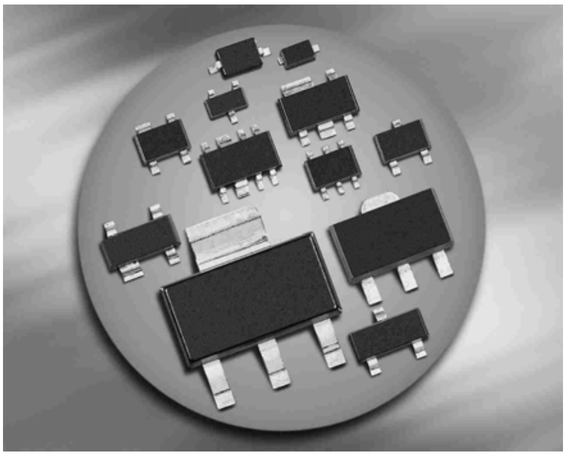
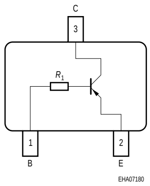
PNP Silicon Digital Transistor

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor (R_1 = 47kΩ)



BCR199F/L3
BCR199T



Type	Marking	Pin Configuration						Package
BCR199F*	UBs	1=B	2=E	3=C	-	-	-	TSFP-3
BCR199L3*	UB	1=B	2=E	3=C	-	-	-	TSLP-3-4
BCR199T*	UBs	1=B	2=E	3=C	-	-	-	SC75

* Preliminary

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	$V_{i(on)}$	50	
Collector current	I_C	70	mA
Total power dissipation- BCR199F, $T_S \leq 128°C$ BCR199L3, $T_S \leq 135°C$ BCR199T, $T_S \leq 109°C$	P_{tot}	 250 250 250	mW
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
BCR199F		≤ 90	
BCR199L3		≤ 60	
BCR199T		≤ 165	

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

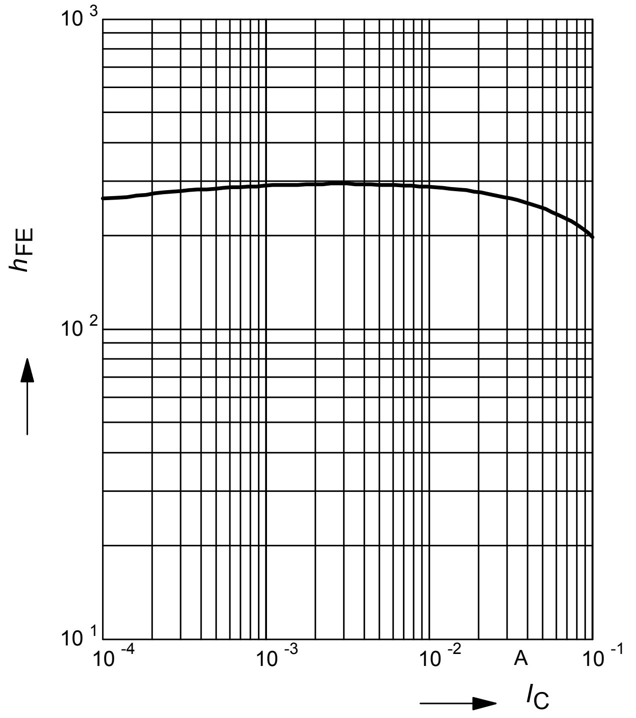
Parameter	**Symbol**	**Values**			**Unit**
		min.	**typ.**	**max.**	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 100\ \mu A$, $I_B = 0$	$V_{(BR)CEO}$	50	-	-	V
Collector-base breakdown voltage $I_C = 10\ \mu A$, $I_E = 0$	$V_{(BR)CBO}$	50	-	-	
Emitter-base breakdown voltage $I_E = 10\ \mu A$, $I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector-base cutoff current $V_{CB} = 40$ V, $I_E = 0$	I_{CBO}	-	-	100	nA
DC current gain[2] $I_C = 5$ mA, $V_{CE} = 5$ V	h_{FE}	120	-	630	-
Collector-emitter saturation voltage[2] $I_C = 10$ mA, $I_B = 0.5$ mA	V_{CEsat}	-	-	0.3	V
Input off voltage $I_C = 100\ \mu A$, $V_{CE} = 5$ V	$V_{i(off)}$	0.4	-	0.8	
Input on voltage $I_C = 2$ mA, $V_{CE} = 0.3$ V	$V_{i(on)}$	0.5	-	1.5	
Input resistor	R_1	32	47	62	kΩ
AC Characteristics					
Transition frequency $I_C = 10$ mA, $V_{CE} = 5$ V, $f = 100$ MHz	f_T	-	200	-	MHz
Collector-base capacitance $V_{CB} = 10$ V, $f = 1$ MHz	C_{cb}	-	3	-	-

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

[2] Pulse test: t < 300µs; D < 2%

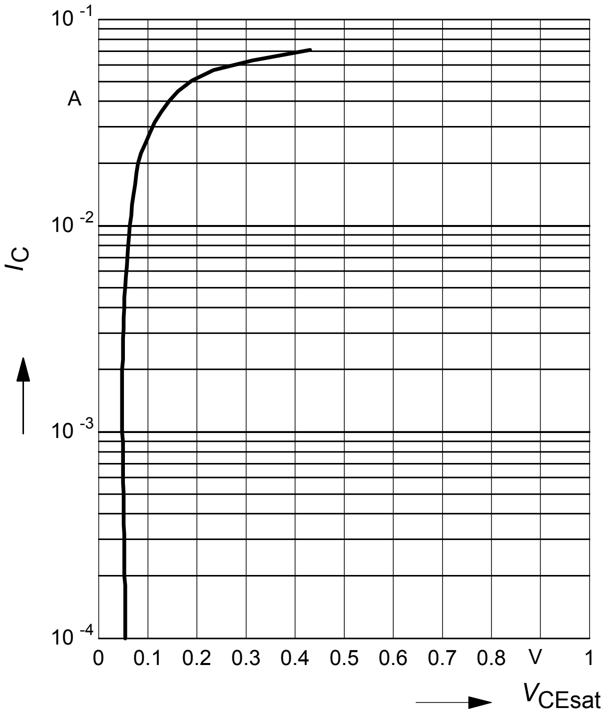
DC current gain $h_{FE} = f(I_C)$

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



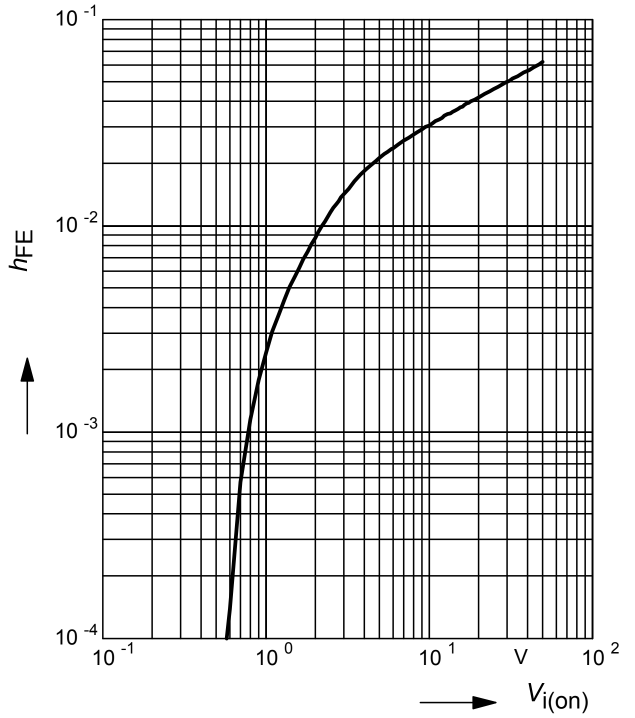
Collector-emitter saturation voltage

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



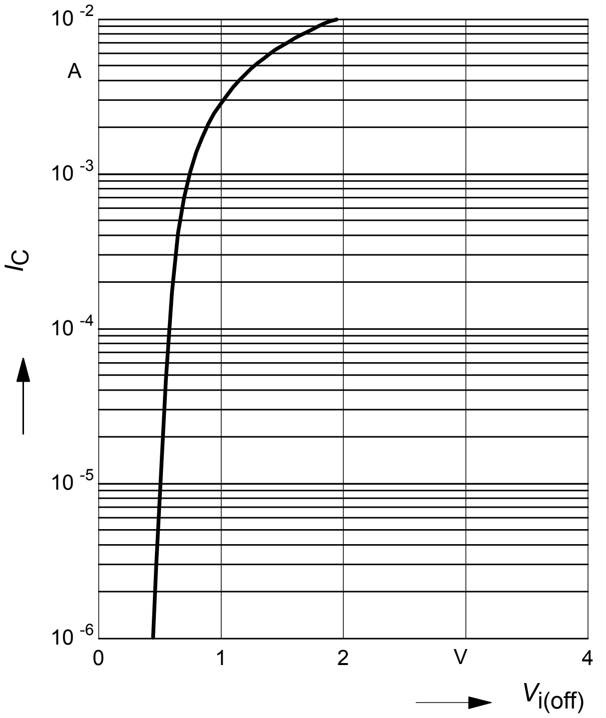
Input on Voltage $Vi_{(on)} = f(I_C)$

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



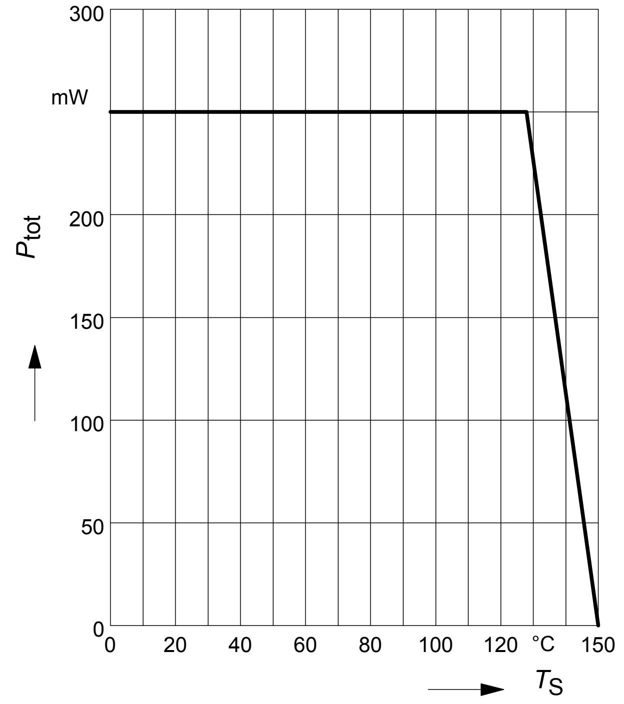
Input off voltage $V_{i(off)} = f(I_C)$

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



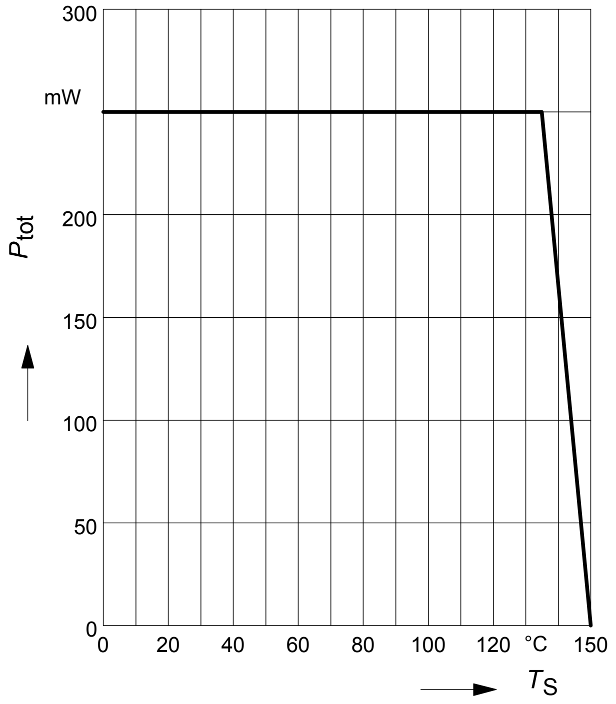
Total power dissipation $P_{tot} = f(T_S)$

BCR199F



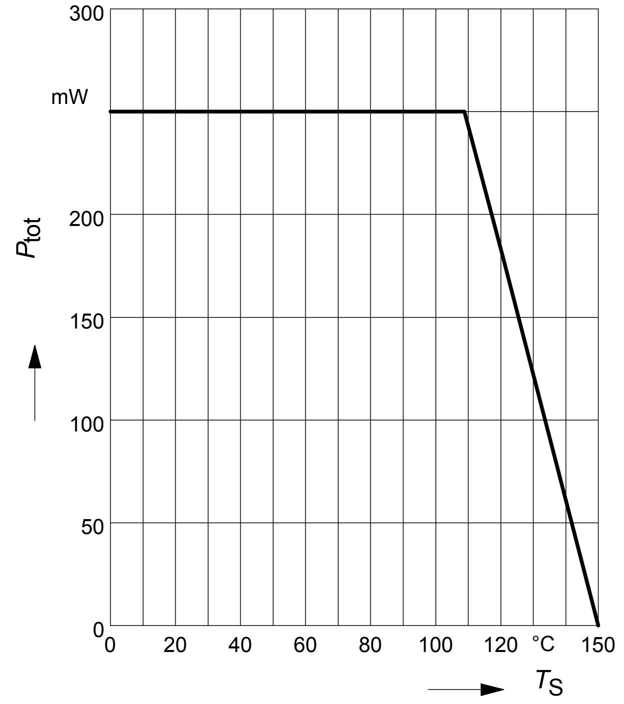
Total power dissipation $P_{tot} = f(T_S)$

BCR199L3



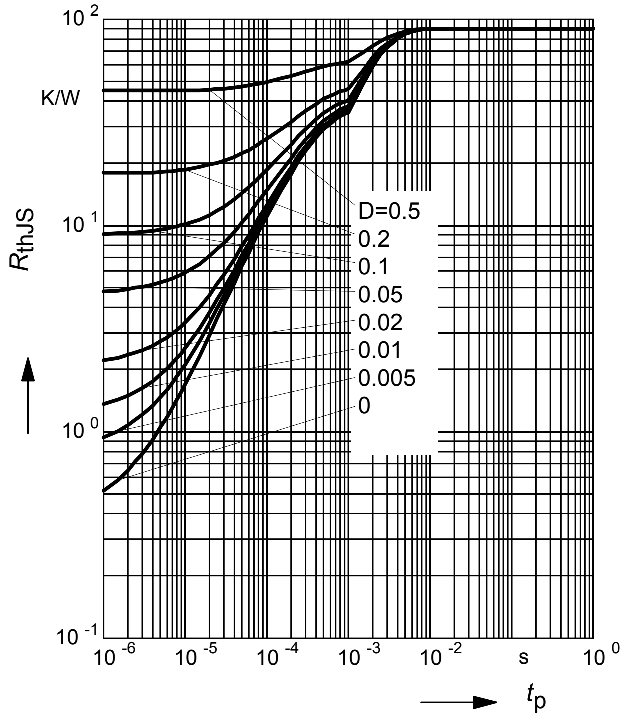
Total power dissipation $P_{tot} = f(T_S)$

BCR199T



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

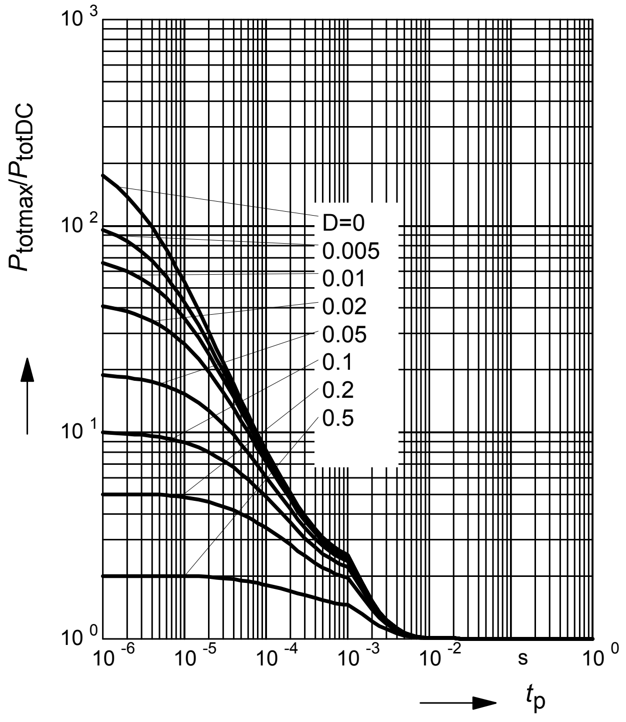
BCR199F



Permissible Pulse Load

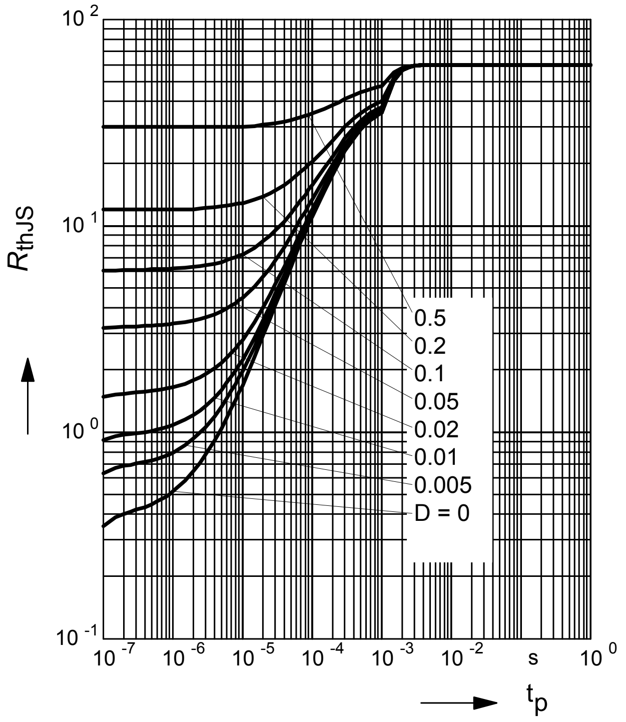
$P_{totmax}/P_{totDC} = f(t_p)$

BCR199F



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

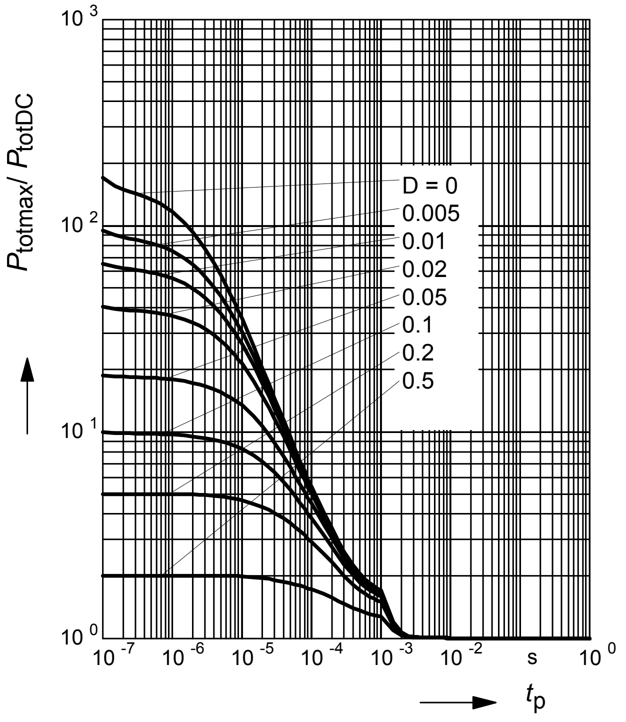
BCR199L3



Permissible Pulse Load

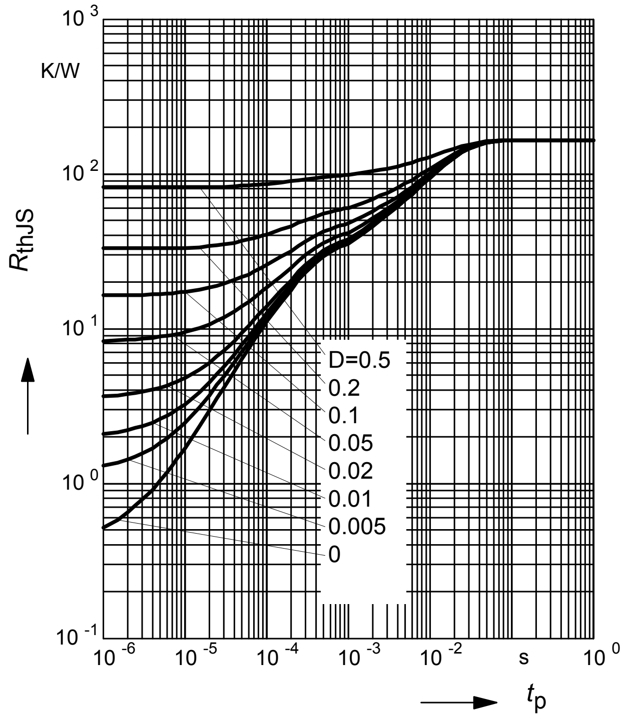
$P_{totmax}/P_{totDC} = f(t_p)$

BCR199L3



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

BCR199T



Permissible Pulse Load

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

BCR199T