

## SILICON PLANAR EPITAXIAL TRANSISTOR

PNP transistor in a plastic microminiature package, intended for low-voltage, high-current LF applications.

## QUICK REFERENCE DATA

|  |                 |                        |
|--|-----------------|------------------------|
| Collector-emitter voltage ( $V_{BE} = 0$ )                           | $-V_{CES}$ max. | 25 V                   |
| Collector-emitter voltage (open base)                                | $-V_{CEO}$ max. | 20 V                   |
| Collector current (peak value)                                       | $-I_{CM}$ max.  | 2 A                    |
| Total power dissipation up to $T_{amb} = 25\text{ }^{\circ}\text{C}$ | $P_{tot}$ max.  | 1,5 W                  |
| Junction temperature   | $T_j$ max.      | 150 $^{\circ}\text{C}$ |
| DC current gain  | $h_{FE}$        | 85 to 375              |
| $-I_C = 500\text{ mA}; -V_{CE} = 1\text{ V}$                         |                 |                        |
| Transition frequency at $f = 100\text{ MHz}$                         | $f_T$           | > 40 MHz               |
| $-I_C = 10\text{ mA}; -V_{CE} = 5\text{ V}$                          |                 |                        |

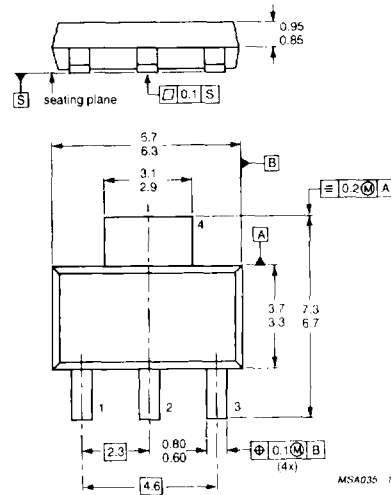
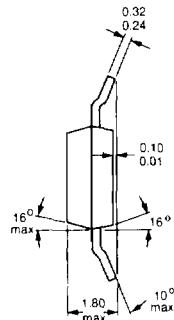
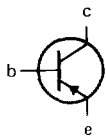
## MECHANICAL DATA

Dimensions in mm

Fig. 1 SOT-223

## Pinning

- 1 = Base
- 2 = Collector
- 3 = Emitter
- 4 = Collector



## RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

|  |            |      |                                       |
|--|------------|------|---------------------------------------|
| Collector-emitter voltage ( $V_{BE} = 0$ )                           | $-V_{CES}$ | max. | 25 V                                  |
| Collector-emitter voltage (open base)                                | $-V_{CEO}$ | max. | 20 V                                  |
| Emitter-base voltage (open collector)                                | $-V_{EBO}$ | max. | 5 V                                   |
| Collector current (DC)   | $-I_C$     | max. | 1 A                                   |
| Collector current (peak value)                                       | $-I_{CM}$  | max. | 2 A                                   |
| Base current (DC)  | $-I_B$     | max. | 100 mA                                |
| Base current (peak value)  | $-I_{BM}$  | max. | 200 mA                                |
| Total power dissipation up to $T_{amb} = 25\text{ }^\circ\text{C}^*$ | $P_{tot}$  | max. | 1,5 W                                 |
| Storage temperature range  | $T_{stg}$  |      | $-65$ to $+150\text{ }^\circ\text{C}$ |
| Junction temperature   | $T_j$      | max. | 150 $^\circ\text{C}$                  |

## THERMAL RESISTANCE

|                           |               |   |          |
|---------------------------|---------------|---|----------|
| From junction to ambient* | $R_{th\ j-a}$ | = | 83,3 K/W |
|---------------------------|---------------|---|----------|

## CHARACTERISTICS

 $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified

|   |              |          |                  |
|---|--------------|----------|------------------|
| Collector cut-off current   |              |          |                  |
| $I_E = 0; -V_{CB} = 25\text{ V}$                                  | $-I_{CBO}$   | <        | 10 $\mu\text{A}$ |
| $I_E = 0; -V_{CB} = 25\text{ V}; T_j = 150\text{ }^\circ\text{C}$ | $-I_{CBO}$   | <        | 1 mA             |
| Emitter cut-off current   |              |          |                  |
| $I_C = 0; -V_{EB} = 5\text{ V}$                                   | $-I_{EBO}$   | <        | 10 $\mu\text{A}$ |
| Base-emitter voltage  |              |          |                  |
| $-I_C = 5\text{ mA}; -V_{CE} = 10\text{ V}$                       | $-V_{BE}$    | typ.     | 0,62 V           |
| $-I_C = 1\text{ A}; -V_{CE} = 1\text{ V}$                         | $-V_{BE}$    | <        | 1 V              |
| Collector-emitter saturation voltage                              |              |          |                  |
| $-I_C = 1\text{ A}; -I_B = 100\text{ mA}$                         | $-V_{CEsat}$ | <        | 0,5 V            |
| DC current gain   |              |          |                  |
| $-I_C = 5\text{ mA}; -V_{CE} = 10\text{ V}$                       | BCP69        | $h_{FE}$ | > 50             |
| $-I_C = 500\text{ mA}; -V_{CE} = 1\text{ V}$                      | BCP69        | $h_{FE}$ | 85 to 375        |
|   | BCP69-10     | $h_{FE}$ | $\leq$ 160       |
|   | BCP69-16     | $h_{FE}$ | 100 to 250       |
|   | BCP69-25     | $h_{FE}$ | $\geq$ 250       |
| $-I_C = 1\text{ A}; -V_{CE} = 1\text{ V}$                         | BCP69        | $h_{FE}$ | > 60             |
| Collector capacitance at $f = 450\text{ kHz}$                     |              |          |                  |
| $I_E = I_e = 0; -V_{CB} = 5\text{ V}$                             |              | $C_C$    | typ. 45 pF       |
| Transition frequency at $f = 100\text{ MHz}$                      |              |          |                  |
| $-I_C = 10\text{ mA}; -V_{CE} = 5\text{ V}$                       |              | $f_T$    | > 40 MHz         |

\* Device mounted on an epoxy printed-circuit board 40 mm x 40 mm x 1,5 mm; mounting pad for the collector lead min. 6 cm<sup>2</sup>.