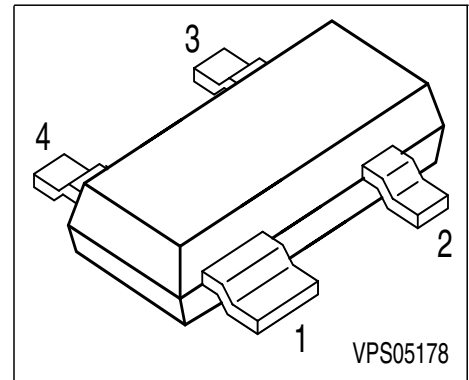
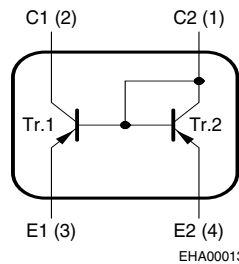


## PNP Silicon Double Transistor

- To be used as a current mirror
- Good thermal coupling and  $V_{BE}$  matching
- High current gain
- Low collector-emitter saturation voltage



| Type    | Marking | Pin Configuration |        |        |        | Package |
|---------|---------|-------------------|--------|--------|--------|---------|
| BCV 62A | 3Js     | 1 = C2            | 2 = C1 | 3 = E1 | 4 = E2 | SOT-143 |
| BCV 62B | 3Ks     | 1 = C2            | 2 = C1 | 3 = E1 | 4 = E2 | SOT-143 |
| BCV 62C | 3Ls     | 1 = C2            | 2 = C1 | 3 = E1 | 4 = E2 | SOT-143 |

### Maximum Ratings

| Parameter                                                | Symbol    | Value       | Unit |
|----------------------------------------------------------|-----------|-------------|------|
| Collector-emitter voltage<br>(transistor T1)             | $V_{CEO}$ | 30          | V    |
| Collector-base voltage (open emitter)<br>(transistor T1) | $V_{CBO}$ | 30          |      |
| Emitter-base voltage                                     | $V_{EBS}$ | 6           |      |
| DC collector current                                     | $I_C$     | 100         | mA   |
| Peak collector current                                   | $I_{CM}$  | 200         |      |
| Base peak current (transistor T1)                        | $I_{BM}$  | 200         |      |
| Total power dissipation, $T_S = 99\text{ °C}$            | $P_{tot}$ | 300         | mW   |
| Junction temperature                                     | $T_j$     | 150         | °C   |
| Storage temperature                                      | $T_{stg}$ | -65 ... 150 |      |

### Thermal Resistance

|                                |            |      |     |
|--------------------------------|------------|------|-----|
| Junction ambient <sup>1)</sup> | $R_{thJA}$ | ≤240 | K/W |
| Junction - soldering point     | $R_{thJS}$ | ≤170 |     |

1) Package mounted on pcb 40mm x 40mm x 1.5mm / 6cm<sup>2</sup> Cu

**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

| Parameter                                                                                                                       | Symbol        | Values   |            |            | Unit          |
|---------------------------------------------------------------------------------------------------------------------------------|---------------|----------|------------|------------|---------------|
|                                                                                                                                 |               | min.     | typ.       | max.       |               |
| DC Characteristics of T1                                                                                                        |               |          |            |            |               |
| Collector-emitter breakdown voltage<br>$I_C = 10\text{ mA}, I_B = 0$                                                            | $V_{(BR)CEO}$ | 30       | -          | -          | V             |
| Collector-base breakdown voltage<br>$I_C = 10\text{ }\mu\text{A}, I_B = 0$                                                      | $V_{(BR)CBO}$ | 30       | -          | -          |               |
| Emitter-base breakdown voltage<br>$I_E = 10\text{ }\mu\text{A}, I_C = 0$                                                        | $V_{(BR)EBO}$ | 6        | -          | -          |               |
| Collector cutoff current<br>$V_{CB} = 30\text{ V}, I_E = 0$                                                                     | $I_{CBO}$     | -        | -          | 15         | nA            |
| Collector cutoff current<br>$V_{CB} = 30\text{ V}, I_E = 0, T_A = 150\text{ }^\circ\text{C}$                                    | $I_{CBO}$     | -        | -          | 5          | $\mu\text{A}$ |
| DC current gain 1)<br>$I_C = 0.1\text{ mA}, V_{CE} = 5\text{ V}$                                                                | $h_{FE}$      | 100      | -          | -          | -             |
| DC current gain 1)<br>$I_C = 2\text{ mA}, V_{CE} = 5\text{ V}$                                                                  | $h_{FE}$      |          |            |            |               |
| BCV 62A                                                                                                                         |               | 125      | 180        | 220        |               |
| BCV 62B                                                                                                                         |               | 220      | 290        | 475        |               |
| BCV 62C                                                                                                                         | 420           | 520      | 800        |            |               |
| Collector-emitter saturation voltage1)<br>$I_C = 10\text{ mA}, I_B = 0.5\text{ mA}$<br>$I_C = 100\text{ mA}, I_B = 5\text{ mA}$ | $V_{CEsat}$   | -<br>-   | 75<br>250  | 300<br>650 | mV            |
| Base-emitter saturation voltage 1)<br>$I_C = 10\text{ mA}, I_B = 0.5\text{ mA}$<br>$I_C = 100\text{ mA}, I_B = 5\text{ mA}$     | $V_{BEsat}$   | -<br>-   | 700<br>850 | -<br>-     |               |
| Base-emitter voltage 1)<br>$I_C = 2\text{ mA}, V_{CE} = 5\text{ V}$<br>$I_C = 10\text{ mA}, V_{CE} = 5\text{ V}$                | $V_{BE(ON)}$  | 600<br>- | 650<br>-   | 750<br>820 |               |

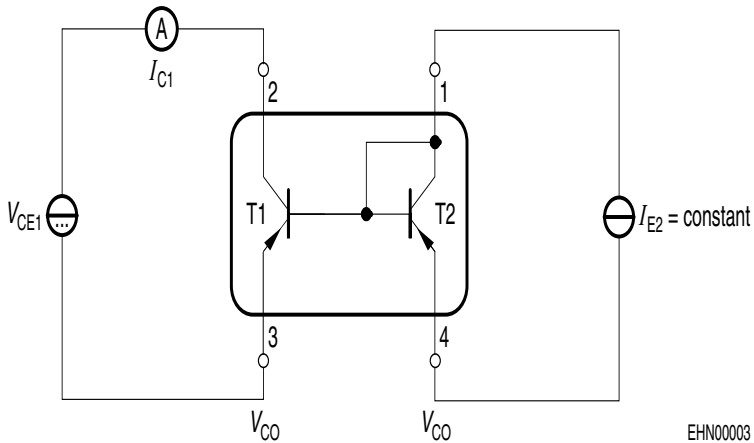
1) Pulse test:  $t \leq 300\mu\text{s}$ ,  $D = 2\%$

**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified.

| Parameter                                                                                                                                                                      | Symbol                          | Values          |             |                 | Unit             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------|-------------|-----------------|------------------|
|                                                                                                                                                                                |                                 | min.            | typ.        | max.            |                  |
| DC Characteristics                                                                                                                                                             |                                 |                 |             |                 |                  |
| Base-emitter forward voltage<br>$I_E = 10\ \mu\text{A}$<br>$I_E = 250\ \text{mA}$                                                                                              | $V_{\text{BES}}$                | 0.4<br>-        | -<br>-      | -<br>1.8        | V                |
| Matching of transistor T1 and transistor T2<br>at $I_{\text{E}2} = 0.5\text{mA}$ and $V_{\text{CE}1} = 5\text{V}$<br>$T_A = 25\ ^\circ\text{C}$<br>$T_A = 150\ ^\circ\text{C}$ | $I_{\text{C}1} / I_{\text{C}2}$ | -<br>0.7<br>0.7 | -<br>-<br>- | -<br>1.3<br>1.3 | -                |
| Thermal coupling of transistor T1 and transistor T2 <sup>1)</sup> T1: $V_{\text{CE}} = 5\text{V}$<br>Maximum current of thermal stability of $I_{\text{C}1}$                   | $I_{\text{E}2}$                 | -               | 5           | -               | mA               |
| AC characteristics of transistor T1                                                                                                                                            |                                 |                 |             |                 |                  |
| Transition frequency<br>$I_{\text{C}} = 10\ \text{mA}$ , $V_{\text{CE}} = 5\ \text{V}$ , $f = 100\ \text{MHz}$                                                                 | $f_{\text{T}}$                  | -               | 250         | -               | MHz              |
| Collector-base capacitance<br>$V_{\text{CB}} = 10\ \text{V}$ , $f = 1\ \text{MHz}$                                                                                             | $C_{\text{cb}}$                 | -               | 3           | -               | pF               |
| Emitter-base capacitance<br>$V_{\text{EB}} = 0.5\ \text{V}$ , $f = 1\ \text{MHz}$                                                                                              | $C_{\text{eb}}$                 | -               | 8           | -               |                  |
| Noise figure<br>$I_{\text{C}} = 200\ \mu\text{A}$ , $V_{\text{CE}} = 5\ \text{V}$ , $R_{\text{S}} = 2\ \text{k}\Omega$ ,<br>$f = 1\ \text{kHz}$ , $\Delta f = 200\ \text{Hz}$  | $F$                             | -               | 2           | -               | dB               |
| Short-circuit input impedance<br>$I_{\text{C}} = 1\ \text{mA}$ , $V_{\text{CE}} = 10\ \text{V}$ , $f = 1\ \text{kHz}$                                                          | $h_{11\text{e}}$                | -               | 4.5         | -               | kΩ               |
| Open-circuit reverse voltage transf.ratio<br>$I_{\text{C}} = 1\ \text{mA}$ , $V_{\text{CE}} = 10\ \text{V}$ , $f = 1\ \text{kHz}$                                              | $h_{12\text{e}}$                | -               | 2           | -               | 10 <sup>-4</sup> |
| Short-circuit forward current transf.ratio<br>$I_{\text{C}} = 1\ \text{mA}$ , $V_{\text{CE}} = 10\ \text{V}$ , $f = 1\ \text{kHz}$                                             | $h_{21\text{e}}$                | 100             | -           | 900             | -                |
| Open-circuit output admittance<br>$I_{\text{C}} = 1\ \text{mA}$ , $V_{\text{CE}} = 10\ \text{V}$ , $f = 1\ \text{kHz}$                                                         | $h_{22\text{e}}$                | -               | 30          | -               | μS               |

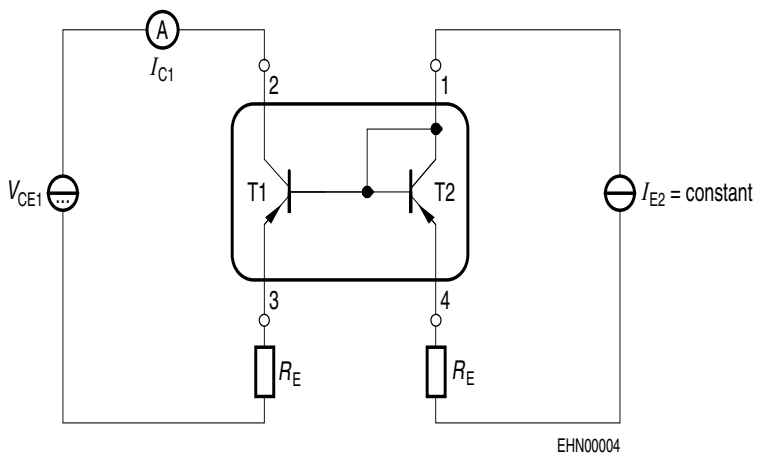
1) Witout emitter resistor. Device mounted on alumina 15mm x 16.5mm x 0.7mm

### Test circuit for current matching



Note: Voltage drop at contacts:  $V_{CO} < 2/3 V_T = 16\text{mV}$

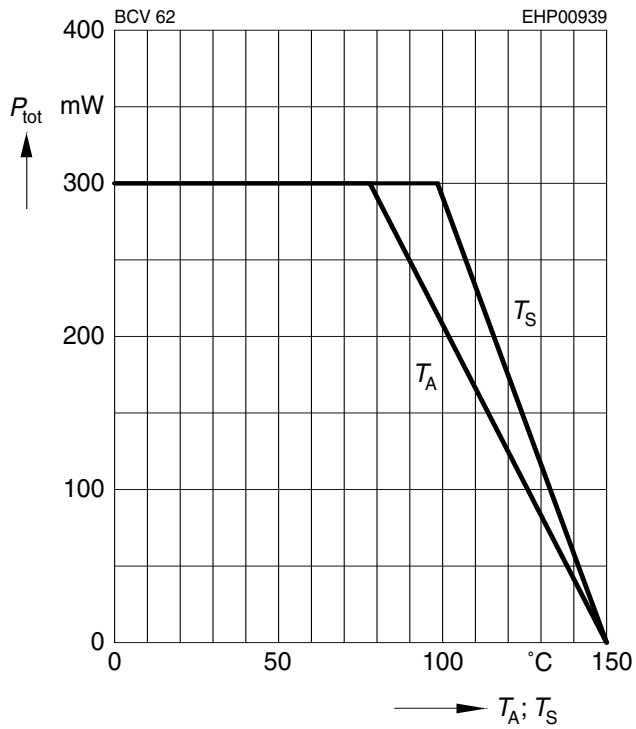
### Characteristic for determination of $V_{CE1}$ at specified $R_E$ range with $I_{E2}$ as parameter under condition of $I_{C1}/I_{E2} = 1.3$



Note: BCV 62 with emitter resistors

**Total power dissipation  $P_{\text{tot}} = f(T_A^*; T_S)$** 

\* Package mounted on epoxy


**Permissible pulse load**

$$P_{\text{totmax}} / P_{\text{totDC}} = f(t_p)$$

