# SILICON PLANAR EPITAXIAL TRANSISTORS

P-N-P transistors, in a microminiature plastic package, intended for low level general purpose applications in thick and thin-film circuits.

## QUICK REFERENCE DATA

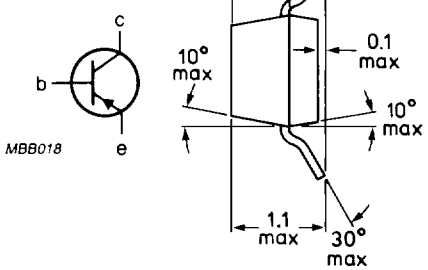
| | | | BCW29 | BCW30 | |
|---|---|---|---|---|---|
| D.C. current gain at $T_j$ = 25 °C<br>$-I_C$ = 2 mA; $-V_{CE}$ = 5 V | $h_{FE}$ | ><br><br>< | 120<br><br>260 | 215<br><br>500 | |
| Collector-base voltage (open emitter) | $-V_{CBO}$ | max. | 32 | | V |
| Collector-emitter voltage (open base) | $-V_{CEO}$ | max. | 32 | | V |
| Collector current (peak value) | $-I_{CM}$ | max. | 200 | | mA |
| Total power dissipation up to $T_{amb}$ = 25 °C | $P_{tot}$ | max. | 250 | | mW |
| Junction temperature | $T_j$ | max. | 150 | | °C |
| Transition frequency at f = 100 MHz<br>$-I_C$ = 10 mA; $-V_{CE}$ = 5 V | $f_T$ | > | 100 | | MHz |
| Noise figure at $R_S$ = 2 kΩ<br>$-I_C$ = 200 μA; $-V_{CE}$ = 5 V;<br>f = 1 kHz; B = 200 Hz | F | < | 10 | | dB |

## MECHANICAL DATA

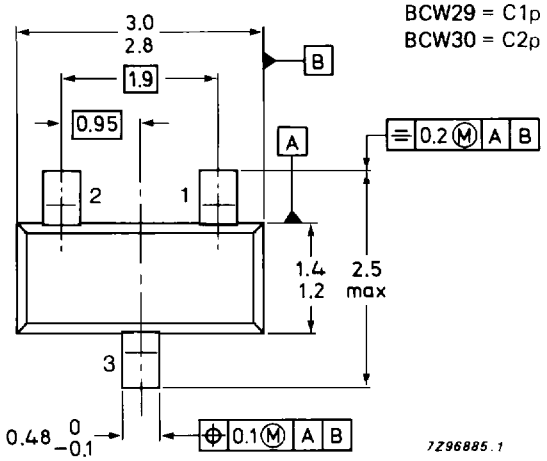
Fig. 1 SOT-23.

**Pinning:**

1 = base
2 = emitter
3 = collector




Dimensions in mm




TOP VIEW

**Marking code**

BCW29 = C1p
BCW30 = C2p

Reverse pinning types are available on request.

## RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC134)

| | | | |
|---|---|---|---|
| Collector-base voltage (open emitter) | $-V_{CBO}$ | max. | 32 V |
| Collector-emitter voltage ($V_{BE}$ = 0) | $-V_{CES}$ | max. | 32 V |
| Collector-emitter voltage (open base) $-I_C$ = 2 mA | $-V_{CEO}$ | max. | 32 V |
| Emitter-base voltage (open collector) | $-V_{EBO}$ | max. | 5 V |
| Collector current (d.c.) | $-I_C$ | max. | 100 mA |
| Collector current (peak value) | $-I_{CM}$ | max. | 200 mA |
| Total power dissipation up to $T_{amb}$ = 25 °C | $P_{tot}$ | max. | 250 mW |
| Storage temperature | $T_{stg}$ | | −65 to +150 °C |
| Junction temperature | $T_j$ | max. | 150 °C |

## THERMAL RESISTANCE

| | | | |
|---|---|---|---|
| From junction to ambient* | $R_{th\ j\text{-}a}$ | = | 500 K/W |

## CHARACTERISTICS

$T_j$ = 25 °C unless otherwise specified

| | | | |
|---|---|---|---|
| Collector cut-off current | | | |
| $I_E$ = 0; $-V_{CB}$ = 32 V | $-I_{CBO}$ | < | 100 nA |
| $I_E$ = 0; $-V_{CB}$ = 32 V; $T_j$ = 100 °C | $-I_{CBO}$ | < | 10 μA |
| Base-emitter voltage | | | |
| $-I_C$ = 2 mA; $-V_{CE}$ = 5 V | $-V_{BE}$ | | 600 to 750 mV |
| Saturation voltages | | | |
| $-I_C$ = 10 mA; $-I_B$ = 0,5 mA | $-V_{CEsat}$ | typ. | 80 mV |
| | | < | 300 mV |
| | $-V_{BEsat}$ | typ. | 720 mV |
| $-I_C$ = 50 mA; $-I_B$ = 2,5 mA | $-V_{CEsat}$ | typ. | 150 mV |
| | $-V_{BEsat}$ | typ. | 810 mV |

* Mounted on an FR4 printed-circuit board 8 mm x 10 mm x 0.7 mm.

| | | | BCW29 | BCW30 | |
|---|---|---|---|---|---|
| D.C. current gain | | | | | |
| $-I_C = 10\ \mu A; -V_{CE} = 5\ V$ | $h_{FE}$ | typ. | 90 | 150 | |
| $-I_C = 2\ mA; -V_{CE} = 5\ V$ | $h_{FE}$ | $>$ | 120 | 215 | |
| | | $<$ | 260 | 500 | |
| Collector-capacitance at f = 1 MHz<br>$I_E = I_e = 0; -V_{CB} = 10\ V$ | $C_c$ | typ. | | 4,5 | pF |
| Transition frequency at f = 100 MHz<br>$-I_C = 10\ mA; -V_{CE} = 5\ V$ | $f_T$ | $>$ | | 100 | MHz |
| Noise figure at $R_S = 2\ k\Omega$<br>$-I_C = 200\ \mu A; -V_{CE} = 5\ V$<br>f = 1 kHz; B = 200 Hz | F | $<$ | | 10 | dB |