

**NPN Silicon AF Transistors**

- For general AF applications
- High current gain
- Low collector-emitter saturation voltage
- Complementary type: BCW68 (PNP)
- Pb-free (RoHS compliant) package<sup>1)</sup>
- Qualified according AEC Q101



Type	Marking	Pin Configuration			Package
		1=B	2=E	3=C	
BCW66F	EFs	1=B	2=E	3=C	SOT23
BCW66KF*	EFs	1=B	2=E	3=C	SOT23
BCW66G	EGs	1=B	2=E	3=C	SOT23
BCW66KG*	EGs	1=B	2=E	3=C	SOT23
BCW66H	EHs	1=B	2=E	3=C	SOT23
BCW66KH*	EHs	1=B	2=E	3=C	SOT23

\* Shrinked chip version

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Collector-emitter voltage	$V_{CEO}$	45	V
Collector-base voltage	$V_{CBO}$	75	
Emitter-base voltage	$V_{EBO}$	5	
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- $T_S \leq 79\text{ °C}$ , BCW66 $T_S \leq 115\text{ °C}$ , BCW66K	$P_{tot}$	330 500	mW
Junction temperature	$T_j$	150	
Storage temperature	$T_{stg}$	-65 ... 150	

<sup>1)</sup>Pb-containing package may be available upon special request

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup>	$R_{thJS}$		K/W
BCW66		≤ 215	
BCW66K		≤ 70	

**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 $I_C = 10 \text{ mA}, I_B = 0$	$V_{(BR)CEO}$	45	-	-	V
Collector-base breakdown voltage $I_C = 10 \mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	75	-	-	
Emitter-base breakdown voltage $I_E = 10 \mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector-base cutoff current $V_{CB} = 45 \text{ V}, I_E = 0$ $V_{CB} = 45 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	$I_{CBO}$	-	-	0.02 20	$\mu\text{A}$
Emitter-base cutoff current $V_{EB} = 5 \text{ V}, I_C = 0$	$I_{EBO}$	-	-	20	nA
DC current gain <sup>2)</sup> $I_C = 100 \mu\text{A} - 10 \text{ mA}, V_{CE} = 1 \text{ V}, \text{hFE-grp.F}$ $I_C = 100 \mu\text{A} - 10 \text{ mA}, V_{CE} = 1 \text{ V}, \text{hFE-grp.G}$ $I_C = 100 \mu\text{A} - 10 \text{ mA}, V_{CE} = 1 \text{ V}, \text{hFE-grp.H}$ $I_C = 100 \text{ mA}, V_{CE} = 1 \text{ V}, \text{hFE-grp.F}$ $I_C = 100 \text{ mA}, V_{CE} = 1 \text{ V}, \text{hFE-grp.G}$ $I_C = 100 \text{ mA}, V_{CE} = 1 \text{ V}, \text{hFE-grp.H}$ $I_C = 500 \text{ mA}, V_{CE} = 1 \text{ V}, \text{hFE-grp.F, G, H}$	$h_{FE}$	75 110 180 100 160 250 40	- - - 160 250 350 -	- - - 250 400 630 -	-
Collector-emitter saturation voltage <sup>2)</sup> $I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$ $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$	$V_{CEsat}$	- -	- -	0.3 0.45	V
Base emitter saturation voltage <sup>2)</sup> $I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$ $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$	$V_{BEsat}$	- -	- -	1.25 1.25	

<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

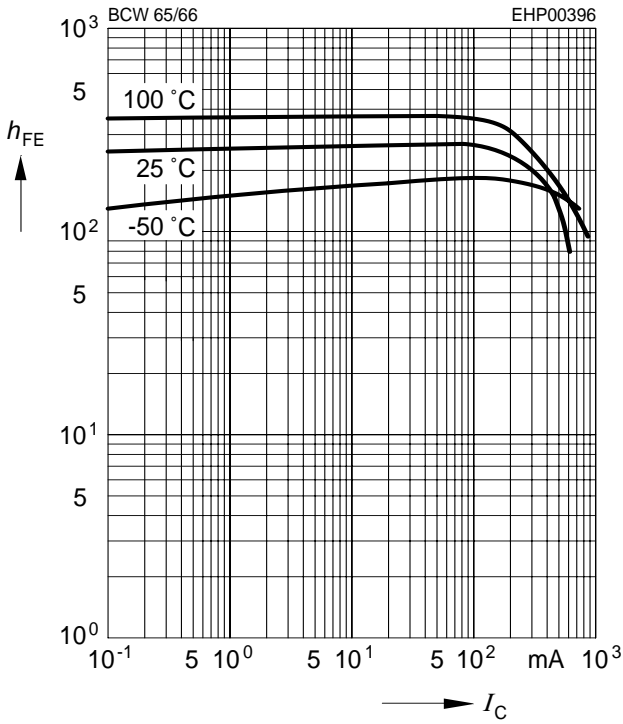
<sup>2)</sup>Pulse test:  $t < 300\mu\text{s}; D < 2\%$

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

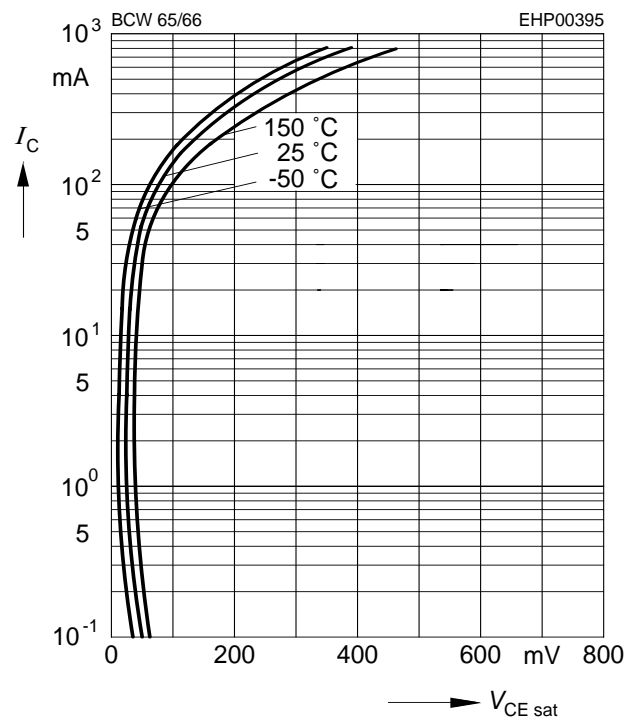
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>AC Characteristics</b>					
Transition frequency $I_C = 50\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $f = 20\text{ MHz}$	$f_T$	-	170	-	MHz
Collector-base capacitance $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$ , BCW66	$C_{cb}$	-	6	-	pF
$V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$ , BCW66K		-	3	-	
Emitter-base capacitance $V_{EB} = 0.5\text{ V}$ , $f = 1\text{ MHz}$ , BCW66	$C_{eb}$	-	60	-	
$V_{EB} = 0.5\text{ V}$ , $f = 1\text{ MHz}$ , BCW66K		-	40	-	

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

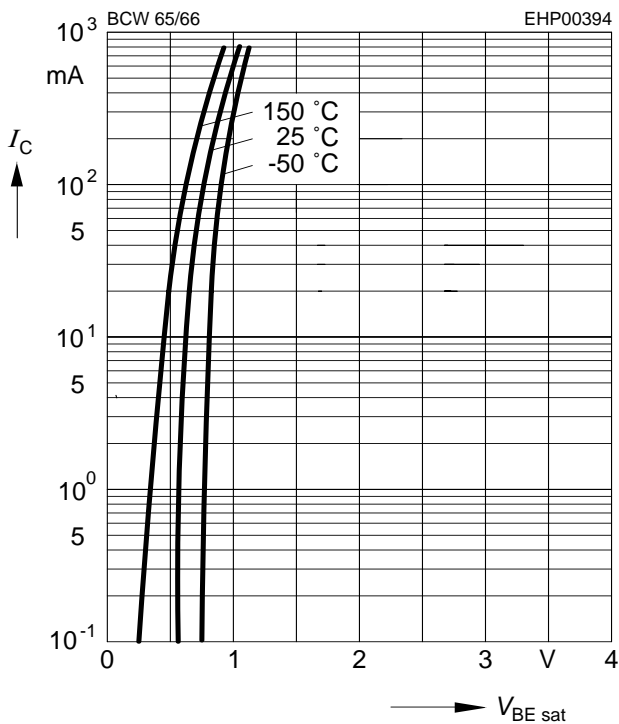
$V_{CE} = 1 \text{ V}$


**Collector-emitter saturation voltage**

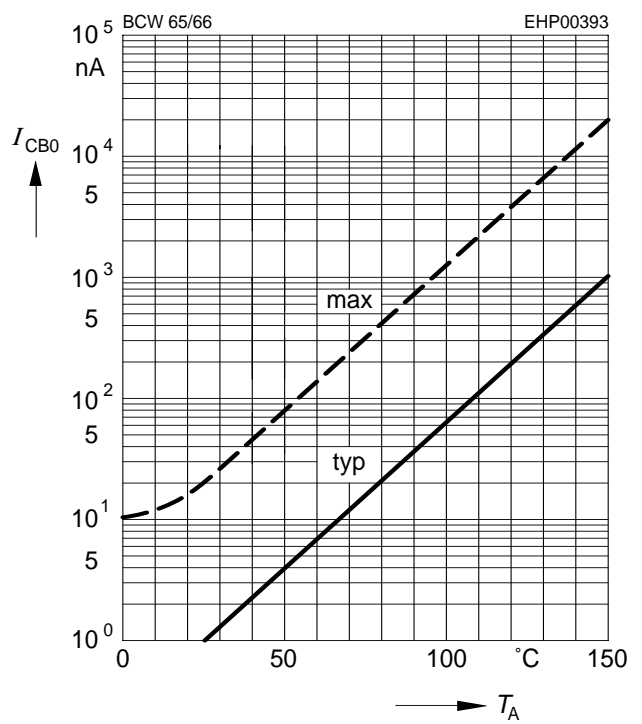
$I_C = f(V_{CEsat}), h_{FE} = 10$

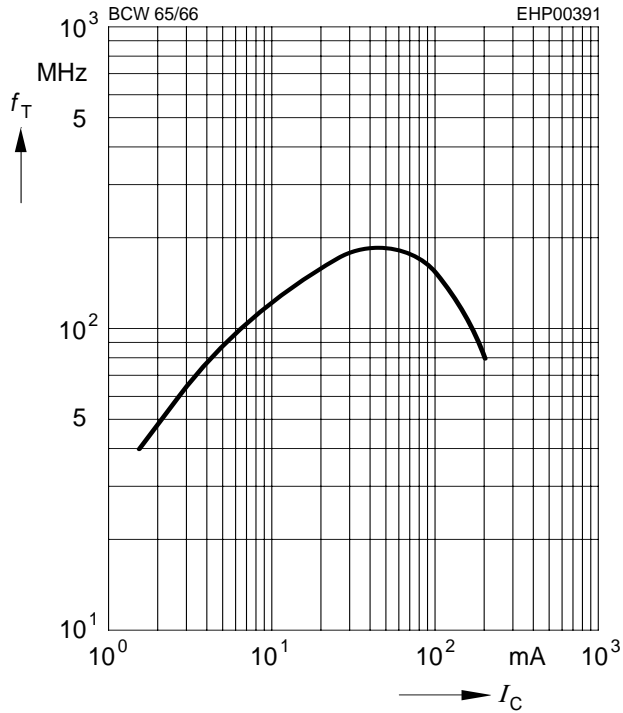

**Base-emitter saturation voltage**

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

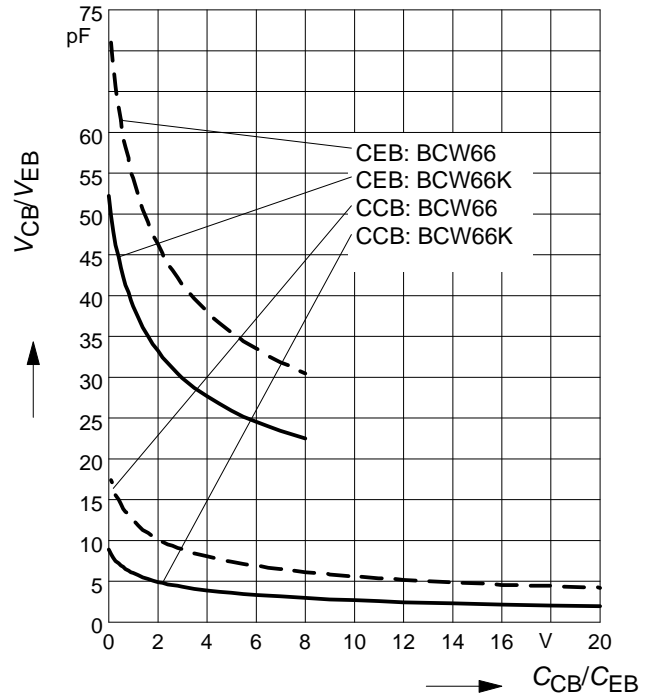

**Collector cutoff current  $I_{CBO} = f(T_A)$** 

$V_{CB} = V_{CEmax}$

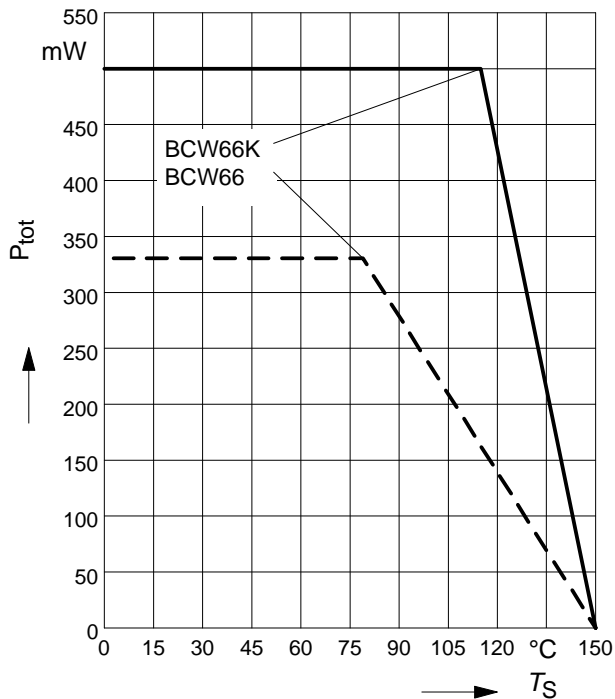
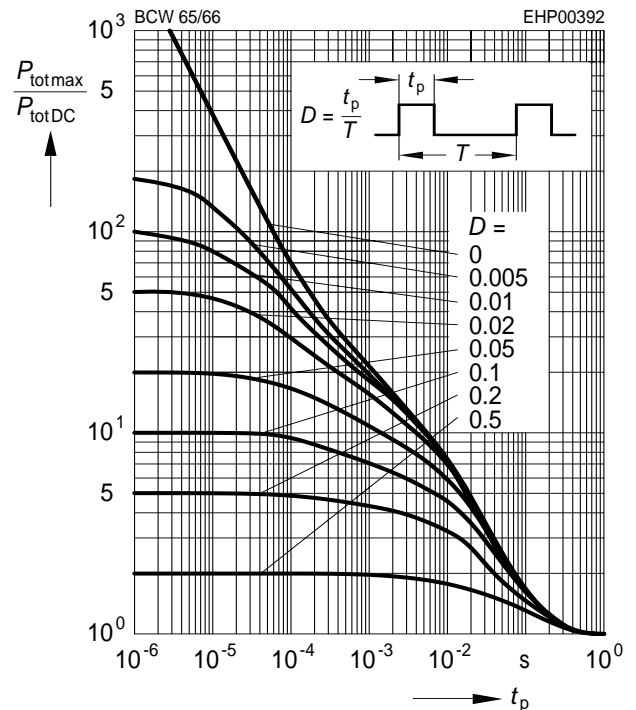


**Transition frequency  $f_T = f(I_C)$** 
 $V_{CE} = 5\text{ V}$ 

**Collector-base capacitance  $C_{cb} = f(V_{CB})$** 
**Emitter-base capacitance  $C_{eb} = f(V_{EB})$** 

BCW66: - - - , BCW66K: ———


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

BCW66: - - - , BCW66K: ———

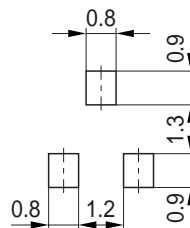

**Permissible Pulse Load**
 $P_{totmax}/P_{totDC} = f(t_p)$ 


Package Outline

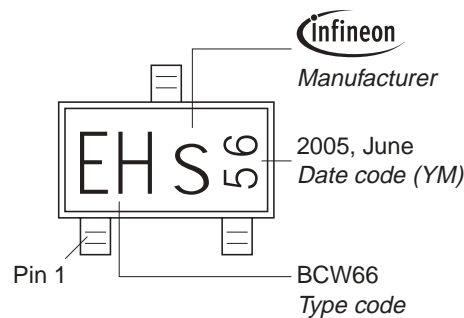


1) Lead width can be 0.6 max. in dambar area

Foot Print

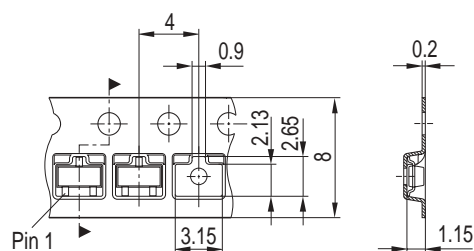


Marking Layout (Example)



Standard Packing

Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



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