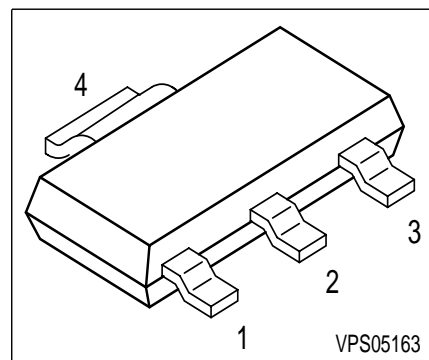


PNP Silicon AF Transistors

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCP54...BCP56 (NPN)



Type	Marking	Pin Configuration				Package
BCP51	BCP 51	1 = B	2 = C	3 = E	4 = C	SOT223
BCP51-10	BCP 51-10	1 = B	2 = C	3 = E	4 = C	SOT223
BCP51-16	BCP 51-16	1 = B	2 = C	3 = E	4 = C	SOT223
BCP52	BCP 52	1 = B	2 = C	3 = E	4 = C	SOT223
BCP52-10	BCP 52-10	1 = B	2 = C	3 = E	4 = C	SOT223
BCP52-16	BCP 52-16	1 = B	2 = C	3 = E	4 = C	SOT223
BCP53	BCP 53	1 = B	2 = C	3 = E	4 = C	SOT223
BCP53-10	BCP 53-10	1 = B	2 = C	3 = E	4 = C	SOT223
BCP53-16	BCP 53-16	1 = B	2 = C	3 = E	4 = C	SOT223

Maximum Ratings

Parameter	Symbol	BCP51	BCP52	BCP53	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_{stg}	-65 ... 150			

Thermal Resistance

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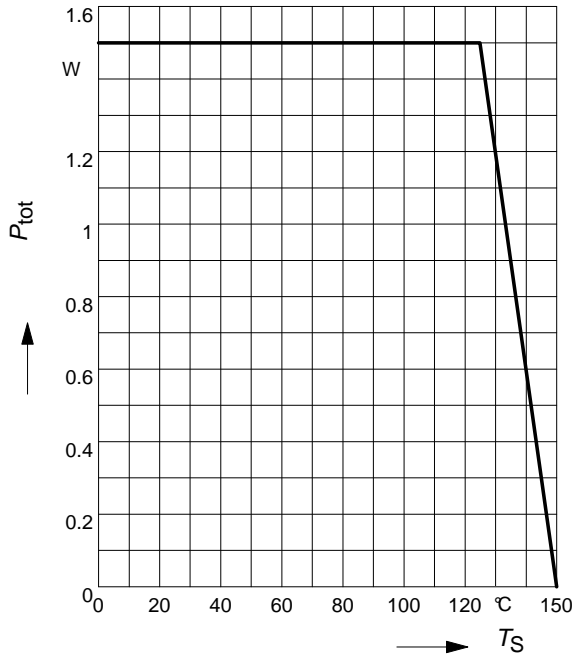
¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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
BCP51		45	-	-	
BCP52		60	-	-	
BCP53	80	-	-		
Collector-base breakdown voltage $I_C = 100\ \mu\text{A}, I_E = 0$	$V_{(BR)CBO}$				
BCP51		45	-	-	
BCP52		60	-	-	
BCP53	100	-	-		
Emitter-base breakdown voltage $I_E = 10\ \mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector cutoff current $V_{CB} = 30\text{ V}, I_E = 0$	I_{CBO}	-	-	100	nA
Collector cutoff current $V_{CB} = 30\text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	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}				
BCP51...53		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	-	125	-	MHz

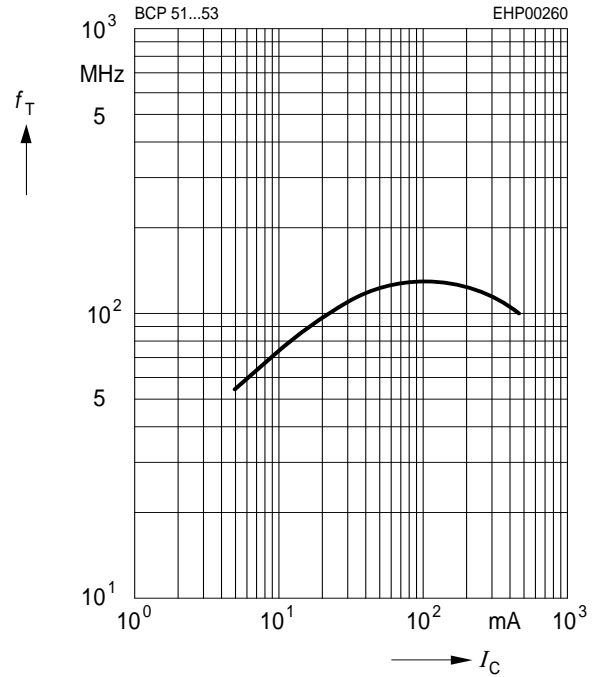
 1) Pulse test: $t \leq 300\ \mu\text{s}$, $D = 2\%$

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



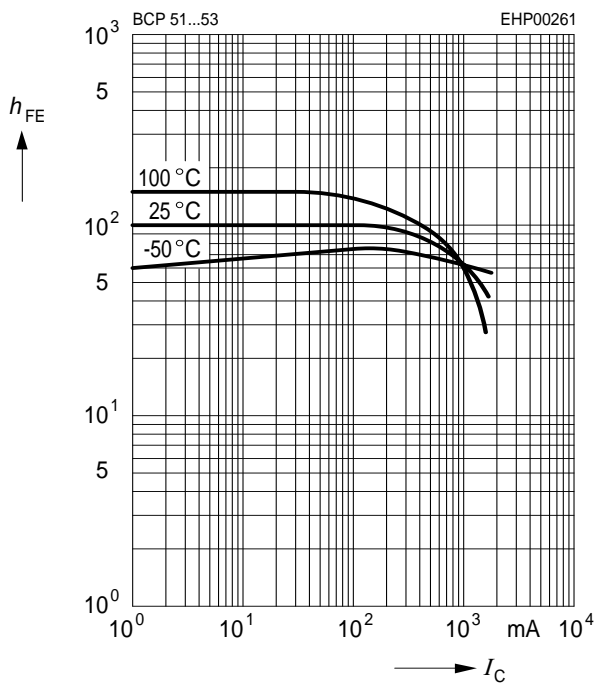
Transition frequency $f_T = f(I_C)$

$V_{CE} = 10V$



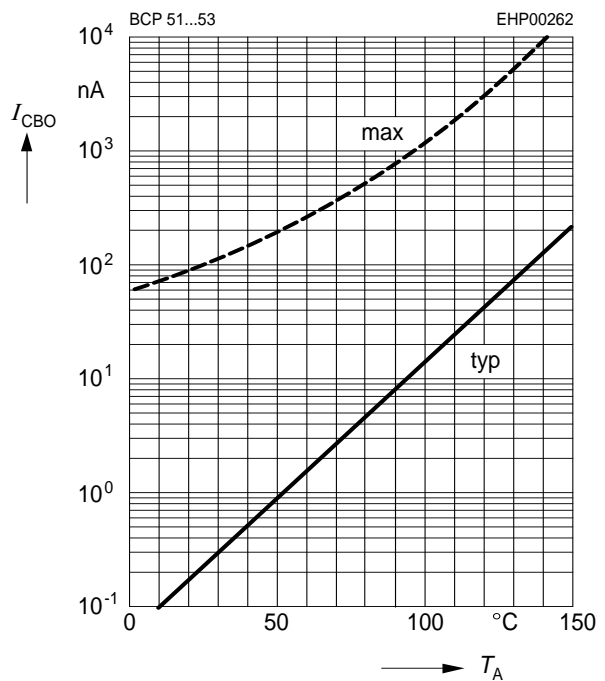
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 2V$



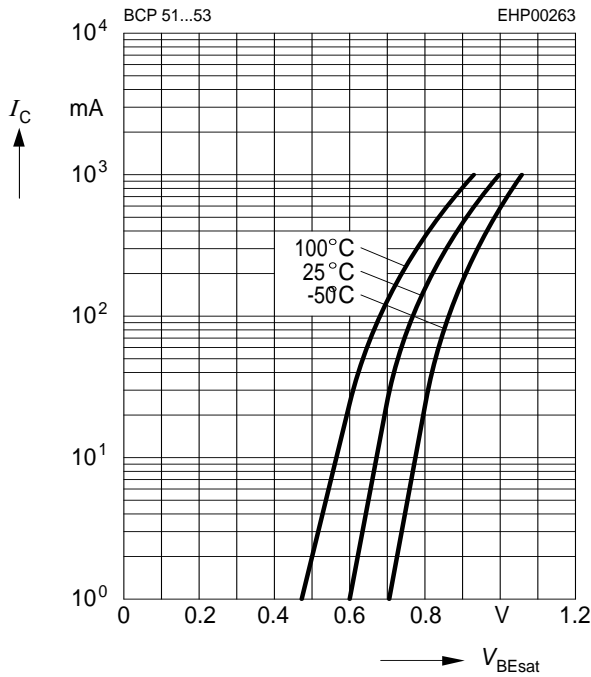
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 30V$



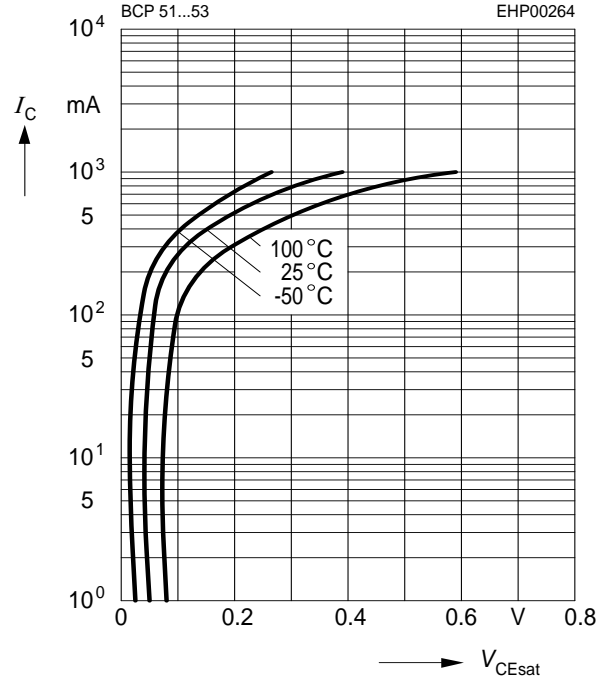
Base-emitter saturation voltage

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



Collector-emitter saturation voltage

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



Permissible pulse load

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

