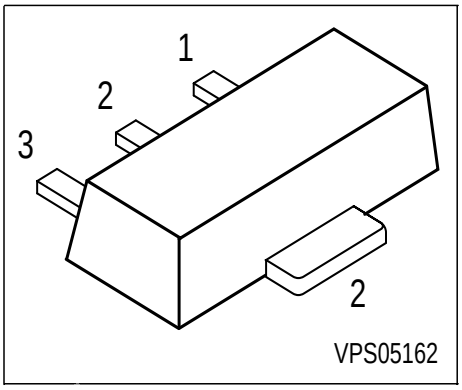
NPN Silicon AF Transistors

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCX51...BCX53 (PNP)



Type	Marking	Pin Configuration			Package
BCX54	BA	1 = B	2 = C	3 = E	SOT89
BCX54-10	BC	1 = B	2 = C	3 = E	SOT89
BCX54-16	BD	1 = B	2 = C	3 = E	SOT89
BCX55	BE	1 = B	2 = C	3 = E	SOT89
BCX55-10	BG	1 = B	2 = C	3 = E	SOT89
BCX55-16	BM	1 = B	2 = C	3 = E	SOT89
BCX56	BH	1 = B	2 = C	3 = E	SOT89
BCX56-10	BK	1 = B	2 = C	3 = E	SOT89
BCX56-16	BL	1 = B	2 = C	3 = E	SOT89

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Maximum Ratings

Parameter	Symbol	BCX54	BCX55	BCX56	Unit
Collector-emitter voltage	V_{CEO}	45	60	80	V
Collector-base voltage	V_{CBO}	45	60	100	
Emitter-base voltage	V_{EBO}	5	5	5	
DC collector current	I_C	1			A
Peak collector current	I_{CM}	1.5			
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

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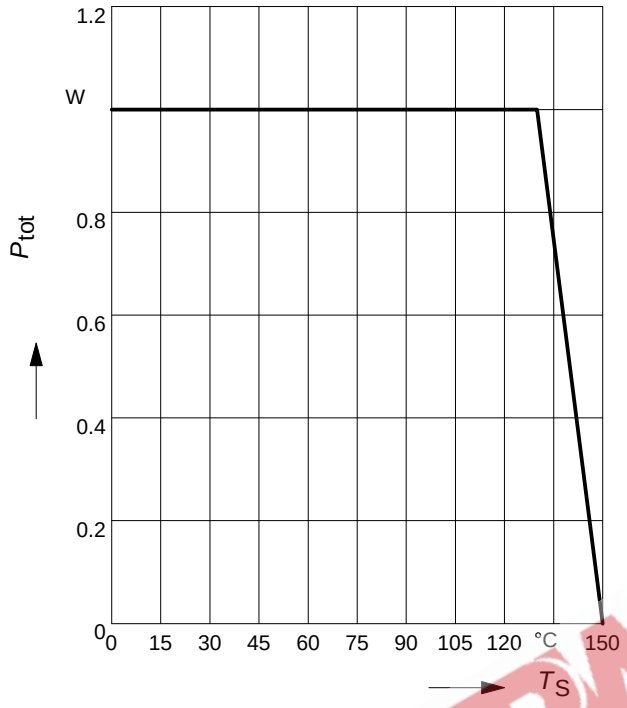
Electrical Characteristics at T_A = 25°C, unless otherwise specified.

Parameter		Symbol	Values			Unit
			min.	typ.	max.	
DC Characteristics						
Collector-emitter breakdown voltage		$V_{(BR)CEO}$				V
I_C = 10 mA, I_B = 0	BCX54		45	-	-	
	BCX55		60	-	-	
	BCX56		80	-	-	
Collector-base breakdown voltage		$V_{(BR)CBO}$				
I_C = 100 µA, I_B = 0	BCX54		45	-	-	
	BCX55		60	-	-	
	BCX56		100	-	-	
Emitter-base breakdown voltage		$V_{(BR)EBO}$	5	-	-	
I_E = 10 µA, I_C = 0						
Collector cutoff current		I_{CBO}	-	-	100	nA
V_{CB} = 30 V, I_E = 0						
Collector cutoff current		I_{CBO}	-	-	20	µA
V_{CB} = 30 V, I_E = 0 , T_A = 150 °C						
DC current gain 1)		h_{FE}	25	-	-	-
I_C = 5 mA, V_{CE} = 2 V						
DC current gain 1)		h_{FE}				
I_C = 150 mA, V_{CE} = 2 V	BCX54...56		40	-	250	
	hFE-grp.10		63	100	160	
	hFE-grp.16		100	160	250	
DC current gain 1)		h_{FE}	25	-	-	
I_C = 500 mA, V_{CE} = 2 V						
Collector-emitter saturation voltage1)		V_{CEsat}	-	-	0.5	V
I_C = 500 mA, I_B = 50 mA						
Base-emitter voltage 1)		$V_{BE(ON)}$	-	-	1	
I_C = 500 mA, V_{CE} = 2 V						
AC Characteristics						
Transition frequency		f_T	-	100	-	MHz
I_C = 50 mA, V_{CE} = 10 V, f = 20 MHz						

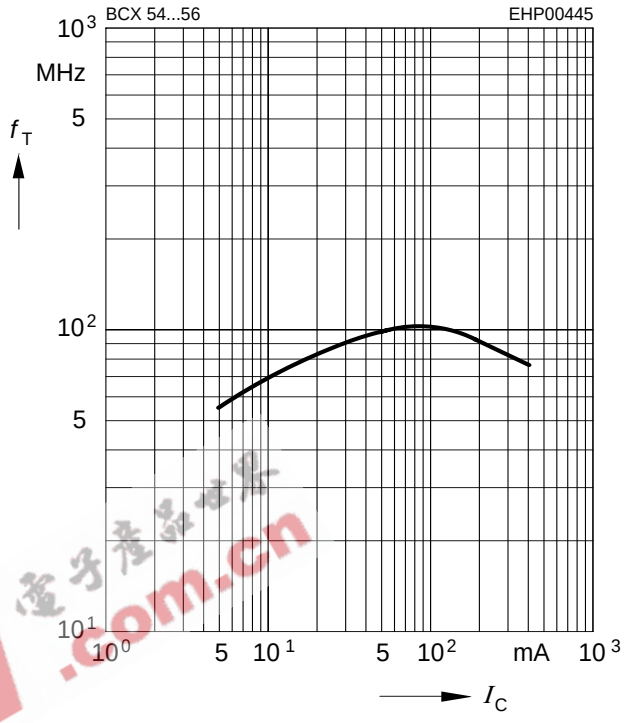
1) Pulse test: t ≤ 300µs, D = 2%

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



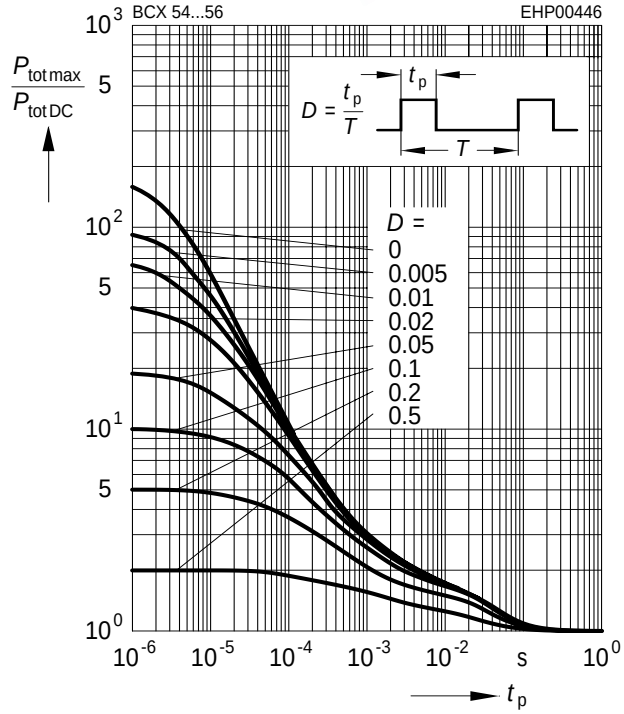
Transition frequency $f_T = f(I_C)$

V_{CE} = 10V



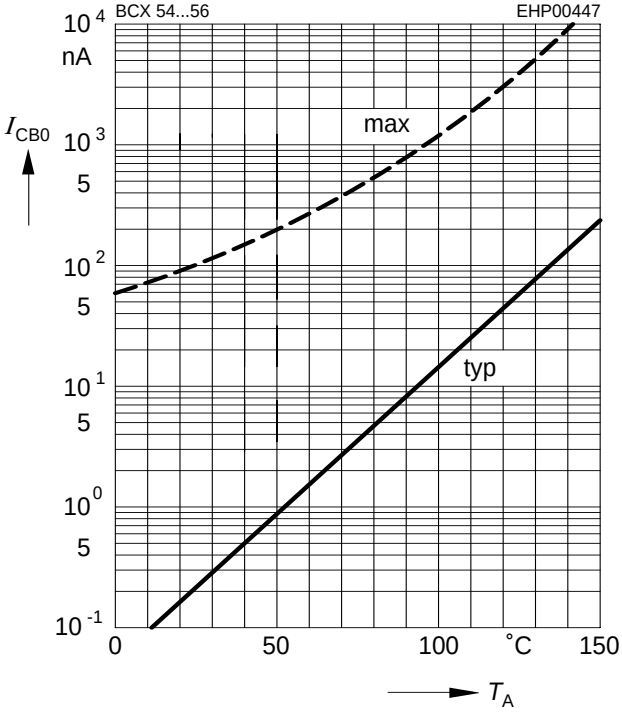
Permissible pulse load

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



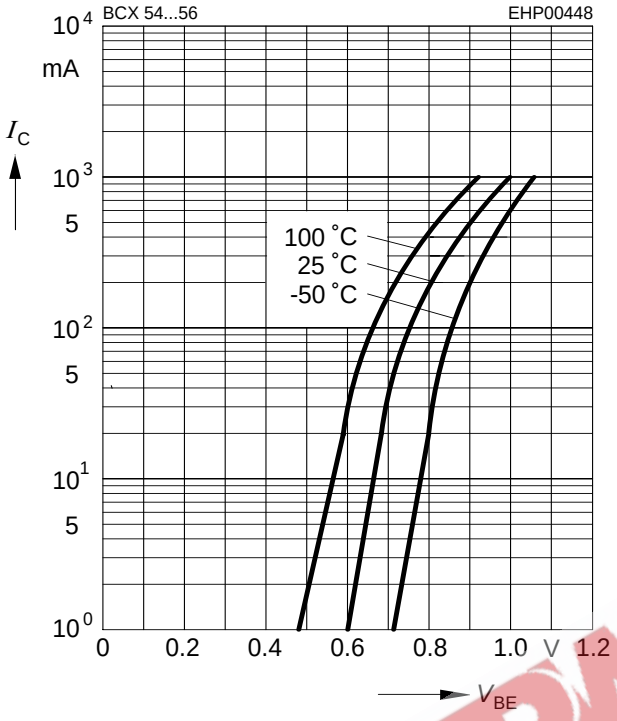
Collector cutoff current $I_{CBO} = f(T_A)$

V_{CB} = 30V



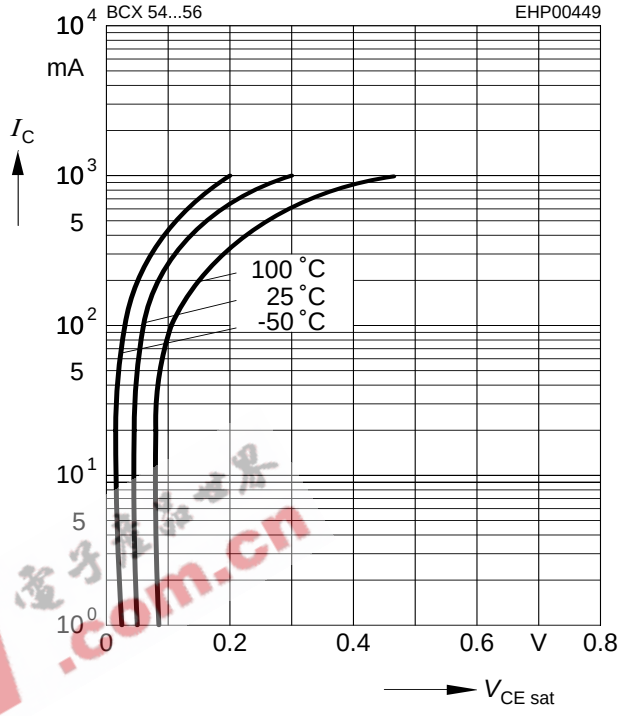
Collector current $I_C = f(V_{BE})$

V_{CE} = 2V



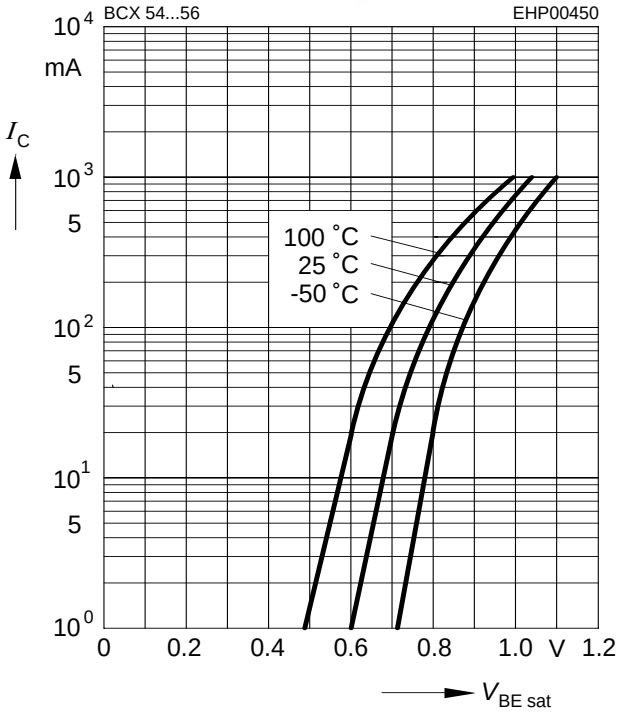
Collector-emitter saturation voltage

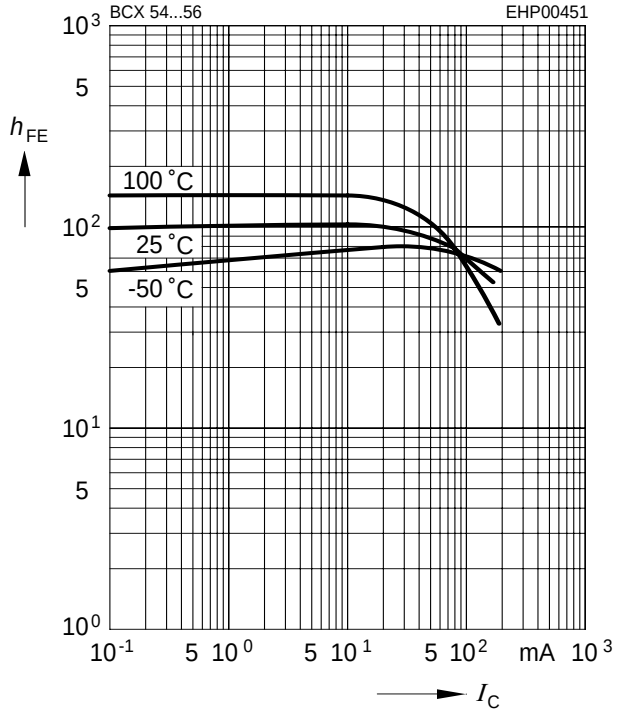
$I_C = f(V_{CEsat})$, h_{FE} = 10



Base-emitter saturation voltage

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



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

V_{CE} = 2V