | T2 - PNP | - V <sub>CEsat</sub> | –           | –           | 300 mV      |
| - I <sub>C</sub> = 100 mA, - I <sub>B</sub> = 5 mA                                |          | - V <sub>CEsat</sub> | –           | –           | 650 mV      |

1 Mounted on P.C. board with 3 mm<sup>2</sup> copper pad at each terminal  
Montage auf Leiterplatte mit 3 mm<sup>2</sup> Kupferbelag (Löt-pad) an jedem Anschluss

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

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

|   |          |   | <b>Min.</b>             | <b>Typ.</b>      | <b>Max.</b>      |
|---|----------|---|-------------------------|------------------|------------------|
| <b>Base-Emitter saturation voltage – Basis-Sättigungsspannung <sup>2)</sup></b>                           |          |   |                         |                  |                  |
| I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0.5 mA<br>I <sub>C</sub> = 100 mA, I <sub>B</sub> = 5 mA         | T1 - NPN | V <sub>BEsat</sub><br>V <sub>BEsat</sub>  | –<br>–                  | 700 mV<br>900 mV | –<br>–           |
| - I <sub>C</sub> = 10 mA, - I <sub>B</sub> = 0.5 mA<br>- I <sub>C</sub> = 100 mA, - I <sub>B</sub> = 5 mA | T2 - PNP | - V <sub>BEsat</sub><br>- V <sub>BEsat</sub>  | –<br>–                  | 700 mV<br>–      | –<br>950 mV      |
| <b>Base-Emitter-voltage – Basis-Emitter-Spannung <sup>2)</sup></b>  |          |   |                         |                  |                  |
| I <sub>C</sub> = 2 mA, V <sub>CE</sub> = 5 V<br>I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 5 V             | T1 - NPN | V <sub>BE</sub><br>V <sub>BE</sub>  | 580 mV<br>–             | –<br>–           | 700 mV<br>720 mV |
| - I <sub>C</sub> = 2 mA, - V <sub>CE</sub> = 5 V<br>- I <sub>C</sub> = 10 mA, - V <sub>CE</sub> = 5 V     | T2 - PNP | - V <sub>BE</sub><br>- V <sub>BE</sub>  | 600 mV<br>–             | –<br>–           | 750 mV<br>820 mV |
| <b>Collector-Base cutoff current – Kollektor-Basis-Reststrom</b>  |          |   |                         |                  |                  |
| V <sub>CB</sub> = 30 V, (E open)  | T1 - NPN | I <sub>CB0</sub>  | –                       | –                | 15 nA            |
| - V <sub>CB</sub> = 30 V, (E open)  | T2 - PNP | - I <sub>CB0</sub>  | –                       | –                | 15 nA            |
| <b>Emitter-Base cutoff current</b>  |          |   |                         |                  |                  |
| V <sub>EB</sub> = 5 V, (C open)   | T1 - NPN | I <sub>EB0</sub>  | –                       | –                | 100 nA           |
| - V <sub>EB</sub> = 5 V, (C open)   | T2 - PNP | - I <sub>EB0</sub>  | –                       | –                | 100 nA           |
| <b>Gain-Bandwidth Product – Transitfrequenz</b>   |          |   |                         |                  |                  |
| V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 mA, f = 100 MHz  | T1 - NPN | f <sub>T</sub>  | 100 MHz                 | –                | –                |
| - V <sub>CE</sub> = 5 V, - I <sub>C</sub> = 10 mA, f = 100 MHz  | T2 - PNP | f <sub>T</sub>  | 100 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                                    | T1 - NPN | C <sub>CB0</sub>  | –                       | –                | 6 pF             |
| - V <sub>CB</sub> = 10 V, I <sub>E</sub> = i <sub>e</sub> = 0, f = 1 MHz                                  | T2 - PNP | C <sub>CB0</sub>  | –                       | –                | 4.5 pF           |
| <b>Thermal resistance junction to ambient air</b><br><b>Wärmewiderstand Sperrschicht – umgebende Luft</b> |          | R <sub>thA</sub>  | < 420 K/W <sup>1)</sup> |                  |                  |
| <b>Pinning – Anschlussbelegung</b>  |          |  |                         |                  |                  |
| T1: E1 = 1, C1 = 6, B1 = 2<br>T2: E2 = 4, C2 = 3, B2 = 5  |          |   |                         |                  |                  |

<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> Mounted on P.C. board with 3 mm<sup>2</sup> copper pad at each terminal  
Montage auf Leiterplatte mit 3 mm<sup>2</sup> Kupferbelag (Löt-pad) an jedem Anschluss