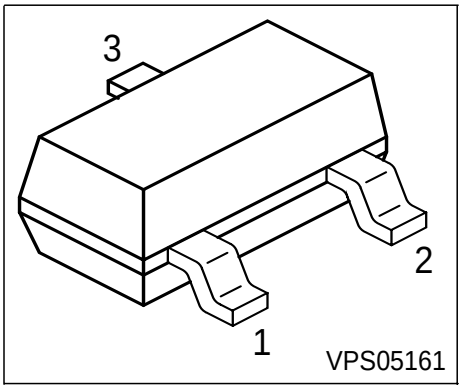
NPN Silicon AF Transistor

- For general AF applications
- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BCW67, BCW68 (PNP)



Type	Marking	Pin Configuration			Package
BCW65A	EAs	1 = B	2 = E	3 = C	SOT23
BCW65B	EBs	1 = B	2 = E	3 = C	SOT23
BCW65C	ECs	1 = B	2 = E	3 = C	SOT23
BCW66F	EFs	1 = B	2 = E	3 = C	SOT23
BCW66G	EGs	1 = B	2 = E	3 = C	SOT23
BCW66H	EHs	1 = B	2 = E	3 = C	SOT23

Maximum Ratings

Parameter	Symbol	BCW65	BCW66	Unit
Collector-emitter voltage	V_{CEO}	32	45	V
Collector-base voltage	V_{CBO}	60	75	
Emitter-base voltage	V_{EBO}	5	5	
DC collector current	I_C	800		mA
Peak collector current	I_{CM}	1		A
Base current	I_B	100		mA
Peak base current	I_{BM}	200		
Total power dissipation, T_S = 79 °C	P_{tot}	330		mW
Junction temperature	T_j	150		°C
Storage temperature	T_{stg}	-65 ... 150		

Thermal Resistance

Junction - soldering point[1)]	R_{thJS}	≤215	K/W

[1]For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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

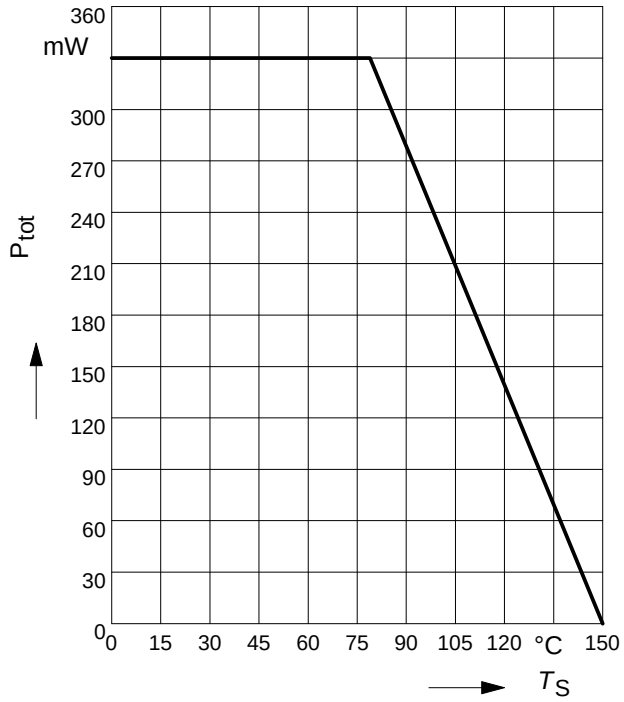
Parameter		Symbol	Values			Unit
			min.	typ.	max.	
DC Characteristics						
Collector-emitter breakdown voltage		$V_{(BR)CEO}$				V
I_C = 10 mA, I_B = 0	BCW65		32	-	-	
	BCW66		45	-	-	
Collector-base breakdown voltage		$V_{(BR)CBO}$				
I_C = 10 µA, I_B = 0	BCW65		60	-	-	
	BCW66		75	-	-	
Emitter-base breakdown voltage		$V_{(BR)EBO}$	5	-	-	
I_E = 10 µA, I_C = 0						
Collector cutoff current		I_{CBO}				nA
V_{CB} = 32 V, I_E = 0	BCW65		-	-	20	
V_{CB} = 45 V, I_E = 0	BCW66		-	-	20	
Collector cutoff current		I_{CBO}				µA
V_{CB} = 32 V, I_E = 0 , T_A = 150 °C	BCW65		-	-	20	
V_{CB} = 45 V, I_E = 0 , T_A = 150 °C	BCW66		-	-	20	
Emitter cutoff current		I_{EBO}	-	-	20	nA
V_{EB} = 4 V, I_C = 0						
DC current gain 1)		h_{FE}				-
I_C = 100 µA, V_{CE} = 10 V	h_{FE}-grp.**A/F**		35	-	-	
	h_{FE}-grp.**B/G**		50	-	-	
	h_{FE}-grp.**C/H**		80	-	-	
DC current gain 1)		h_{FE}				
I_C = 10 mA, V_{CE} = 1 V	h_{FE}-grp.**A/F**		75	-	-	
	h_{FE}-grp.**B/G**		110	-	-	
	h_{FE}-grp.**C/H**		180	-	-	
DC current gain 1)		h_{FE}				
I_C = 100 mA, V_{CE} = 1 V	h_{FE}-grp.**A/F**		100	160	250	
	h_{FE}-grp.**B/G**		160	250	400	
	h_{FE}-grp.**C/H**		250	350	630	

1) Pulse test: t ≤ 300µs, D = 2%

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

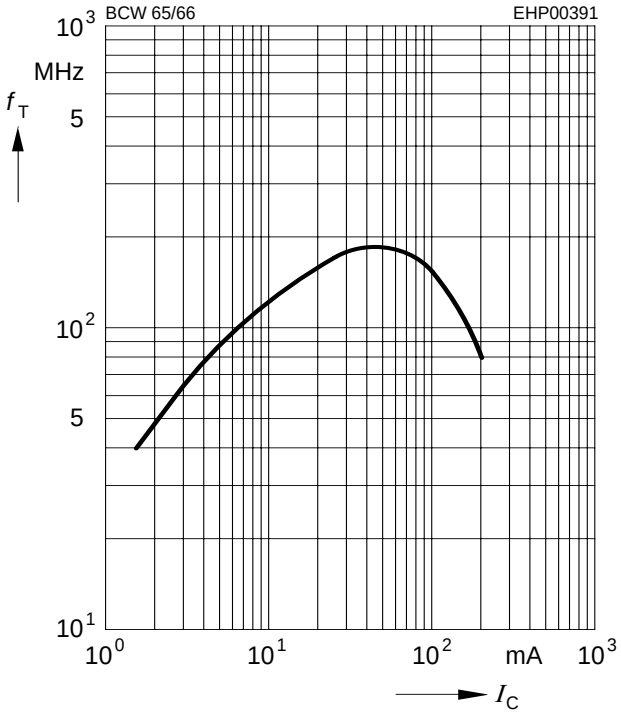
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
DC current gain 1)	h_{FE}				-
I_C = 500 mA, V_{CE} = 2 V h_{FE}-grp.**A/F**		-	35	-	
h_{FE}-grp.**B/G**		-	60	-	
h_{FE}-grp.**C/H**		-	100	-	
Collector-emitter saturation voltage1)	V_{CEsat}				V
I_C = 100 mA, I_B = 10 mA		-	-	0.3	
I_C = 500 mA, I_B = 50 mA		-	-	0.7	
Base-emitter saturation voltage 1)	V_{BEsat}				
I_C = 100 mA, I_B = 10 mA		-	-	1.25	
I_C = 500 mA, I_B = 50 mA		-	-	2	
AC Characteristics					
Transition frequency	f_T	-	170	-	MHz
I_C = 50 mA, V_{CE} = 5 V, f = 20 MHz					
Collector-base capacitance	C_{cb}	-	6	-	pF
V_{CB} = 10 V, f = 1 MHz					
Emitter-base capacitance	C_{eb}	-	60	-	
V_{EB} = 0.5 V, f = 1 MHz					

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



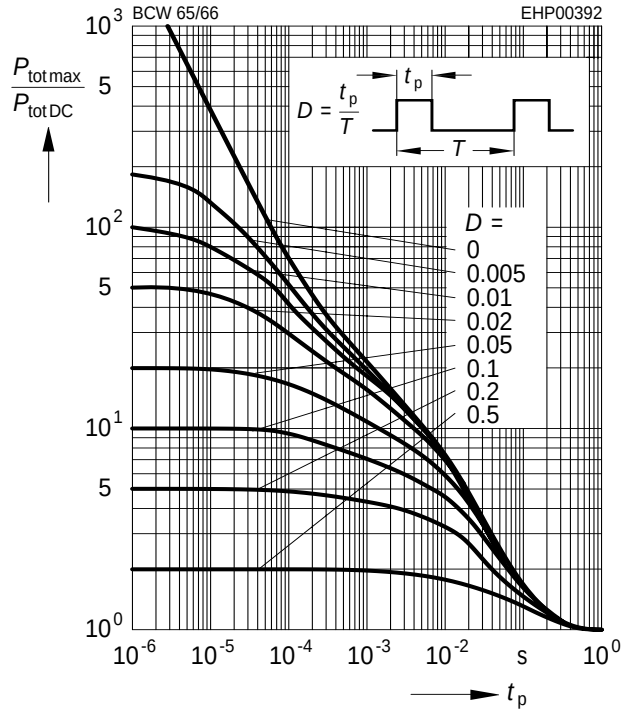
Transition frequency $f_T = f(I_C)$

$V_{CE} = 5V$



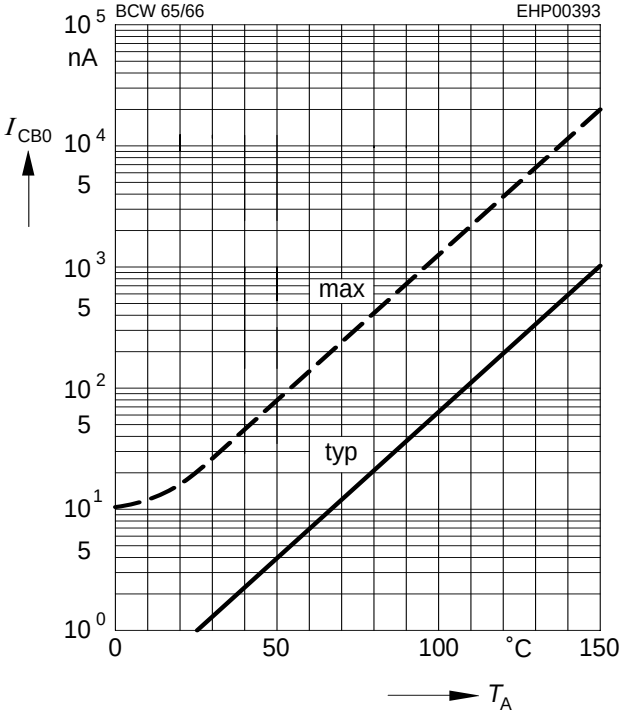
Permissible pulse load

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



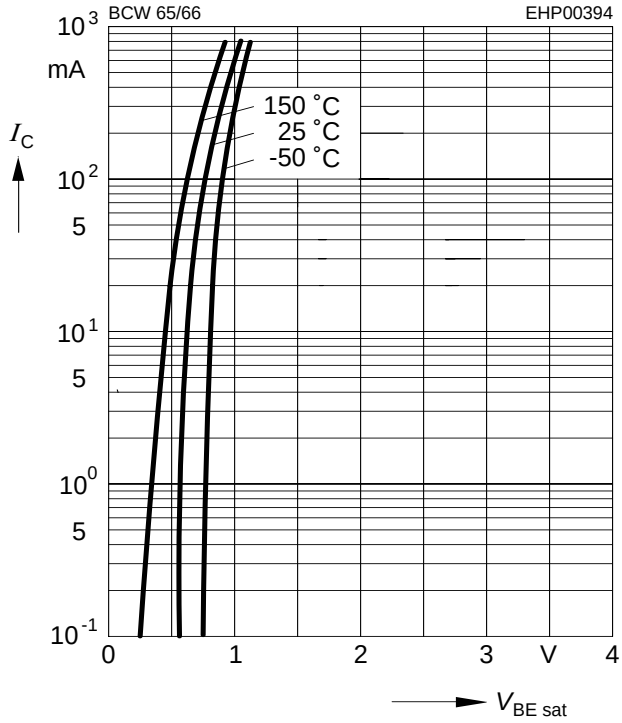
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = V_{CEmax}$



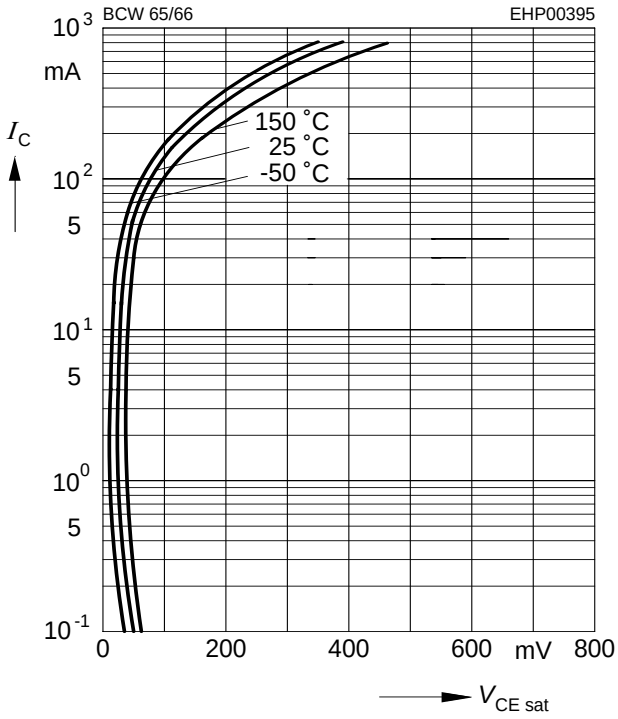
Base-emitter saturation voltage

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



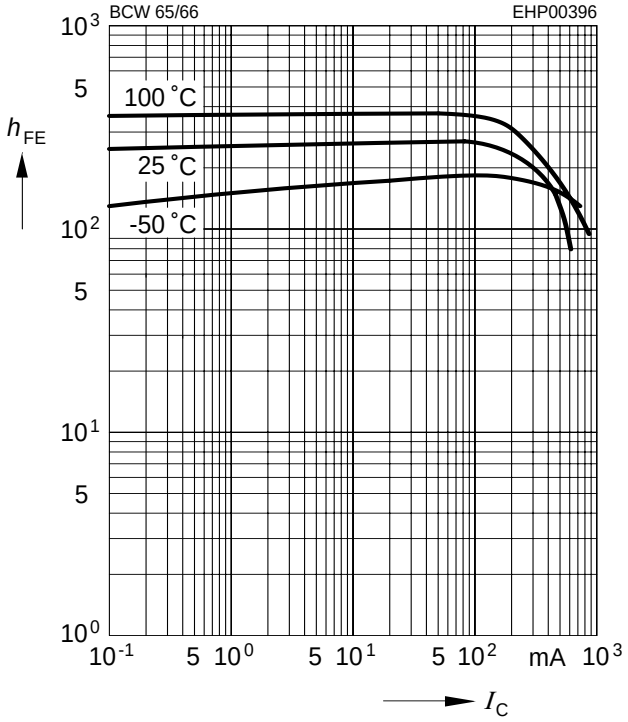
Collector-emitter saturation voltage

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



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

V_{CE} = 1V



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