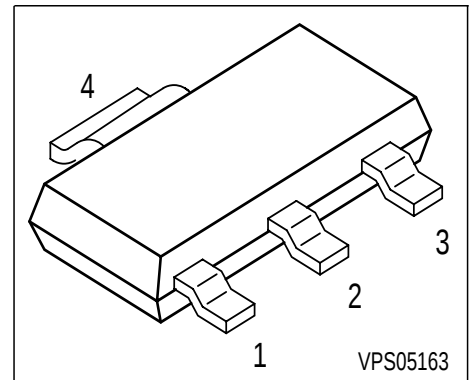


NPN Silicon AF Transistor

- For general AF applications
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Complementary type: BCP69 (PNP)



Type	Marking	Pin Configuration				Package
BCP68	BCP 68	1 = B	2 = C	3 = E	4 = C	SOT223
BCP68-10	BCP 68-10	1 = B	2 = C	3 = E	4 = C	SOT223
BCP68-16	BCP 68-16	1 = B	2 = C	3 = E	4 = C	SOT223
BCP68-25	BCP 68-25	1 = B	2 = C	3 = E	4 = C	SOT223

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CEO}	20	V
Collector-emitter voltage	V_{CES}	25	V
Collector-base voltage	V_{CBO}	25	V
Emitter-base voltage	V_{EBO}	5	V
DC collector current	I_C	1	A
Peak collector current	I_{CM}	2	A
Base current	I_B	100	mA
Peak base current	I_{BM}	200	mA
Total power dissipation, $T_S = 124\text{ °C}$	P_{tot}	1.5	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 .. 150	°C

Thermal Resistance

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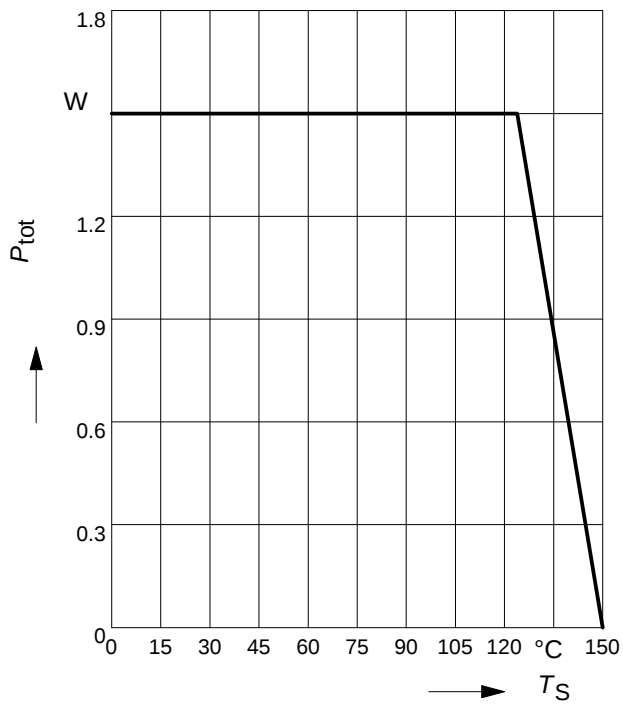
¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Collector-emitter breakdown voltage $I_C = 30\text{ mA}$, $I_B = 0$	$V_{(BR)CEO}$	20	-	-	V
Collector-emitter breakdown voltage $I_C = 10\text{ }\mu\text{A}$, $V_{BE} = 0$	$V_{(BR)CES}$	25	-	-	
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}$, $I_E = 0$	$V_{(BR)CBO}$	25	-	-	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$, $I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector cutoff current $V_{CB} = 25\text{ V}$, $I_E = 0$	I_{CBO}	-	-	100	nA
Collector cutoff current $V_{CB} = 25\text{ V}$, $I_E = 0$, $T_A = 150\text{ }^\circ\text{C}$	I_{CBO}	-	-	100	μA
DC current gain 1) $I_C = 5\text{ mA}$, $V_{CE} = 10\text{ V}$	h_{FE}	50	-	-	-
DC current gain 1) $I_C = 500\text{ mA}$, $V_{CE} = 1\text{ V}$	h_{FE}	85	-	375	
BCP68		85	100	160	
BCP68-10		100	160	250	
BCP68-16		160	250	375	
DC current gain 1) $I_C = 1\text{ A}$, $V_{CE} = 1\text{ V}$	h_{FE}	60	-	-	V
Collector-emitter saturation voltage1) $I_C = 1\text{ A}$, $I_B = 100\text{ mA}$	V_{CEsat}	-	-	0.5	
Base-emitter voltage 1) $I_C = 5\text{ mA}$, $V_{CE} = 10\text{ V}$ $I_C = 1\text{ A}$, $V_{CE} = 1$	$V_{BE(ON)}$	- -	0.6 -	- 1	
AC Characteristics					
Transition frequency $I_C = 100\text{ mA}$, $V_{CE} = 5\text{ V}$, $f = 100\text{ MHz}$	f_T	-	100	-	MHz

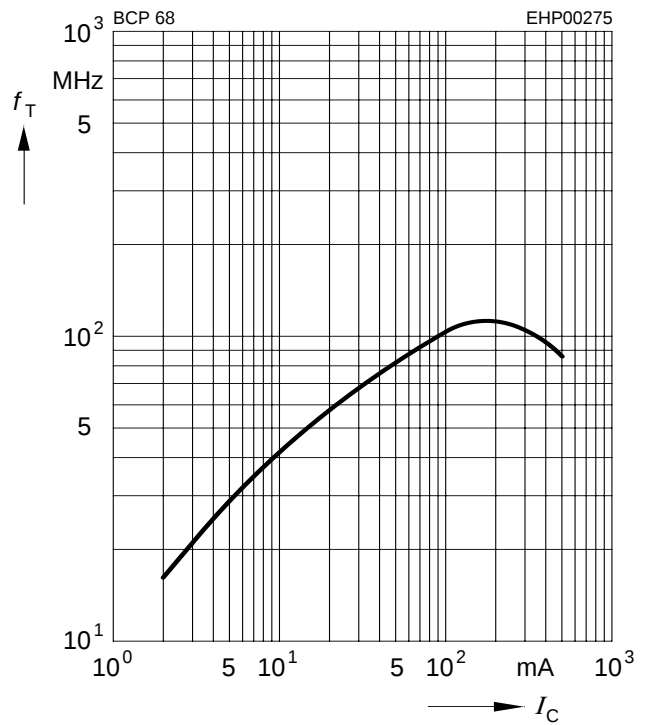
1) Pulse test: $t \leq 300\mu\text{s}$, $D = 2\%$

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



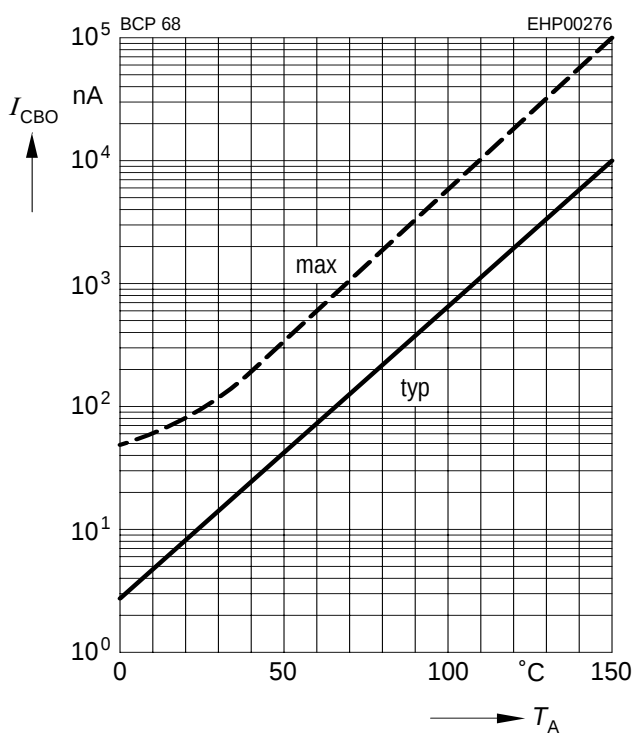
Transition frequency $f_T = f(I_C)$

$V_{CE} = 5V$



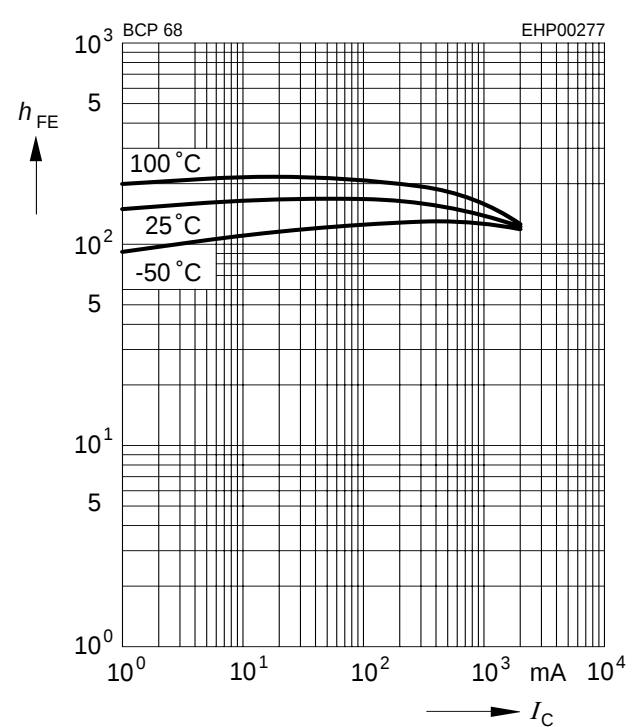
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 25V$



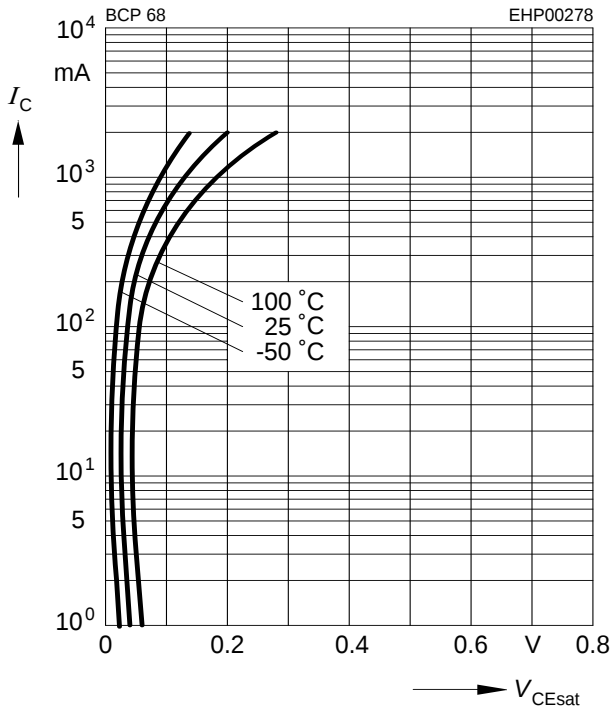
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 1V$



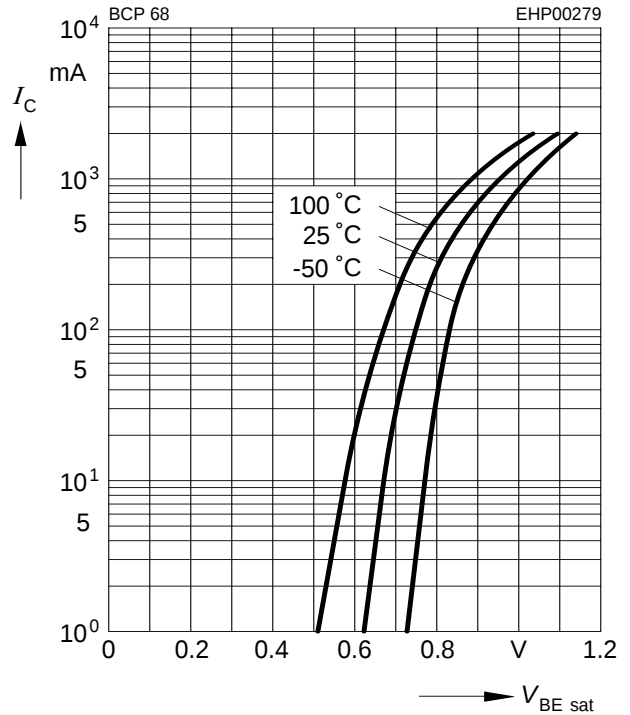
Collector-emitter saturation voltage

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



Base-emitter saturation voltage

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



Permissible pulse load

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

