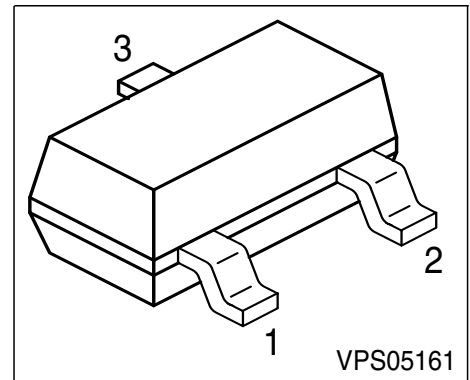
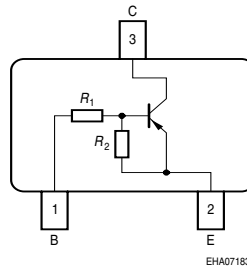


## PNP Silicon Digital Transistor

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor ( $R_1=22k\Omega$ ,  $R_2=47k\Omega$ )



| Type   | Marking | Pin Configuration |       |       | Package |
|--------|---------|-------------------|-------|-------|---------|
| BCR192 | WPs     | 1 = B             | 2 = E | 3 = C | SOT23   |

### Maximum Ratings

| Parameter                                          | Symbol      | Value       | Unit             |
|----------------------------------------------------|-------------|-------------|------------------|
| Collector-emitter voltage                          | $V_{CEO}$   | 50          | V                |
| Collector-base voltage                             | $V_{CBO}$   | 50          |                  |
| Emitter-base voltage                               | $V_{EBO}$   | 10          |                  |
| Input on Voltage                                   | $V_{i(on)}$ | 30          |                  |
| DC collector current                               | $I_C$       | 100         | mA               |
| Total power dissipation, $T_S = 102^\circ\text{C}$ | $P_{tot}$   | 200         | mW               |
| Junction temperature                               | $T_j$       | 150         | $^\circ\text{C}$ |
| Storage temperature                                | $T_{stg}$   | -65 ... 150 |                  |

### Thermal Resistance

|                                          |            |            |     |
|------------------------------------------|------------|------------|-----|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ | $\leq 240$ | K/W |
|------------------------------------------|------------|------------|-----|

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

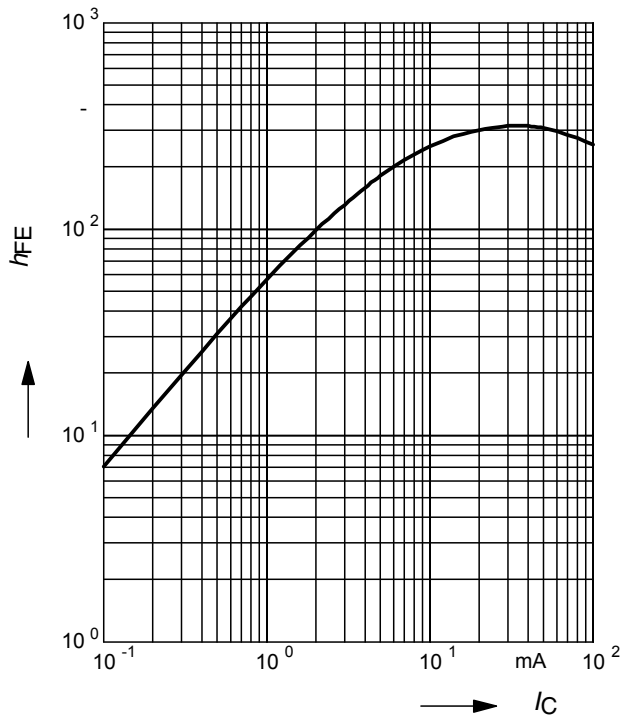
**Electrical Characteristics** at  $T_A=25^{\circ}\text{C}$ , unless otherwise specified

| 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>$V_{EB} = 10\text{ V}$ , $I_C = 0$                                | $I_{EBO}$     | -      | -    | 227  | $\mu\text{A}$ |
| DC current gain 1)<br>$I_C = 5\text{ mA}$ , $V_{CE} = 5\text{ V}$                           | $h_{FE}$      | 70     | -    | -    | -             |
| 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>$I_C = 100\text{ }\mu\text{A}$ , $V_{CE} = 5\text{ V}$                 | $V_{i(off)}$  | 0.5    | -    | 1.2  |               |
| Input on Voltage<br>$I_C = 2\text{ mA}$ , $V_{CE} = 0.3\text{ V}$                           | $V_{i(on)}$   | 0.8    | -    | 2.5  |               |
| Input resistor                                                                              | $R_1$         | 15     | 22   | 29   | k $\Omega$    |
| Resistor ratio                                                                              | $R_1/R_2$     | 0.42   | 0.47 | 0.52 | -             |
| AC Characteristics                                                                          |               |        |      |      |               |
| Transition frequency<br>$I_C = 10\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $f = 100\text{ MHz}$ | $f_T$         | -      | 200  | -    | MHz           |
| Collector-base capacitance<br>$V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$                   | $C_{cb}$      | -      | 3    | -    | pF            |

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

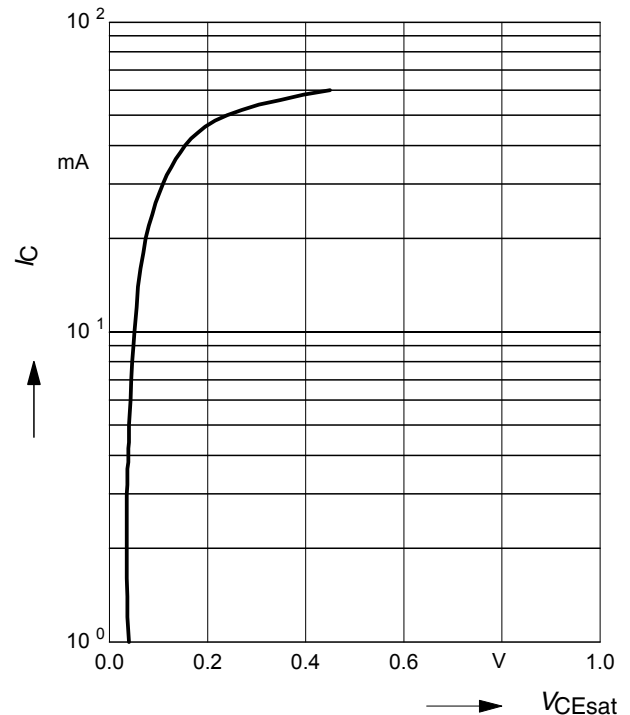
### DC Current Gain $h_{FE} = f(I_C)$

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



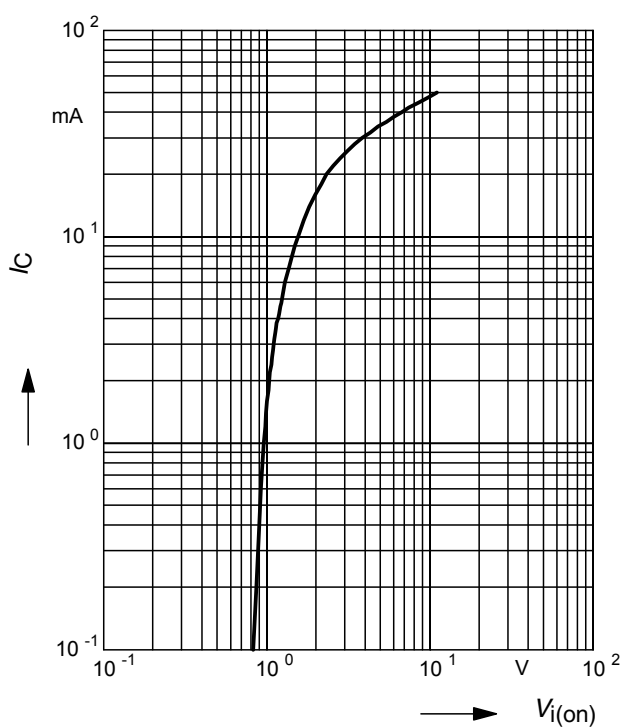
### Collector-Emitter Saturation Voltage

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



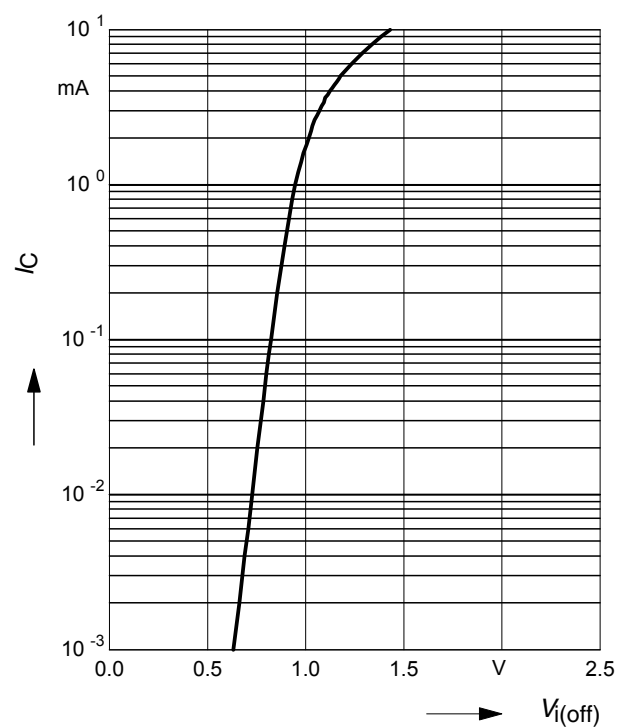
### Input on Voltage $V_{i(on)} = f(I_C)$

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

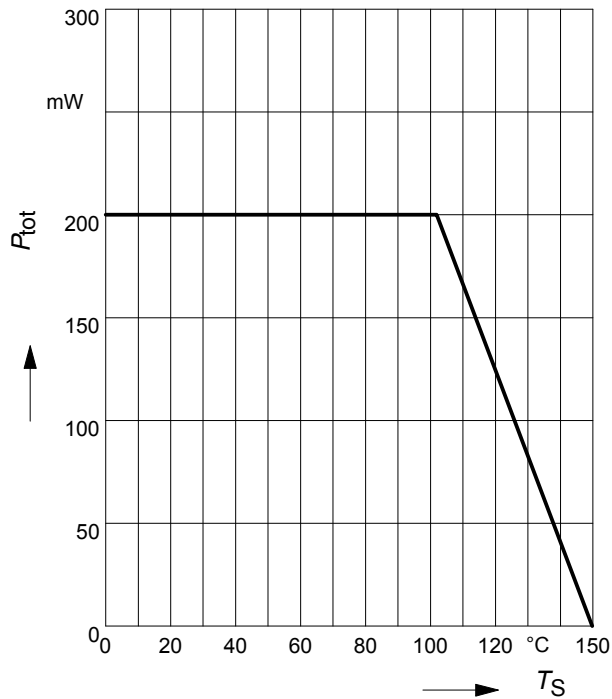


### Input off voltage $V_{i(off)} = f(I_C)$

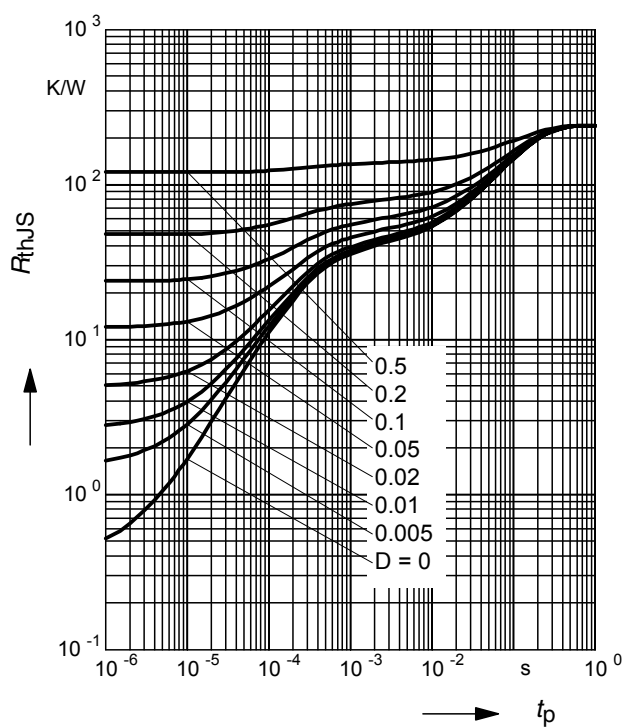
$V_{CE} = 5V$  (common emitter configuration)



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



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



**Permissible Pulse Load**

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

