

## SILICON EPITAXIAL TRANSISTORS

P-N-P transistors in a microminiature (SMD) plastic envelope intended for surface mounted applications. They are primarily intended for use in telephony and professional communication equipment.

## QUICK REFERENCE DATA

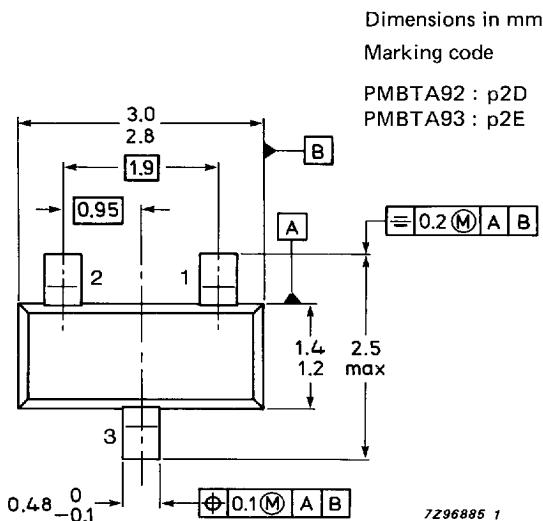
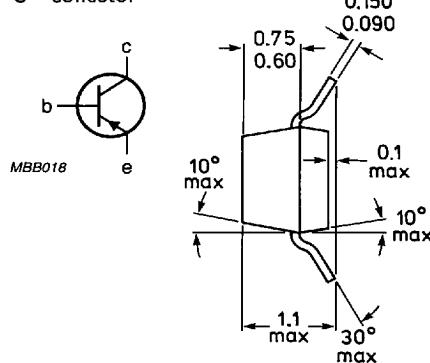
|   |                   | PMBTA92  | PMBTA93 |
|---|-------------------|----------|---------|
| Collector-base voltage (open emitter)   | -V <sub>CBO</sub> | max. 300 | 200 V   |
| Collector-emitter voltage (open base)   | -V <sub>CEO</sub> | max. 300 | 200 V   |
| Emitter-base voltage (open collector)   | -V <sub>EBO</sub> | max. 5   | V       |
| Collector current (d.c.)  | -I <sub>C</sub>   | max. 500 | mA      |
| Total power dissipation up to T <sub>amb</sub> = 25 °C                                  | P <sub>tot</sub>  | max. 250 | mW      |
| D.C. current gain<br>-I <sub>C</sub> = 10 mA; -V <sub>CE</sub> = 10 V                   | h <sub>FE</sub>   | min. 40  |         |
| Transition frequency at f = 100 MHz<br>-I <sub>C</sub> = 10 mA; -V <sub>CE</sub> = 20 V | f <sub>T</sub>    | min. 50  | MHz     |
| Collector-base capacitance at f = 1 MHz<br>I <sub>E</sub> = 0; -V <sub>CB</sub> = 20 V  | C <sub>cbb</sub>  | max. 6   | 8 pF    |

## MECHANICAL DATA

Fig. 1 SOT-23.

## Pinning:

- 1 = base
- 2 = emitter
- 3 = collector



TOP VIEW

See also Soldering recommendations.

PMBTA92  
PMBTA93

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**RATINGS**

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

|                                       |            | PMBTA92     | PMBTA93          |
|---------------------------------------|------------|-------------|------------------|
| Collector-base voltage (open emitter) | $-V_{CBO}$ | max. 300    | 200 V            |
| Collector-emitter voltage (open base) | $-V_{CEO}$ | max. 300    | 200 V            |
| Emitter-base voltage (open collector) | $-V_{EBO}$ | max. 5      | V                |
| Collector current (d.c.)              | $-I_C$     | max. 500    | mA               |
| Total power dissipation *             | $P_{tot}$  | max. 250    | mW               |
| up to $T_{amb} = 25^\circ\text{C}$    |            |             |                  |
| Storage temperature                   | $T_{stg}$  | -65 to +150 |                  |
| Junction temperature                  | $T_j$      | max. 150    | $^\circ\text{C}$ |

**THERMAL CHARACTERISTICS \*\***

$$T_j = P (R_{th\ j-t} + R_{th\ t-s} + R_{th\ s-a}) + T_{amb}$$

|   |               |   |     |     |
|---|---------------|---|-----|-----|
| Thermal resistance<br>from junction to ambient* | $R_{th\ j-a}$ | = | 500 | K/W |
|---|---------------|---|-----|-----|

**CHARACTERISTICS** $T_{amb} = 25^\circ\text{C}$  unless otherwise specified

|  |                                  | PMBTA92                       | PMBTA93                               |
|--|----------------------------------|-------------------------------|---------------------------------------|
| Collector-emitter breakdown voltage<br>$-I_C = 1\text{ mA}; I_B = 0$   | $-V_{(BR)CEO}$                   | min. 300                      | 200 V                                 |
| Collector-base breakdown voltage<br>$-I_C = 100\ \mu\text{A}; I_E = 0$   | $-V_{(BR)CBO}$                   | min. 300                      | 200 V                                 |
| Collector cut-off current<br>$-V_{CB} = 200\text{ V}; I_E = 0$<br>$-V_{CB} = 160\text{ V}; I_E = 0$  | $-I_{CBO}$                       | max. 0,25<br>max. —           | — $\mu\text{A}$<br>0,25 $\mu\text{A}$ |
| Emitter-base breakdown voltage<br>$-I_E = 100\ \mu\text{A}; I_C = 0$   | $-V_{(BR)EBO}$                   | min. 5                        | V                                     |
| Emitter cut-off current<br>$I_C = 0; -V_{BE} = 3\text{ V}$   | $-I_{EBO}$                       | max. 0,1                      | $\mu\text{A}$                         |
| Collector-base capacitance<br>at $f = 1\text{ MHz}$ ;<br>$I_E = 0; -V_{CB} = 20\text{ V}$  | $C_{cb}$                         | max. 6                        | 8 pF                                  |
| Saturation voltages<br>$-I_C = 20\text{ mA}; -I_B = 2\text{ mA}$<br>$-I_C = 20\text{ mA}; -I_B = 2\text{ mA}$  | $-V_{CEsat}$<br>$-V_{BEsat}$     | max. 0,5<br>max. 0,9          | V<br>V                                |
| D.C. current gain ▲<br>$-I_C = 1\text{ mA}; -V_{CE} = 10\text{ V}$<br>$-I_C = 10\text{ mA}; -V_{CE} = 10\text{ V}$<br>$-I_C = 30\text{ mA}; -V_{CE} = 10\text{ V}$ | $h_{FE}$<br>$h_{FE}$<br>$h_{FE}$ | min. 25<br>min. 40<br>min. 25 |                                       |

\* Mounted on a ceramic substrate: area = 10 x 8 mm; thickness = 0,7 mm.

\*\* See Thermal characteristics.

▲ Pulse test conditions:  $t_p = 300\ \mu\text{s}$ ; duty cycle  $\leq 2\%$ .