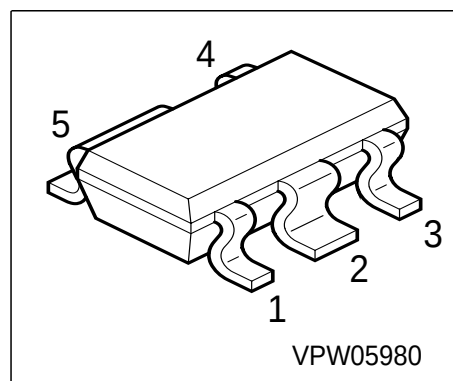


NPN Silicon AF Transistors

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCP51M...BCP53M(PNP)



Type	Marking	Pin Configuration					Package
BCP54M	BAs	1 = B	2 = C	3 = E	4 n.c.	5 = C	SCT595
BCP55M	BEs	1 = B	2 = C	3 = E	4 n.c.	5 = C	SCT595
BCP56M	BHs	1 = B	2 = C	3 = E	4 n.c.	5 = C	SCT595

Maximum Ratings

Parameter	Symbol	BCP54M	BCP55M	BCP56M	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, $T_S \leq 77\text{ }^{\circ}\text{C}$	P_{tot}	1.7			W
Junction temperature	T_j	150			$^{\circ}\text{C}$
Storage temperature	T_{sta}	-65 ... 150			

Thermal Resistance

Junction - soldering point ¹⁾	R_{thJS}	≤ 43	K/W
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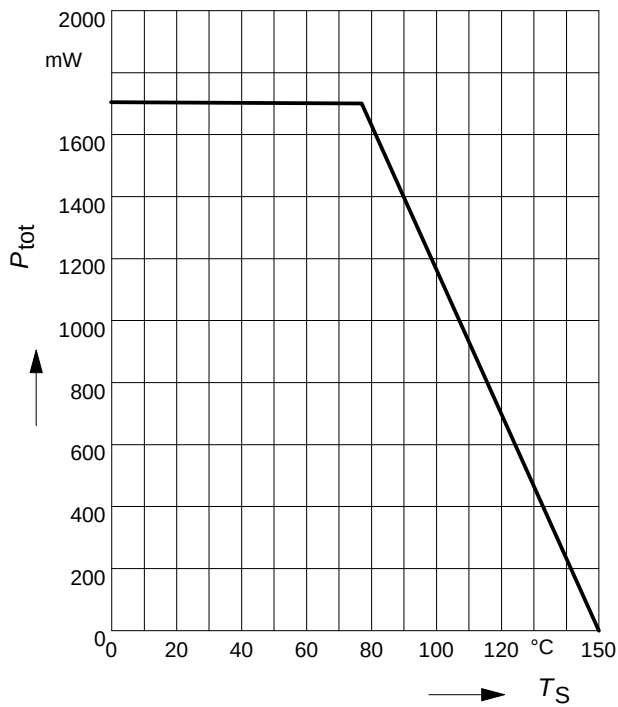
¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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 $I_C = 10\text{ mA}$, $I_B = 0$ BCP54M BCP55M BCP56M	$V_{(BR)CEO}$	45 60 80	- - -	- - -	V
Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$ BCP54M BCP55M BCP56M	$V_{(BR)CBO}$	45 60 100	- - -	- - -	
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	
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}	40	-	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

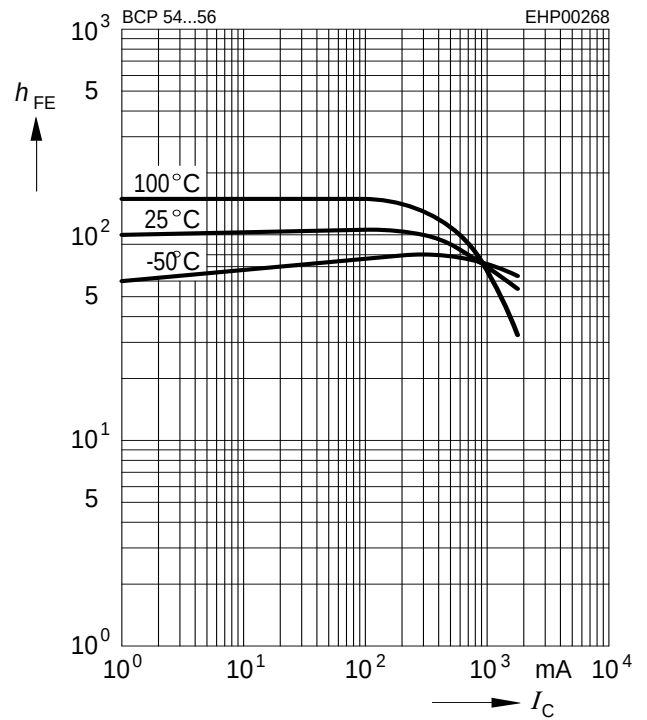
1) Pulse test: $t \leq 300\mu\text{s}$, $D = 2\%$

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

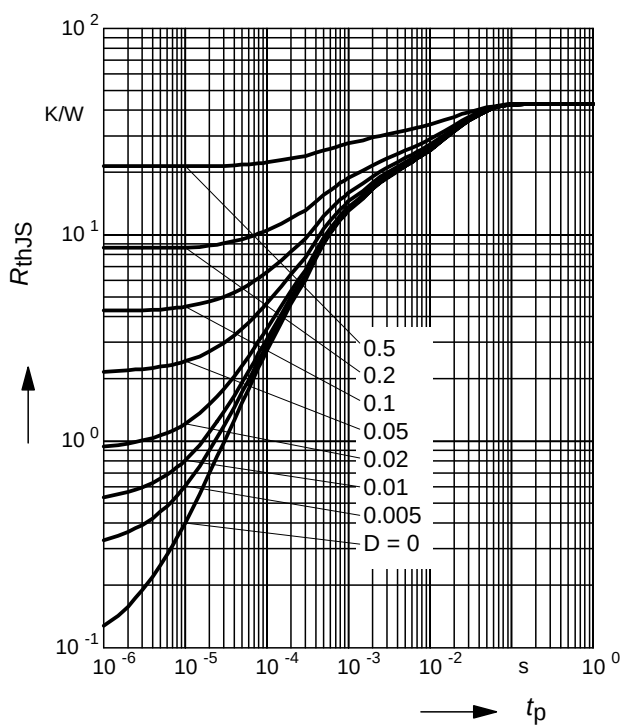


DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 2V$

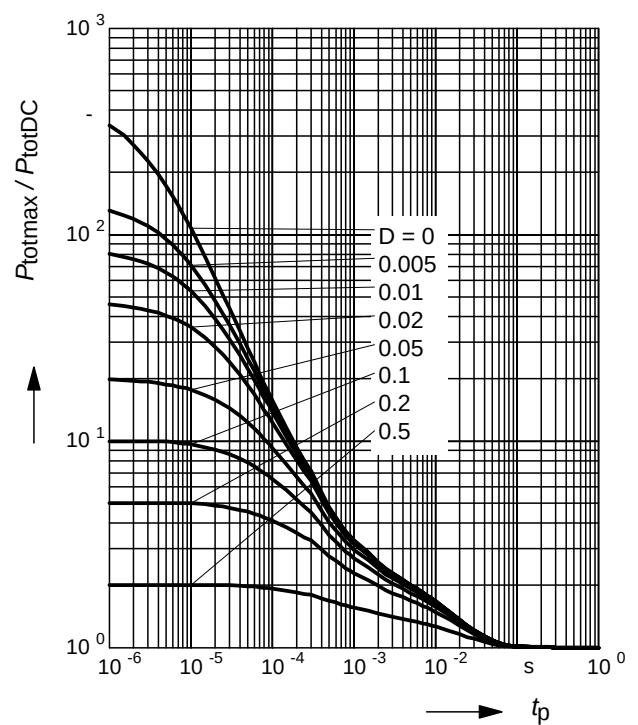


Permissible Pulse Load $R_{thJS} = f(t_p)$



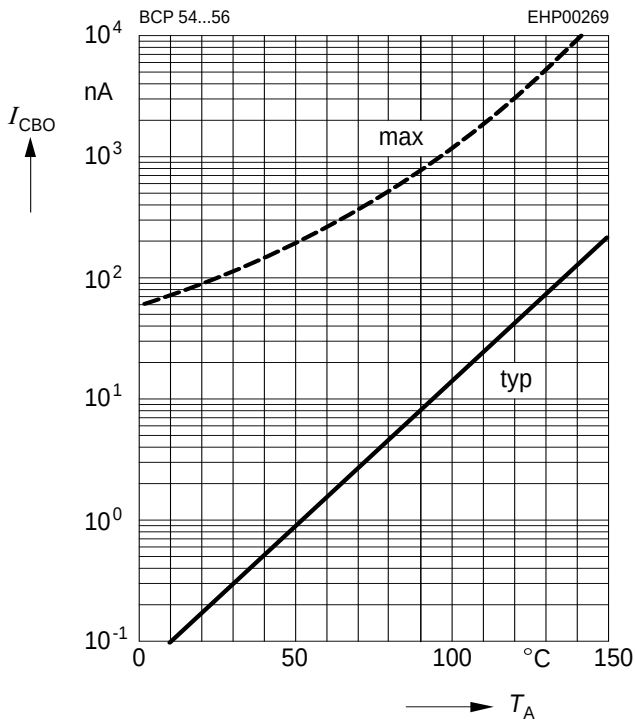
Permissible Pulse Load

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



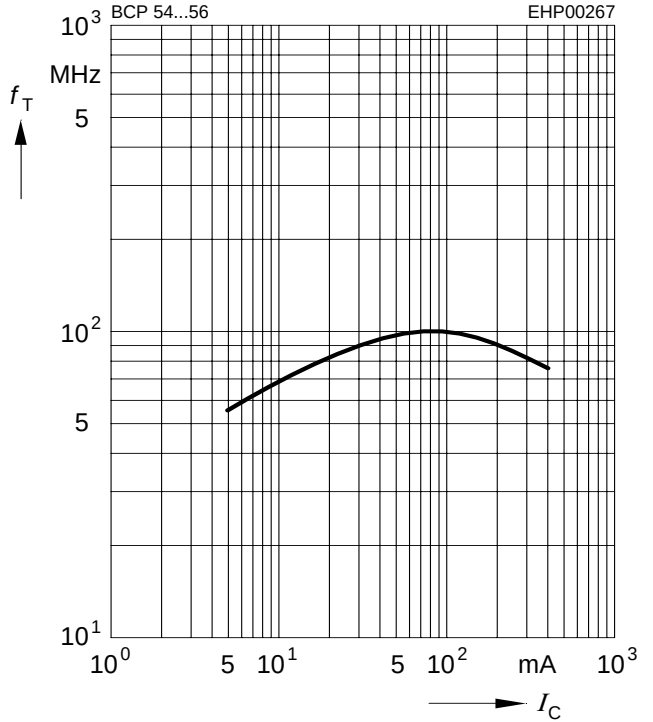
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 30V$



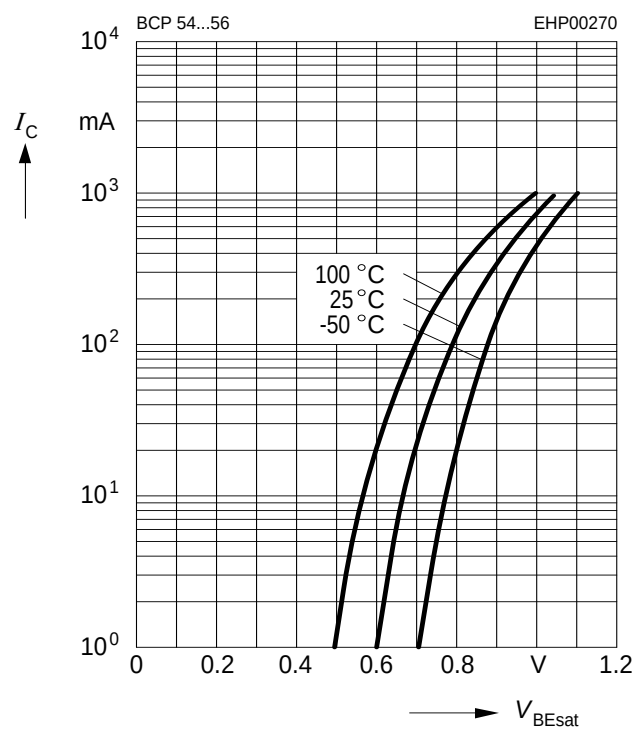
Transition frequency $f_T = f(I_C)$

$V_{CE} = 10V$



Base-emitter saturation voltage

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



Collector-emitter saturation voltage

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

