

**PNP Silicon AF Transistors**

- For general AF applications
- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BCW66... (NPN)
- Pb-free (RoHS compliant) package<sup>1)</sup>
- Qualified according AEC Q101



Type	Marking	Pin Configuration			Package
		1=B	2=E	3=C	
BCW67A	DAs	1=B	2=E	3=C	SOT23
BCW67B	DBs	1=B	2=E	3=C	SOT23
BCW67C	DCs	1=B	2=E	3=C	SOT23
BCW68F	DFs	1=B	2=E	3=C	SOT23
BCW68G	DGs	1=B	2=E	3=C	SOT23
BCW68H	DHs	1=B	2=E	3=C	SOT23

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

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Collector-emitter voltage	$V_{CEO}$		V
BCW67		32	
BCW68		45	
Collector-base voltage	$V_{CBO}$		
BCW67		45	
BCW68		60	
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, $T_S \leq 79^\circ\text{C}$	$P_{tot}$	330	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-65 ... 150	

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup>	$R_{thJS}$	$\leq 215$	K/W

<sup>1)</sup>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.	
<b>DC Characteristics</b>					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$ , $I_B = 0$ , BCW67 $I_C = 10\text{ mA}$ , $I_B = 0$ , BCW68	$V_{(BR)CEO}$	32 45	- -	- -	V
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}$ , $I_E = 0$ , BCW67 $I_C = 10\text{ }\mu\text{A}$ , $I_E = 0$ , BCW68	$V_{(BR)CBO}$	45 60	- -	- -	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$ , $I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector-base cutoff current $V_{CB} = 32\text{ V}$ , $I_E = 0$ $V_{CB} = 45\text{ V}$ , $I_E = 0$ $V_{CB} = 32\text{ V}$ , $I_E = 0$ , $T_A = 150^\circ\text{C}$ ; BCW67 $V_{CB} = 45\text{ V}$ , $I_E = 0$ , $T_A = 150^\circ\text{C}$ ; BCW68	$I_{CBO}$	- - - -	- - - -	0.02 0.02 20 20	$\mu\text{A}$
Emitter-base cutoff current $V_{EB} = 4\text{ V}$ , $I_C = 0$	$I_{EBO}$	-	-	20	nA
DC current gain <sup>1)</sup> $I_C = 100\text{ }\mu\text{A}$ , $V_{CE} = 10\text{ V}$ , $h_{FE}\text{-grp.A/F}$ $I_C = 100\text{ }\mu\text{A}$ , $V_{CE} = 10\text{ V}$ , $h_{FE}\text{-grp.B/G}$ $I_C = 100\text{ }\mu\text{A}$ , $V_{CE} = 10\text{ V}$ , $h_{FE}\text{-grp.C/H}$ $I_C = 10\text{ mA}$ , $V_{CE} = 1\text{ V}$ , $h_{FE}\text{-grp.A/F}$ $I_C = 10\text{ mA}$ , $V_{CE} = 1\text{ V}$ , $h_{FE}\text{-grp.B/G}$ $I_C = 10\text{ mA}$ , $V_{CE} = 1\text{ V}$ , $h_{FE}\text{-grp.C/H}$ $I_C = 100\text{ mA}$ , $V_{CE} = 1\text{ V}$ , $h_{FE}\text{-grp.A/F}$ $I_C = 100\text{ mA}$ , $V_{CE} = 1\text{ V}$ , $h_{FE}\text{-grp.B/G}$ $I_C = 100\text{ mA}$ , $V_{CE} = 1\text{ V}$ , $h_{FE}\text{-grp.C/H}$ $I_C = 500\text{ mA}$ , $V_{CE} = 2\text{ V}$ , $h_{FE}\text{-grp.A/F}$ $I_C = 500\text{ mA}$ , $V_{CE} = 2\text{ V}$ , $h_{FE}\text{-grp.B/G}$ $I_C = 500\text{ mA}$ , $V_{CE} = 2\text{ V}$ , $h_{FE}\text{-grp.C/H}$	$h_{FE}$	35 50 80 75 120 180 100 160 250 35 60 100	- - - - - - 160 250 350 - - -	- - - - - - 250 400 630 - - -	-

**DC Electrical Characteristics**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>Characteristics</b>					
Collector-emitter saturation voltage <sup>1)</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 0.7	V
Base emitter saturation voltage <sup>1)</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 2	

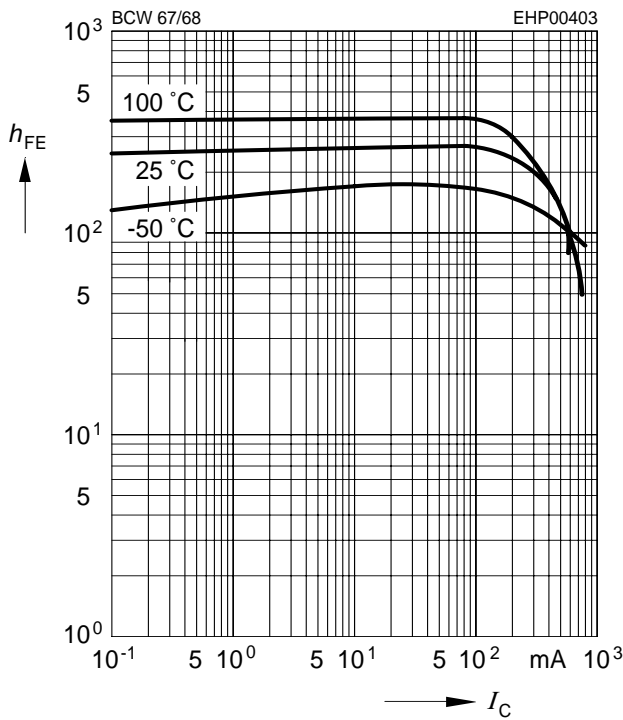
**AC Characteristics**

Transition frequency $I_C = 50 \text{ mA}, V_{CE} = 5 \text{ V}, f = 20 \text{ MHz}$	$f_T$	-	200	-	MHz
Collector-base capacitance $V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$	$C_{cb}$	-	6	-	pF
Emitter-base capacitance $V_{EB} = 0.5 \text{ V}, f = 1 \text{ MHz}$	$C_{eb}$	-	60	-	

<sup>1)</sup>Pulse test:  $t < 300 \mu\text{s}; D < 2\%$

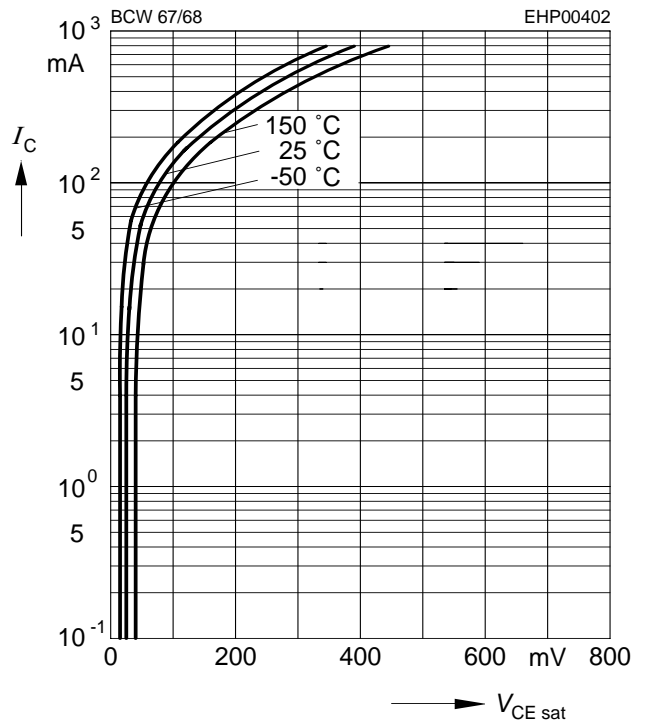
**DC current gain  $h_{FE} = f(I_C)$**

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



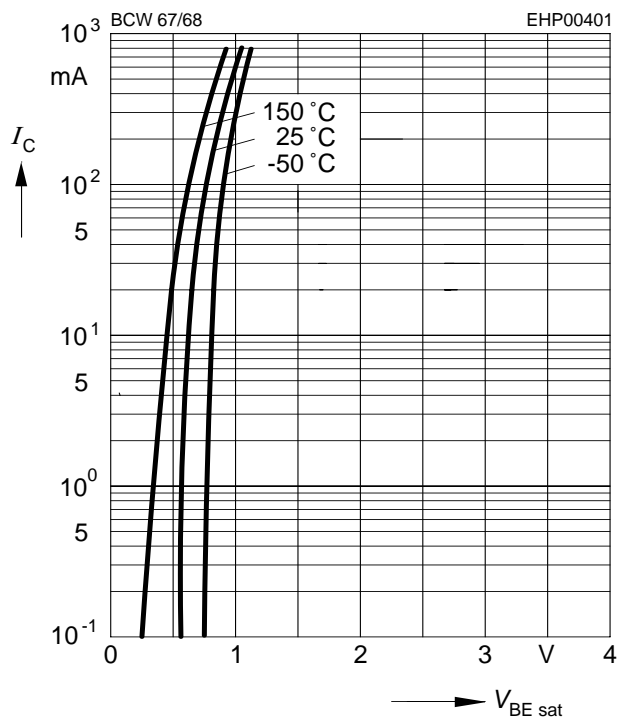
**Collector-emitter saturation voltage**

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



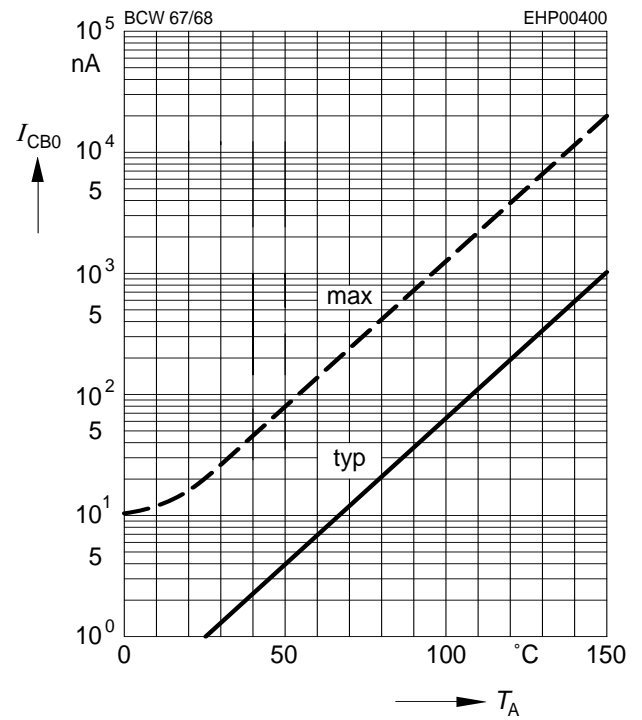
**Base-emitter saturation voltage**

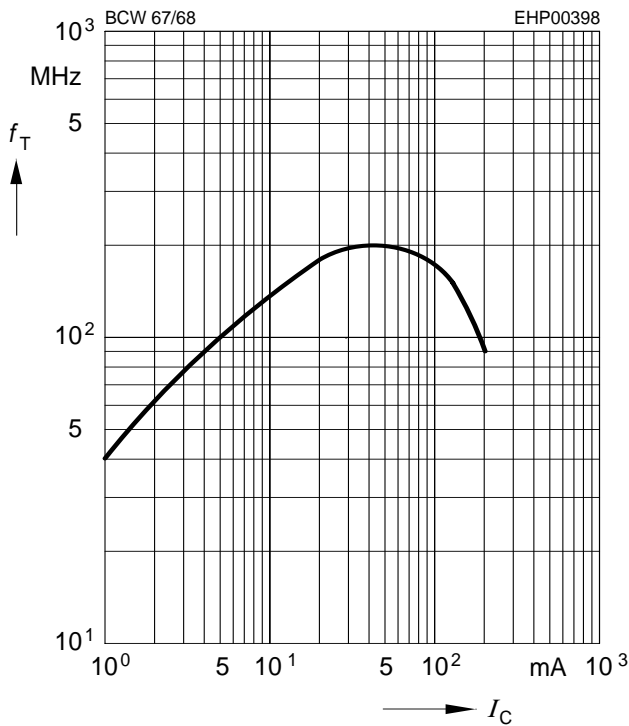
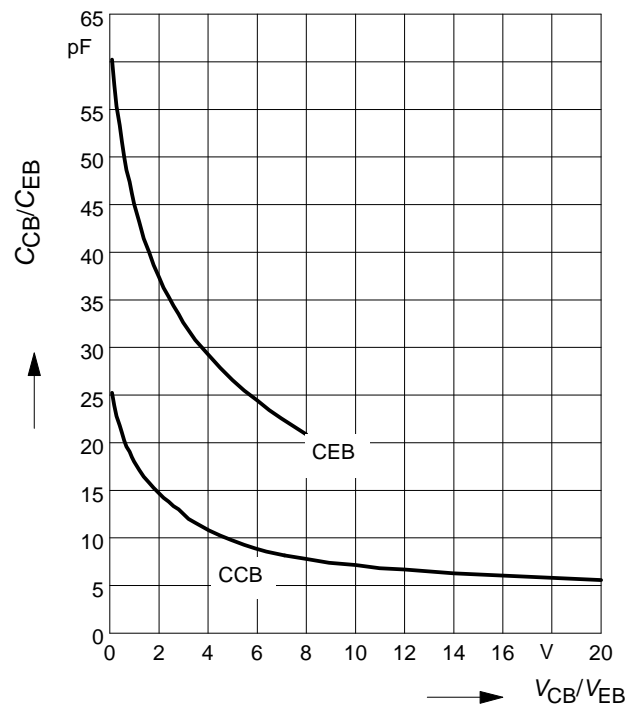
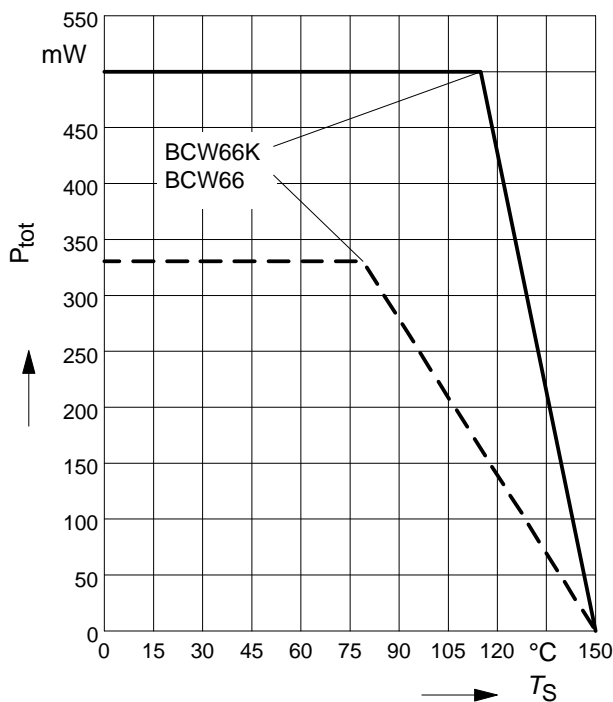
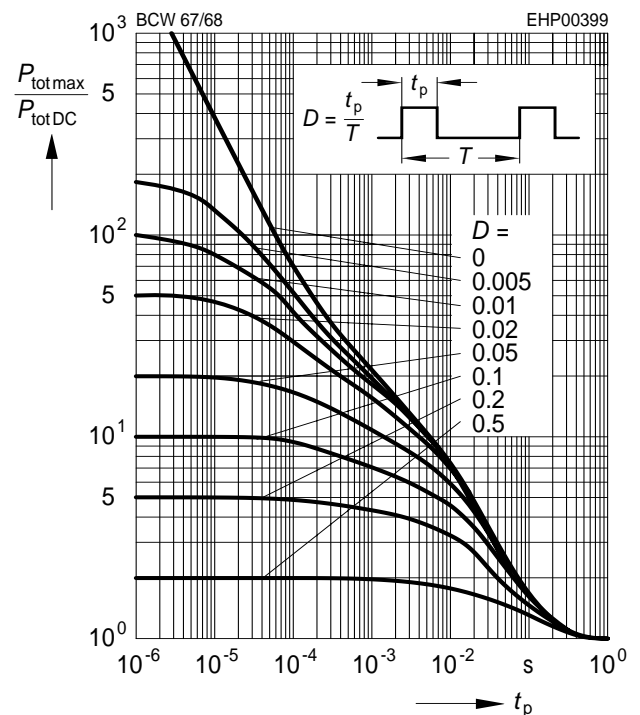
$I_C = f(V_{BEsat}), h_{FE} = 10$



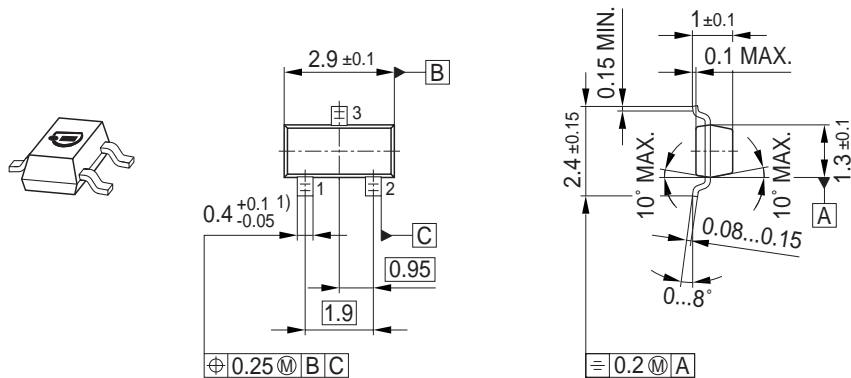
**Collector cutoff current  $I_{CBO} = f(T_A)$**

$V_{CBO} = 25\text{ V}$



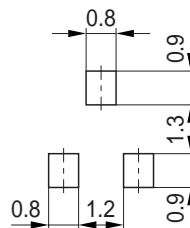
**Transition frequency  $f_T = f(I_C)$** 
 $V_{CE} = 5\text{ V}$ 

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

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

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


Package Outline

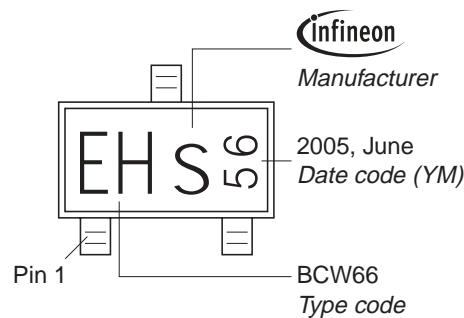


1) Lead width can be 0.6 max. in dambar area

Foot Print

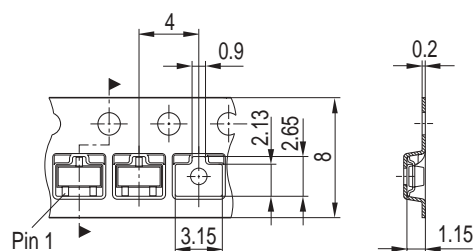


Marking Layout (Example)



Standard Packing

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



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