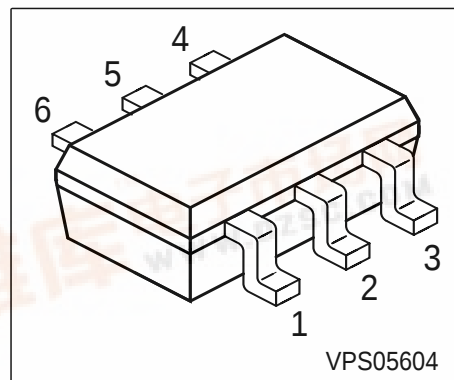




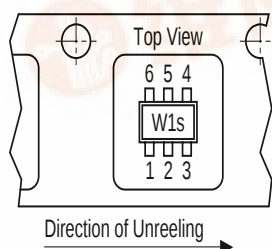
## BCR10PN

## NPN/PNP Silicon Digital Transistor Array

- Switching circuit, inverter, interface circuit, driver circuit
- Two (galvanic) internal isolated NPN/PNP Transistors in one package
- Built in bias resistor ( $R_1=10k\Omega$ ,  $R_2=10k\Omega$ )



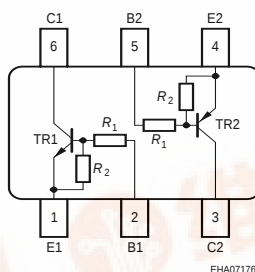
## Tape loading orientation



Marking on SOT-363 package  
(for example W1s)  
corresponds to pin 1 of device

Position in tape: pin 1  
opposite of feed hole side

EHA07193



EHA07176

| Type    | Marking | Pin Configuration |      |      |      |      |      | Package |
|---------|---------|-------------------|------|------|------|------|------|---------|
| BCR10PN | W1s     | 1=E1              | 2=B1 | 3=C2 | 4=E2 | 5=B2 | 6=C1 | SOT363  |

## Maximum Ratings

| Parameter                                          | Symbol      | Value       | Unit             |
|----------------------------------------------------|-------------|-------------|------------------|
| Collector-emitter voltage                          | $V_{CEO}$   | 50          | V                |
| Collector-base voltage                             | $V_{CBO}$   | 50          | V                |
| Emitter-base voltage                               | $V_{EBO}$   | 10          | V                |
| Input on Voltage                                   | $V_{i(on)}$ | 20          | V                |
| DC collector current                               | $I_C$       | 100         | mA               |
| Total power dissipation, $T_S = 115^\circ\text{C}$ | $P_{tot}$   | 250         | mW               |
| Junction temperature                               | $T_j$       | 150         | $^\circ\text{C}$ |
| Storage temperature                                | $T_{stg}$   | -65 ... 150 | $^\circ\text{C}$ |

## Thermal Resistance

|                                          |            |            |     |
|------------------------------------------|------------|------------|-----|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ | $\leq 140$ | 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

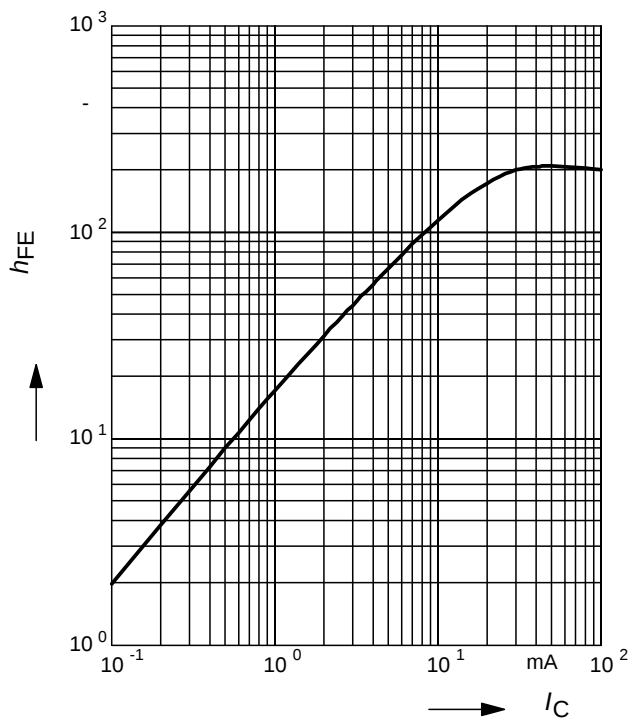
| Parameter                                                                                   | Symbol        | Values |      |      | Unit |
|---------------------------------------------------------------------------------------------|---------------|--------|------|------|------|
|                                                                                             |               | min.   | typ. | max. |      |
| DC Characteristics                                                                          |               |        |      |      |      |
| Collector-emitter breakdown voltage<br>$I_C = 100\text{ }\mu\text{A}$ , $I_B = 0$           | $V_{(BR)CEO}$ | 50     | -    | -    | V    |
| Collector-base breakdown voltage<br>$I_C = 10\text{ }\mu\text{A}$ , $I_E = 0$               | $V_{(BR)CBO}$ | 50     | -    | -    |      |
| Collector cutoff current<br>$V_{CB} = 40\text{ V}$ , $I_E = 0$                              | $I_{CBO}$     | -      | -    | 100  | nA   |
| Emitter cutoff current<br>$V_{EB} = 10\text{ V}$ , $I_C = 0$                                | $I_{EBO}$     | -      | -    | 0.75 | mA   |
| DC current gain 1)<br>$I_C = 5\text{ mA}$ , $V_{CE} = 5\text{ V}$                           | $h_{FE}$      | 30     | -    | -    | -    |
| Collector-emitter saturation voltage1)<br>$I_C = 10\text{ mA}$ , $I_B = 0.5\text{ mA}$      | $V_{CEsat}$   | -      | -    | 0.3  | V    |
| Input off voltage<br>$I_C = 100\text{ }\mu\text{A}$ , $V_{CE} = 5\text{ V}$                 | $V_{i(off)}$  | 0.8    | -    | 1.5  |      |
| Input on Voltage<br>$I_C = 2\text{ mA}$ , $V_{CE} = 0.3\text{ V}$                           | $V_{i(on)}$   | 1      | -    | 2.5  |      |
| Input resistor                                                                              | $R_1$         | 7      | 10   | 13   | kΩ   |
| Resistor ratio                                                                              | $R_1/R_2$     | 0.9    | 1    | 1.1  | -    |
| AC Characteristics                                                                          |               |        |      |      |      |
| Transition frequency<br>$I_C = 10\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $f = 100\text{ MHz}$ | $f_T$         | -      | 130  | -    | MHz  |
| Collector-base capacitance<br>$V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$                   | $C_{cb}$      | -      | 3    | -    | pF   |

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

## NPN Type

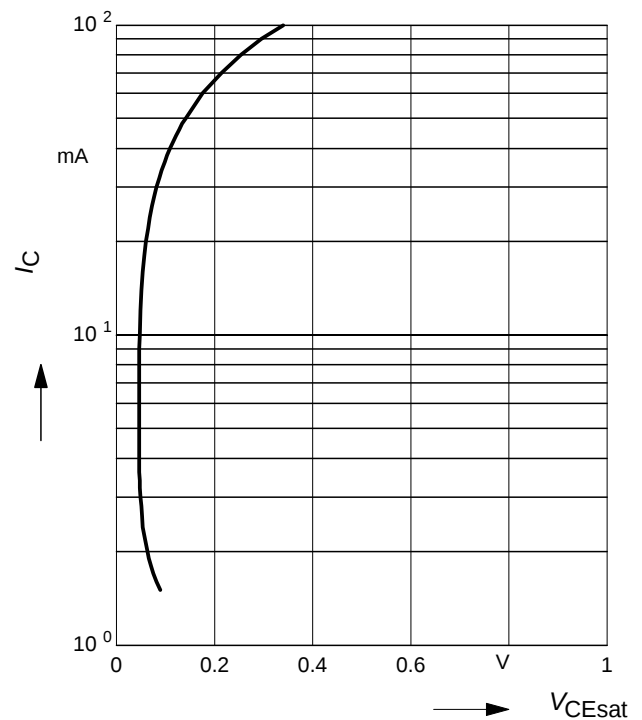
**DC Current Gain**  $h_{FE} = f(I_C)$

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



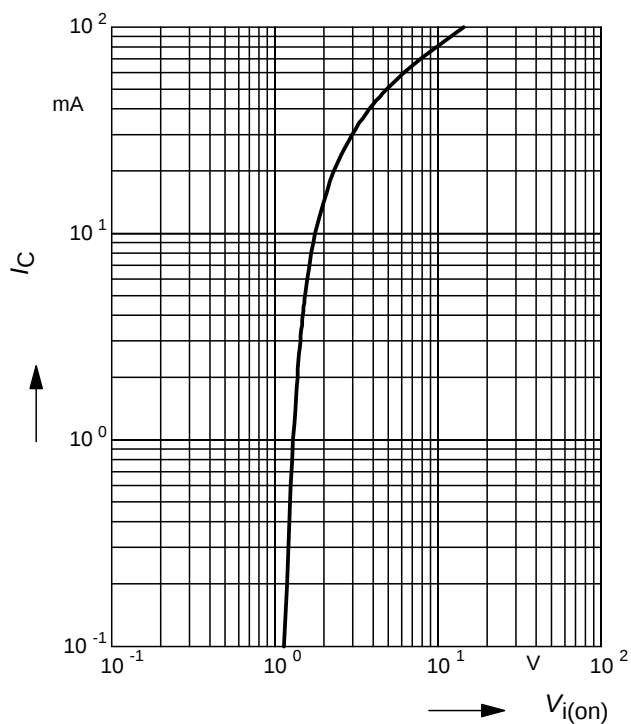
**Collector-Emitter Saturation Voltage**

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



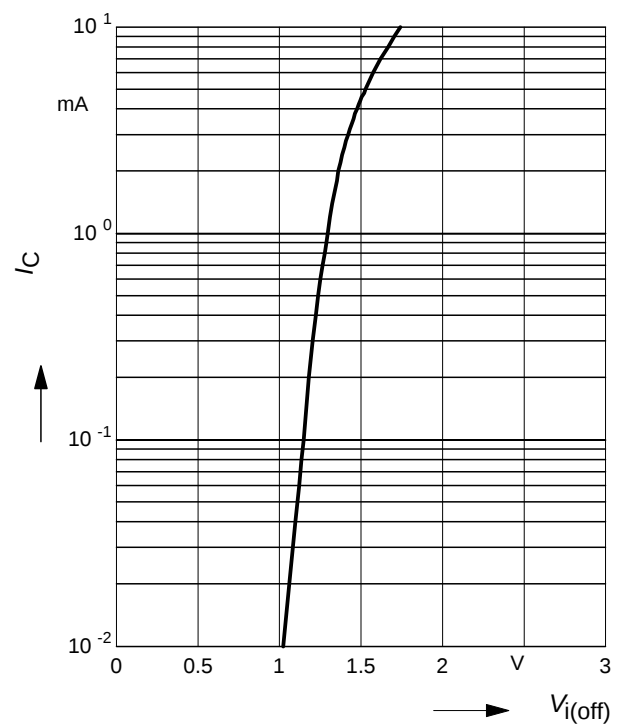
**Input on Voltage**  $V_{i(on)} = f(I_C)$

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



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

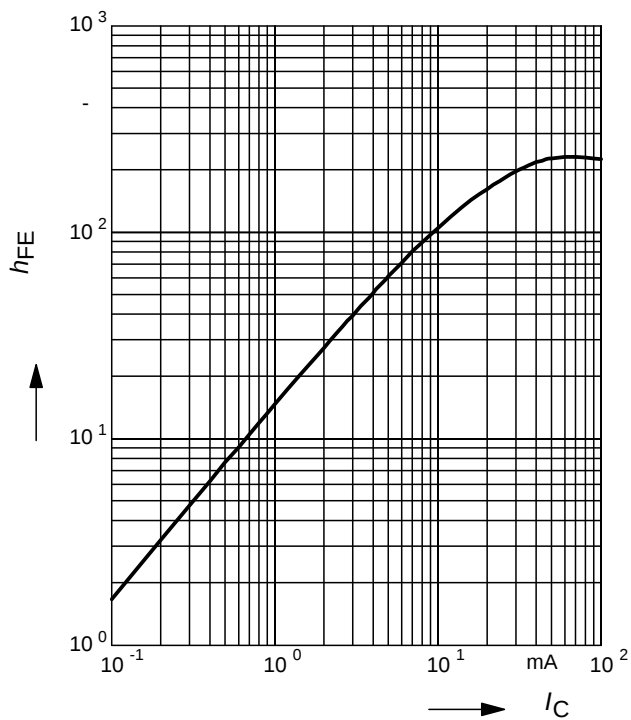
$V_{CE} = 5V$  (common emitter configuration)



## PNP Type

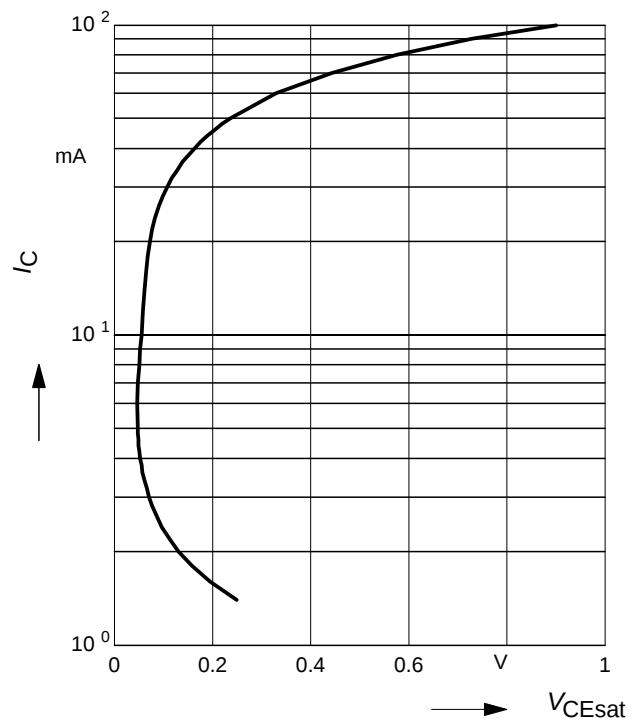
**DC Current Gain**  $h_{FE} = f(I_C)$

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



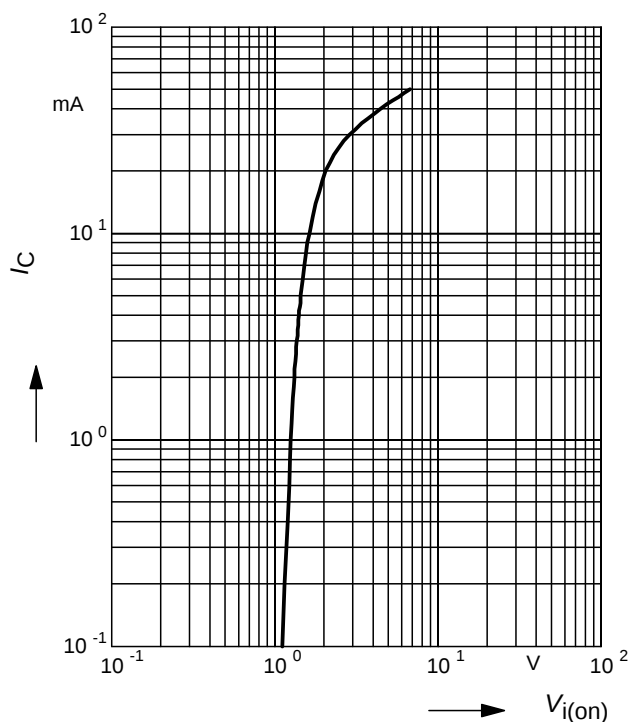
**Collector-Emitter Saturation Voltage**

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



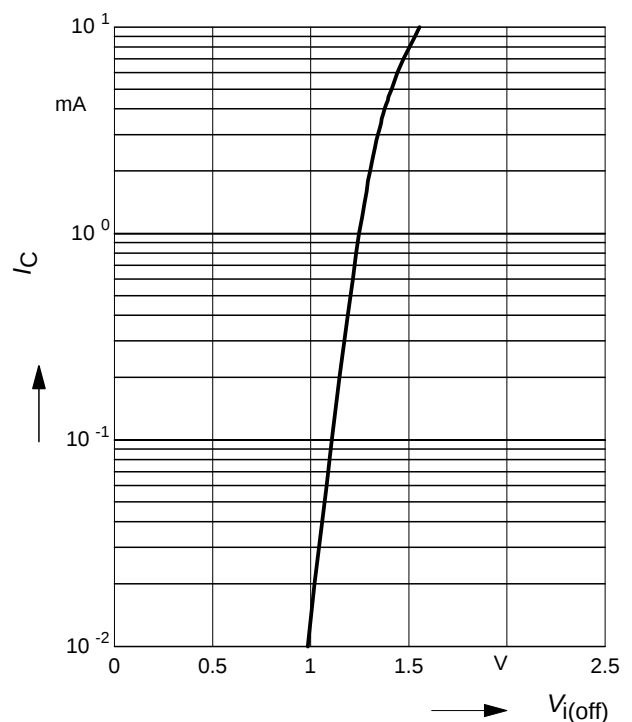
**Input on Voltage**  $V_{i(on)} = f(I_C)$

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

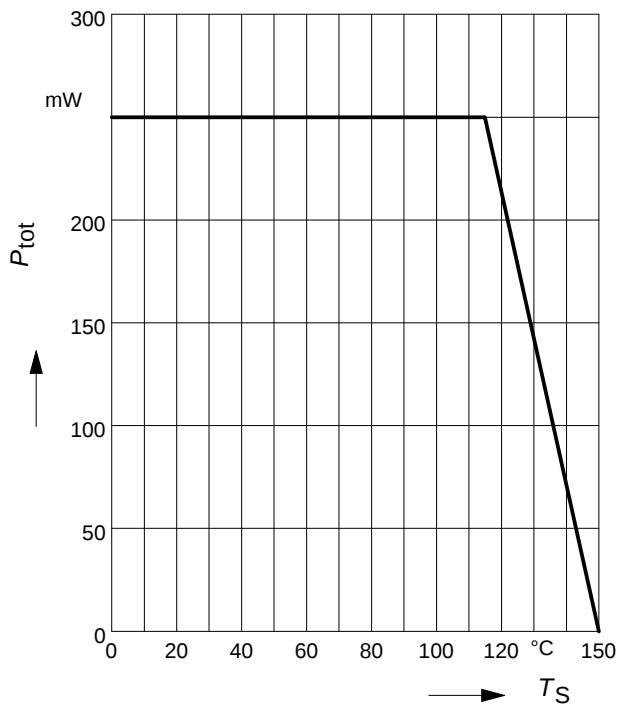


**Input off voltage**  $V_{i(off)} = f(I_C)$

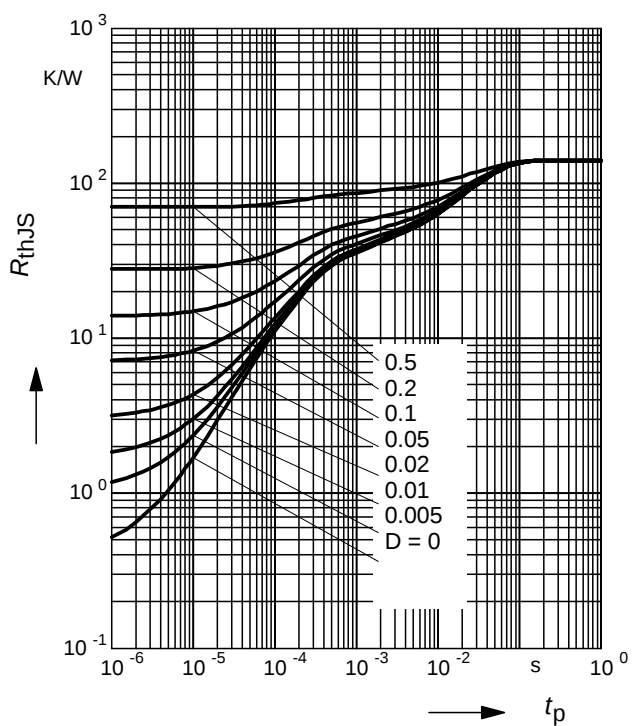
$V_{CE} = 5V$  (common emitter configuration)



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



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



**Permissible Pulse Load**

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

