

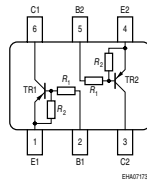
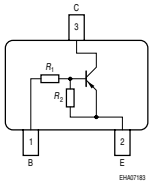
**PNP Silicon Digital Transistor**

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor ( $R_1 = 47k\Omega$  ,  $R_2 = 47k\Omega$  )
- For 6-PIN packages: two (galvanic) internal isolated transistors with good matching in one package



**BCR198/F/L3  
BCR198T/W**

**BCR198S  
SEMB2**



| Type     | Marking | Pin Configuration |      |      |      |      |      | Package  |
|----------|---------|-------------------|------|------|------|------|------|----------|
|          |         | 1=B               | 2=E  | 3=C  | -    | -    | -    |          |
| BCR198   | WRs     | 1=B               | 2=E  | 3=C  | -    | -    | -    | SOT23    |
| BCR198F  | WRs     | 1=B               | 2=E  | 3=C  | -    | -    | -    | TSFP-3   |
| BCR198L3 | WR      | 1=B               | 2=E  | 3=C  | -    | -    | -    | TSLP-3-4 |
| BCR198S  | WRs     | 1=E1              | 2=B1 | 3=C2 | 4=E2 | 5=B2 | 6=C1 | SOT363   |
| BCR198T  | WRs     | 1=B               | 2=E  | 3=C  | -    | -    | -    | SC75     |
| BCR198W  | WRs     | 1=B               | 2=E  | 3=C  | -    | -    | -    | SOT323   |
| SEMB2    | WR      | 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   | $V_{EBO}$   | 10  |      |
| Input on voltage   | $V_{i(on)}$ | 50  |      |
| Collector current  | $I_C$       | 70  | mA   |
| Total power dissipation-<br>BCR198, $T_S \leq 102^\circ\text{C}$<br>BCR198F, $T_S \leq 128^\circ\text{C}$<br>BCR198L3, $T_S \leq 135^\circ\text{C}$<br>BCR198S, $T_S \leq 115^\circ\text{C}$<br>BCR198T, $T_S \leq 109^\circ\text{C}$<br>BCR198W, $T_S \leq 124^\circ\text{C}$<br>SEMB2, $T_S \leq 75^\circ\text{C}$ | $P_{tot}$   | 200<br>250<br>250<br>250<br>250<br>250<br>250 | mW   |
| Junction temperature   | $T_j$       | 150   | °C   |
| Storage temperature  | $T_{stg}$   | -65 ... 150                                   |      |

**Thermal Resistance**

| Parameter                                | Symbol     | Value      | Unit |
|--|------------|------------|------|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ |            | K/W  |
| BCR198                                   |            | $\leq 240$ |      |
| BCR198F                                  |            | $\leq 90$  |      |
| BCR198L3                                 |            | $\leq 60$  |      |
| BCR198S                                  |            | $\leq 140$ |      |
| BCR198T                                  |            | $\leq 165$ |      |
| BCR198W                                  |            | $\leq 124$ |      |
| SEMB2                                    |            | $\leq 300$ |      |

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

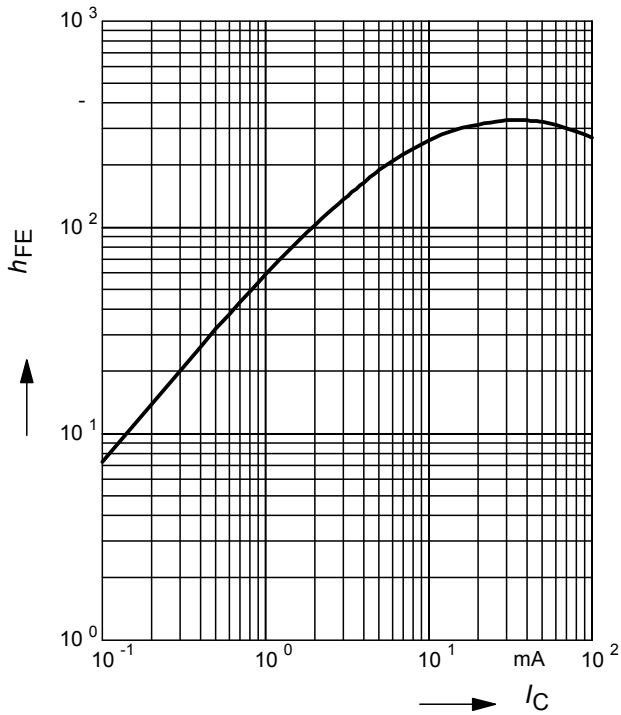
**Electrical Characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

| Parameter   | Symbol        | Values |      |      | Unit             |
|---|---------------|--------|------|------|------------------|
|   |               | min.   | typ. | max. |                  |
| <b>DC Characteristics</b>   |               |        |      |      |                  |
| Collector-emitter breakdown voltage<br>$I_C = 100 \mu\text{A}, I_B = 0$                           | $V_{(BR)CEO}$ | 50     | -    | -    | V                |
| Collector-base breakdown voltage<br>$I_C = 10 \mu\text{A}, I_E = 0$                               | $V_{(BR)CBO}$ | 50     | -    | -    |                  |
| Collector-base cutoff current<br>$V_{CB} = 40 \text{ V}, I_E = 0$                                 | $I_{CBO}$     | -      | -    | 100  | nA               |
| Emitter-base cutoff current<br>$V_{EB} = 10 \text{ V}, I_C = 0$                                   | $I_{EBO}$     | -      | -    | 164  | $\mu\text{A}$    |
| DC current gain <sup>1)</sup><br>$I_C = 5 \text{ V}, V_{CE} = 5 \text{ V}$                        | $h_{FE}$      | 70     | -    | -    | -                |
| Collector-emitter saturation voltage <sup>1)</sup><br>$I_C = 10 \text{ mA}, I_B = 0,5 \text{ mA}$ | $V_{CEsat}$   | -      | -    | 0,3  | V                |
| Input off voltage<br>$I_C = 100 \mu\text{A}, V_{CE} = 5 \text{ V}$                                | $V_{i(off)}$  | 0,8    | -    | 1,5  |                  |
| Input on voltage<br>$I_C = 2 \text{ mA}, V_{CE} = 0,3 \text{ V}$                                  | $V_{i(on)}$   | 1      | -    | 3    |                  |
| Input resistor  | $R_1$         | 32     | 47   | 62   | $\text{k}\Omega$ |
| Resistor ratio  | $R_1/R_2$     | 0,9    | 1    | 1,1  | -                |
| <b>AC Characteristics</b>   |               |        |      |      |                  |
| Transition frequency<br>$I_C = 10 \text{ mA}, V_{CE} = 5 \text{ V}, f = 100 \text{ MHz}$          | $f_T$         | -      | 190  | -    | MHz              |
| Collector-base capacitance<br>$V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$                          | $C_{cb}$      | -      | 3    | -    | pF               |

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

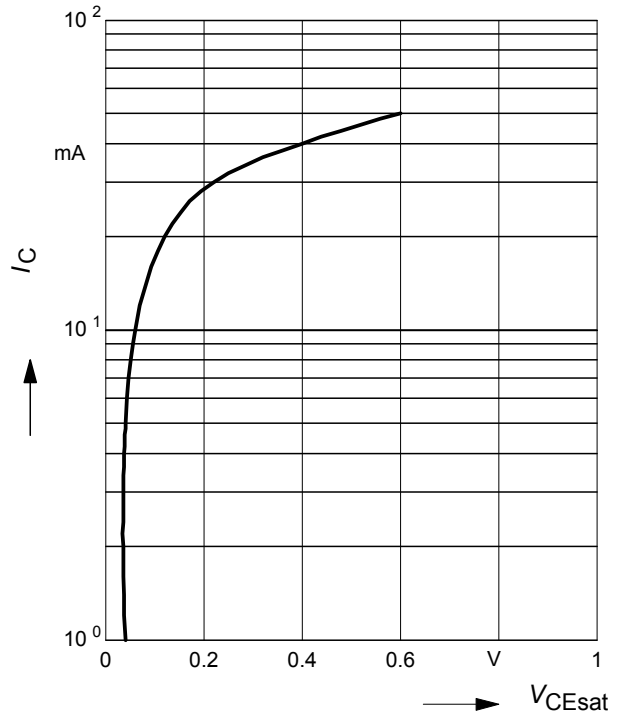
**DC current gain  $h_{FE} = f(I_C)$**

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



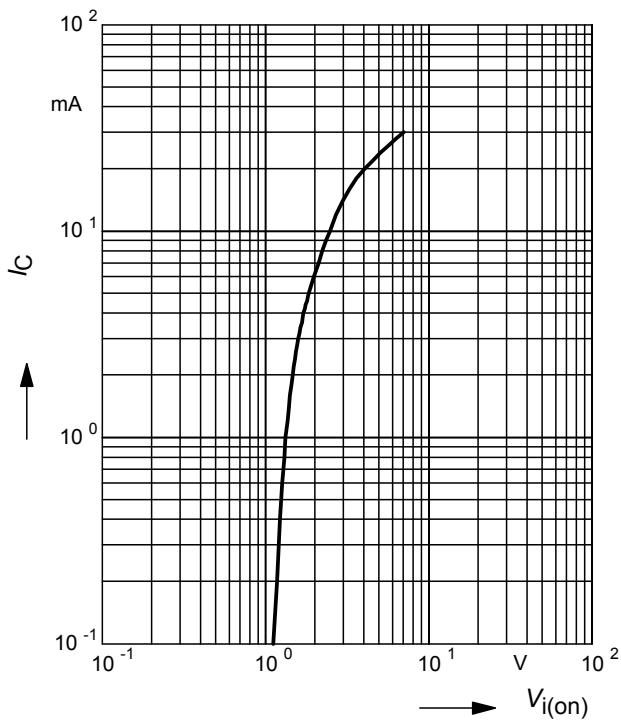
**Collector-emitter saturation voltage**

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



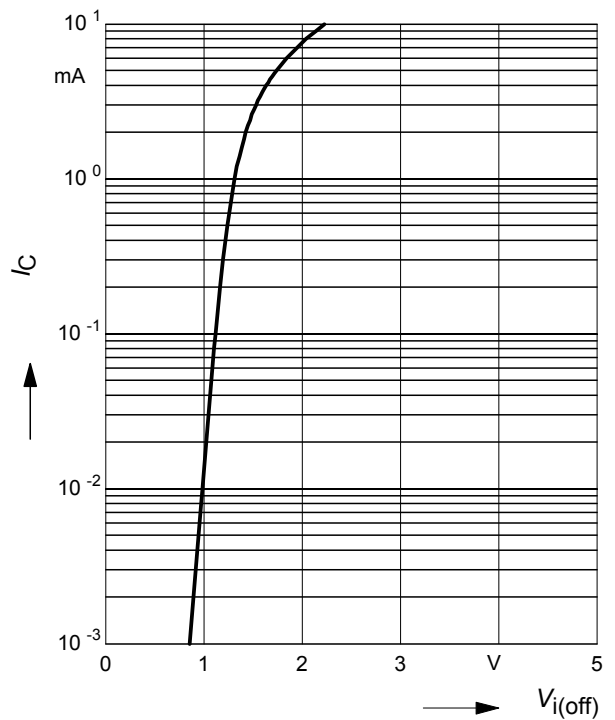
**Input on Voltage  $V_{i(on)} = f(I_C)$**

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



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

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



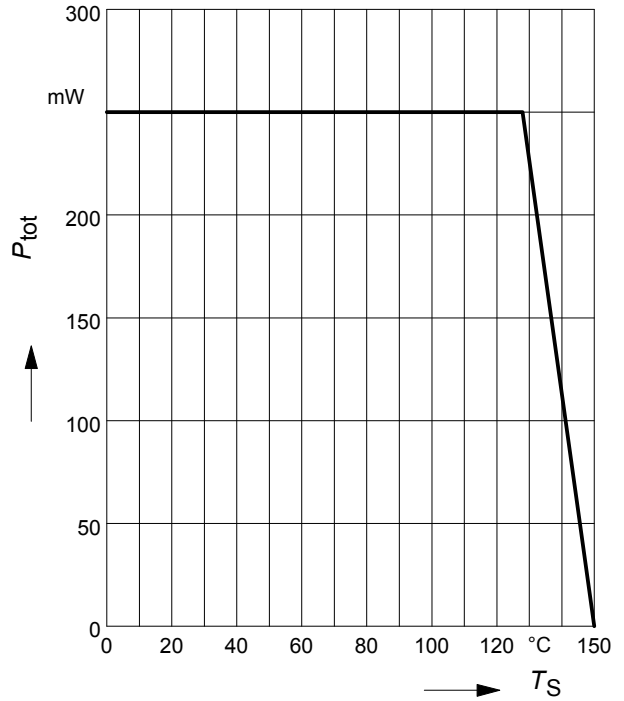
Total power dissipation  $P_{tot} = f(T_S)$

BCR198



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

BCR198F



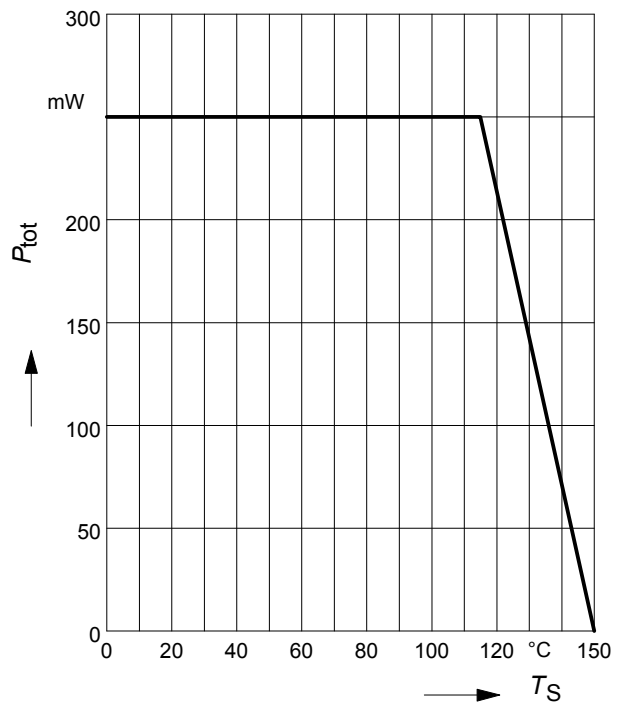
Total power dissipation  $P_{tot} = f(T_S)$

BCR198L3



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

BCR198S



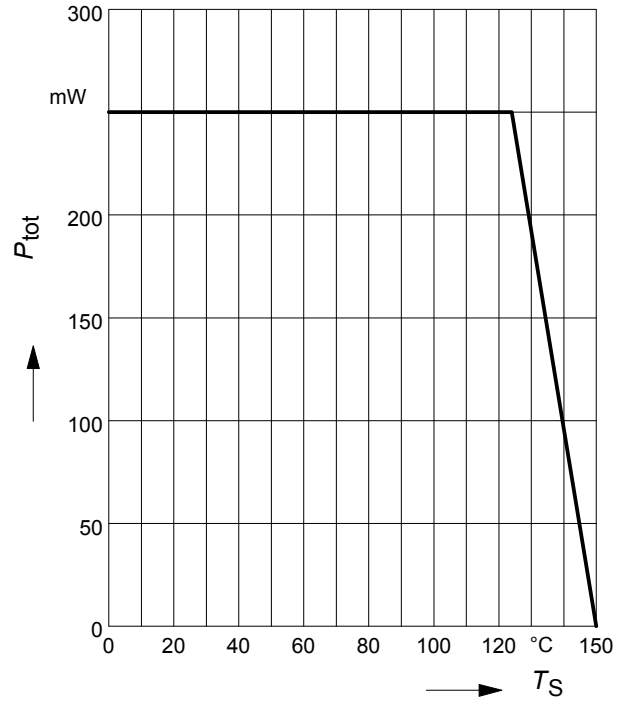
Total power dissipation  $P_{tot} = f(T_S)$

BCR198T



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

BCR198W



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

SEMB2



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

BCR198



**Permissible Pulse Load**

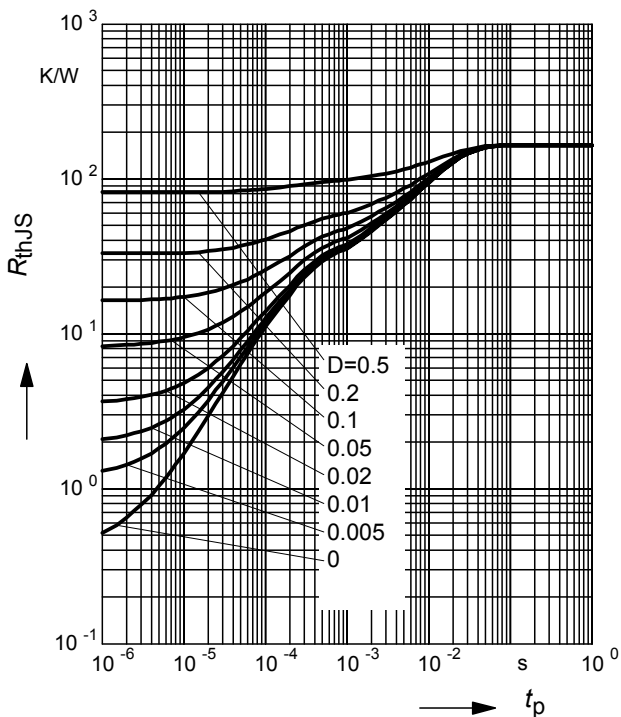
$P_{totmax}/P_{totDC} = f(t_p)$

BCR198



**Permissible Puls Load  $R_{thJS} = f(t_p)$**

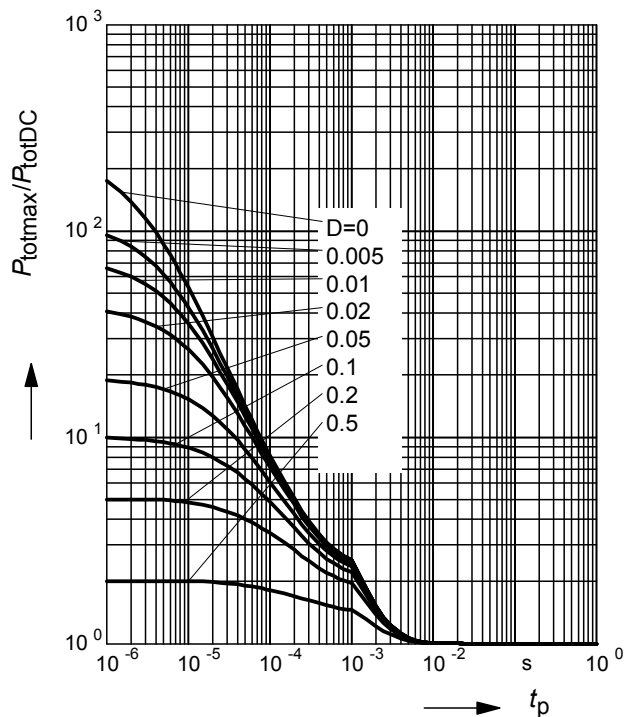
BCR198F



**Permissible Pulse Load**

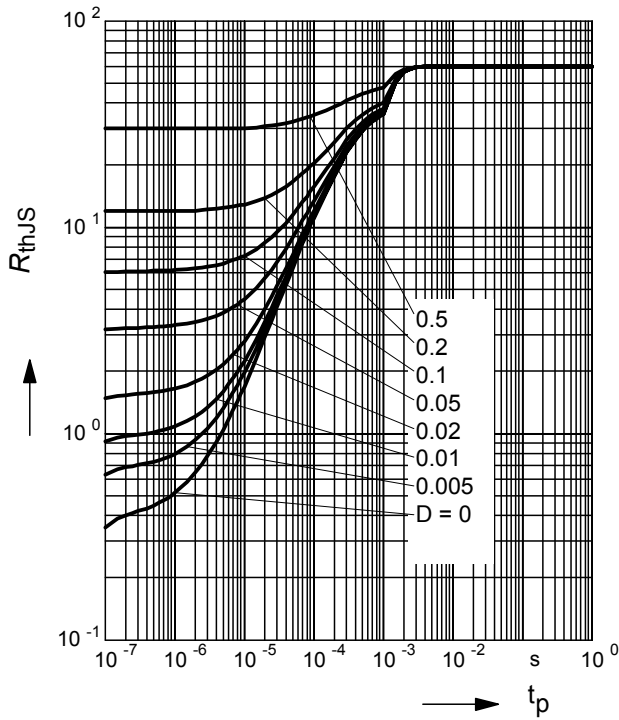
$P_{totmax}/P_{totDC} = f(t_p)$

BCR198F



**Permissible Puls Load  $R_{thJS} = f(t_p)$**

BCR198L3



**Permissible Pulse Load**

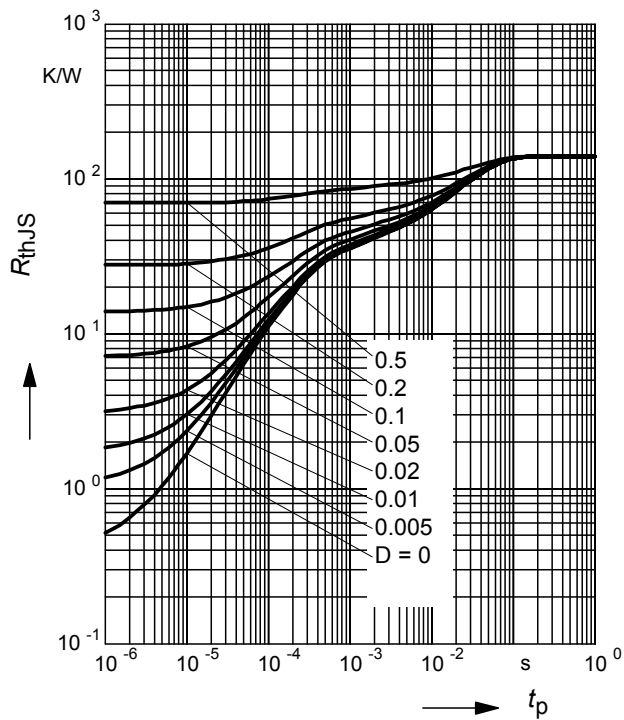
$P_{totmax}/P_{totDC} = f(t_p)$

BCR198L3



**Permissible Puls Load  $R_{thJS} = f(t_p)$**

BCR198S



**Permissible Pulse Load**

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

BCR198S





**Permissible Puls Load  $R_{thJS} = f(t_p)$**

BCR198T



**Permissible Pulse Load**

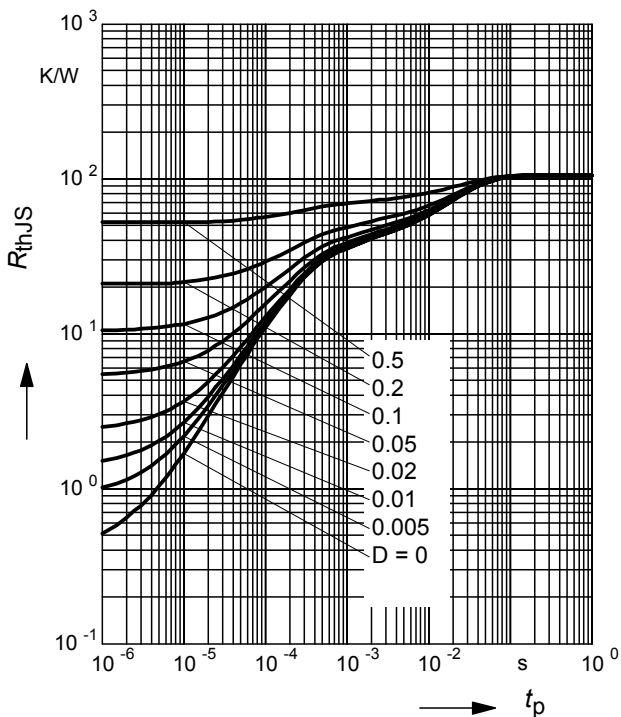
$P_{totmax}/P_{totDC} = f(t_p)$

BCR198T



**Permissible Puls Load  $R_{thJS} = f(t_p)$**

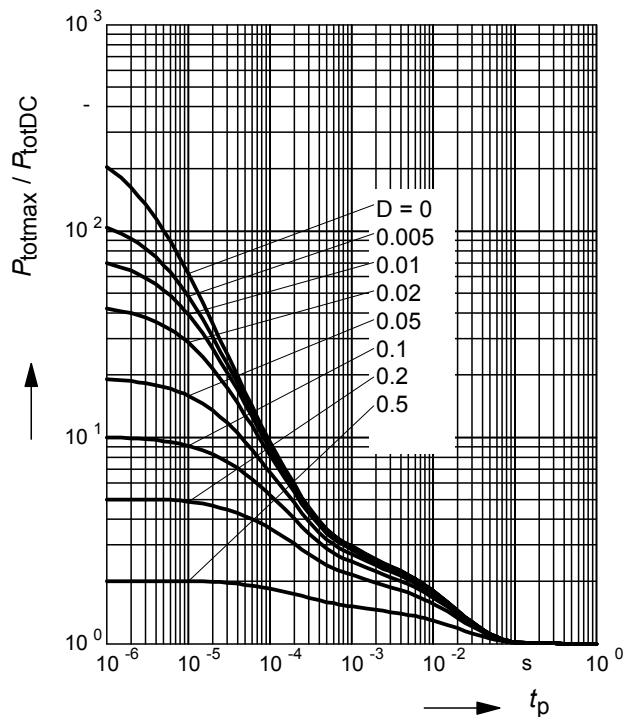
BCR133W



**Permissible Pulse Load**

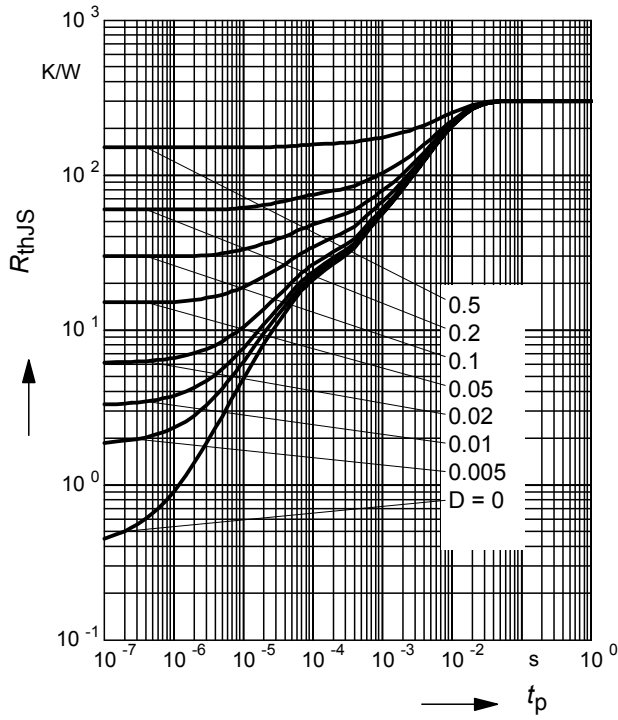
$P_{totmax}/P_{totDC} = f(t_p)$

BCR198W



**Permissible Puls Load  $R_{thJS} = f(t_p)$**

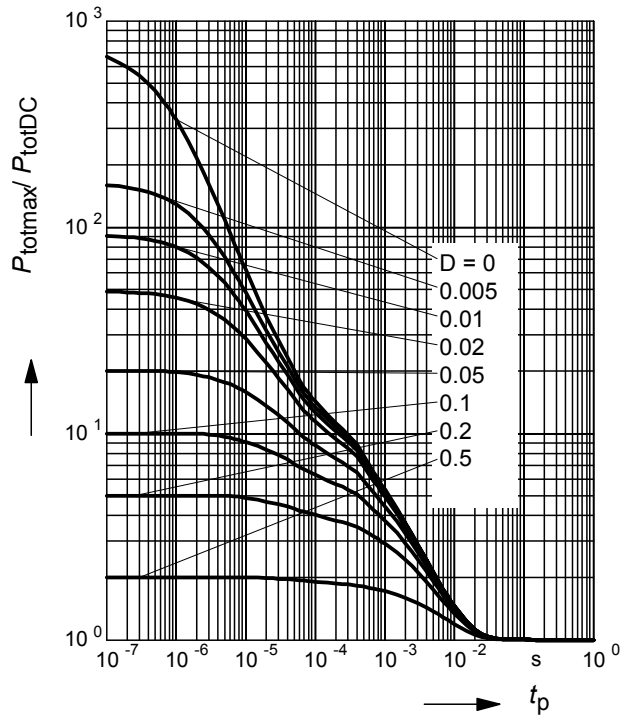
SEMB2



**Permissible Pulse Load**

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

SEMB2



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