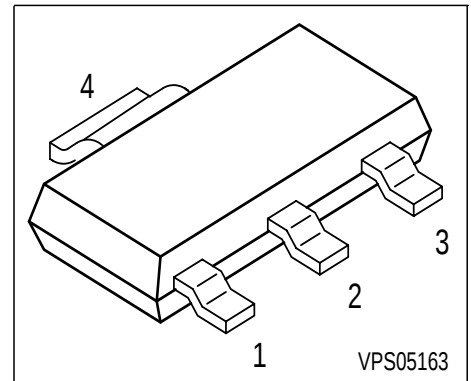


NPN Silicon AF Transistors

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCP51 ... BCP53 (PNP)



Type	Marking	Pin Configuration				Package
BCP54	BCP 54	1 = B	2 = C	3 = E	4 = C	SOT223
BCP54-10	BCP 54-10	1 = B	2 = C	3 = E	4 = C	SOT223
BCP54-16	BCP 54-16	1 = B	2 = C	3 = E	4 = C	SOT223
BCP55	BCP 55	1 = B	2 = C	3 = E	4 = C	SOT223
BCP55-10	BCP 55-10	1 = B	2 = C	3 = E	4 = C	SOT223
BCP55-16	BCP 55-16	1 = B	2 = C	3 = E	4 = C	SOT223
BCP56	BCP 56	1 = B	2 = C	3 = E	4 = C	SOT223
BCP56-10	BCP 56-10	1 = B	2 = C	3 = E	4 = C	SOT223
BCP56-16	BCP 56-16	1 = B	2 = C	3 = E	4 = C	SOT223

Maximum Ratings

Parameter	Symbol	BCP54	BCP55	BCP56	Unit
Collector-emitter voltage	V_{CEO}	45	60	80	V
Collector-emitter voltage $R_{BE} \leq 1k\Omega$	V_{CER}	45	60	100	
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, $T_S = 124\text{ }^{\circ}\text{C}$	P_{tot}	1.5			W
Junction temperature	T_j	150			$^{\circ}\text{C}$
Storage temperature	T_{sta}	-65 ... 150			

Thermal Resistance

Junction - soldering point ¹⁾	R_{thJS}	≤ 17	K/W
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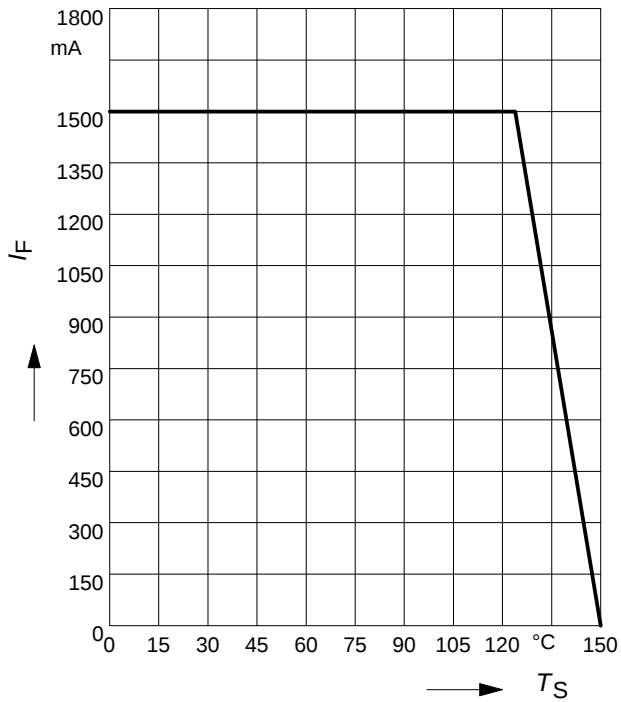
¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$, $I_B = 0$	$V_{(BR)CEO}$				V
BCP54		45	-	-	
BCP55		60	-	-	
BCP56		80	-	-	
Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$	$V_{(BR)CBO}$				
BCP54		45	-	-	
BCP55		60	-	-	
BCP56		100	-	-	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$, $I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector cutoff current $V_{CB} = 30\text{ V}$, $I_E = 0$	I_{CBO}	-	-	100	nA
Collector cutoff current $V_{CB} = 30\text{ V}$, $I_E = 0$, $T_A = 150\text{ }^\circ\text{C}$	I_{CBO}	-	-	20	μA
DC current gain 1) $I_C = 5\text{ mA}$, $V_{CE} = 2\text{ V}$	h_{FE}	25	-	-	-
DC current gain 1) $I_C = 150\text{ mA}$, $V_{CE} = 2\text{ V}$	h_{FE}				
BCP54...56		40	-	250	
hFE-grp.10		63	100	160	
hFE-grp.16		100	160	250	
DC current gain 1) $I_C = 500\text{ mA}$, $V_{CE} = 2\text{ V}$	h_{FE}	25	-	-	
Collector-emitter saturation voltage1) $I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$	V_{CEsat}	-	-	0.5	V
Base-emitter voltage 1) $I_C = 500\text{ mA}$, $V_{CE} = 2\text{ V}$	$V_{BE(ON)}$	-	-	1	
AC Characteristics					
Transition frequency $I_C = 50\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 100\text{ MHz}$	f_T	-	100	-	MHz

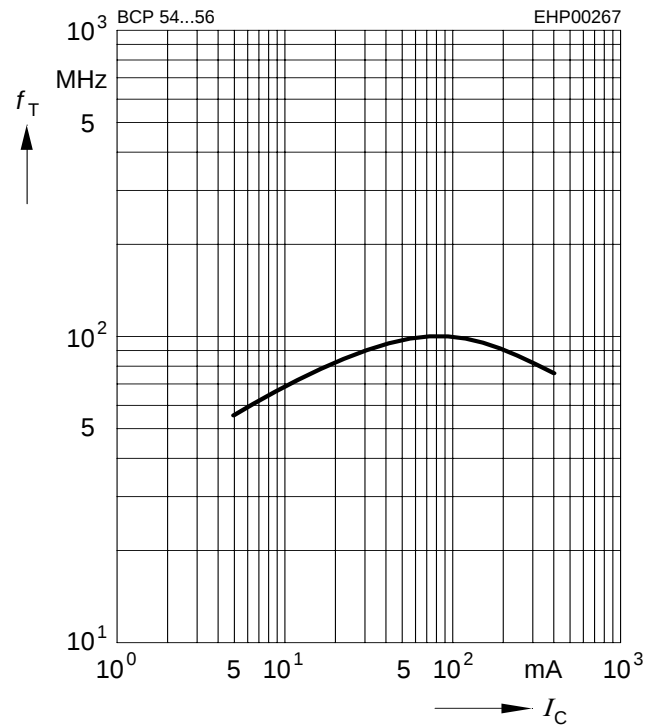
1) Pulse test: $t \leq 300\mu\text{s}$, $D = 2\%$

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



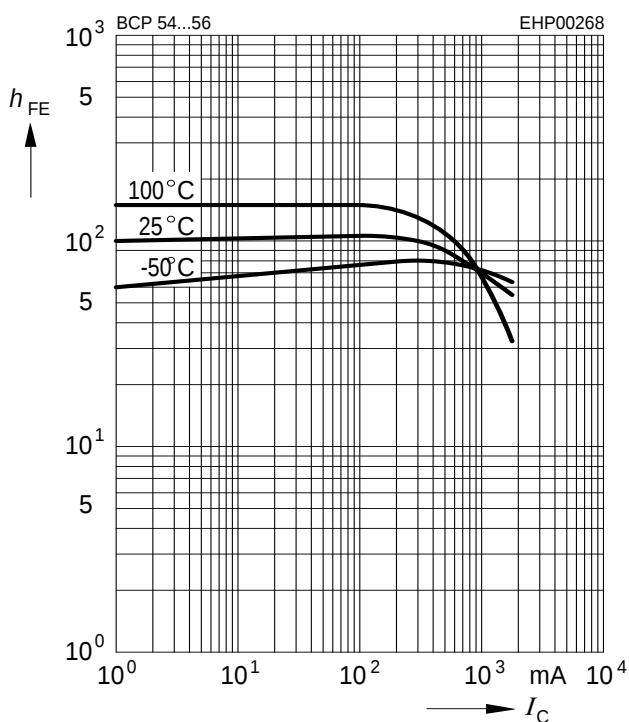
Transition frequency $f_T = f(I_C)$

$V_{CE} = 10V$



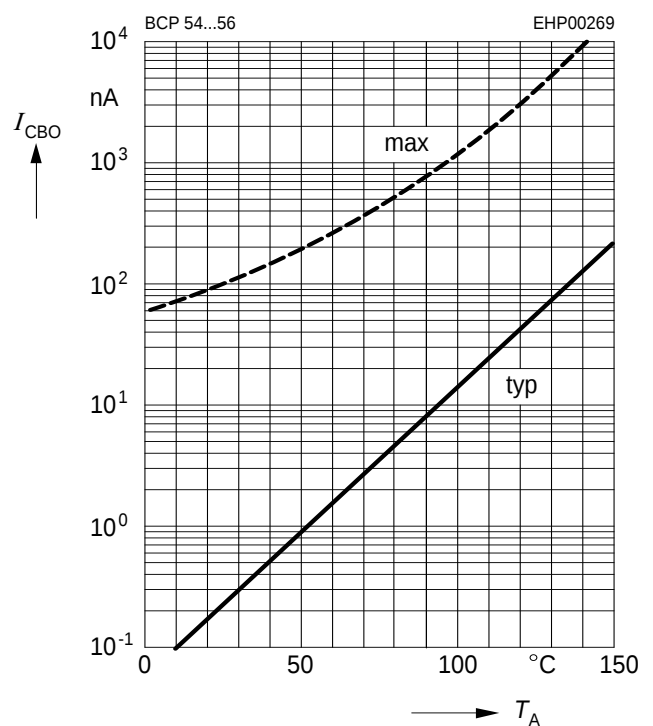
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 2V$



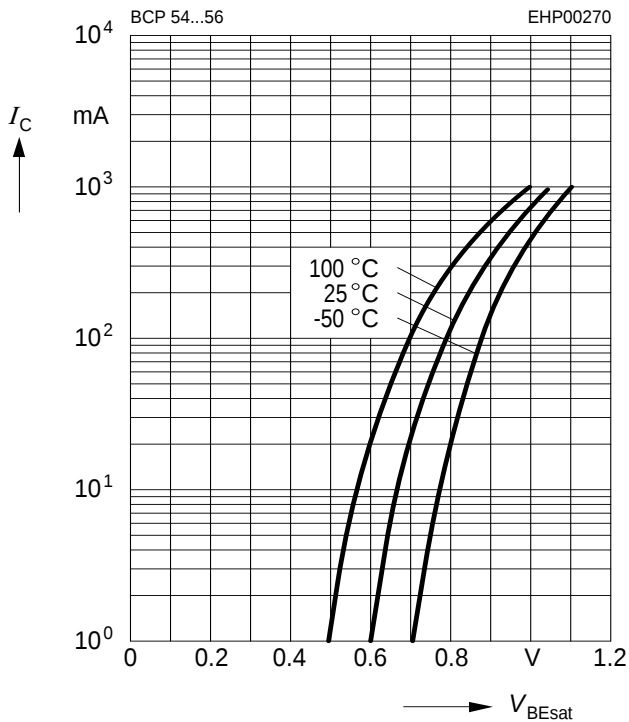
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 30V$



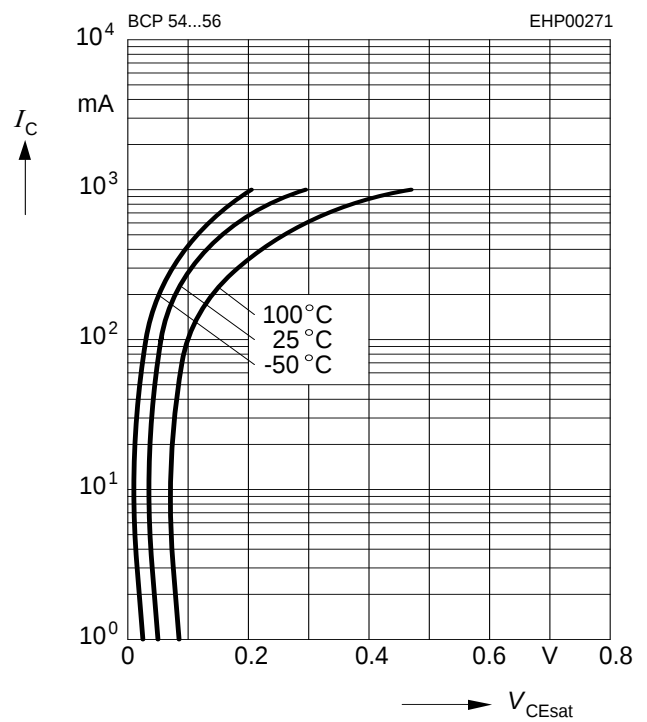
Base-emitter saturation voltage

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



Collector-emitter saturation voltage

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



Permissible pulse load

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

