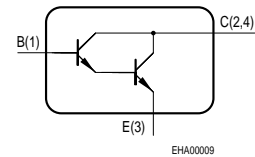
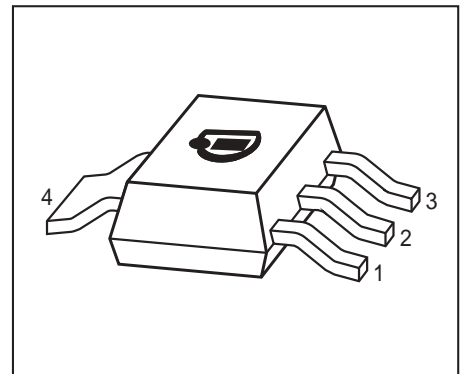


**NPN Silicon Darlington Transistors**

- For general AF applications
- High collector current
- High current gain
- Pb-free (RoHS compliant) package<sup>1)</sup>
- Qualified according AEC Q101



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

**Maximum Ratings**

Parameter	Symbol	Values	Unit	
Collector-emitter voltage	$V_{CEO}$	60	V	
Collector-base voltage	$V_{CBO}$	80		
Emitter-base voltage	$V_{EBO}$	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		W
Junction temperature	$T_j$	150		
Storage temperature	$T_{stg}$	-65 ... 150		

**Thermal Resistance**

Junction - soldering point <sup>2)</sup>	$R_{thJS}$	≤17	K/W
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<sup>1</sup>Pb-containing package may be available upon special request

<sup>2</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 $I_C = 1 \text{ mA}, I_B = 0$	$V_{(BR)CEO}$	60	-	-	V
Collector-base breakdown voltage $I_C = 100 \mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	80	-	-	
Emitter-base breakdown voltage $I_E = 10 \mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	10	-	-	
Collector cutoff current $V_{CB} = 60 \text{ V}, I_E = 0$	$I_{CBO}$	-	-	100	nA
Collector cutoff current $V_{CB} = 60 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	$I_{CBO}$	-	-	10	$\mu\text{A}$
Emitter cutoff current $V_{EB} = 5 \text{ V}, I_C = 0$	$I_{EBO}$	-	-	100	nA
DC current gain 1) $I_C = 100 \mu\text{A}, V_{CE} = 1 \text{ V}$	$h_{FE}$	2000	-	-	-
DC current gain 1) $I_C = 10 \text{ mA}, V_{CE} = 5 \text{ V}$	$h_{FE}$	4000	-	-	
DC current gain 1) $I_C = 100 \text{ mA}, V_{CE} = 5 \text{ V}$	$h_{FE}$	10000	-	-	
DC current gain 1) $I_C = 500 \text{ mA}, V_{CE} = 5 \text{ V}$	$h_{FE}$	2000	-	-	

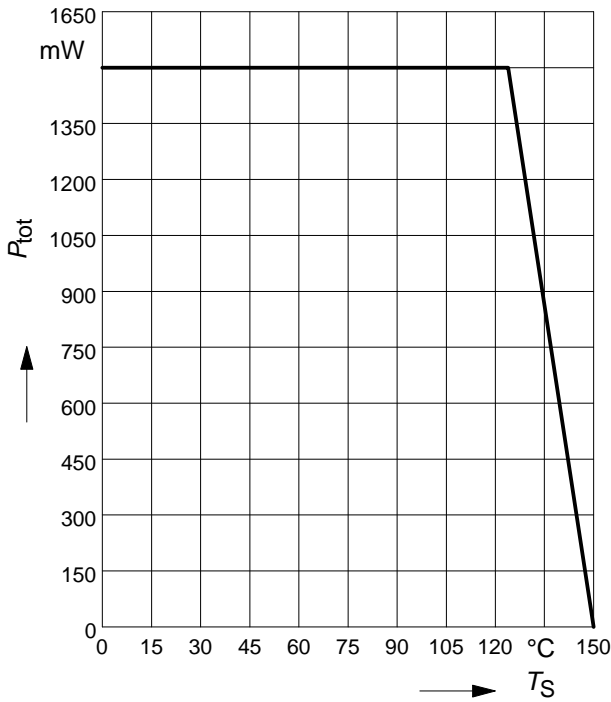
1) Pulse test:  $t \leq 300 \mu\text{s}$ ,  $D = 2\%$

**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

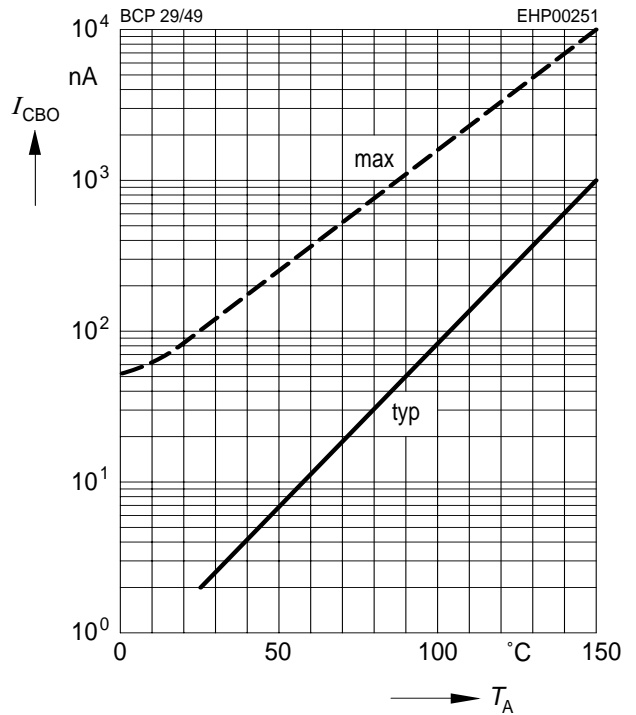
1) Pulse test:  $t \leq 300\mu\text{s}$ ,  $D = 2\%$

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



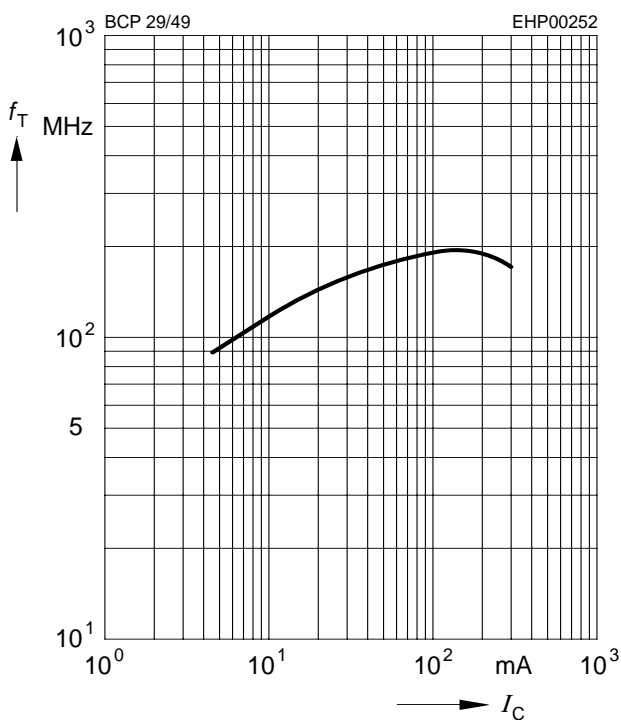
**Collector cutoff current  $I_{CBO} = f(T_A)$**

$V_{CB} = V_{CEmax}$



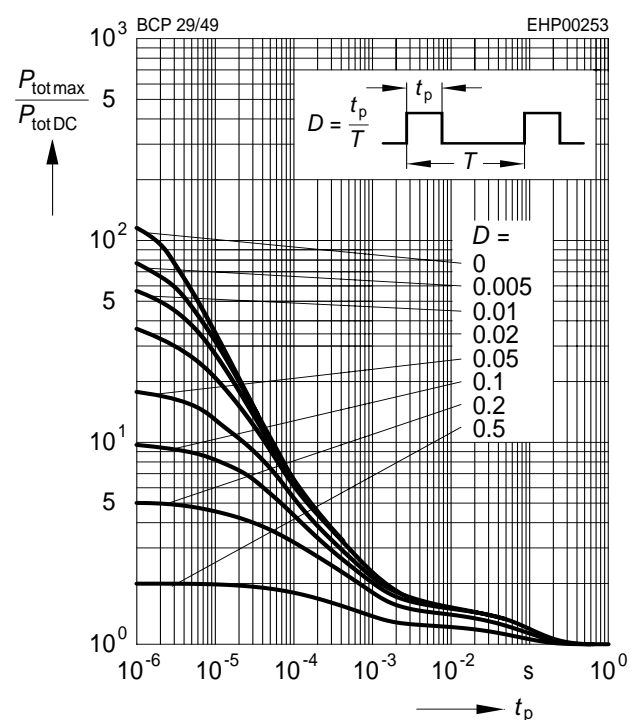
**Transition frequency  $f_T = f(I_C)$**

$V_{CE} = 5V$



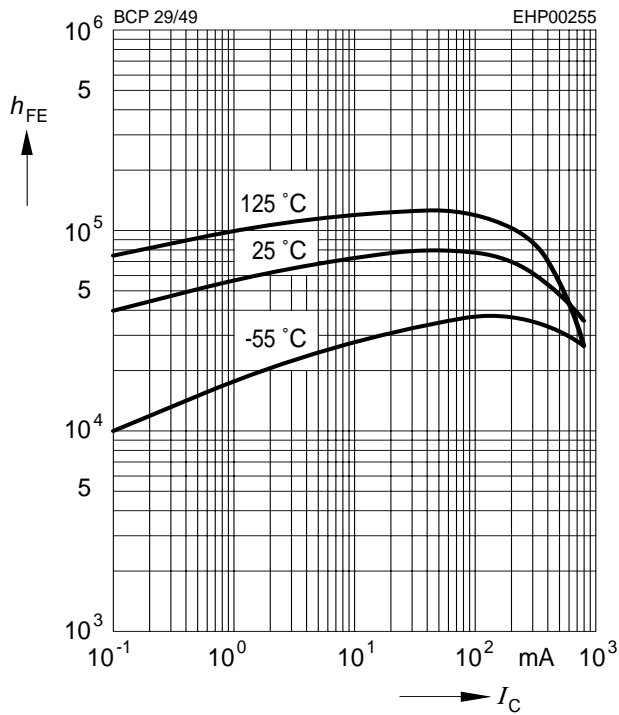
**Permissible pulse load**

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



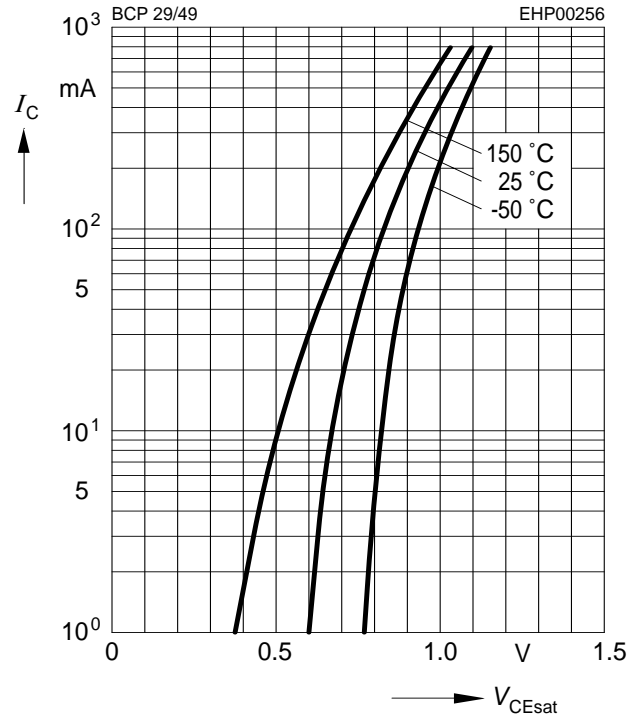
**DC current gain  $h_{FE} = f(I_C)$**

$V_{CE} = 5V$



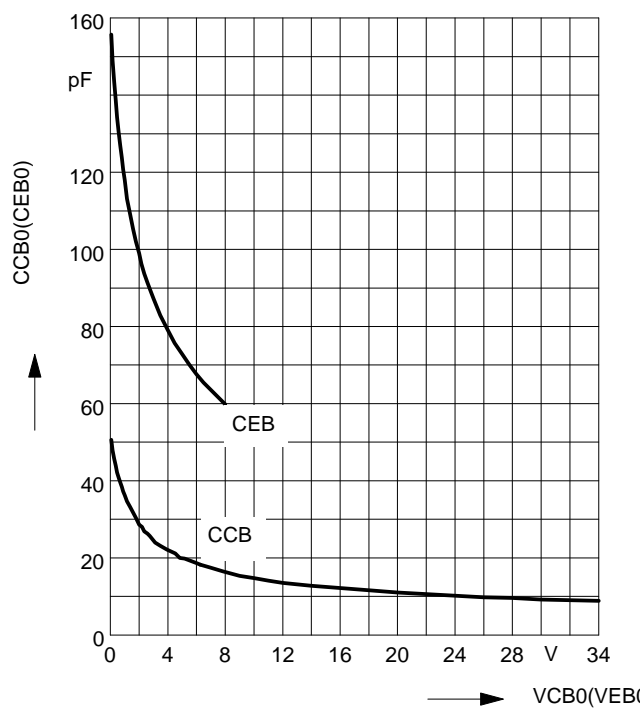
**Collector-emitter saturation voltage**

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



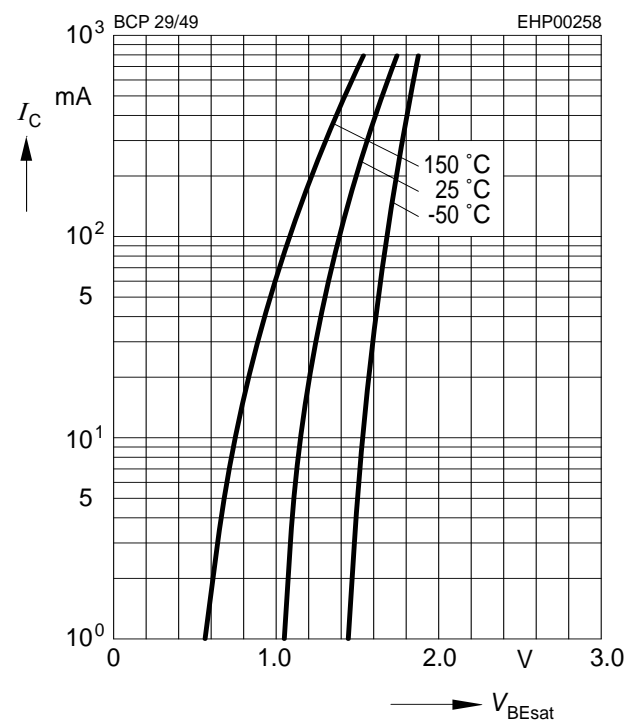
**Collector-base capacitance  $C_{cb} = f(V_{CB})$**

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

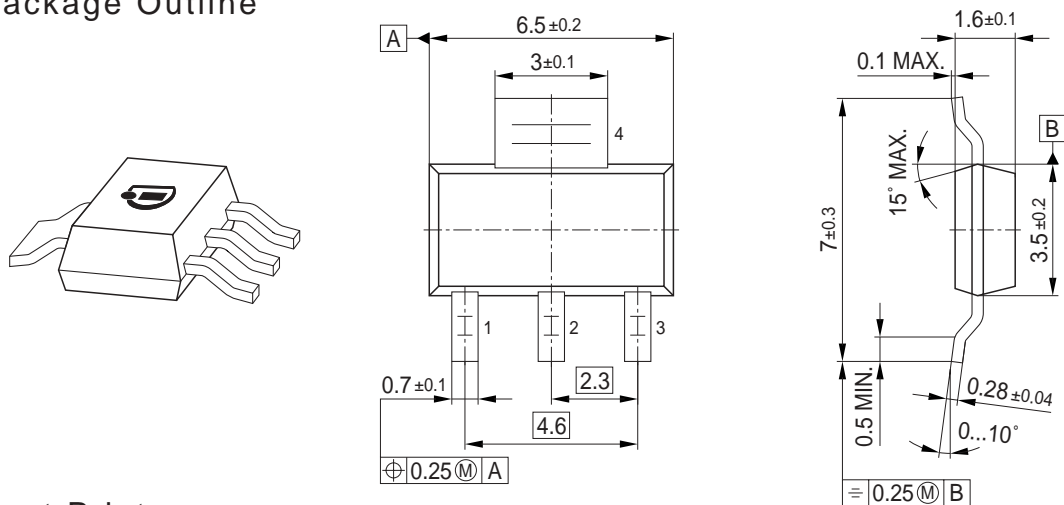


**Base-emitter saturation voltage**

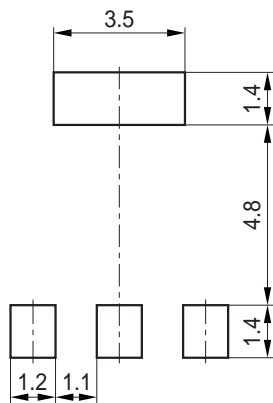
$I_C = f(V_{BEsat}), h_{FE} = 1000$



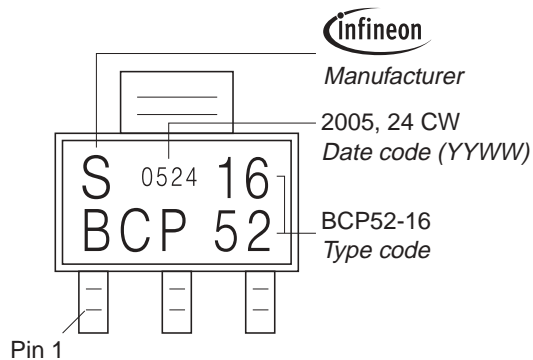
Package Outline



Foot Print

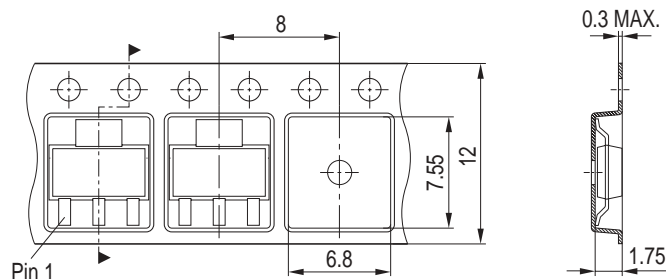


Marking Layout (Example)



Packing

Reel ø180 mm = 1.000 Pieces/Reel  
 Reel ø330 mm = 4.000 Pieces/Reel



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