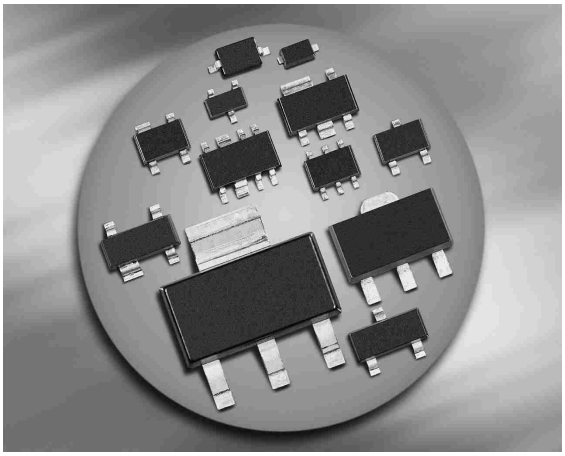
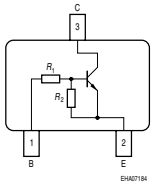
NPN Silicon Digital Transistor

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor (R_1 = 100kΩ , R_2 = 100kΩ)



BCR101F/L3
BCR101T



Type	Marking	Pin Configuration						Package
BCR101F*	UCs	1=B	2=E	3=C	-	-	-	TSFP-3
BCR101L3*	UC	1=B	2=E	3=C	-	-	-	TSLP-3-4
BCR101T*	UCs	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}	10	
Input on voltage	$V_{i(on)}$	50	
Collector current	I_C	50	mA
Total power dissipation-	P_{tot}		mW
BCR101F, $T_S \leq 128°C$		250	
BCR101L3, $T_S \leq 135°C$		250	
BCR101T, $T_S \leq 109°C$		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
BCR101F		≤ 90	
BCR101L3		≤ 60	
BCR101T		≤ 165	

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

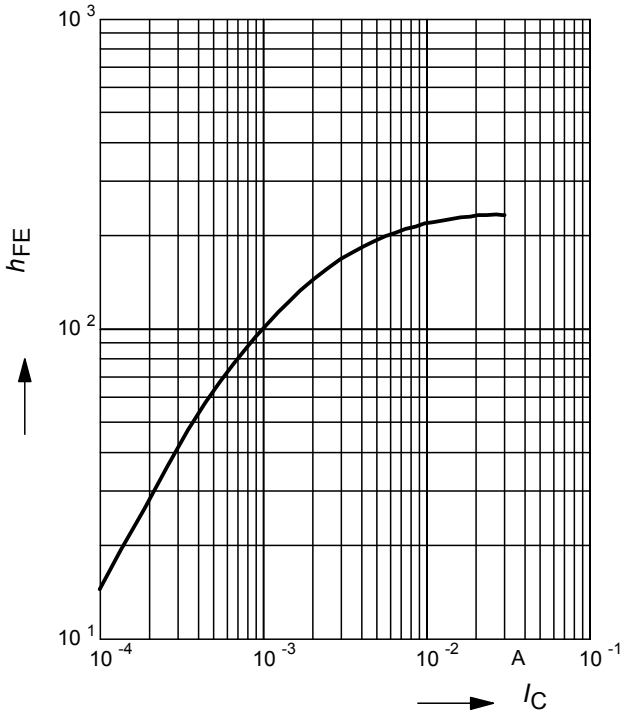
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 100 µA, I_B = 0	$V_{(BR)CEO}$	50	-	-	V
Collector-base breakdown voltage I_C = 10 µA, I_E = 0	$V_{(BR)CBO}$	50	-	-	
Collector-base cutoff current V_{CB} = 40 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter-base cutoff current V_{EB} = 10 V, I_C = 0	I_{EBO}	-	-	75	µA
DC current gain[2)] I_C = 5 mA, V_{CE} = 5 V	h_{FE}	70	-	-	-
Collector-emitter saturation voltage[2)] I_C = 5 mA, I_B = 0.25 mA	V_{CEsat}	-	-	0.3	V
Input off voltage I_C = 100 µA, V_{CE} = 5 V	$V_{i(off)}$	0.5	-	1.8	
Input on voltage I_C = 1 mA, V_{CE} = 0.3 V	$V_{i(on)}$	1	-	3	
Input resistor	R_1	70	100	130	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	-	100	-	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	3	-	pF

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

[2]Pulse test: t < 300µs; D < 2%

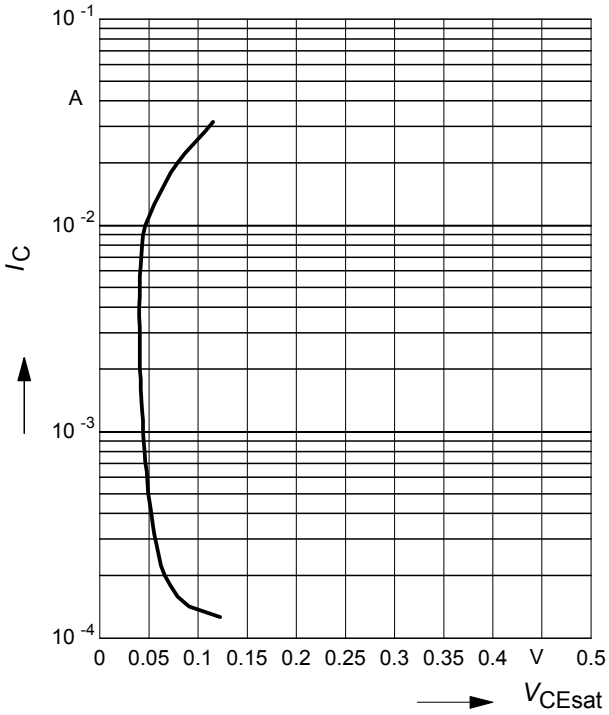
DC current gain $h_{FE} = f(I_C)$

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



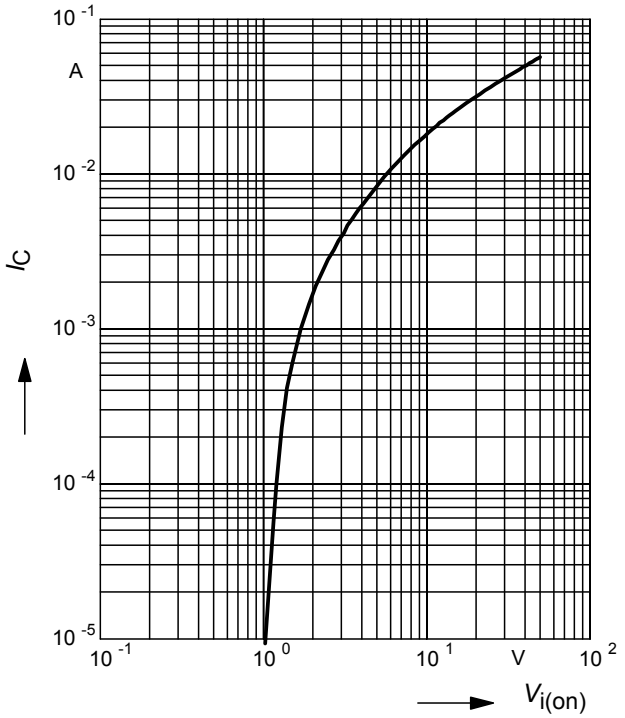
Collector-emitter saturation voltage

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



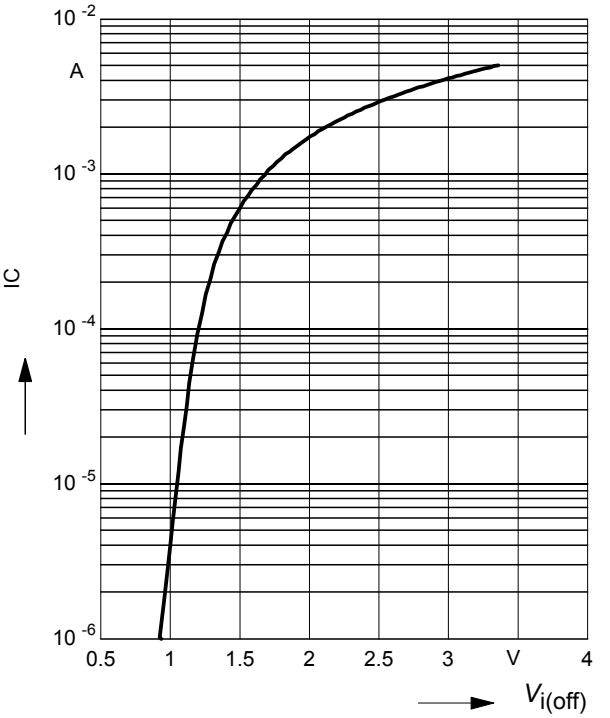
Input on Voltage $V_{i(on)} = f(I_C)$

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

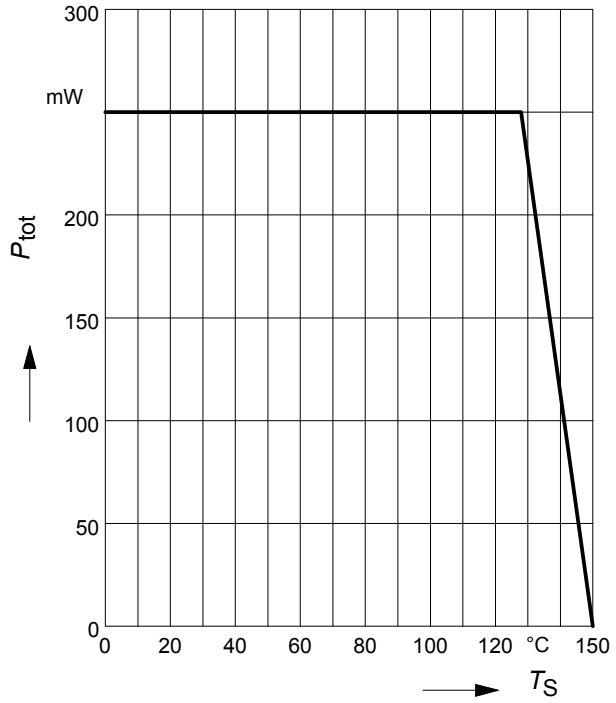


Input off voltage $V_{i(off)} = f(I_C)$

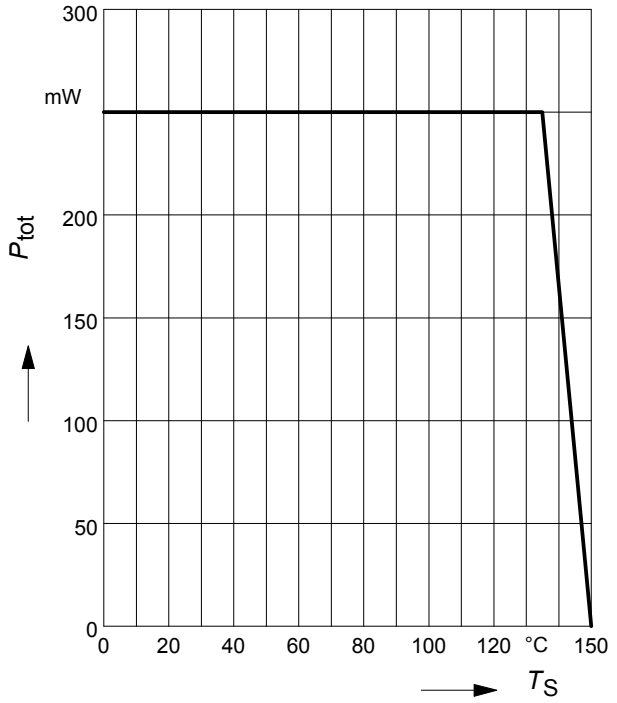
V_{CE} = 5V (common emitter configuration)



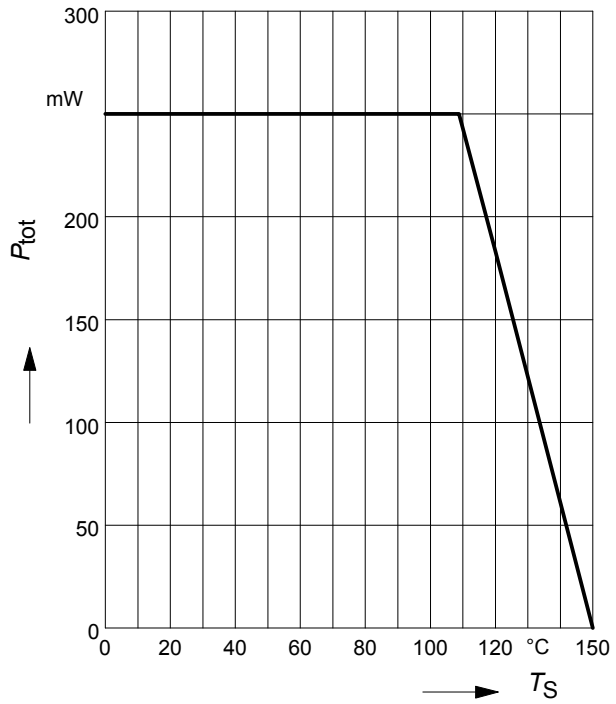
Total power dissipation $P_{tot} = f(T_S)$
BCR101F



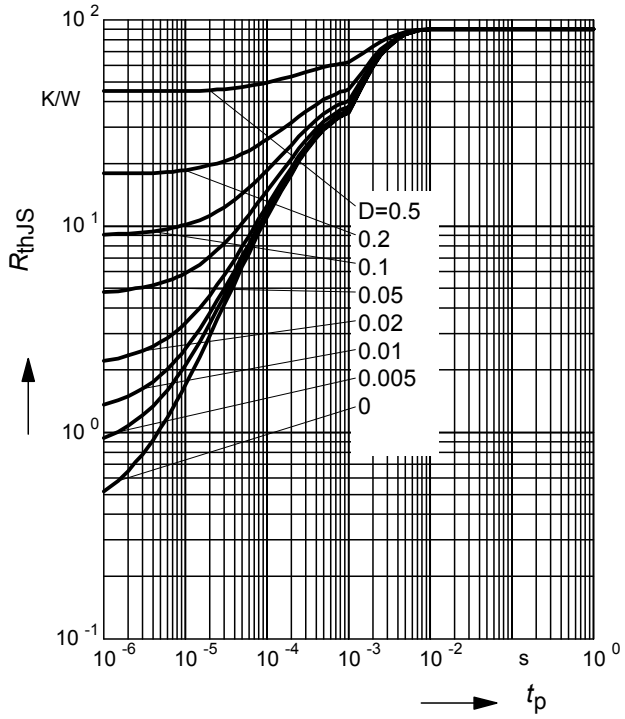
Total power dissipation $P_{tot} = f(T_S)$
BCR101L3



Total power dissipation $P_{tot} = f(T_S)$
BCR101T



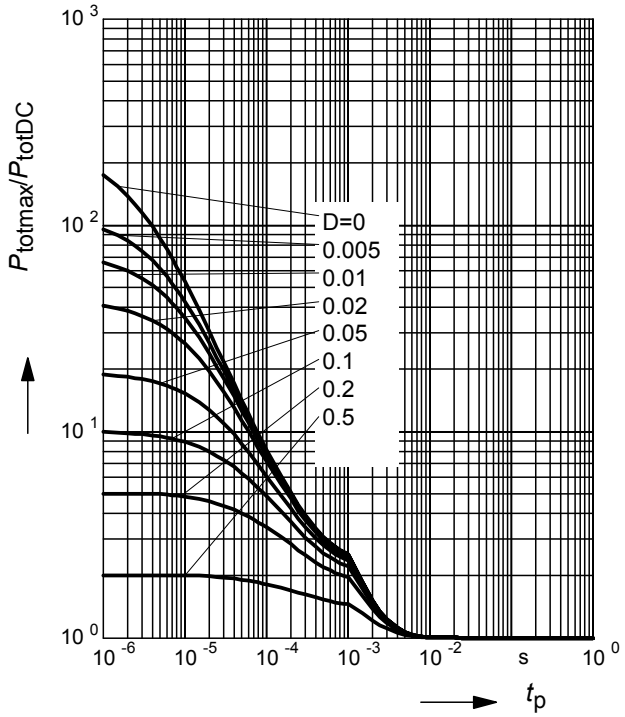
Permissible Puls Load $R_{thJS} = f(t_p)$
BCR101F



Permissible Pulse Load

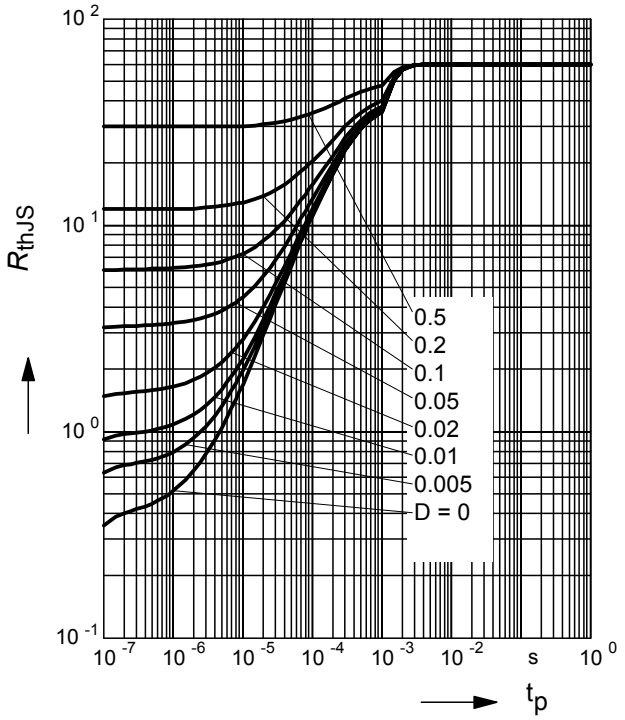
$P_{totmax}/P_{totDC} = f(t_p)$

BCR101F



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

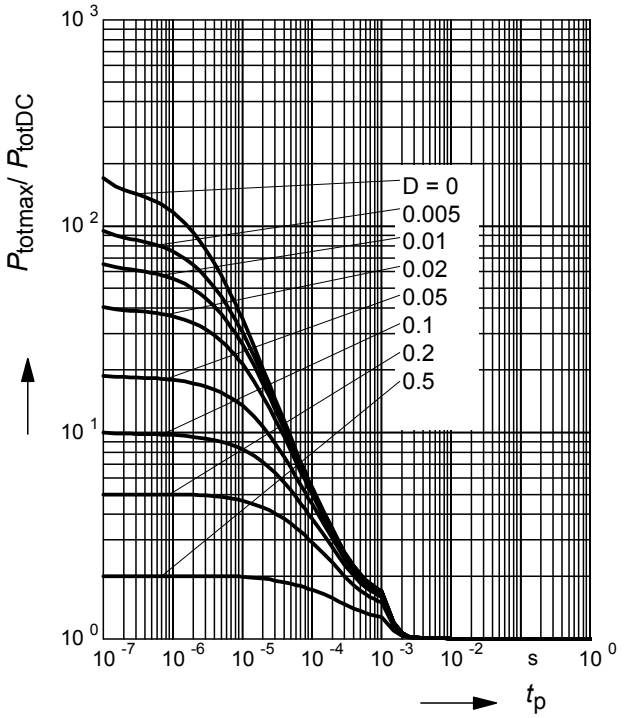
BCR101L3



Permissible Pulse Load

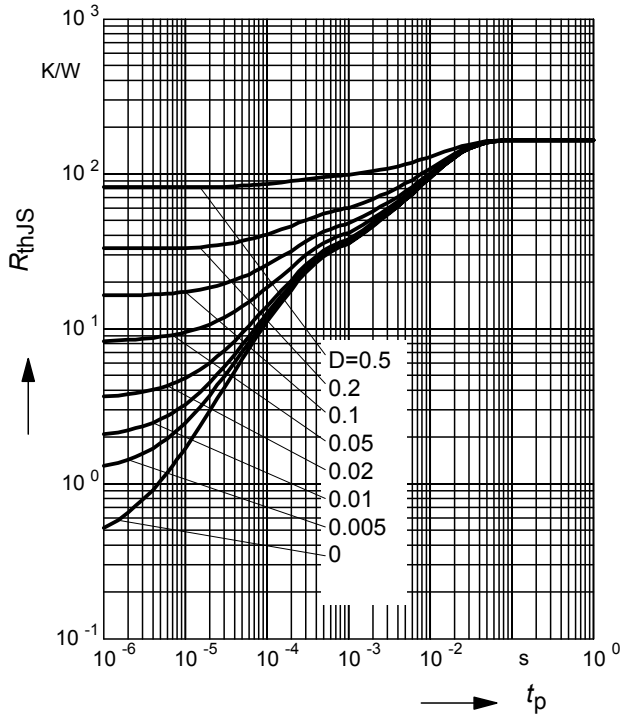
$P_{totmax}/P_{totDC} = f(t_p)$

BCR101L3



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

BCR101T



Permissible Pulse Load

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

BCR101T