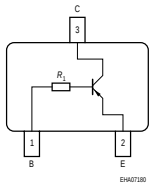


PNP Silicon Digital Transistor

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


BCR189/F/L3
BCR189T


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	
Storage temperature	T_{stg}	150 ... -65	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ¹⁾	R_{thJS}		K/W
BCR189		≤ 240	
BCR189F		≤ 90	
BCR189L3		≤ 60	
BCR189T		≤ 165	

¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

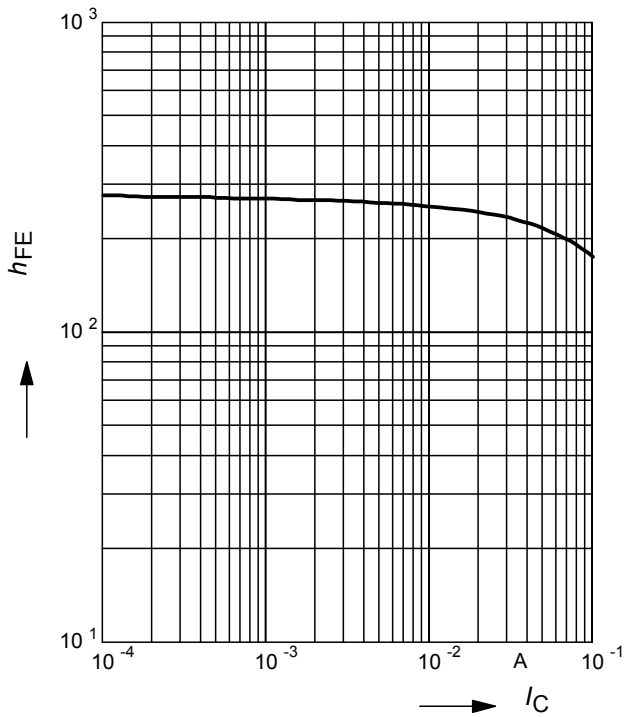
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 100\ \mu\text{A}$, $I_B = 0$	$V_{(\text{BR})\text{CEO}}$	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_{CBO}	-	-	100	nA
DC current gain ¹⁾ $I_C = 5\ \text{mA}$, $V_{\text{CE}} = 5\ \text{V}$	h_{FE}	120	-	630	-
Collector-emitter saturation voltage ¹⁾ $I_C = 10\ \text{mA}$, $I_B = 0,5\ \text{mA}$	V_{CEsat}	-	-	0,3	V
Input off voltage $I_C = 100\ \mu\text{A}$, $V_{\text{CE}} = 5\ \text{V}$	$V_{\text{i(off)}}$	0,4	-	0,8	
Input on voltage $I_C = 2\ \text{mA}$, $V_{\text{CE}} = 0,3\ \text{V}$	$V_{\text{i(on)}}$	0,5	-	1,1	
Input resistor	R_1	15	22	29	kΩ
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_{cb}	-	3	-	pF

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

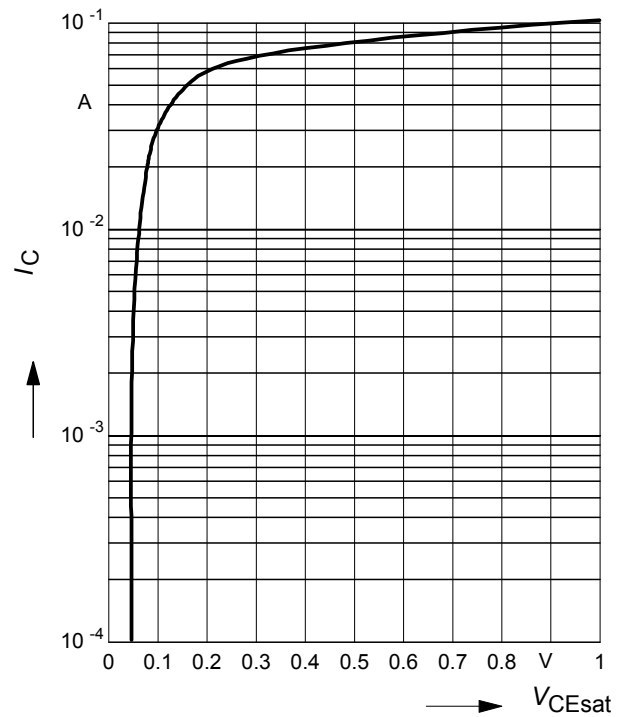
DC current gain $h_{FE} = f(I_C)$

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



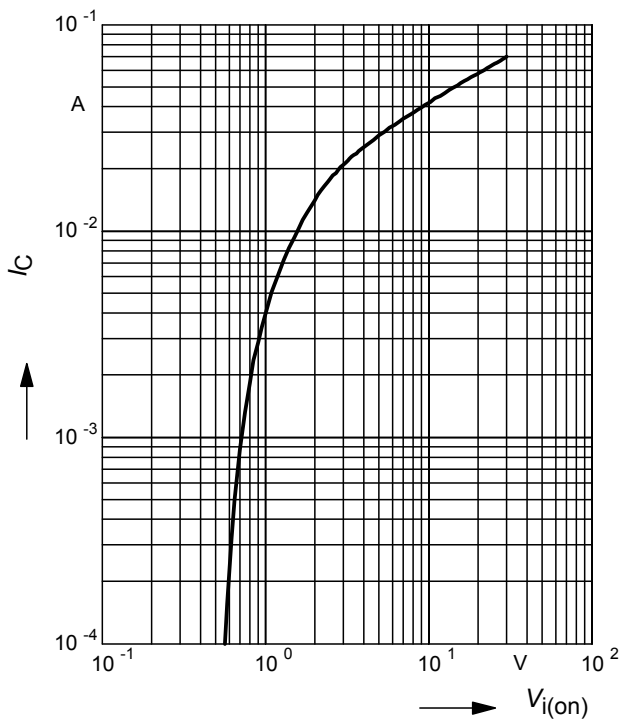
Collector-emitter saturation voltage

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



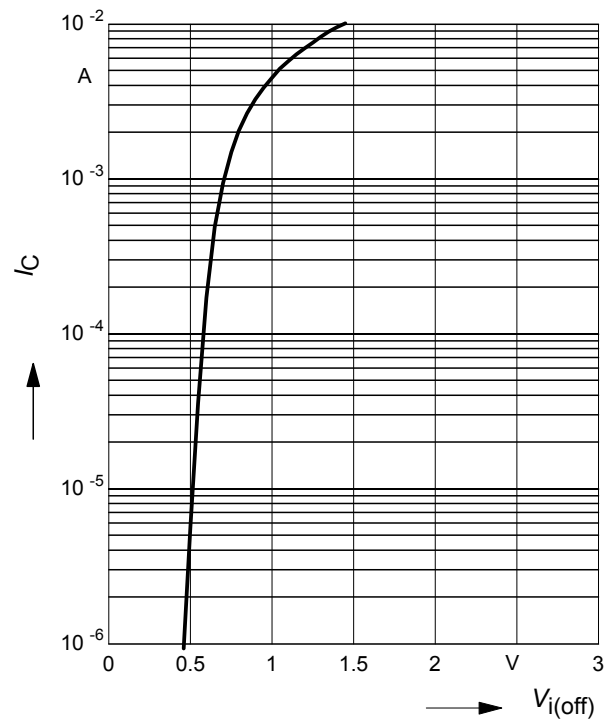
Input on Voltage $V_{i(on)} = f(I_C)$

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



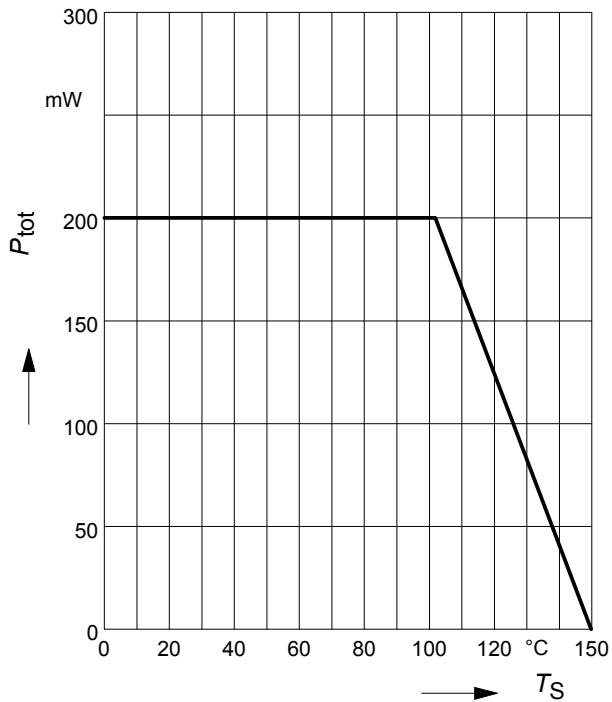
Input off voltage $V_{i(off)} = f(I_C)$

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



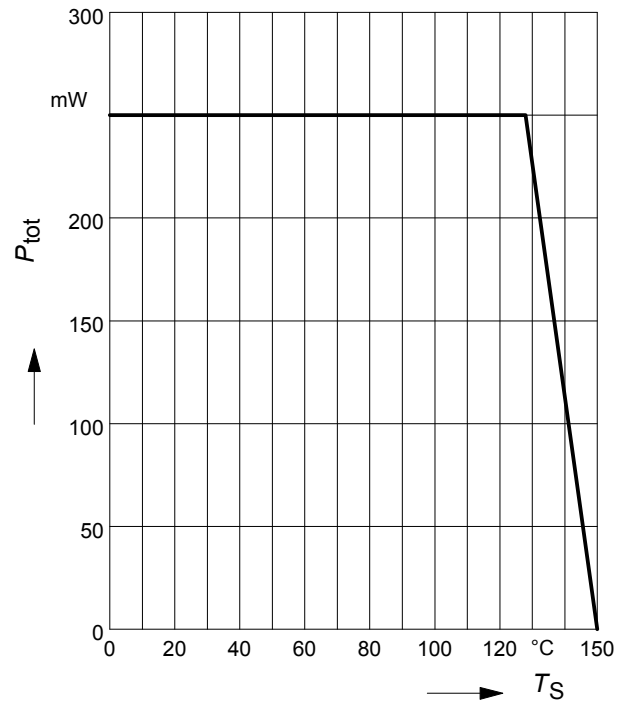
Total power dissipation $P_{\text{tot}} = f(T_S)$

BCR189



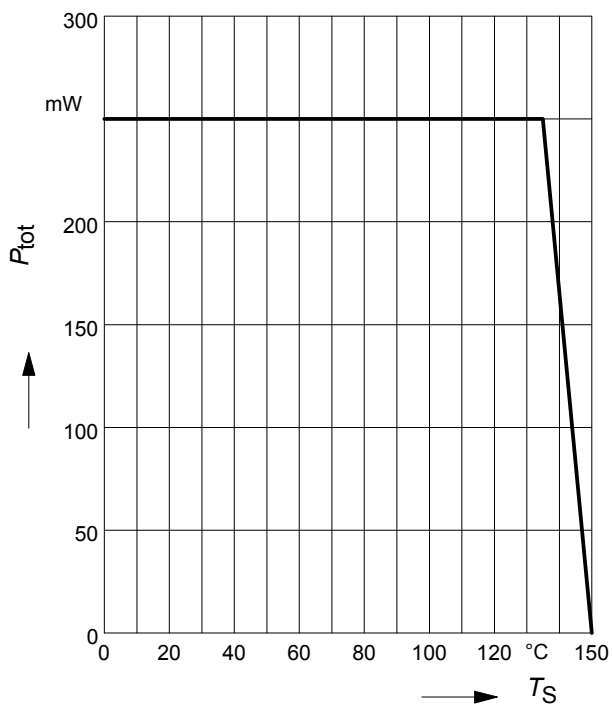
Total power dissipation $P_{\text{tot}} = f(T_S)$

BCR189F



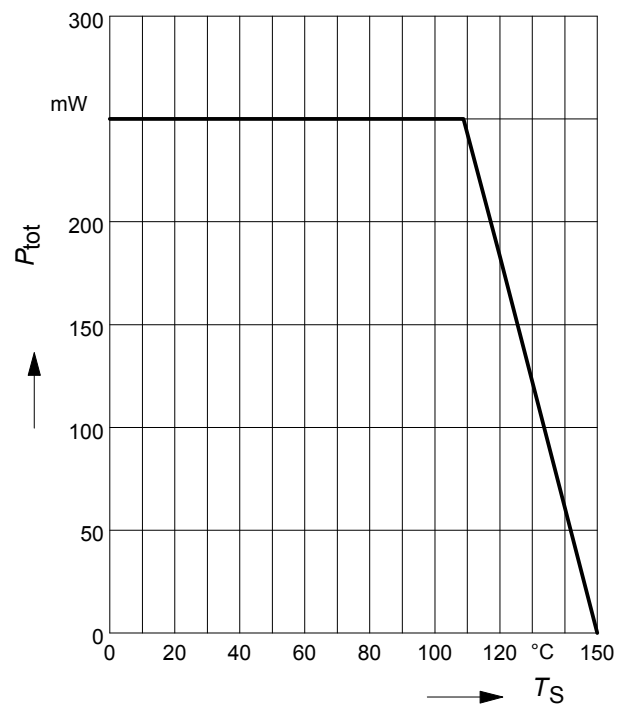
Total power dissipation $P_{\text{tot}} = f(T_S)$

BCR189L3



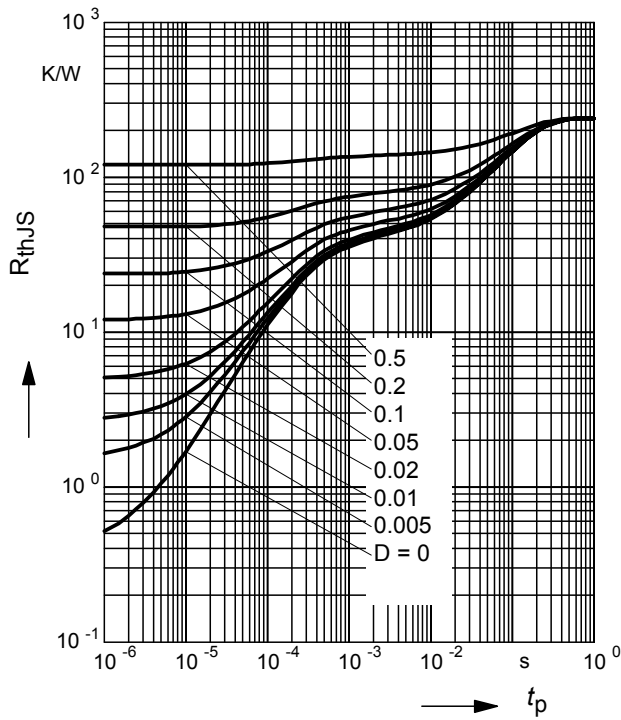
Total power dissipation $P_{\text{tot}} = f(T_S)$

BCR189T



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

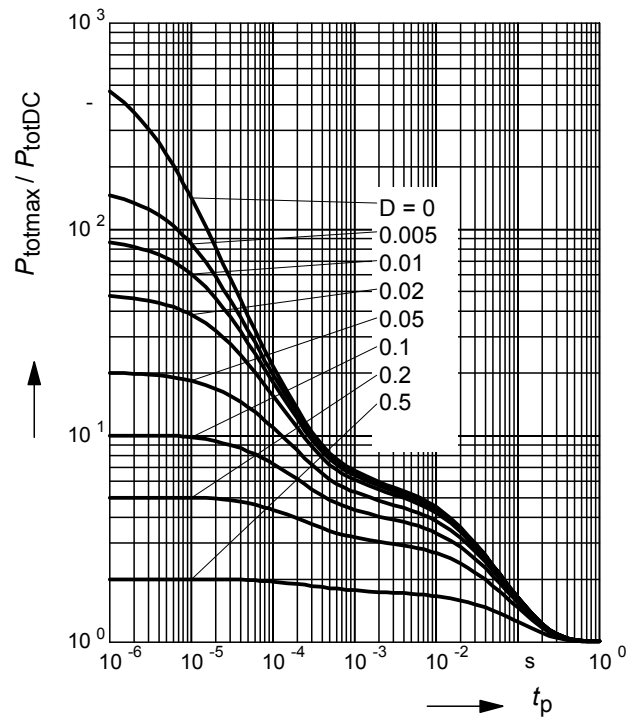
BCR189



Permissible Pulse Load

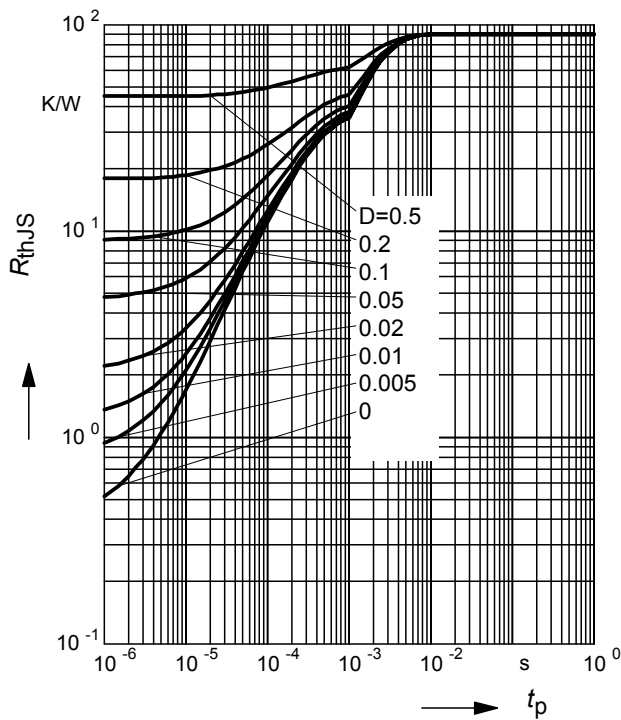
$$P_{totmax}/P_{totDC} = f(t_p)$$

BCR189



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

BCR189F



Permissible Pulse Load

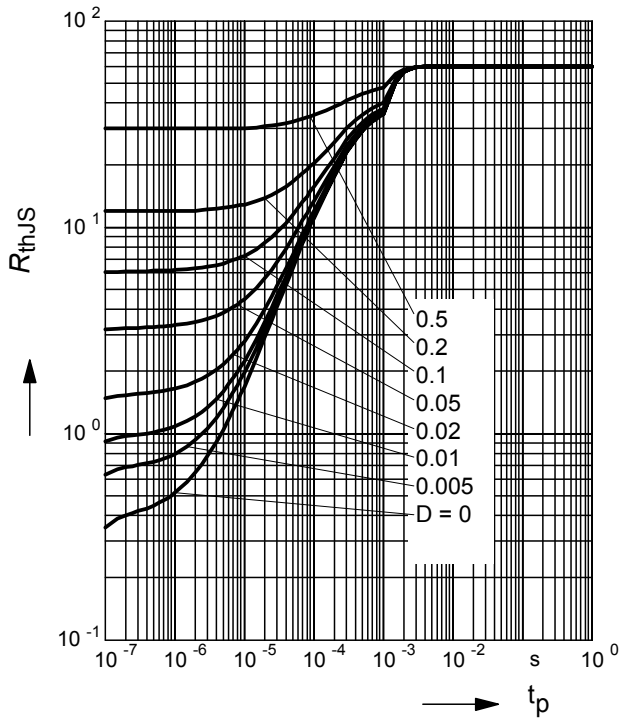
$$P_{totmax}/P_{totDC} = f(t_p)$$

BCR189F



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

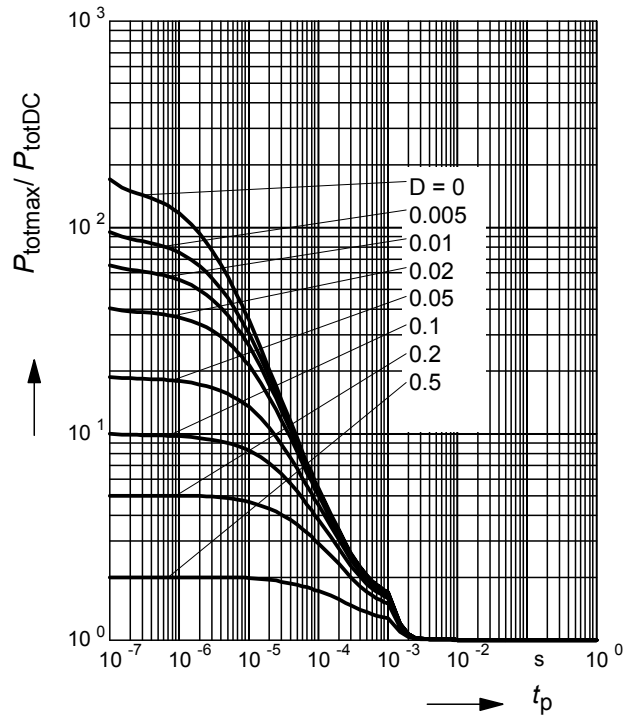
BCR189L3



Permissible Pulse Load

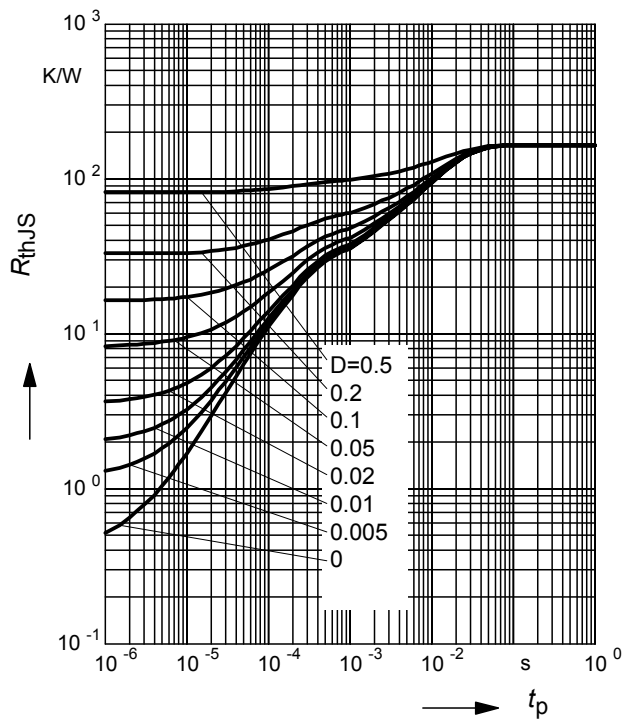
$$P_{totmax}/P_{totDC} = f(t_p)$$

BCR189L3



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

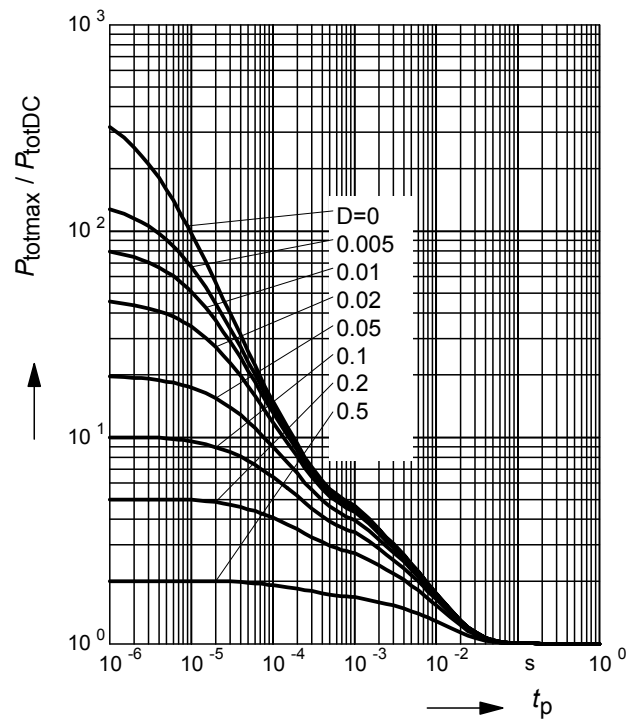
BCR189T



Permissible Pulse Load

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

BCR189T



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