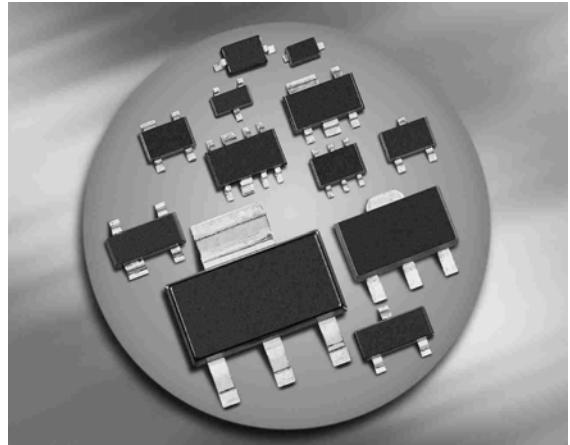


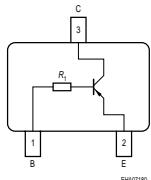
### PNP Silicon Digital Transistor

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



**BCR189/F/L3**

**BCR189T**



EIAJ07180

Type	Marking	Pin Configuration						Package
BCR189	W2s	1=B	2=E	3=C	-	-	-	SOT23
BCR189F	W2s	1=B	2=E	3=C	-	-	-	TSLP-3
BCR189L3	W2	1=B	2=E	3=C	-	-	-	TSLP-3-4
BCR189T	W2s	1=B	2=E	3=C	-	-	-	SC75

### 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	$V_{i(on)}$	30	
Collector current	$I_C$	100	mA
Total power dissipation- BCR189, $T_S \leq 102^\circ\text{C}$ BCR189F, $T_S \leq 128^\circ\text{C}$ BCR189L3, $T_S \leq 135^\circ\text{C}$ BCR189T, $T_S \leq 109^\circ\text{C}$	$P_{tot}$	200 250 250 250	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	150 ... -65	

### Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup> BCR189 BCR189F BCR189L3 BCR189T	$R_{thJS}$	$\leq 240$ $\leq 90$ $\leq 60$ $\leq 165$	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**

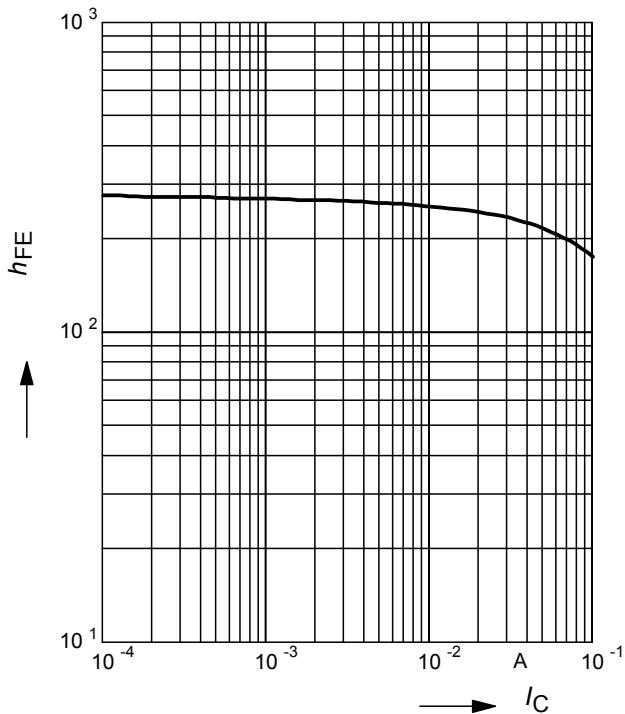
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
Collector-emitter breakdown voltage $I_C = 100 \mu\text{A}, I_B = 0$	$V_{(\text{BR})\text{CEO}}$	50	-	-	V
Collector-base breakdown voltage $I_C = 10 \mu\text{A}, I_E = 0$	$V_{(\text{BR})\text{CBO}}$	50	-	-	
Emitter-base breakdown voltage $I_E = 10 \mu\text{A}, I_C = 0$	$V_{(\text{BR})\text{EBO}}$	5	-	-	
Collector-base cutoff current $V_{\text{CB}} = 40 \text{ V}, I_E = 0$	$I_{\text{CBO}}$	-	-	100	nA
DC current gain <sup>1)</sup> $I_C = 5 \text{ mA}, V_{\text{CE}} = 5 \text{ V}$	$h_{\text{FE}}$	120	-	630	-
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 10 \text{ mA}, I_B = 0,5 \text{ mA}$	$V_{\text{CEsat}}$	-	-	0,3	V
Input off voltage $I_C = 100 \mu\text{A}, V_{\text{CE}} = 5 \text{ V}$	$V_{i(\text{off})}$	0,4	-	0,8	
Input on voltage $I_C = 2 \text{ mA}, V_{\text{CE}} = 0,3 \text{ V}$	$V_{i(\text{on})}$	0,5	-	1,1	
Input resistor	$R_1$	15	22	29	k $\Omega$

**AC Characteristics**

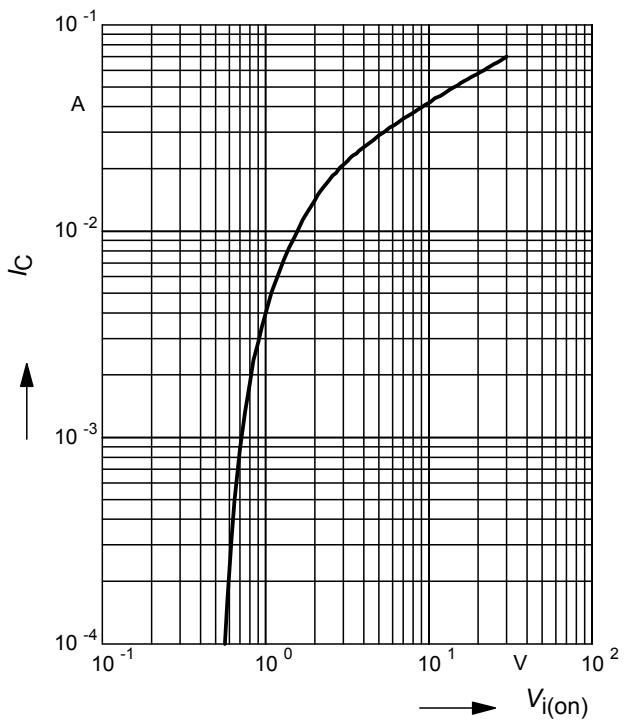
Transition frequency $I_C = 10 \text{ mA}, V_{\text{CE}} = 5 \text{ V}, f = 100 \text{ MHz}$	$f_T$	-	200	-	MHz
Collector-base capacitance $V_{\text{CB}} = 10 \text{ V}, f = 1 \text{ MHz}$	$C_{\text{cb}}$	-	3	-	pF

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

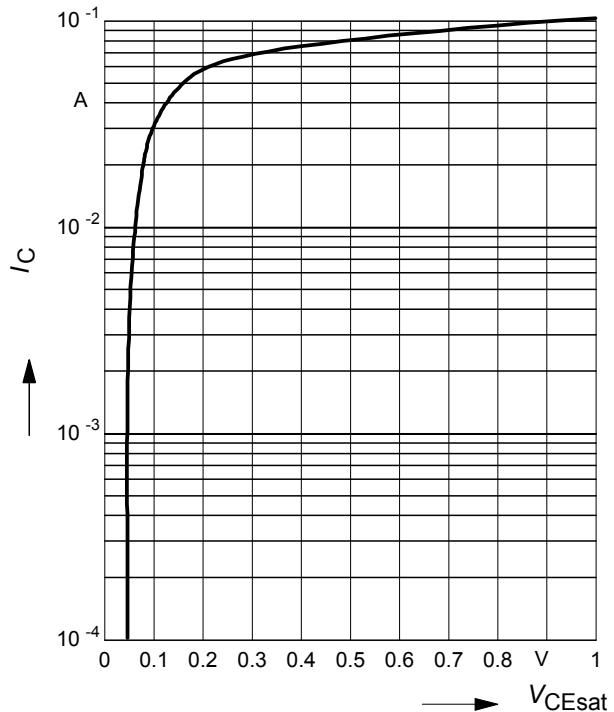
**DC current gain**  $h_{FE} = f(I_C)$   
 $V_{CE} = 5 \text{ V}$  (common emitter configuration)



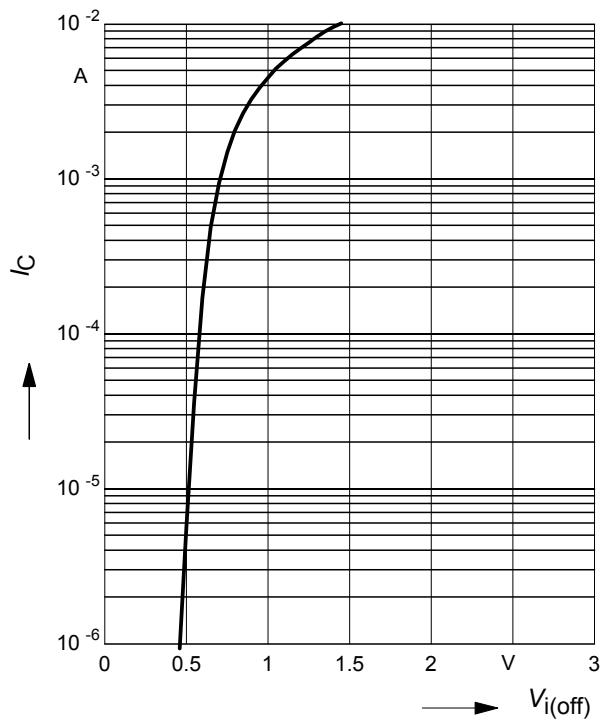
**Input on Voltage**  $V_{i(on)} = f(I_C)$   
 $V_{CE} = 0.3 \text{ V}$  (common emitter configuration)



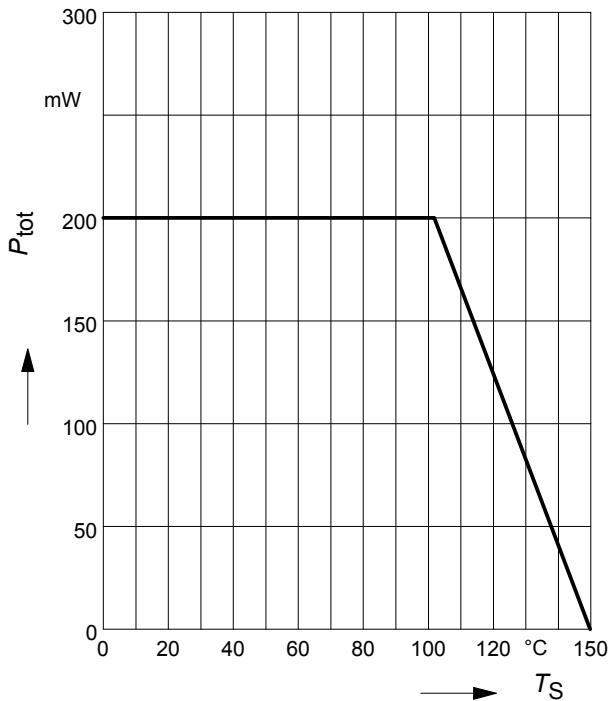
**Collector-emitter saturation voltage**  
 $V_{CEsat} = f(I_C)$ ,  $h_{FE} = 20$



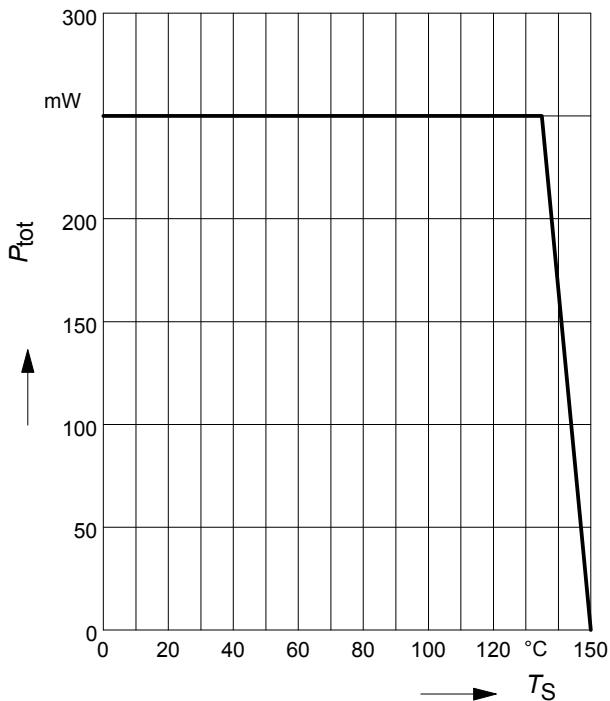
**Input off voltage**  $V_{i(off)} = f(I_C)$   
 $V_{CE} = 5 \text{ V}$  (common emitter configuration)



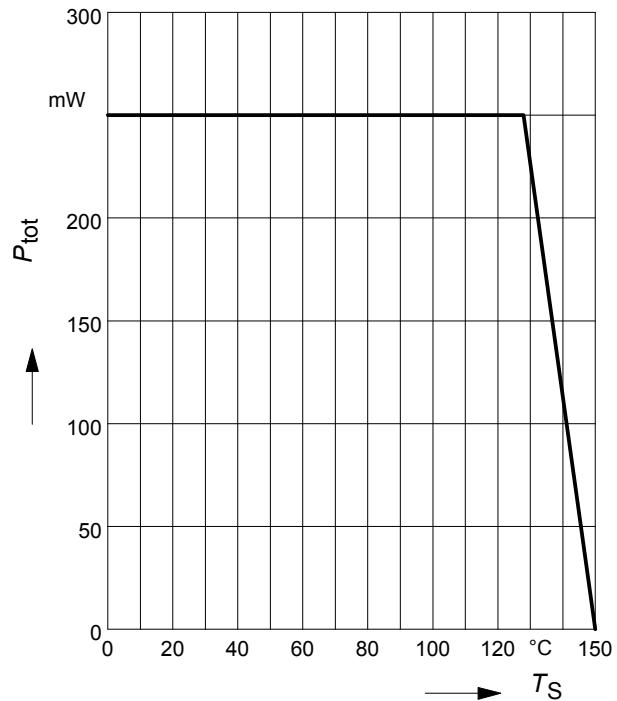
**Total power dissipation  $P_{\text{tot}} = f(T_S)$**   
BCR189



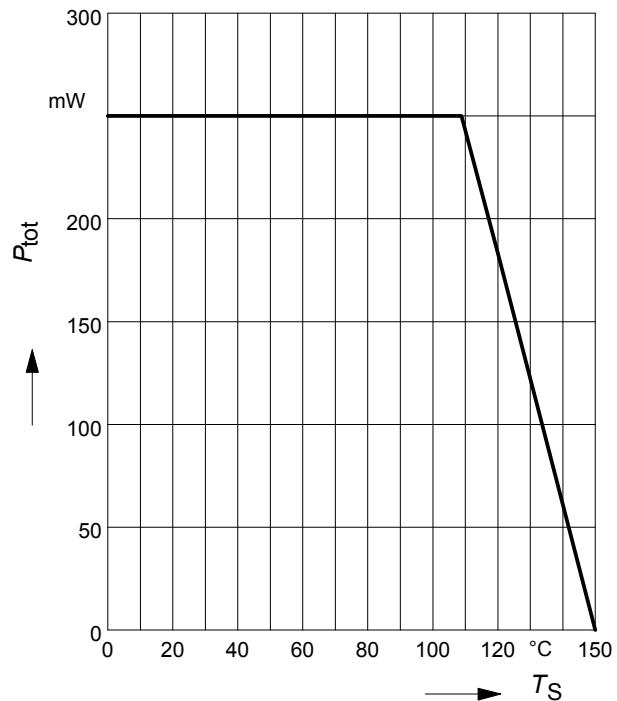
**Total power dissipation  $P_{\text{tot}} = f(T_S)$**   
BCR189L3



**Total power dissipation  $P_{\text{tot}} = f(T_S)$**   
BCR189F

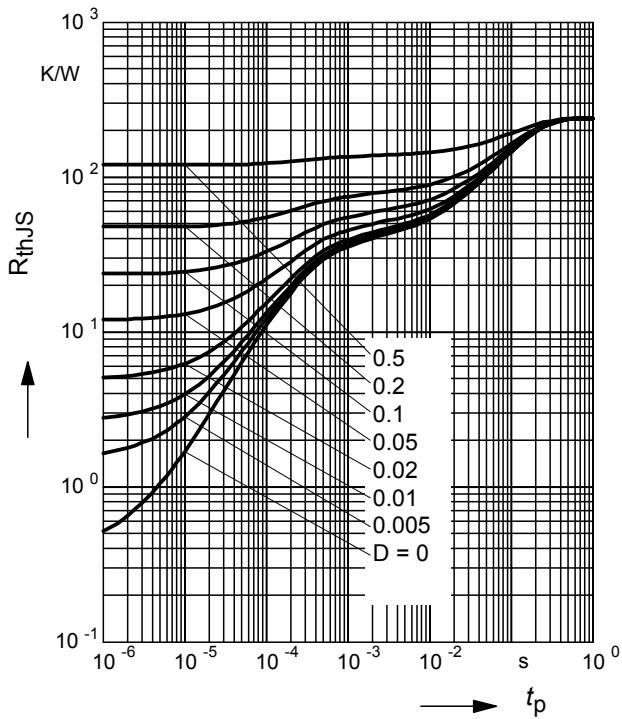


**Total power dissipation  $P_{\text{tot}} = f(T_S)$**   
BCR189T



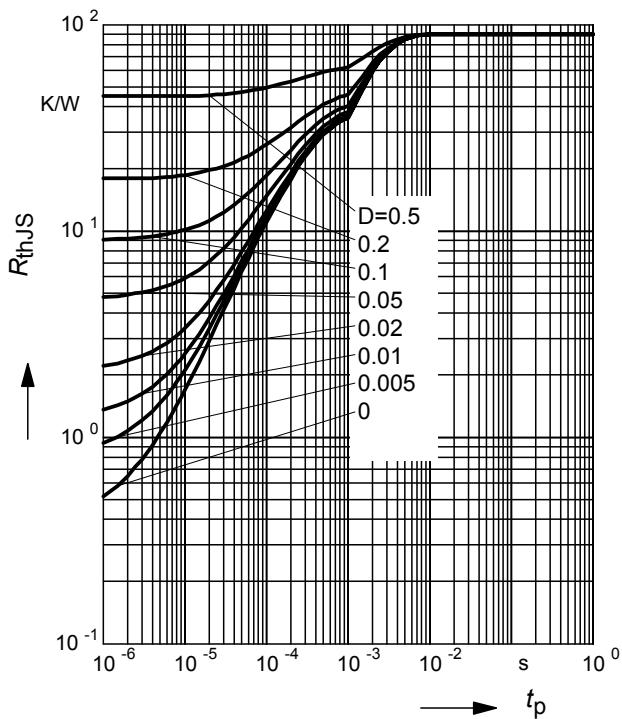
**Permissible Pulse Load**  $R_{\text{thJS}} = f(t_p)$

BCR189



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

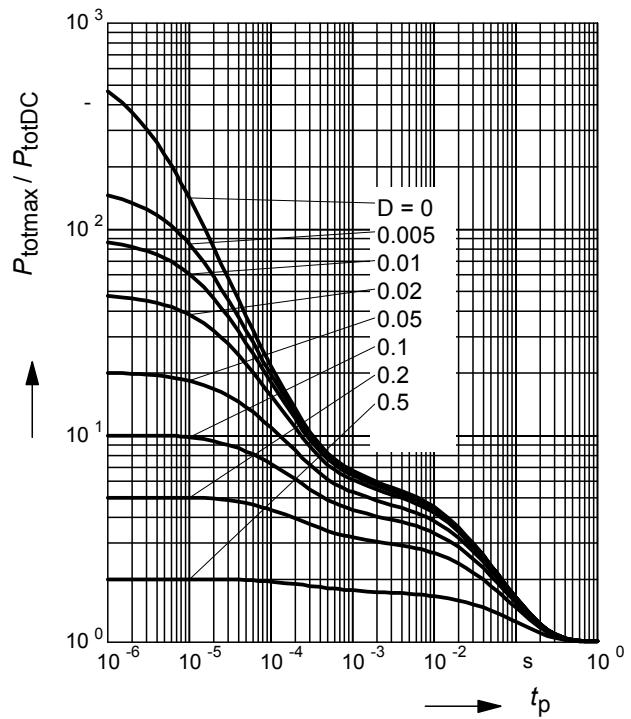
BCR189F



**Permissible Pulse Load**

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

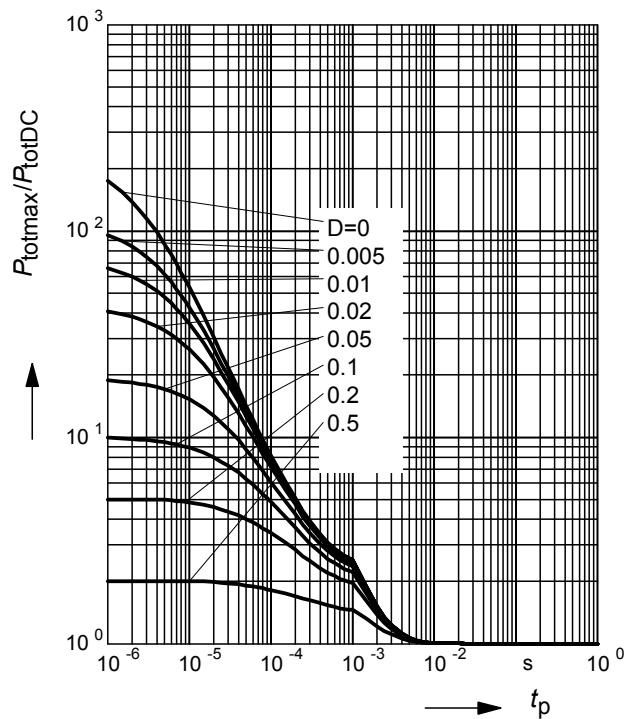
BCR189



**Permissible Pulse Load**

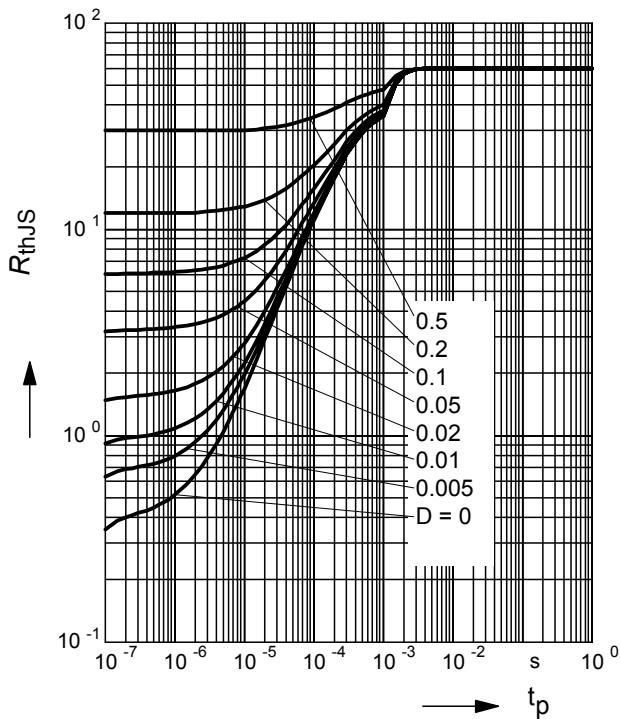
$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$

BCR189F



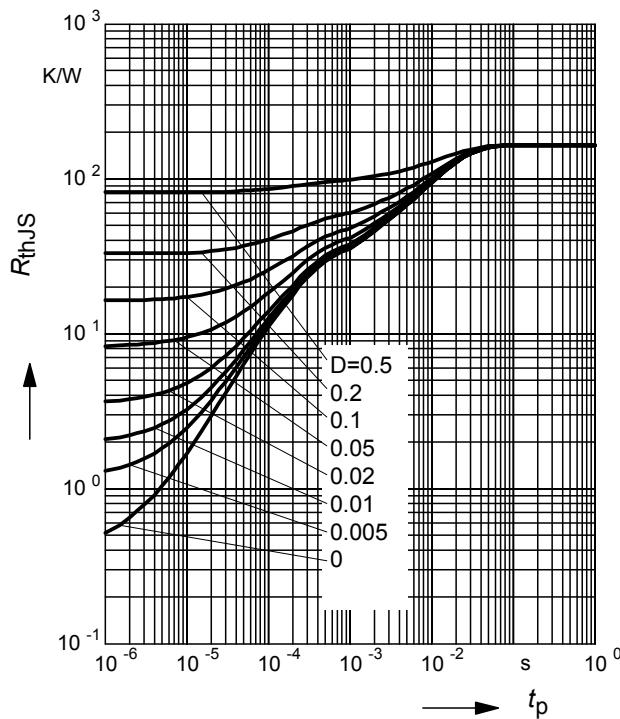
**Permissible Puls Load**  $R_{\text{thJS}} = f(t_p)$

BCR189L3



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

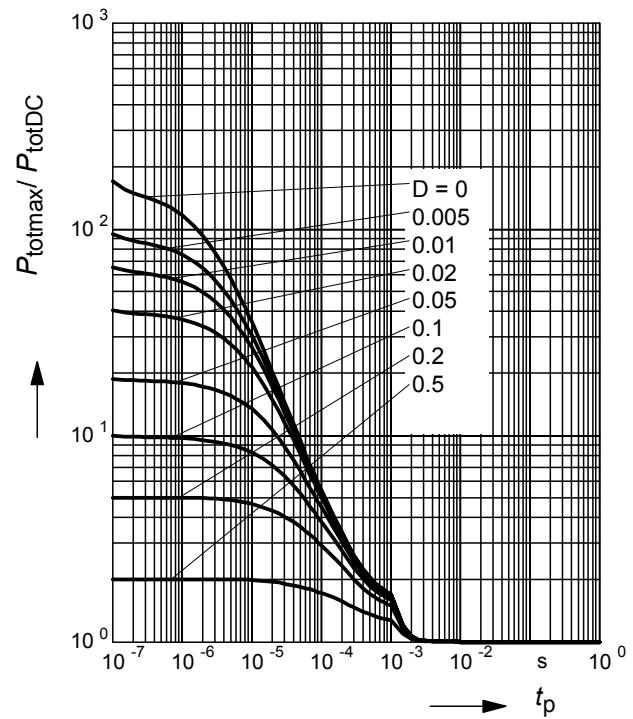
BCR189T



**Permissible Pulse Load**

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

BCR189L3



**Permissible Pulse Load**

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

BCR189T

