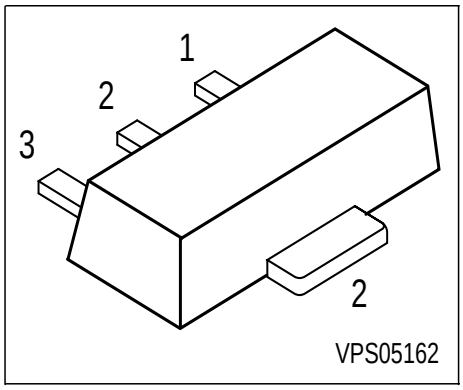
NPN Silicon AF Transistors

- For general AF applications
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Complementary type: BCX69 (PNP)



Type	Marking	Pin Configuration			Package
BCX68	CA	1 = B	2 = C	3 = E	SOT89
BCX68-10	CB	1 = B	2 = C	3 = E	SOT89
BCX68-16	CC	1 = B	2 = C	3 = E	SOT89
BCX68-25	CD	1 = B	2 = C	3 = E	SOT89

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CEO}	20	V
Collector-base voltage	V_{CBO}	25	
Emitter-base voltage	V_{EBO}	5	
DC collector current	I_C	1	A
Peak collector current	I_{CM}	2	
Base current	I_B	100	mA
Peak base current	I_{BM}	200	
Total power dissipation, T_S = 130 °C	P_{tot}	1	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Junction - soldering point[1)]	R_{thJS}	≤20	K/W

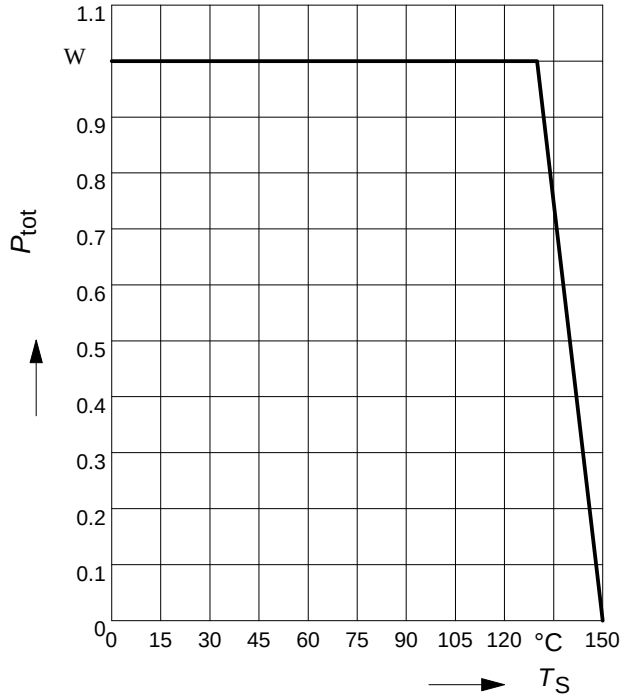
[1]For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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

Parameter		Symbol	Values			Unit
			min.	typ.	max.	
Characteristics						
Collector-emitter breakdown voltage I_C = 30 mA, I_B = 0		$V_{(BR)CEO}$	20	-	-	V
Collector-base breakdown voltage I_C = 10 µA, I_B = 0		$V_{(BR)CBO}$	25	-	-	
Emitter-base breakdown voltage I_E = 1 µA, I_C = 0		$V_{(BR)EBO}$	5	-	-	
Collector cutoff current V_{CB} = 25 V, I_E = 0		I_{CBO}	-	-	100	nA
Collector cutoff current V_{CB} = 25 V, I_E = 0 , T_A = 150 °C		I_{CBO}	-	-	100	µA
DC current gain 1) I_C = 5 mA, V_{CE} = 10 V		h_{FE}	50	-	-	-
DC current gain 1) I_C = 500 mA, V_{CE} = 1 V		h_{FE}				
	BCX68		85	-	375	
	BCX68-10		85	100	160	
	BCX68-16		100	160	250	
	BCX68-25		160	250	375	
DC current gain 1) I_C = 1 A, V_{CE} = 1 V		h_{FE}	60	-	-	
Collector-emitter saturation voltage1) I_C = 1 A, I_B = 100 mA		V_{CEsat}	-	-	0.5	V
Base-emitter voltage 1) I_C = 5 mA, V_{CE} = 10 V I_C = 1 A, V_{CE} = 1 V		$V_{BE(ON)}$	 - -	 0.6 -	 - 1	
AC Characteristics						
Transition frequency I_C = 100 mA, V_{CE} = 5 V, f = 20 MHz		f_T	-	100	-	MHz

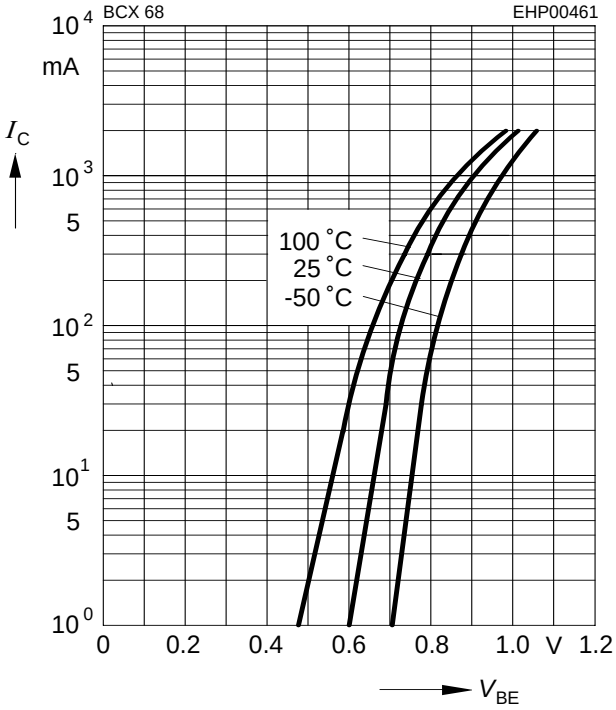
1) Pulse test: t ≤ 300µs, D = 2%

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



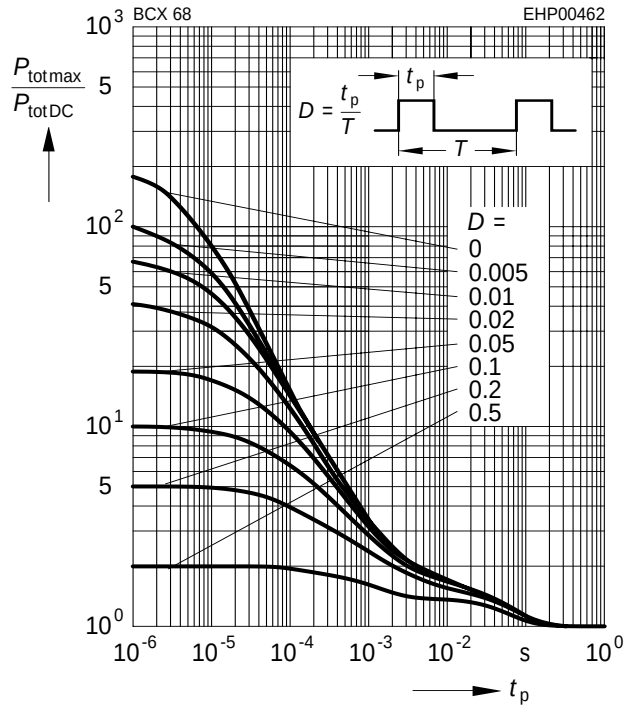
Collector current $I_C = f(V_{BE})$

V_{CE} = 1V



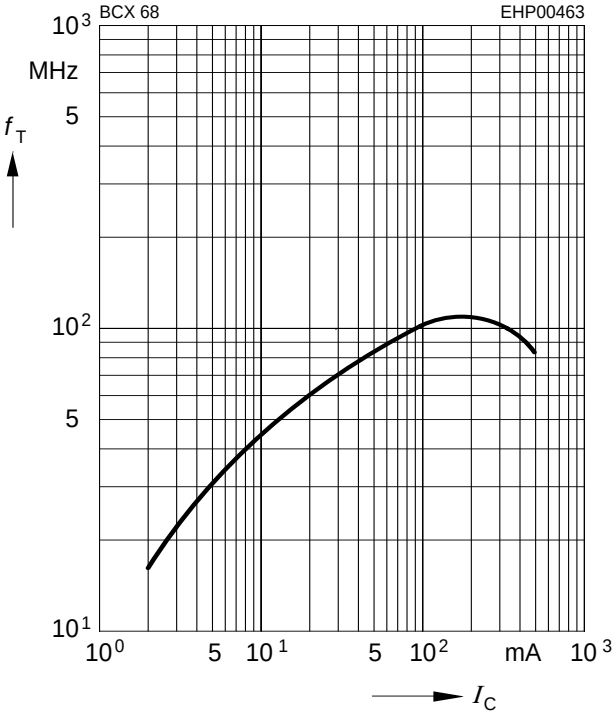
Permissible pulse load

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



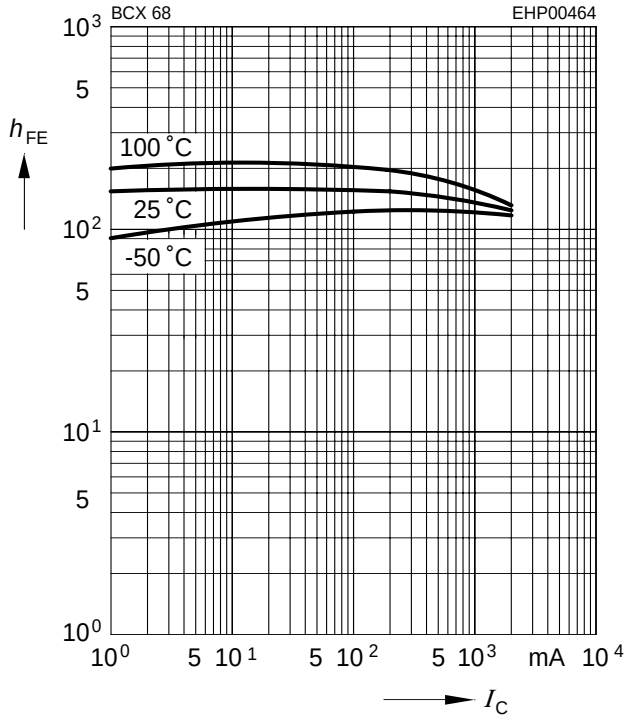
Transition frequency $f_T = f(I_C)$

V_{CE} = 5V



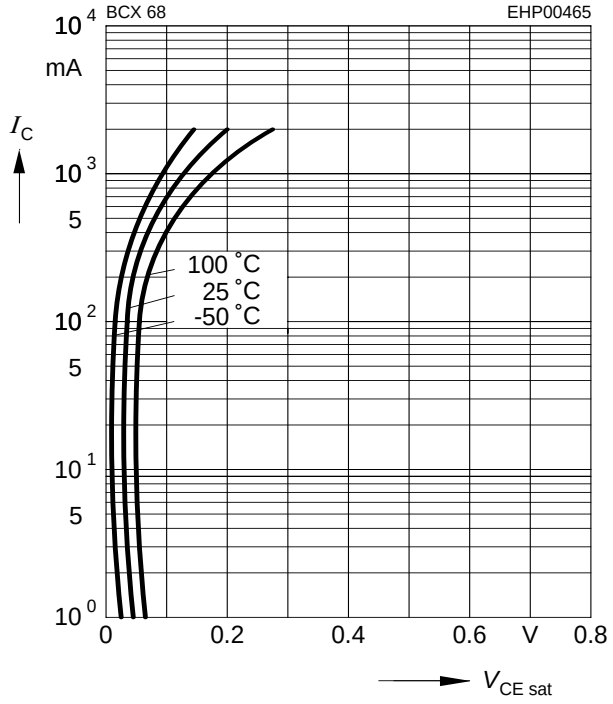
DC current gain $h_{FE} = f(I_C)$

V_{CE} = 1V



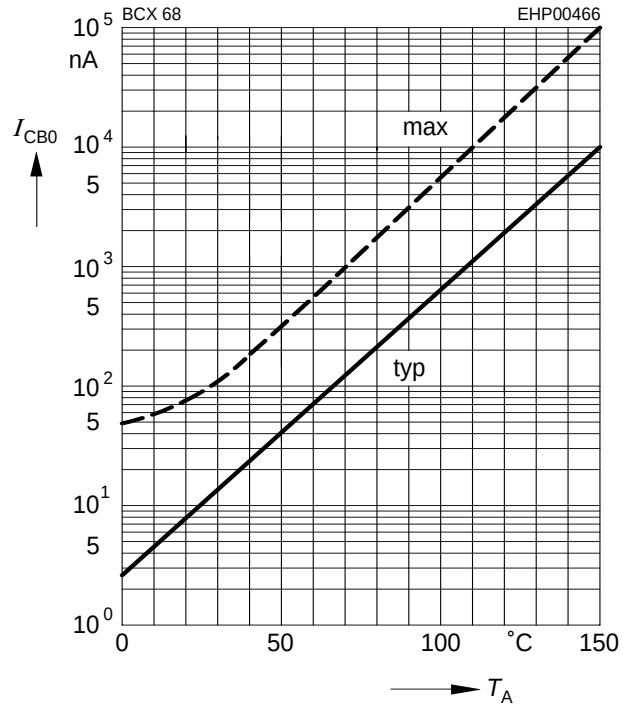
Collector-emitter saturation voltage

$I_C = f(V_{CEsat})$, h_{FE} = 10



Collector cutoff current $I_{CBO} = f(T_A)$

V_{CB} = 25V



Base-emitter saturation voltage

$I_C = f(V_{BEsat})$, h_{FE} = 10