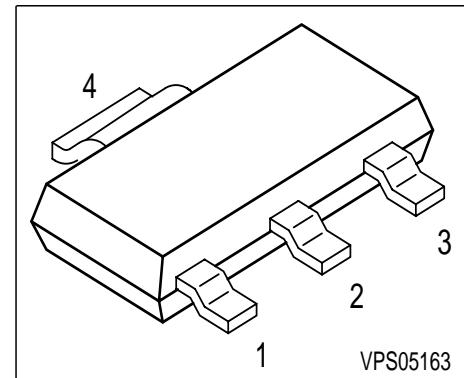


NPN Silicon AF Transistor

- 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	
DC collector current	I_C	1	A
Peak collector current	I_{CM}	2	
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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¹For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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

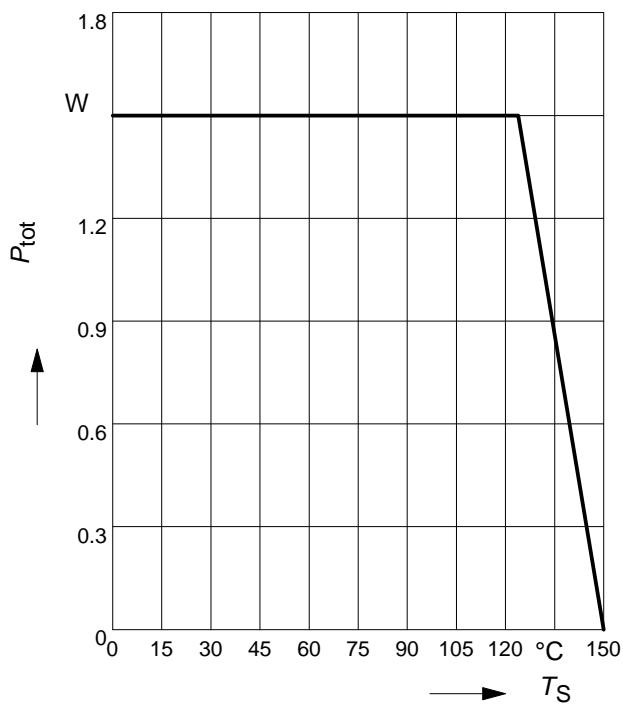
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Collector-emitter breakdown voltage $I_C = 30 \text{ mA}, I_B = 0$	$V_{(\text{BR})\text{CEO}}$	20	-	-	V
Collector-emitter breakdown voltage $I_C = 10 \mu\text{A}, V_{\text{BE}} = 0$	$V_{(\text{BR})\text{CES}}$	25	-	-	
Collector-base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

AC Characteristics

Transition frequency $I_C = 100 \text{ mA}, V_{\text{CE}} = 5 \text{ V}, f = 100 \text{ MHz}$	f_T	-	100	-	MHz
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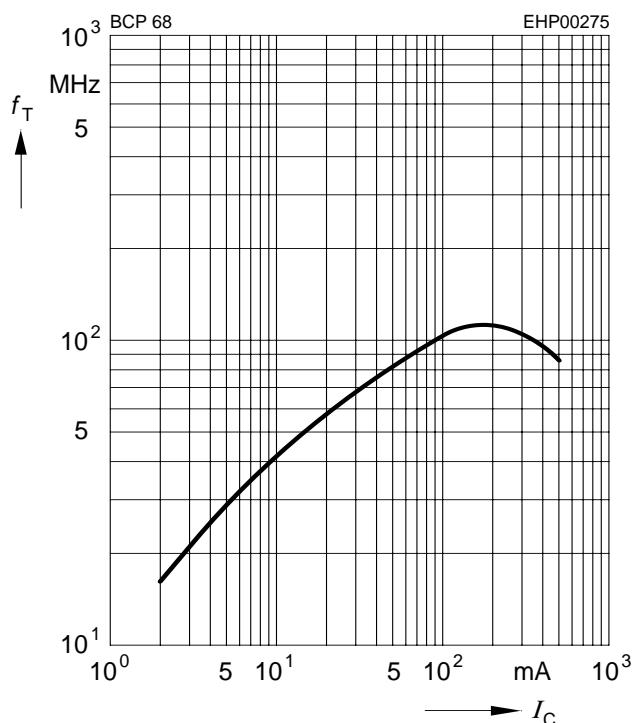
1) Pulse test: $t \leq 300\mu\text{s}$, $D = 2\%$

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



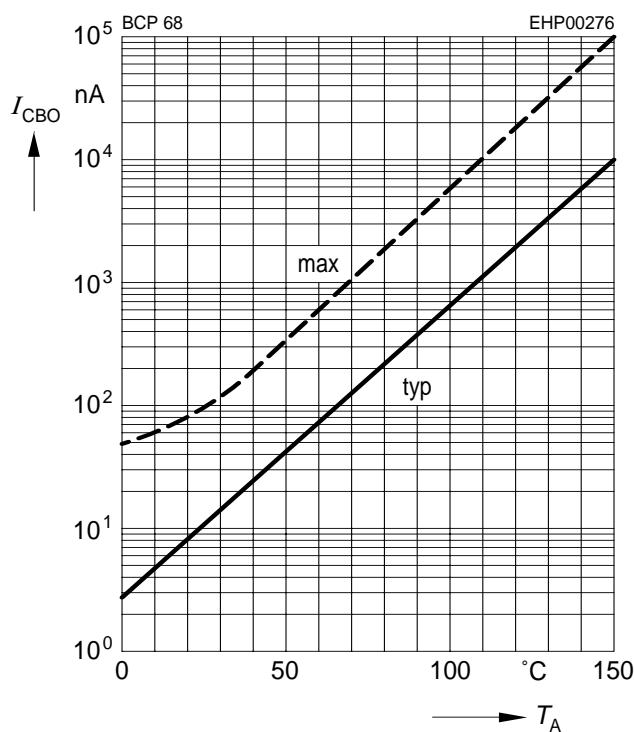
Transition frequency $f_T = f(I_C)$

$V_{CE} = 5V$



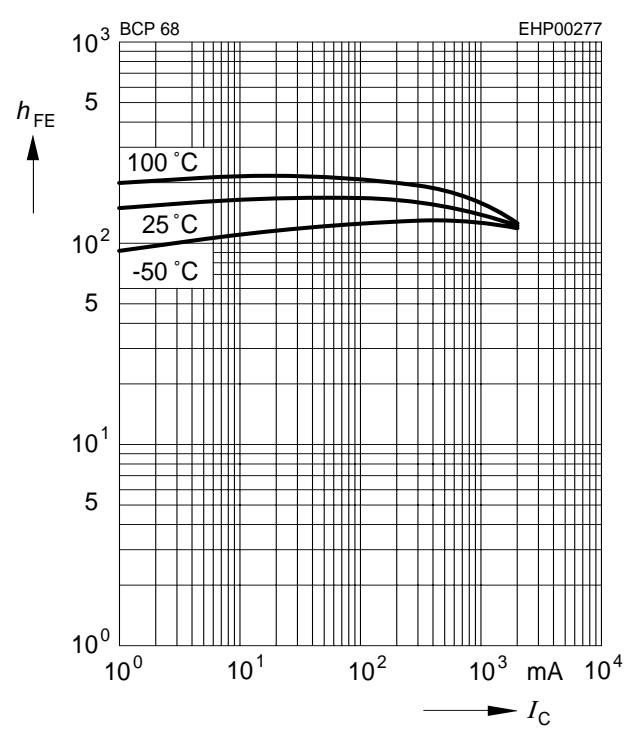
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 25V$



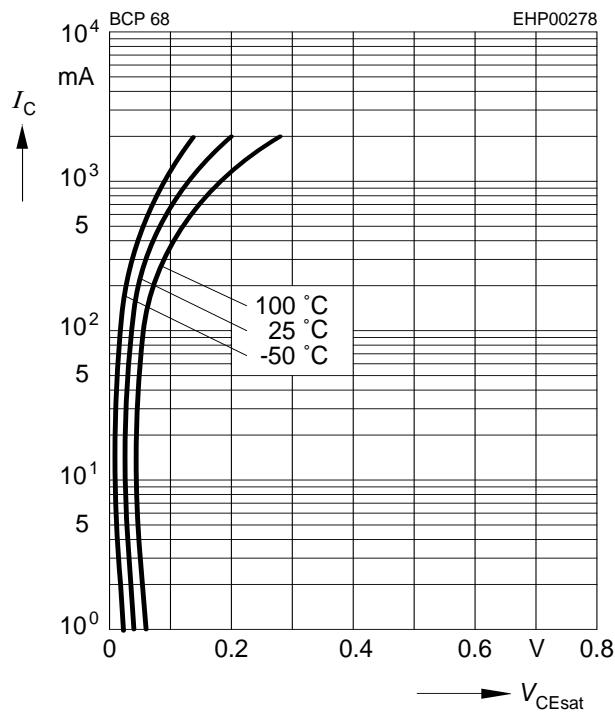
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 1V$



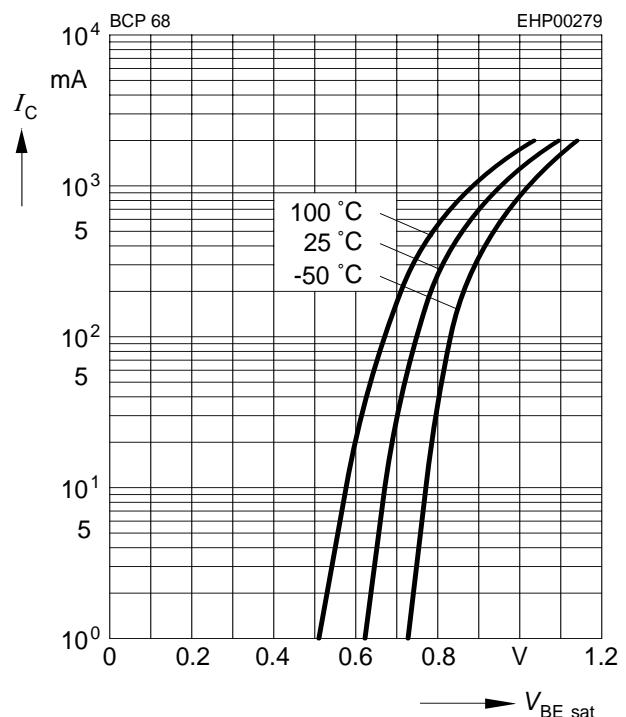
Collector-emitter saturation voltage

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



Base-emitter saturation voltage

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



Permissible pulse load

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

