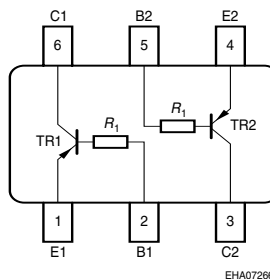
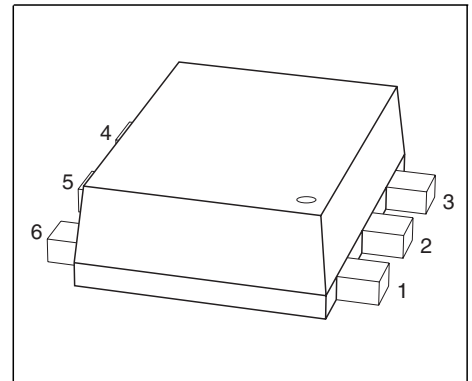


## PNP Silicon Digital Transistor Array

### Preliminary data

- Switching circuit, inverter, interface circuit, driver circuit
- Two ( galvanic) internal isolated Transistors with good matching in one package
- Built in bias resistor ( $R_1=10k\Omega$ )



| Type  | Marking | Pin Configuration |      |      |      |      |      | Package |
|-------|---------|-------------------|------|------|------|------|------|---------|
| SEMB4 | WW      | 1=E1              | 2=B1 | 3=C2 | 4=E2 | 5=B2 | 6=C1 | SOT666  |

### Maximum Ratings

| Parameter                                         | Symbol      | Value       | Unit             |
|---------------------------------------------------|-------------|-------------|------------------|
| Collector-emitter voltage                         | $V_{CEO}$   | 50          | V                |
| Collector-base voltage                            | $V_{CBO}$   | 50          |                  |
| Emitter-base voltage                              | $V_{EBO}$   | 5           |                  |
| Input on Voltage                                  | $V_{I(on)}$ | 20          |                  |
| DC collector current                              | $I_C$       | 100         | mA               |
| Total power dissipation, $T_S = 75^\circ\text{C}$ | $P_{tot}$   | 250         | mW               |
| Junction temperature                              | $T_j$       | 150         | $^\circ\text{C}$ |
| Storage temperature                               | $T_{stg}$   | -65 ... 150 |                  |

### Thermal Resistance

|                                          |            |            |     |
|------------------------------------------|------------|------------|-----|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ | $\leq 300$ | K/W |
|------------------------------------------|------------|------------|-----|

<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

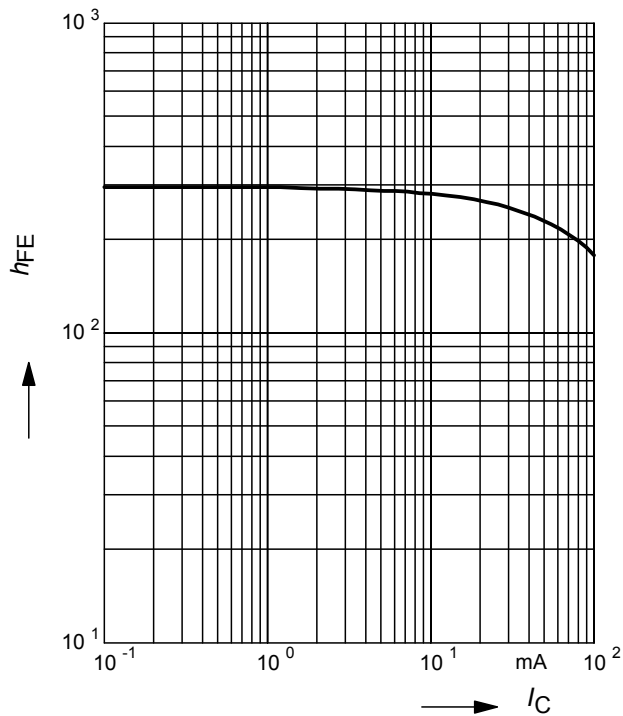
**Electrical Characteristics at  $T_A=25^\circ\text{C}$ , unless otherwise specified**

| Parameter                                                                                             | Symbol                      | Values |      |      | Unit |
|-------------------------------------------------------------------------------------------------------|-----------------------------|--------|------|------|------|
|                                                                                                       |                             | min.   | typ. | max. |      |
| DC Characteristics                                                                                    |                             |        |      |      |      |
| Collector-emitter breakdown voltage<br>$I_C = 100\ \mu\text{A}$ , $I_B = 0$                           | $V_{(\text{BR})\text{CEO}}$ | 50     | -    | -    | V    |
| Collector-base breakdown voltage<br>$I_C = 10\ \mu\text{A}$ , $I_E = 0$                               | $V_{(\text{BR})\text{CBO}}$ | 50     | -    | -    |      |
| Emitter-base breakdown voltage<br>$I_E = 10\ \mu\text{A}$ , $I_C = 0$                                 | $V_{(\text{BR})\text{EBO}}$ | 5      | -    | -    |      |
| Collector cutoff current<br>$V_{\text{CB}} = 40\ \text{V}$ , $I_E = 0$                                | $I_{\text{CBO}}$            | -      | -    | 100  | nA   |
| DC current gain 1)<br>$I_C = 5\ \text{mA}$ , $V_{\text{CE}} = 5\ \text{V}$                            | $h_{\text{FE}}$             | 120    | -    | 630  | -    |
| Collector-emitter saturation voltage1)<br>$I_C = 10\ \text{mA}$ , $I_B = 0.5\ \text{mA}$              | $V_{\text{CEsat}}$          | -      | -    | 0.3  | V    |
| Input off voltage<br>$I_C = 100\ \mu\text{A}$ , $V_{\text{CE}} = 5\ \text{V}$                         | $V_{\text{i(off)}}$         | 0.4    | -    | 1    |      |
| Input on Voltage<br>$I_C = 2\ \text{mA}$ , $V_{\text{CE}} = 0.3\ \text{V}$                            | $V_{\text{i(on)}}$          | 0.5    | -    | 1.1  |      |
| Input resistor                                                                                        | $R_1$                       | 7      | 10   | 13   | kΩ   |
| AC Characteristics                                                                                    |                             |        |      |      |      |
| Transition frequency<br>$I_C = 10\ \text{mA}$ , $V_{\text{CE}} = 5\ \text{V}$ , $f = 100\ \text{MHz}$ | $f_{\text{T}}$              | -      | 150  | -    | MHz  |
| Collector-base capacitance<br>$V_{\text{CB}} = 10\ \text{V}$ , $f = 1\ \text{MHz}$                    | $C_{\text{cb}}$             | -      | 1.2  | -    | pF   |

1) Pulse test:  $t < 300\ \mu\text{s}$ ;  $D < 2\%$

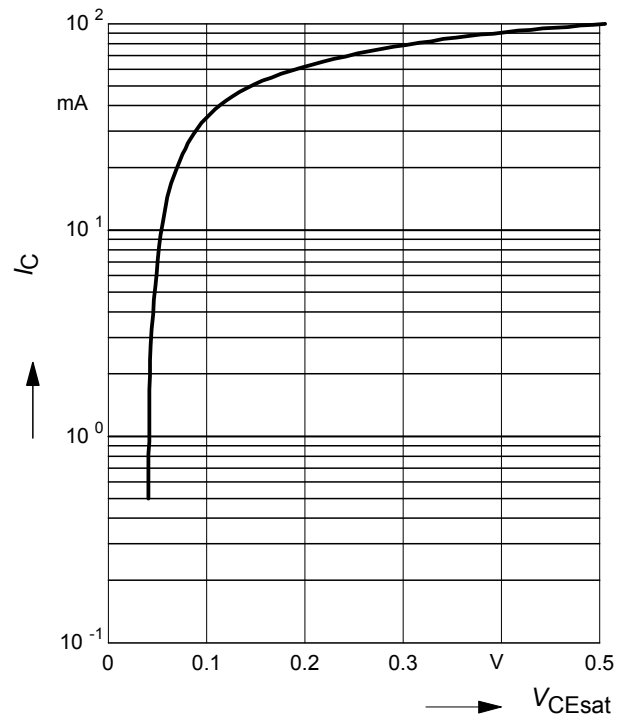
### DC Current Gain $h_{FE} = f(I_C)$

$V_{CE} = 5V$  (common emitter configuration)



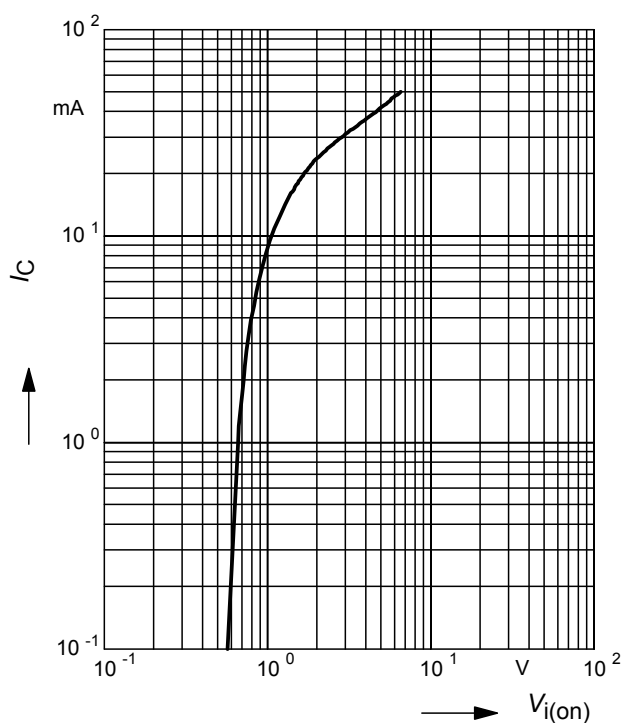
### Collector-Emitter Saturation Voltage

$V_{CEsat} = f(I_C), h_{FE} = 20$



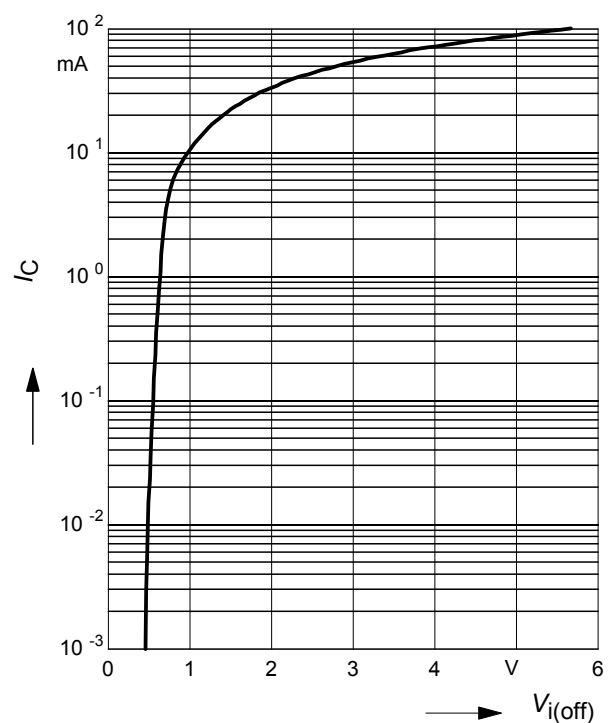
### Input on Voltage $V_{i(on)} = f(I_C)$

$V_{CE} = 0.3V$  (common emitter configuration)

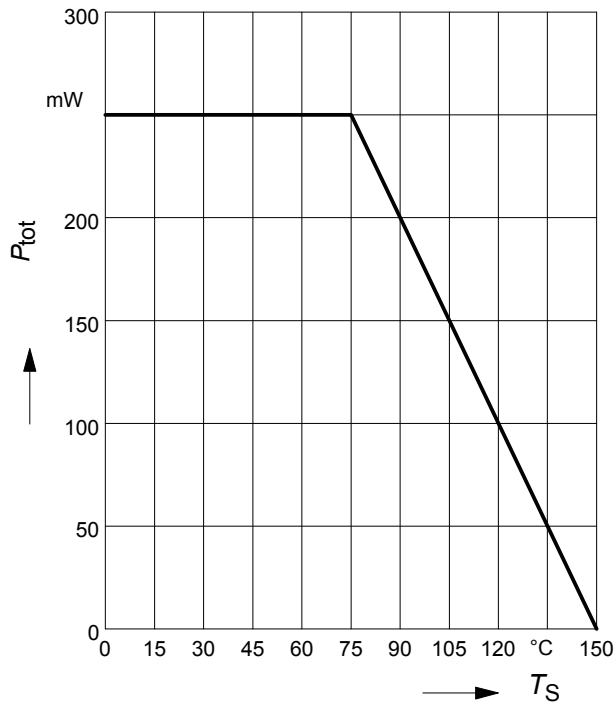


### Input off voltage $V_{i(off)} = f(I_C)$

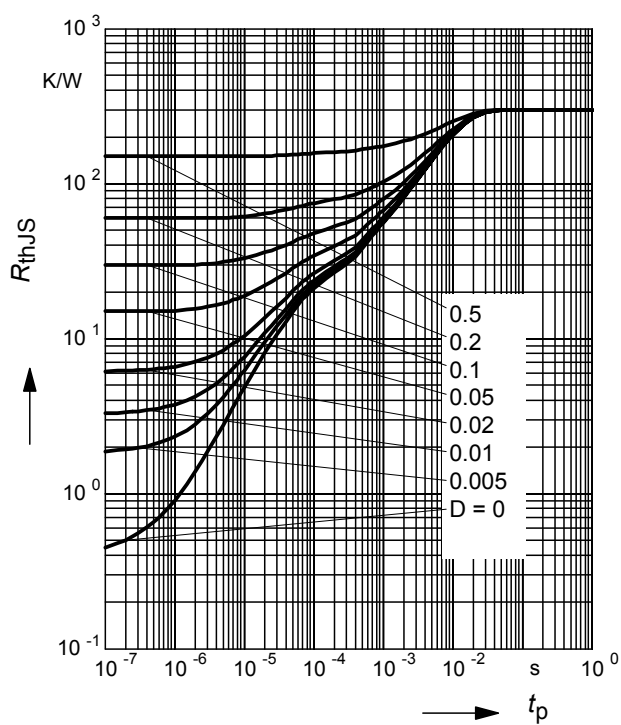
$V_{CE} = 5V$  (common emitter configuration)



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



**Permissible Pulse Load  $R_{\text{thJS}} = f(t_p)$**



**Permissible Pulse Load**

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

