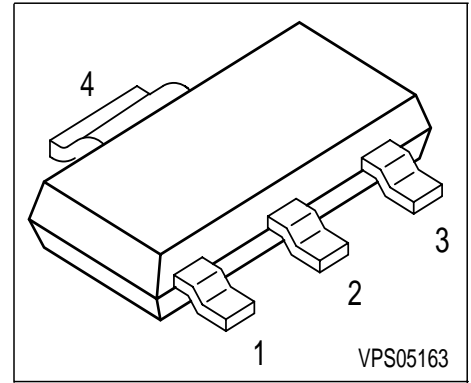
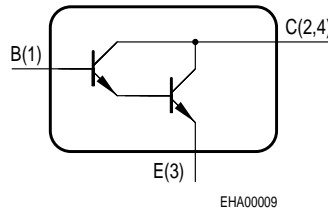


**NPN Silicon Darlington Transistors**

- For general AF applications
- High collector current
- High current gain
- Complementary types: BCP28/48 (PNP)



Type	Marking	Pin Configuration				Package
BCP29	BCP 29	1 = B	2 = C	3 = E	4 = C	SOT223
BCP49	BCP 49	1 = B	2 = C	3 = E	4 = C	SOT223

**Maximum Ratings**

Parameter	Symbol	BCP29	BCP49	Unit
Collector-emitter voltage	$V_{CEO}$	30	60	V
Collector-base voltage	$V_{CBO}$	40	80	
Emitter-base voltage	$V_{EBO}$	10	10	
DC collector current	$I_C$	500		mA
Peak collector current	$I_{CM}$	800		
Base current	$I_B$	100		
Peak base current	$I_{BM}$	200		mA
Total power dissipation, $T_S = 124\text{ °C}$	$P_{tot}$	1.5		
Junction temperature	$T_j$	150		
Storage temperature	$T_{stg}$	-65 ... 150		°C

**Thermal Resistance**

Junction - soldering point <sup>1)</sup>	$R_{thJS}$	≤17	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 $I_C = 1 \text{ mA}, I_B = 0$	$V_{(BR)CEO}$				V
BCP29		30	-	-	
BCP49		60	-	-	
Collector-base breakdown voltage $I_C = 100 \mu\text{A}, I_E = 0$	$V_{(BR)CBO}$				
BCP29		40	-	-	
BCP49		80	-	-	
Emitter-base breakdown voltage $I_E = 10 \mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	10	-	-	
Collector cutoff current $V_{CB} = 30 \text{ V}, I_E = 0$	$I_{CBO}$				nA
BCP29		-	-	100	
$V_{CB} = 60 \text{ V}, I_E = 0$	BCP49			100	
Collector cutoff current $V_{CB} = 30 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	$I_{CBO}$				$\mu\text{A}$
BCP29		-	-	10	
$V_{CB} = 60 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	BCP49			10	
Emitter cutoff current $V_{EB} = 5 \text{ V}, I_C = 0$	$I_{EBO}$	-	-	100	nA
DC current gain 1) $I_C = 100 \mu\text{A}, V_{CE} = 1 \text{ V}$	$h_{FE}$				-
BCP29		4000	-	-	
BCP49		2000	-	-	
DC current gain 1) $I_C = 10 \text{ mA}, V_{CE} = 5 \text{ V}$	$h_{FE}$				
BCP29		10000	-	-	
BCP49		4000	-	-	
DC current gain 1) $I_C = 100 \text{ mA}, V_{CE} = 5 \text{ V}$	$h_{FE}$				
BCP29		20000	-	-	
BCP49		10000	-	-	
DC current gain 1) $I_C = 500 \text{ mA}, V_{CE} = 5 \text{ V}$	$h_{FE}$				
BCP29		4000	-	-	
BCP49		2000	-	-	

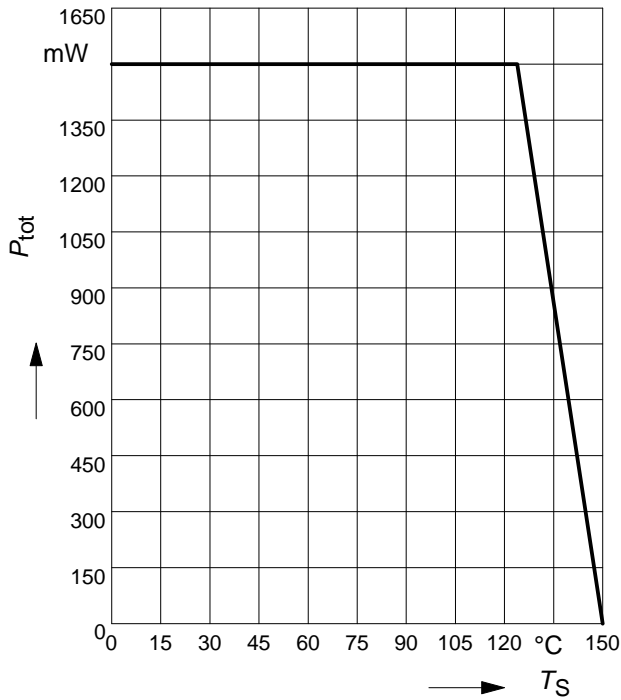
 1) Pulse test:  $t \leq 300 \mu\text{s}$ ,  $D = 2\%$

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 100\text{ mA}, I_B = 0.1\text{ mA}$	$V_{CEsat}$	-	-	1	V
Base-emitter saturation voltage 1) $I_C = 100\text{ mA}, I_B = 0.1\text{ mA}$	$V_{BEsat}$	-	-	1.5	
<b>AC Characteristics</b>					
Transition frequency $I_C = 50\text{ mA}, V_{CE} = 5\text{ V}, f = 100\text{ MHz}$	$f_T$	-	200	-	MHz
Collector-base capacitance $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$	$C_{cb}$	-	6.5	-	pF

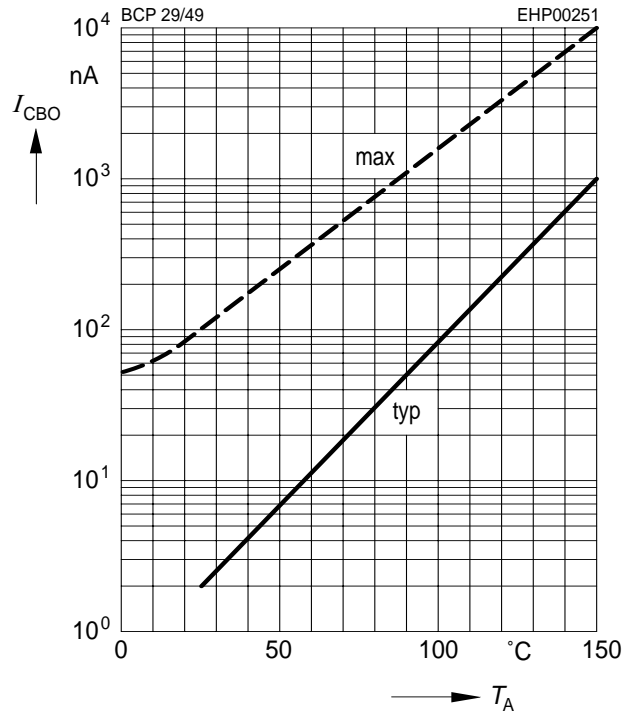
1) Pulse test:  $t \leq 300\mu\text{s}$ ,  $D = 2\%$

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



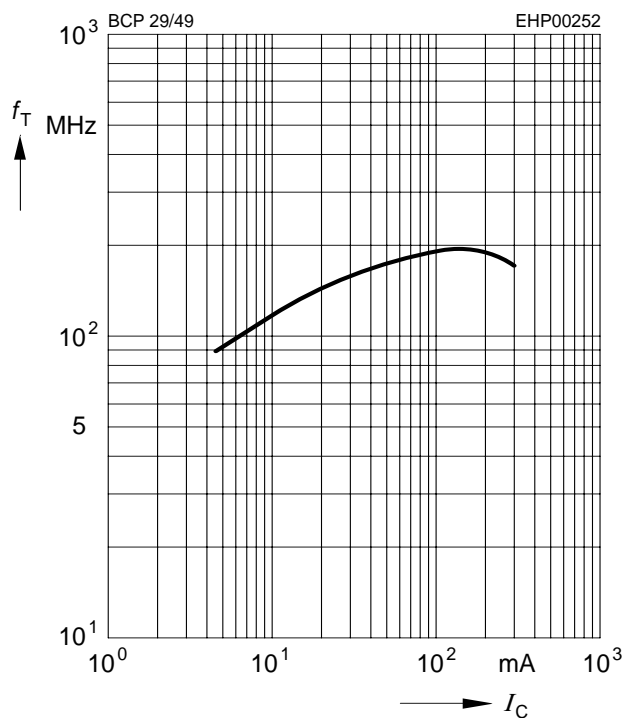
**Collector cutoff current  $I_{CBO} = f(T_A)$**

$V_{CB} = V_{CEmax}$



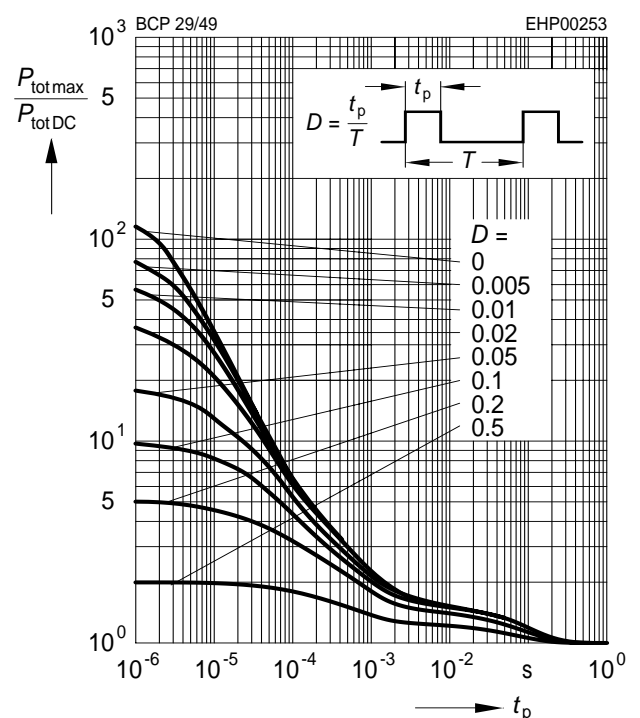
**Transition frequency  $f_T = f(I_C)$**

$V_{CE} = 5V$



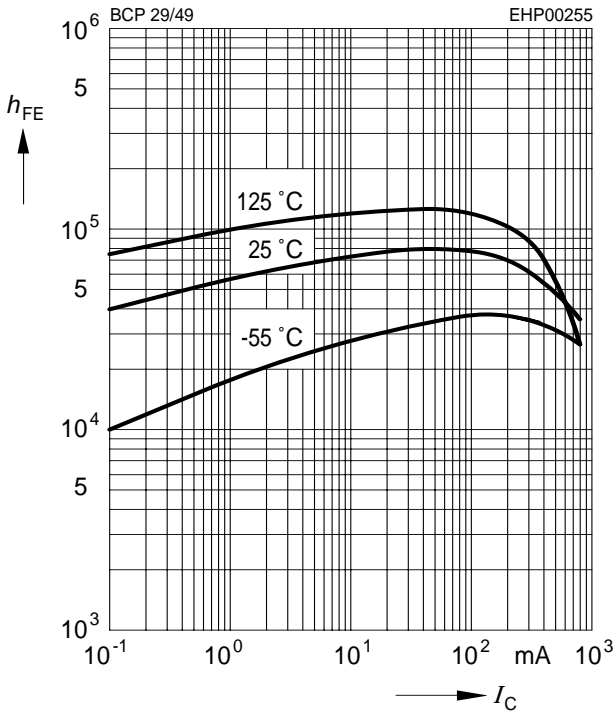
**Permissible pulse load**

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



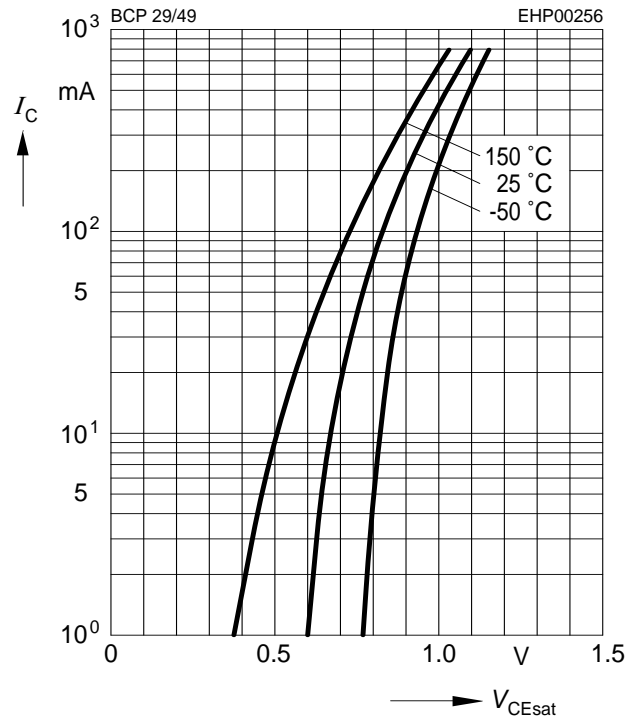
**DC current gain  $h_{FE} = f(I_C)$**

$V_{CE} = 5V$



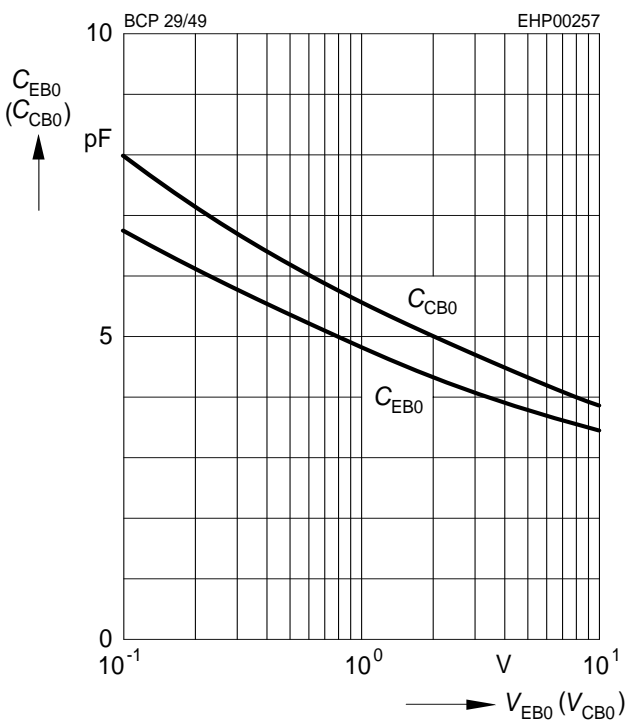
**Collector-emitter saturation voltage**

$I_C = f(V_{CEsat}), h_{FE} = 1000$



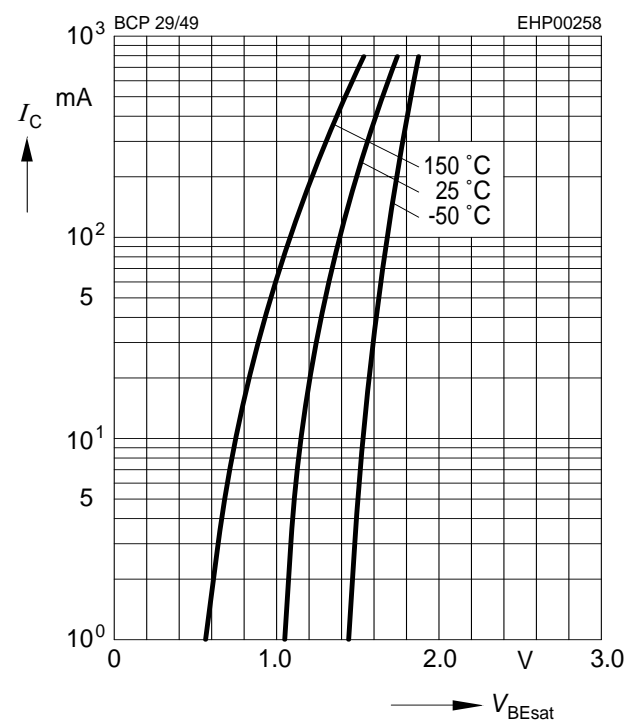
**Collector-base capacitance  $C_{CB} = f(V_{CB0})$**

**Emitter-base capacitance  $C_{EB} = f(V_{EB0})$**



**Base-emitter saturation voltage**

$I_C = f(V_{BEsat}), h_{FE} = 1000$



**Published by Infineon Technologies AG,  
St.-Martin-Strasse 53,  
81669 München**

**© Infineon Technologies AG 2004.  
All Rights Reserved.**

**Attention please!**

The information herein is given to describe certain components and shall not be considered as a guarantee of characteristics.

Terms of delivery and rights to technical change reserved.

We hereby disclaim any and all warranties, including but not limited to warranties of non-infringement, regarding circuits, descriptions and charts stated herein.

**Information**

For further information on technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies Office ([www.infineon.com](http://www.infineon.com)).

**Warnings**

Due to technical requirements components may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies Office.

Infineon Technologies Components may only be used in life-support devices or systems with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body, or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.