

**NPN Silicon AF Transistors**

- For general AF applications
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Complementary type: BCX69 (PNP)
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



Type	Marking	Pin Configuration			Package
BCX68-10	CB	1=B	2=C	3=E	SOT89
BCX68-16	CC	1=B	2=C	3=E	SOT89
BCX68-25	CD	1=B	2=C	3=E	SOT89

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Collector-emitter voltage	$V_{CEO}$	20	V
Collector-base voltage	$V_{CBO}$	25	
Emitter-base voltage	$V_{EBO}$	5	
Collector current	$I_C$	1	A
Peak collector current, $t_p \leq 10$ ms	$I_{CM}$	2	
Base current	$I_B$	100	mA
Peak base current	$I_{BM}$	200	
Total power dissipation- $T_S \leq 114$ °C	$P_{tot}$	3	W
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-65 ... 150	

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup>	$R_{thJS}$	$\leq 12$	K/W

<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note AN077 (Thermal Resistance Calculation)

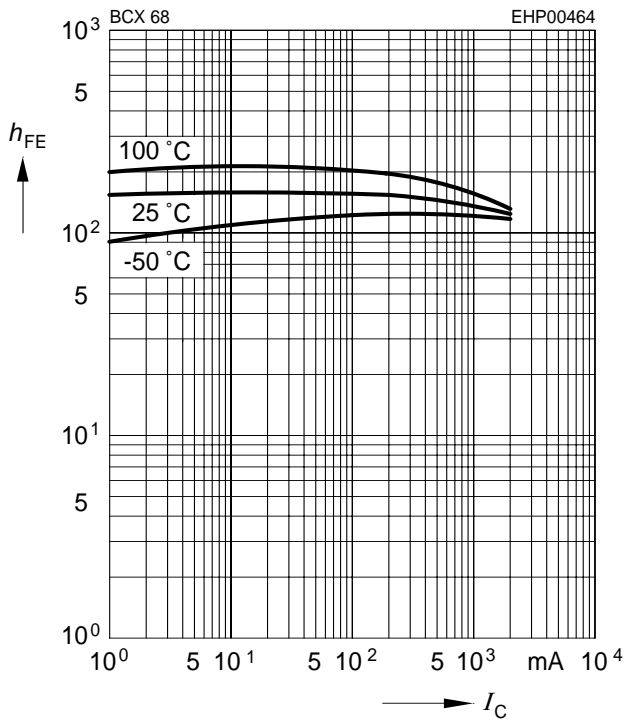
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
Collector-emitter breakdown voltage $I_C = 30\text{ mA}, I_B = 0$	$V_{(BR)CEO}$	20	-	-	V
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	25	-	-	
Emitter-base breakdown voltage $I_E = 1\text{ }\mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector-base cutoff current $V_{CB} = 25\text{ V}, I_E = 0$ $V_{CB} = 25\text{ V}, I_E = 0, T_A = 150\text{ }^\circ\text{C}$	$I_{CBO}$	-	-	0.1 100	$\mu\text{A}$
DC current gain <sup>1)</sup> $I_C = 5\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 500\text{ mA}, V_{CE} = 1\text{ V}, \text{BCX68-10}$ $I_C = 500\text{ mA}, V_{CE} = 1\text{ V}, \text{BCX68-16}$ $I_C = 500\text{ mA}, V_{CE} = 1\text{ V}, \text{BCX68-25}$ $I_C = 1\text{ A}, V_{CE} = 1\text{ V}$	$h_{FE}$	50 85 100 160 60	- 100 160 250 -	- 160 250 375 -	-
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 1\text{ A}, I_B = 100\text{ mA}$	$V_{CEsat}$	-	-	0.5	V
Base-emitter voltage <sup>1)</sup> $I_C = 5\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 1\text{ A}, V_{CE} = 1\text{ V}$	$V_{BE(ON)}$	-	0.6 -	- 1	
<b>AC Characteristics</b>					
Transition frequency $I_C = 100\text{ mA}, V_{CE} = 5\text{ V}, f = 20\text{ MHz}$	$f_T$	-	100	-	MHz

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

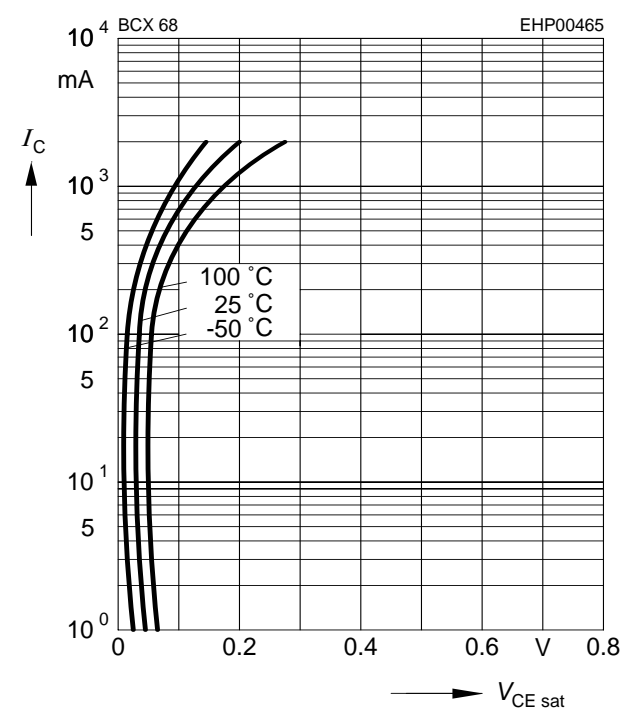
**DC current gain  $h_{FE} = f(I_C)$**

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



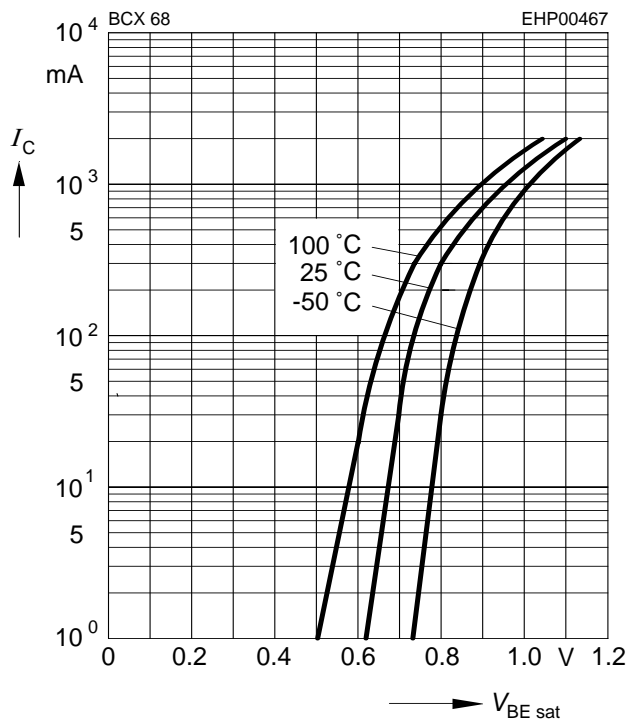
**Collector-emitter saturation voltage**

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



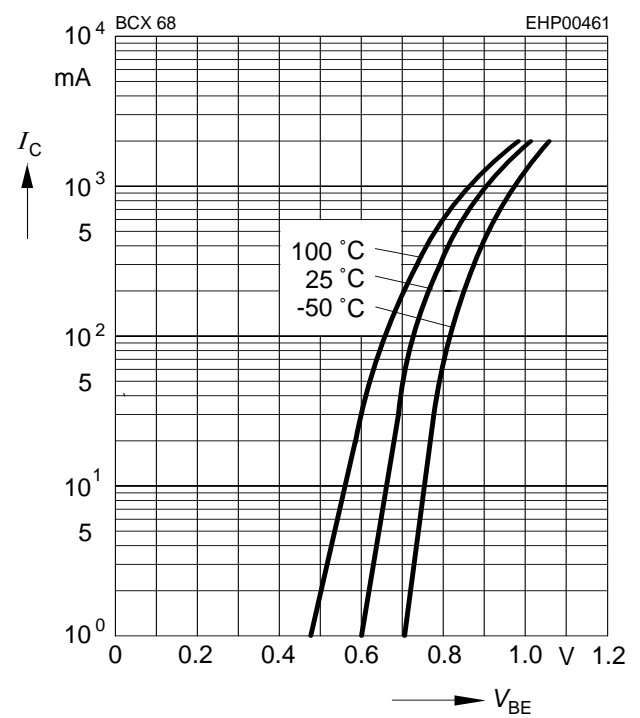
**Base-emitter saturation voltage**

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



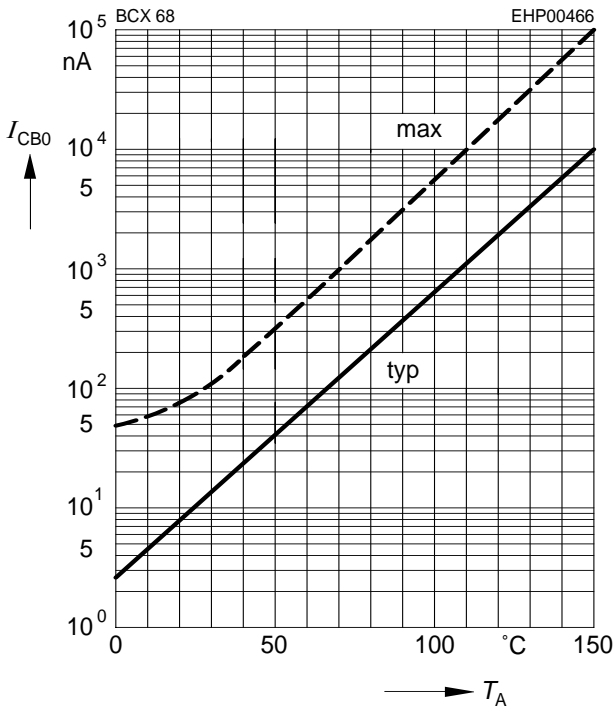
**Collector current  $I_C = f(V_{BE})$**

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



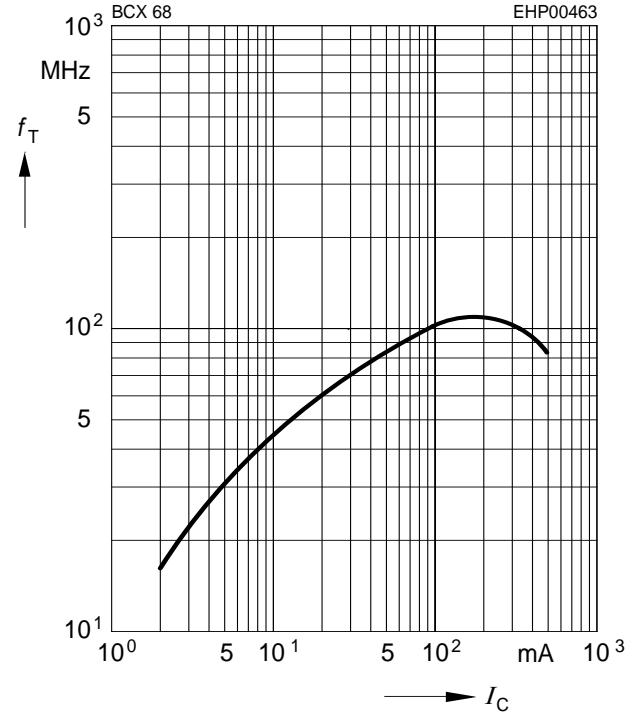
Collector cutoff current  $I_{CBO} = f(T_A)$

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

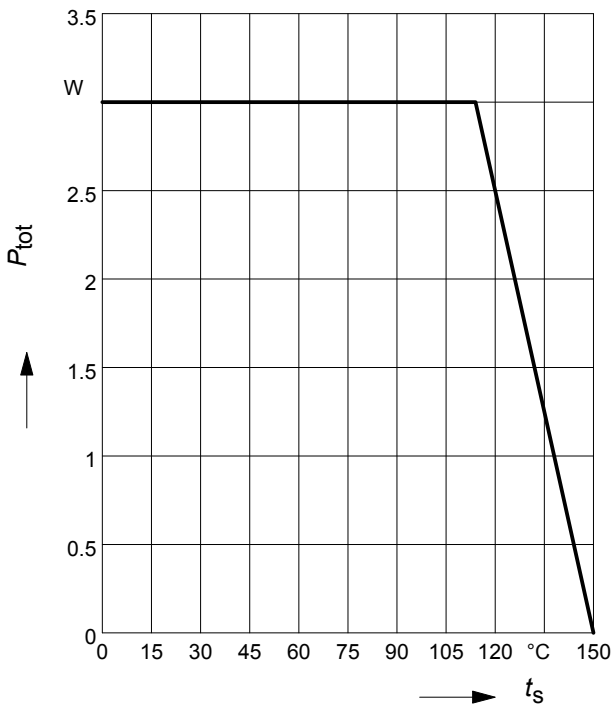


Transition frequency  $f_T = f(I_C)$

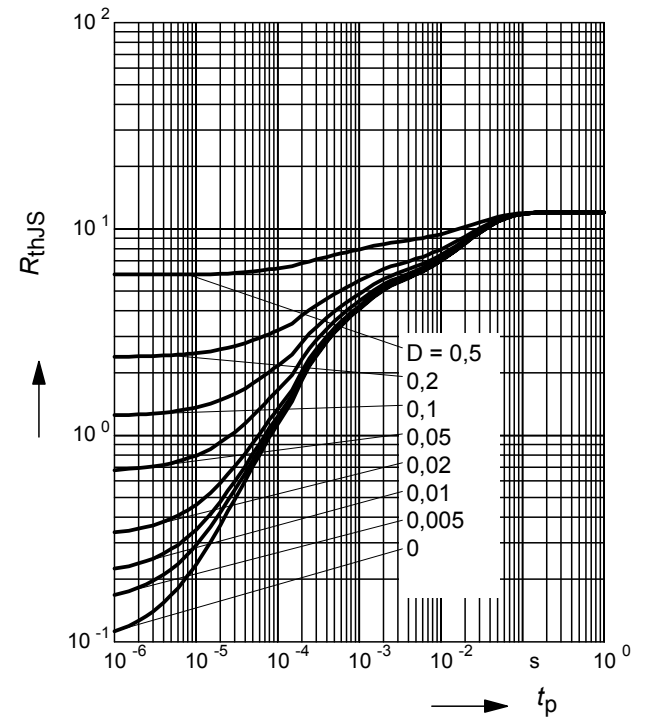
$V_{CE} = 5\text{ V}$



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

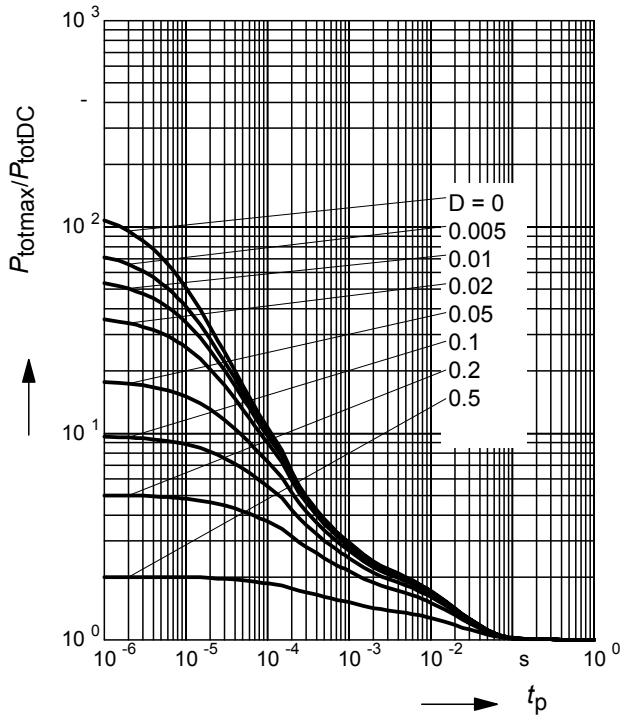


Permissible Pulse Load  $R_{thJS} = f(t_p)$

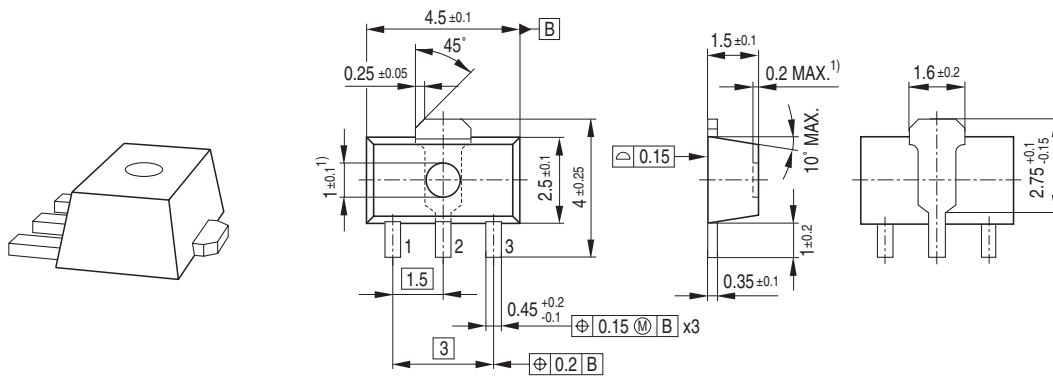


**Permissible Pulse Load**

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

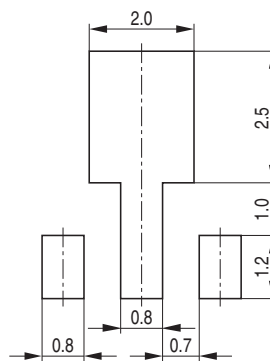


Package Outline

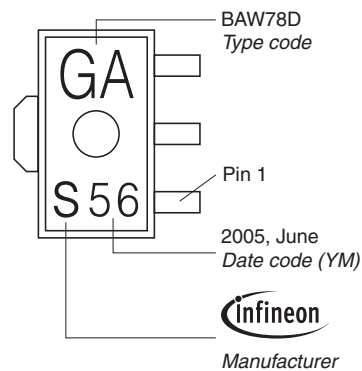


1) Ejector pin markings possible

Foot Print

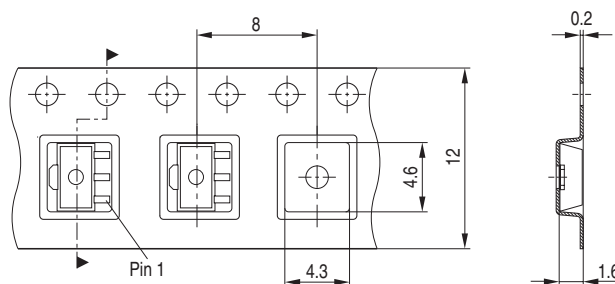


Marking Layout (Example)



Standard Packing

Reel  $\varnothing 180 \text{ mm} = 1.000 \text{ Pieces/Reel}$   
 Reel  $\varnothing 330 \text{ mm} = 4.000 \text{ Pieces/Reel}$



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