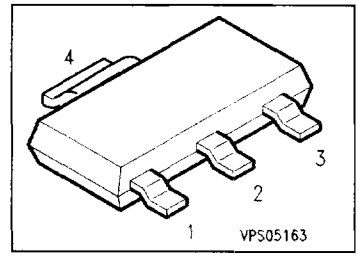
SIEMENS

NPN Silicon AF Transistors

BCP 54
... BCP 56

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCP 51 ... BCP 53 (PNP)



Type	Marking	Ordering Code (tape and reel)	Pin Configuration 1	2	3	4	Package[1]
BCP 54	BCP 54	Q62702-C2117	B	C	E	C	SOT-223
BCP 54-10	BCP 54-10	Q62702-C2119					
BCP 54-16	BCP 54-16	Q62702-C2120					
BCP 55	BCP 55	Q62702-C2148					
BCP 55-10	BCP 55-10	Q62702-C2122					
BCP 55-16	BCP 55-16	Q62702-C2123					
BCP 56	BCP 56	Q62702-C2149					
BCP 56-10	BCP 56-10	Q62702-C2125					
BCP 56-16	BCP 56-16	Q62702-C2106					

[1] For detailed information see chapter Package Outlines.

Maximum Ratings

Parameter	Symbol	Values			Unit
		BCP 54	BCP 55	BCP 56	
Collector-emitter voltage	V_{CEO}	45	60	80	V
$R_{BE} \leq 1$ kΩ	V_{CER}	45	60	100	
Collector-base voltage	V_{CBO}	45	60	100	
Emitter-base voltage	V_{EBO}	5			
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, $T_S = 124$ °C[1]	P_{tot}	1.5			W
Junction temperature	T_j	150			°C
Storage temperature range	T_{stg}	− 65 ... + 150			

Thermal Resistance

Junction - ambient[1]	$R_{th\,JA}$	≤ 72	K/W
Junction - soldering point	$R_{th\,JS}$	≤ 17	

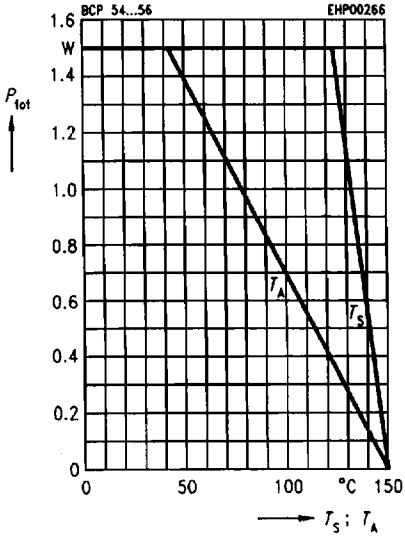
[1] Package mounted on epoxy pcb 40 mm × 40 mm × 1.5 mm/6 cm² Cu.

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

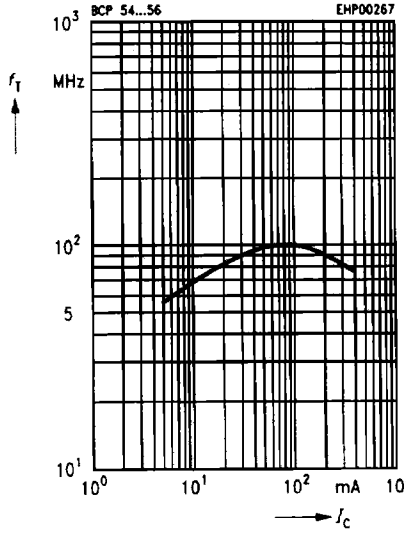
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC characteristics					
Collector-emitter breakdown voltage	$V_{(BR)CE0}$				V
I_C = 10 mA, I_B = 0 BCP 54		45	–	–	
BCP 55		60	–	–	
BCP 56		80	–	–	
Collector-base breakdown voltage[1]	$V_{(BR)CB0}$				
I_C = 100 µA, I_B = 0 BCP 54		45	–	–	
BCP 55		60	–	–	
BCP 56		100	–	–	
Emitter-base breakdown voltage I_E = 10 µA, I_C = 0	$V_{(BR)EB0}$	5	–	–	
Collector-base cutoff current	I_{CB0}				
V_{CB} = 30 V, I_E = 0		–	–	100	nA
V_{CB} = 30 V, I_E = 0, T_A = 150 °C		–	–	20	µA
Emitter-base cutoff current V_{EB} = 5 V	I_{EB0}	–	–	10	µA
DC current gain	h_{FE}				–
I_C = 5 mA, V_{CE} = 2 V		25	–	–	
I_C = 150 mA, V_{CE} = 2 V					
BCP 54/BCP 55/BCP 56		40	–	250	
BCP 54/BCP 55/BCP 56-10		63	100	160	
BCP 54/BCP 55/BCP 56-16		100	160	250	
I_C = 500 mA, V_{CE} = 2 V		25	–	–	
Collector-emitter saturation voltage[1] I_C = 500 mA, I_B = 50 mA	V_{CEsat}	–	–	0.5	V
Base-emitter voltage[1] I_C = 500 mA, V_{CE} = 2 V	V_{BE}	–	–	1	
AC characteristics					
Transition frequency I_C = 50 mA, V_{CE} = 10 V, f = 100 MHz	f_t	–	100	–	MHz

[1] Pulse test conditions: $t \leq 300$ µs, D = 2 %.

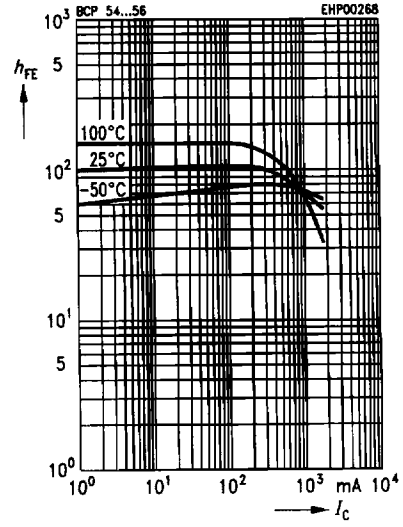
Total power dissipation $P_{tot} = f(T_A^*; T_S)$
* Package mounted on epoxy



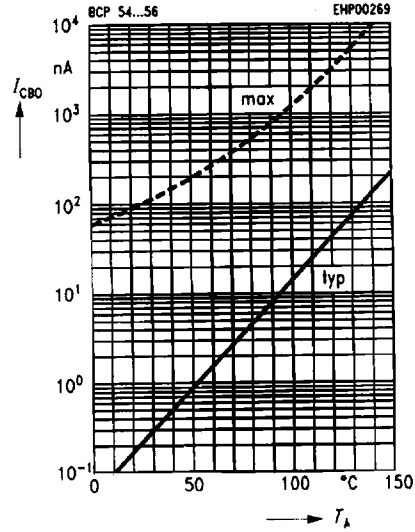
Transition frequency $f_T = f(I_C)$
V_{CE} = 10 V



DC current gain $h_{FE} = f(I_C)$
V_{CE} = 2 V



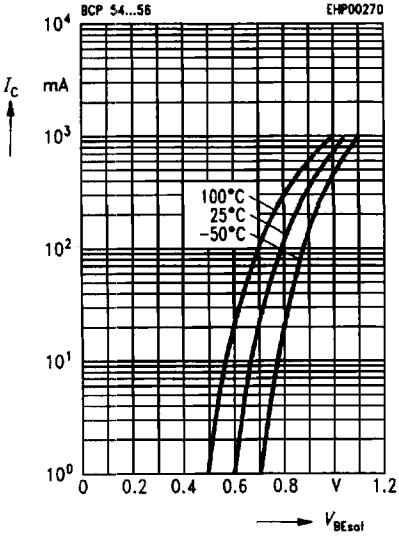
Collector cutoff current $I_{CBO} = f(T_A)$
V_{CB} = 30 V



Base-emitter saturation voltage

$I_C = f(V_{BEsat})$

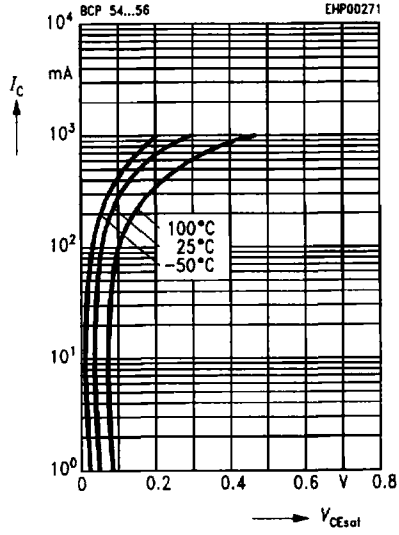
$h_{FE} = 10$



Collector-emitter saturation voltage

$I_C = f(V_{CEsat})$,

$h_{FE} = 10$



Permissible pulse load $P_{tot\,max}/P_{tot\,DC} = f(t_p)$