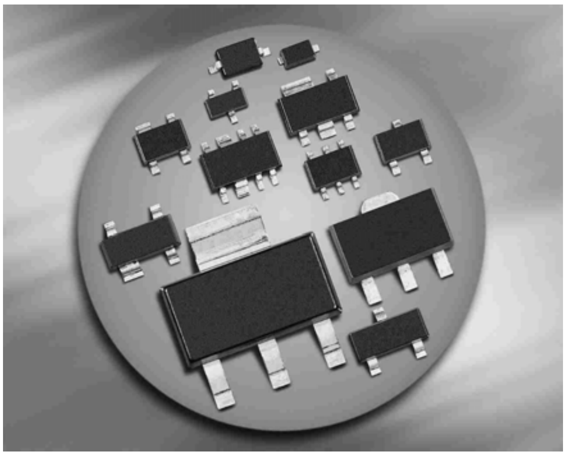
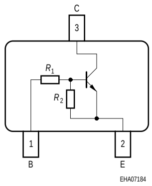
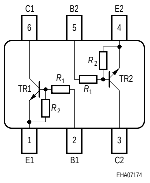
NPN Silicon Digital Transistor

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor (R_1=4.7kΩ, R_2=4.7kΩ)
- For 6-PIN packages: two (galvanic) internal isolated transistors with good matching in one package



BCR112/F/L3 **BCR112U**
BCR112T/W





Type	Marking	Pin Configuration						Package
BCR112	WFs	1=B	2=E	3=C	-	-	-	SOT23
BCR112F	WFs	1=B	2=E	3=C	-	-	-	TSFP-3
BCR112L3	WF	1=B	2=E	3=C	-	-	-	TSLP-3-4
BCR112T	WFs	1=B	2=E	3=C	-	-	-	SC75
BCR112U	WFs	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SC74
BCR112W	WFs	1=B	2=E	3=C	-	-	-	SOT323

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	$V_{i(on)}$	15	
Collector current	I_C	100	mA
Total power dissipation-	P_{tot}		mW
BCR112, T_S ≤102°C		200	
BCR112F, T_S ≤128°C		250	
BCR112L3, T_S ≤135°C		250	
BCR112T, T_S ≤109°C		250	
BCR112U, T_S ≤118°C		250	
BCR112W, T_S ≤124°C		250	
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[1]	R_{thJS}		K/W
BCR112		≤ 240	
BCR112F		≤ 90	
BCR112L3		≤ 60	
BCR112T		≤ 165	
BCR112U		≤ 133	
BCR112W		≤ 105	

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

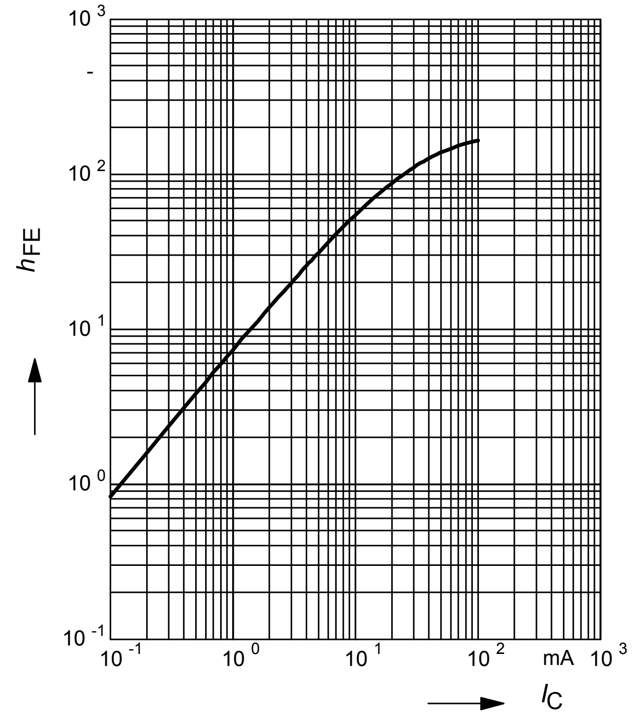
Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 100 µA, I_B = 0	$V_{(BR)CEO}$	50	-	-	V
Collector-base breakdown voltage I_C = 10 µA, I_E = 0	$V_{(BR)CBO}$	50	-	-	
Collector-base cutoff current V_{CB} = 40 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter-base cutoff current V_{EB} = 10 V, I_C = 0	I_{EBO}	-	-	1.61	mA
DC current gain[1] I_C = 5 mA, V_{CE} = 5 V	h_{FE}	20	-	-	-
Collector-emitter saturation voltage[1] I_C = 10 mA, I_B = 0.5 mA	V_{CEsat}	-	-	0.3	V
Input off voltage I_C = 100 µA, V_{CE} = 5 V	$V_{i(off)}$	0.8	-	1.5	
Input on voltage I_C = 2 mA, V_{CE} = 0.3 V	$V_{i(on)}$	1	-	2.5	
Input resistor	R_1	3.2	4.7	6.2	kΩ
Resistor ratio	R_1/R_2	0.9	1	1.1	-
AC Characteristics					
Transition frequency I_C = 10 mA, V_{CE} = 5 V, f = 100 MHz	f_T	-	140	-	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	3	-	pF

[1] Pulse test: t < 300µs; D < 2%

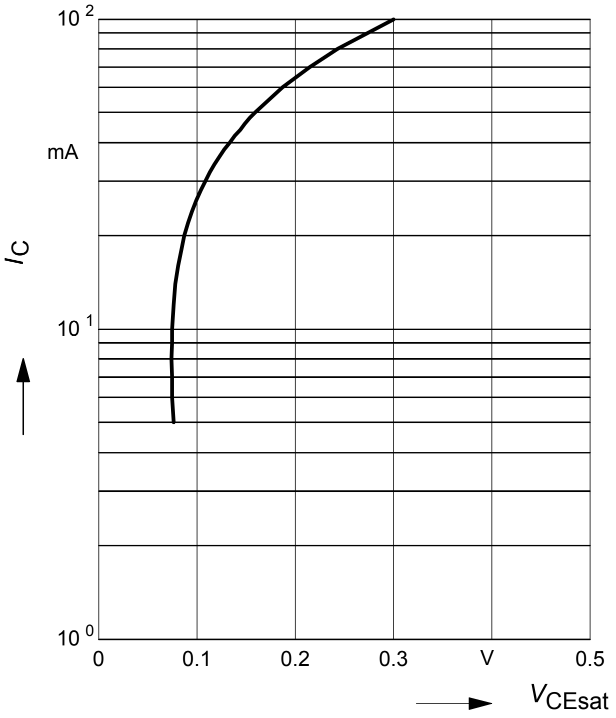
DC current gain $h_{FE} = f(I_C)$

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



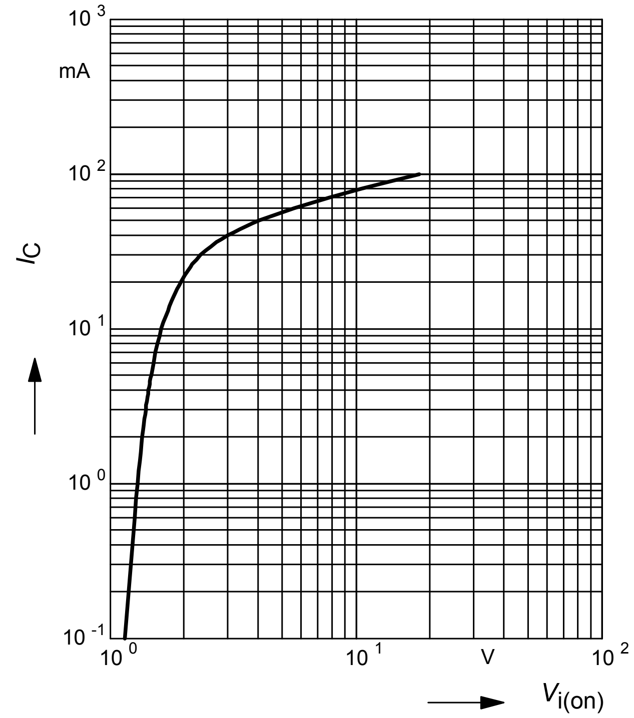
Collector-emitter saturation voltage

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



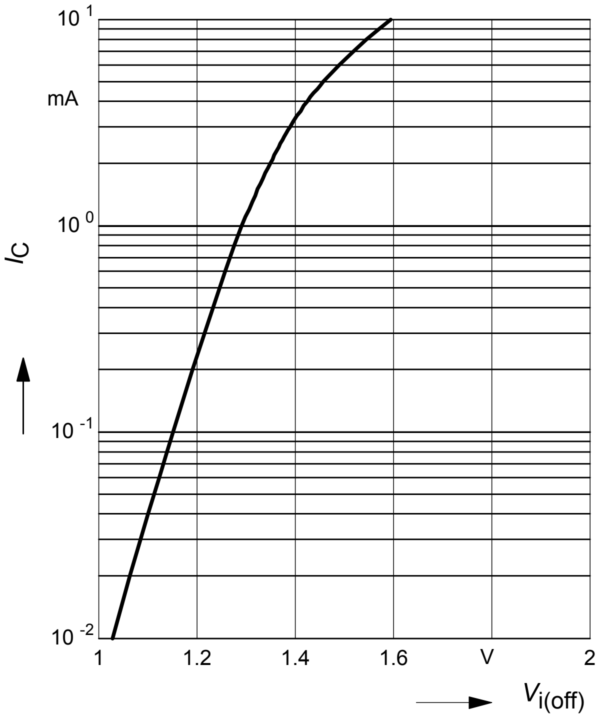
Input on Voltage $Vi_{(on)} = f(I_C)$

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



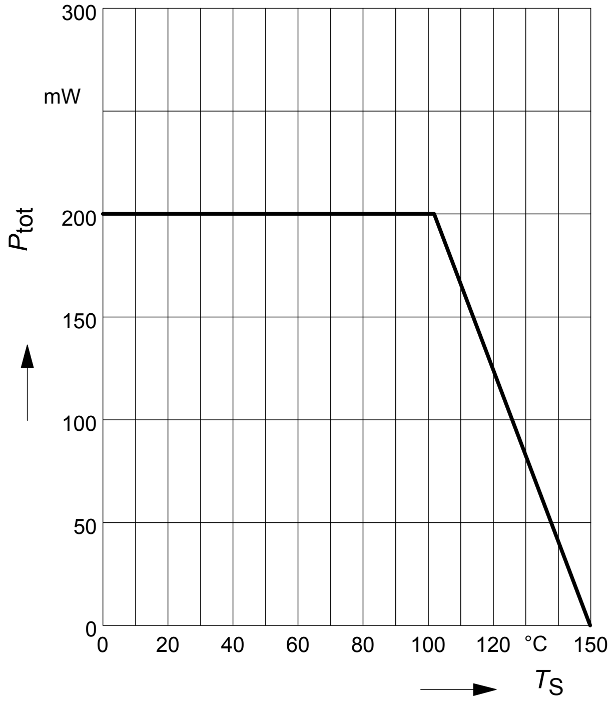
Input off voltage $V_{i(off)} = f(I_C)$

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



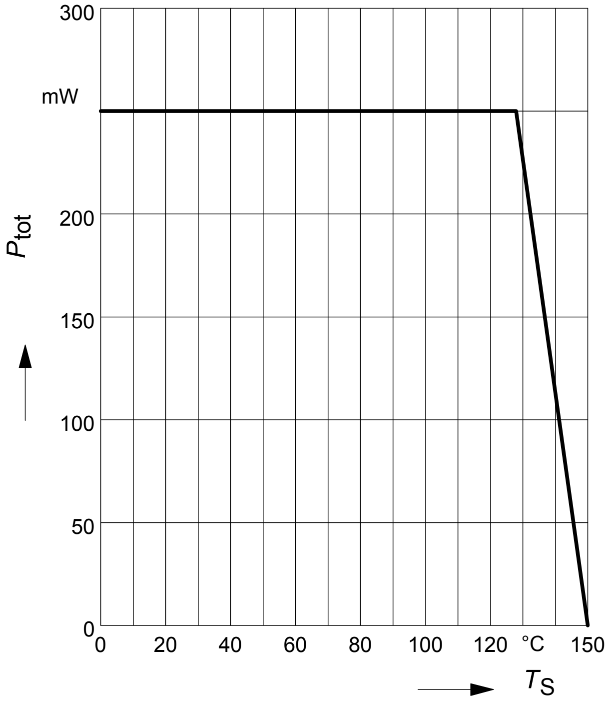
Total power dissipation $P_{tot} = f(T_S)$

BCR112



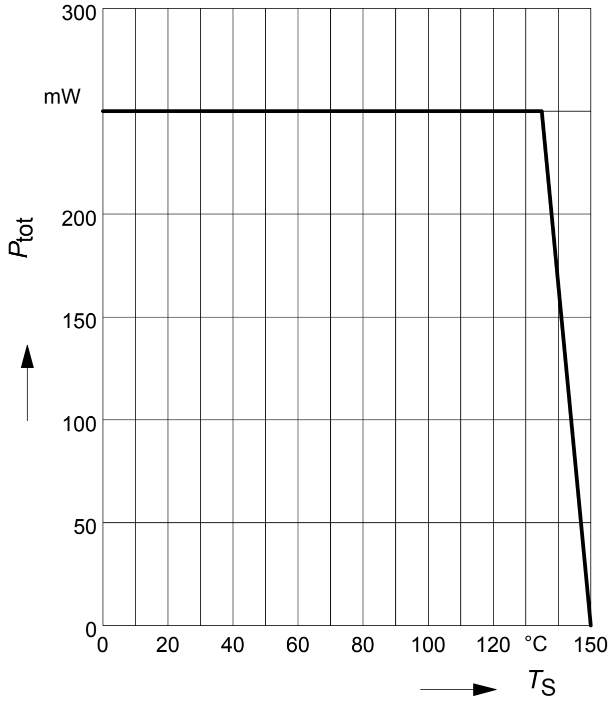
Total power dissipation $P_{tot} = f(T_S)$

BCR112F



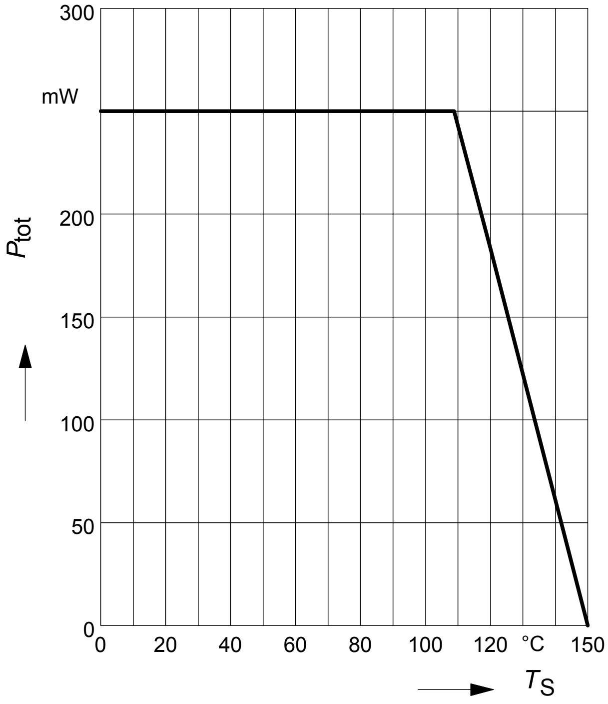
Total power dissipation $P_{tot} = f(T_S)$

BCR112L3



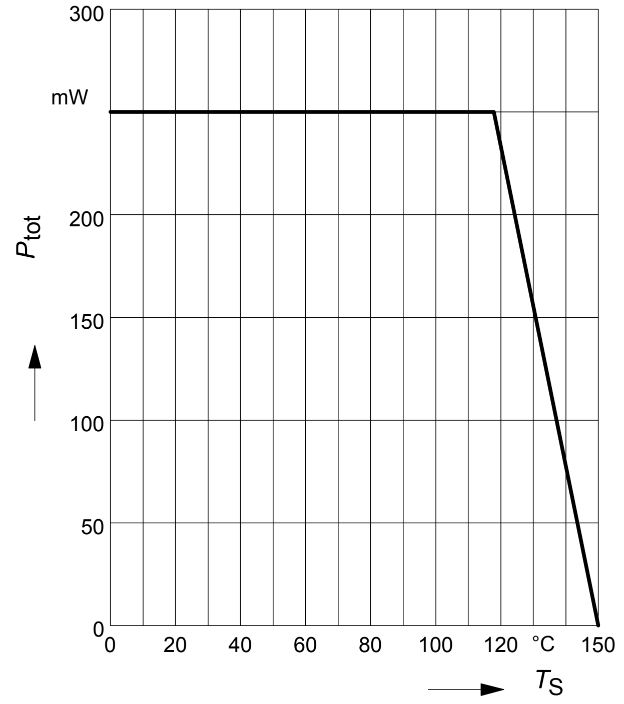
Total power dissipation $P_{tot} = f(T_S)$

BCR112T



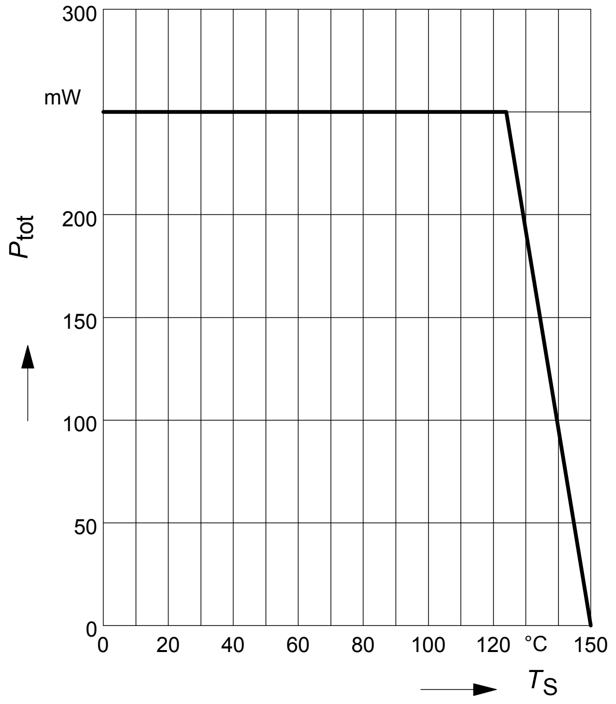
Total power dissipation $P_{tot} = f(T_S)$

BCR112U



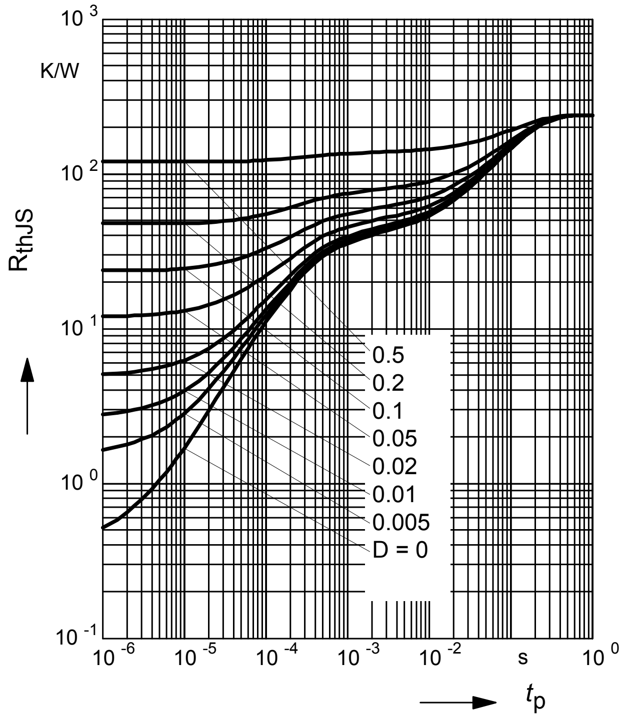
Total power dissipation $P_{tot} = f(T_S)$

BCR112W



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

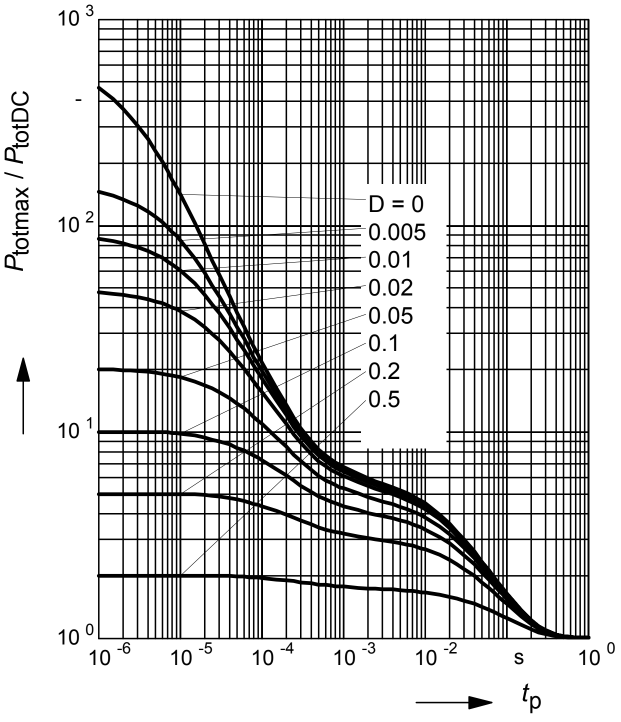
BCR112



Permissible Pulse Load

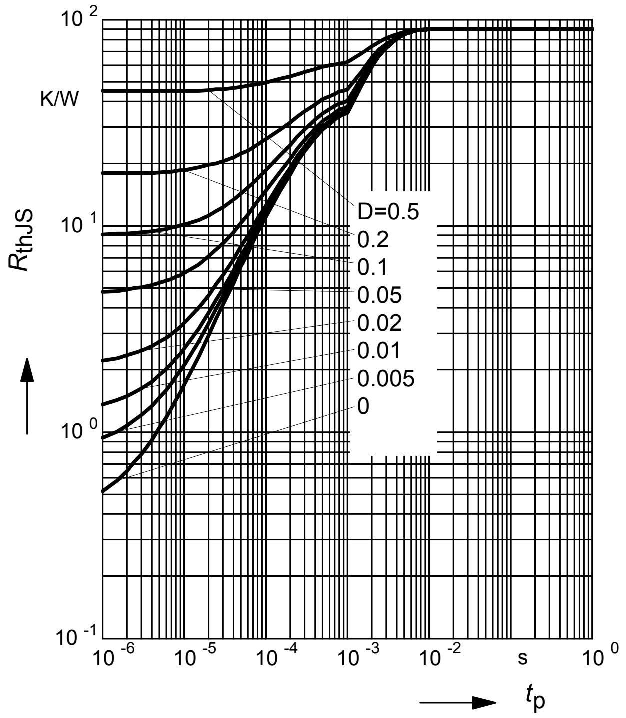
$P_{totmax}/P_{totDC} = f(t_p)$

BCR112



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

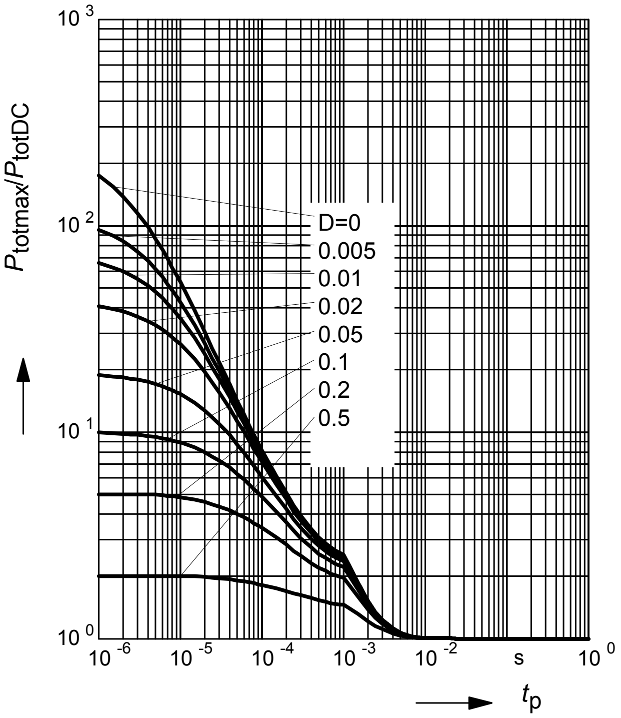
BCR112F



Permissible Pulse Load

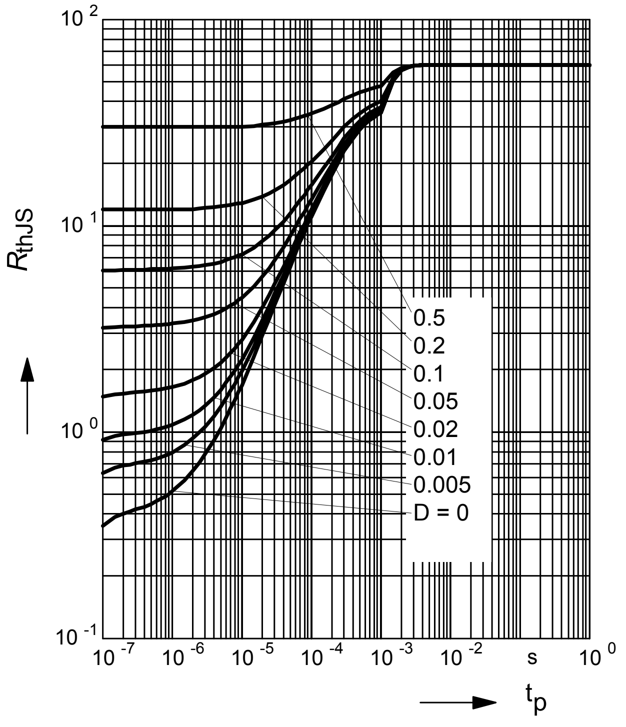
$P_{totmax}/P_{totDC} = f(t_p)$

BCR112F



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

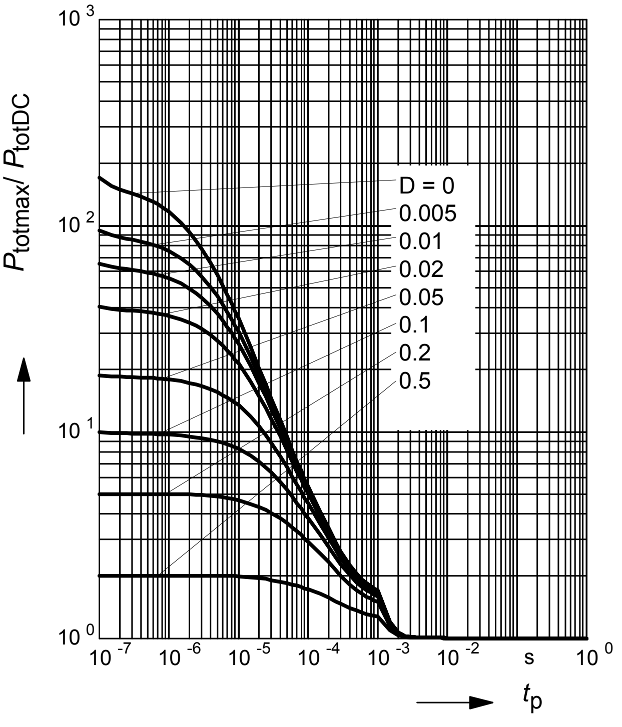
BCR112L3



Permissible Pulse Load

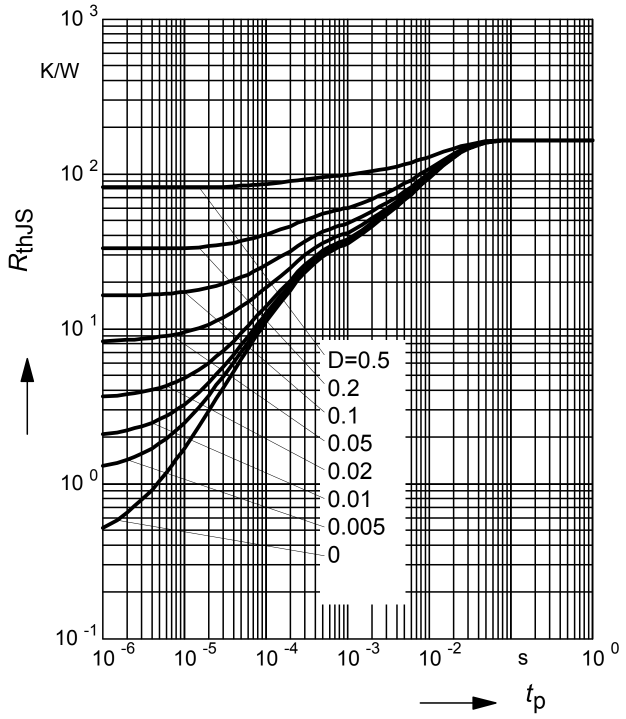
$P_{totmax}/P_{totDC} = f(t_p)$

BCR112L3



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

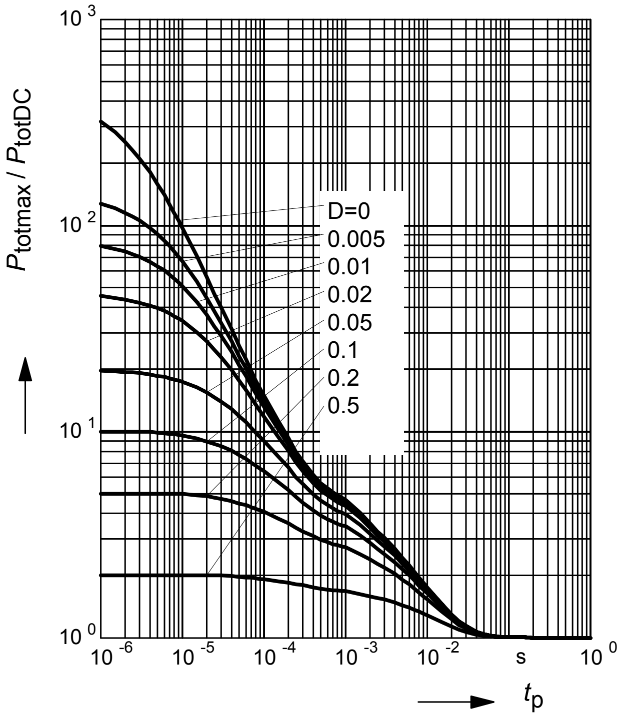
BCR112T



Permissible Pulse Load

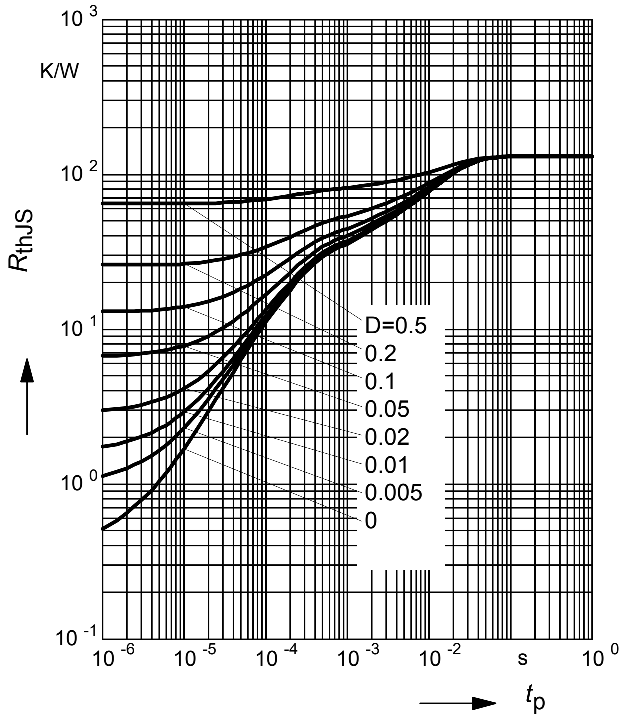
$P_{totmax}/P_{totDC} = f(t_p)$

BCR112T



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

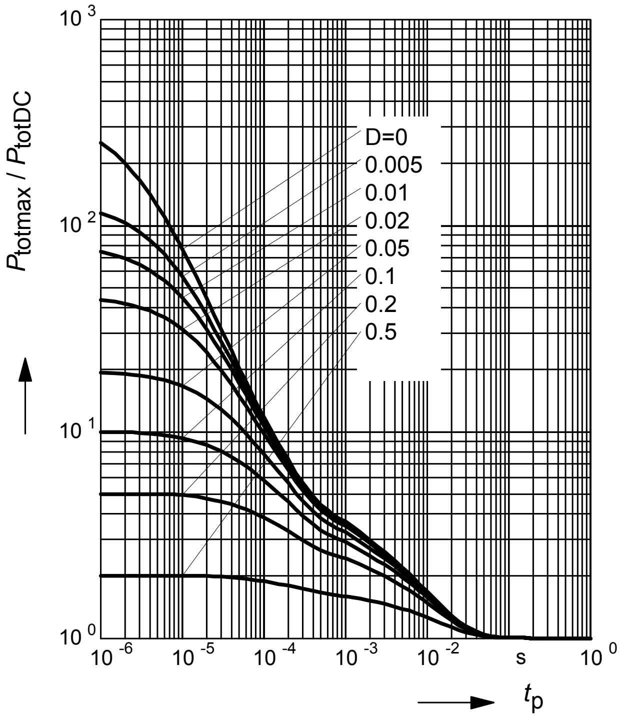
BCR112U



Permissible Pulse Load

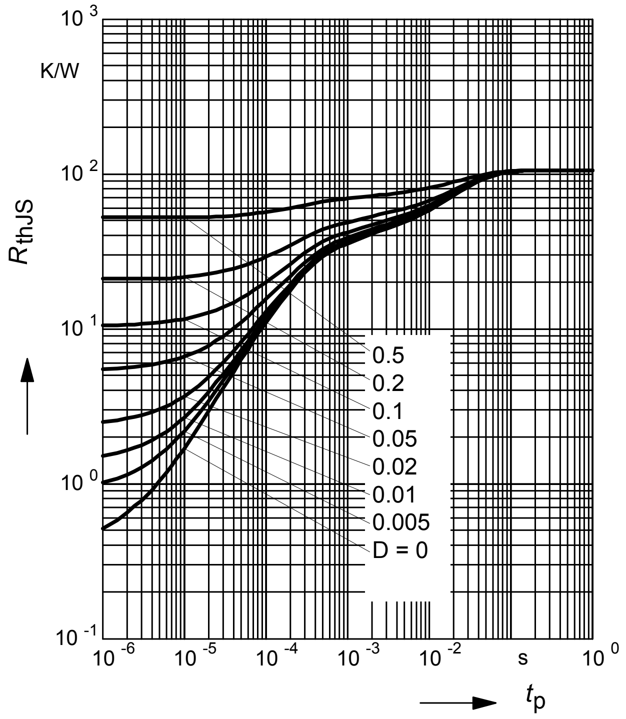
$P_{totmax}/P_{totDC} = f(t_p)$

BCR112U



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

BCR112W



Permissible Pulse Load

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

BCR112W