

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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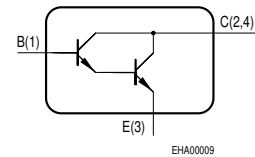
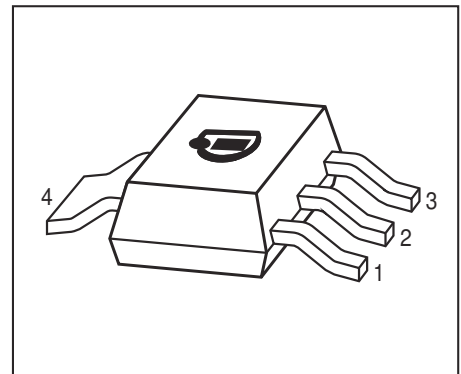
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**NPN Silicon Darlington Transistors**

- 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	mA
Base current	$I_B$	100	
Peak base current	$I_{BM}$	200	
Total power dissipation, $T_S = 124\text{ °C}$	$P_{tot}$	1.5	W
Junction temperature	$T_j$	150	°C
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	-	-	

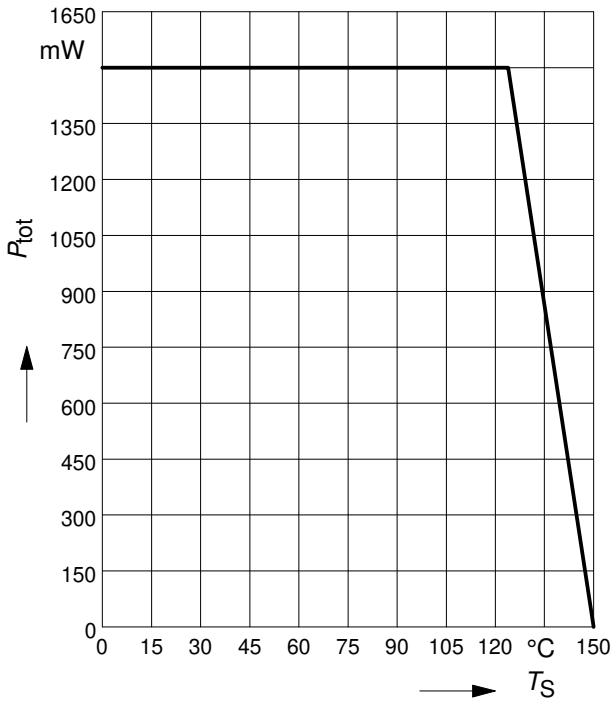
1) Pulse test:  $t \leq 300 \mu\text{s}$ ,  $D = 2\%$

**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

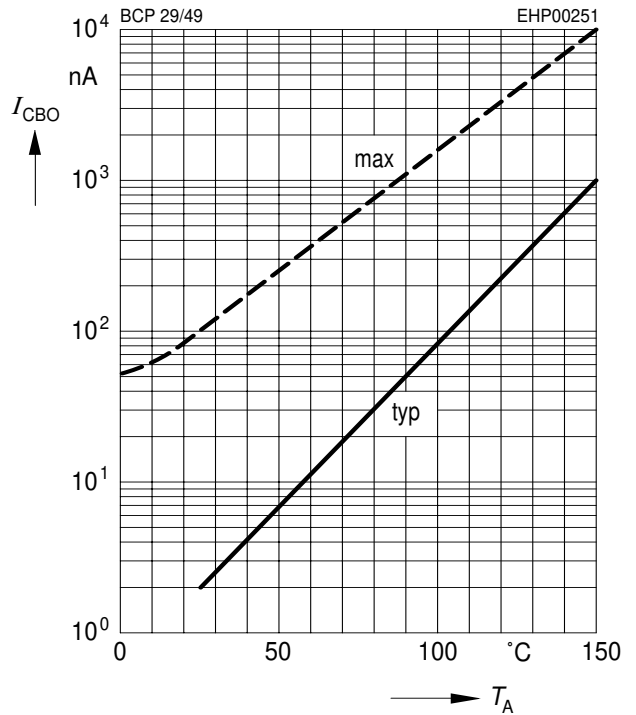
1) Pulse test:  $t \leq 300\mu\text{s}$ ,  $D = 2\%$

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



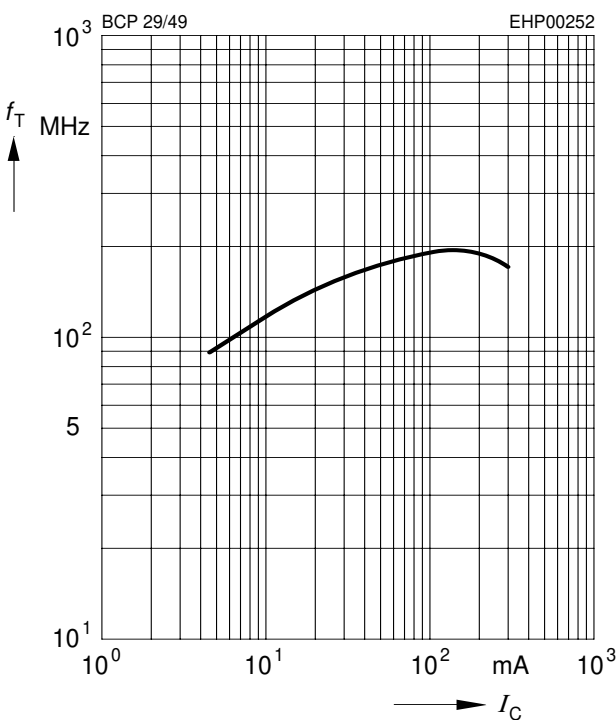
**Collector cutoff current  $I_{CBO} = f(T_A)$**

$V_{CB} = V_{CEmax}$



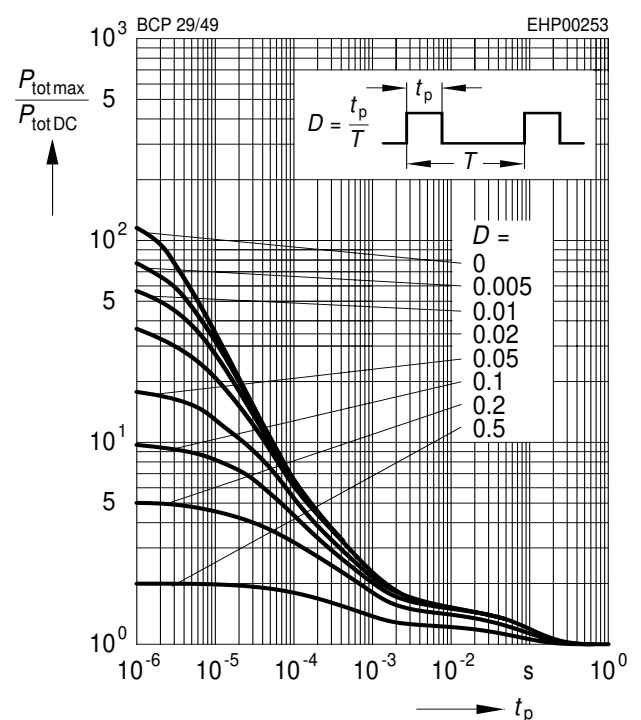
**Transition frequency  $f_T = f(I_C)$**

$V_{CE} = 5V$



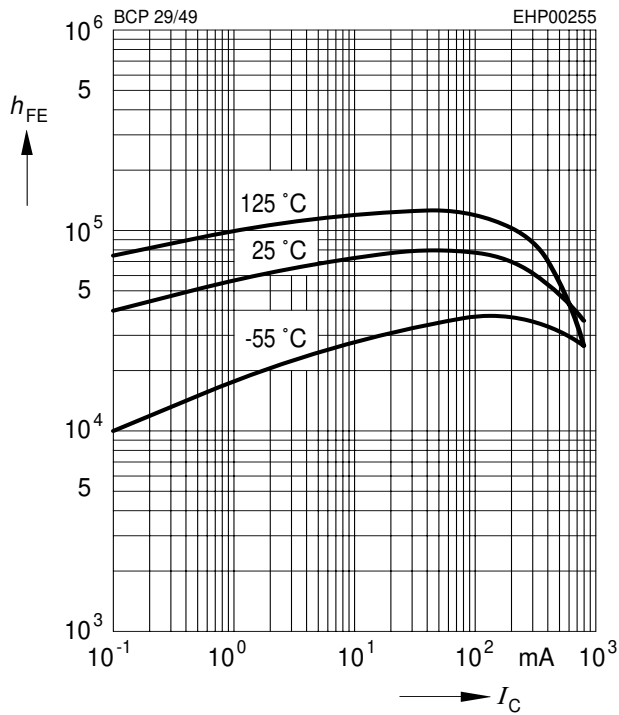
**Permissible pulse load**

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



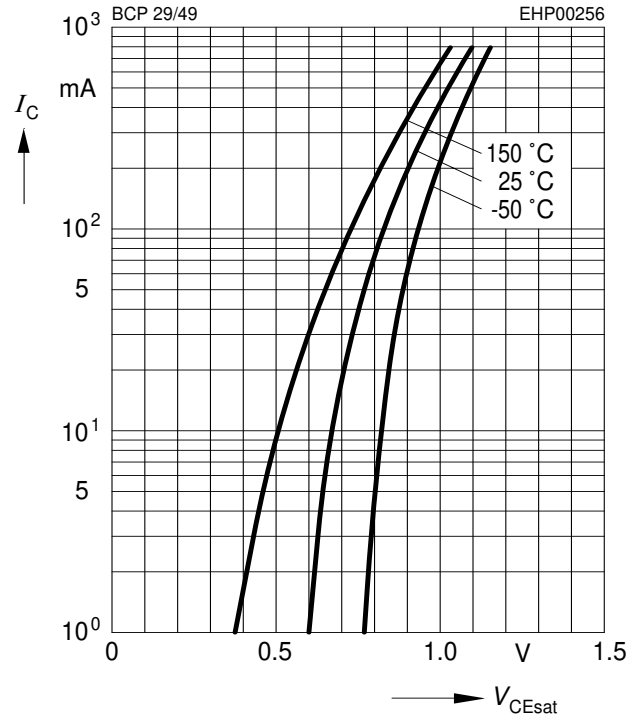
**DC current gain  $h_{FE} = f(I_C)$**

$V_{CE} = 5V$



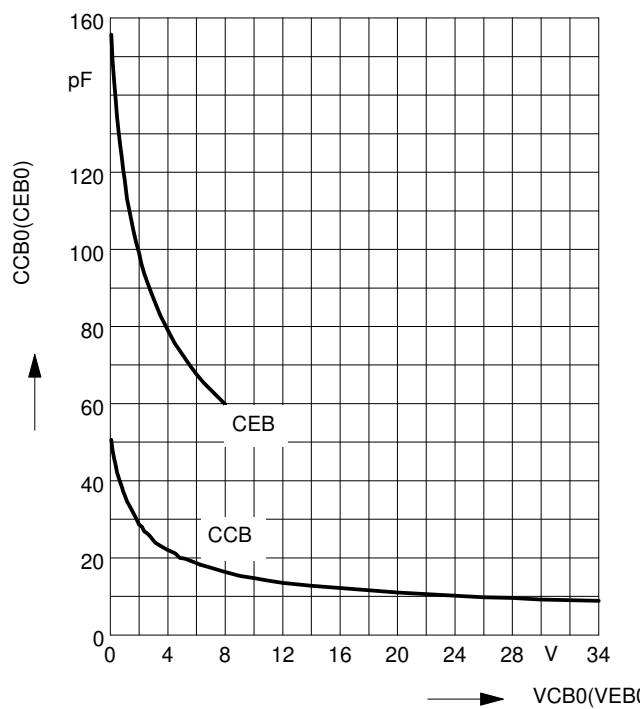
**Collector-emitter saturation voltage**

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



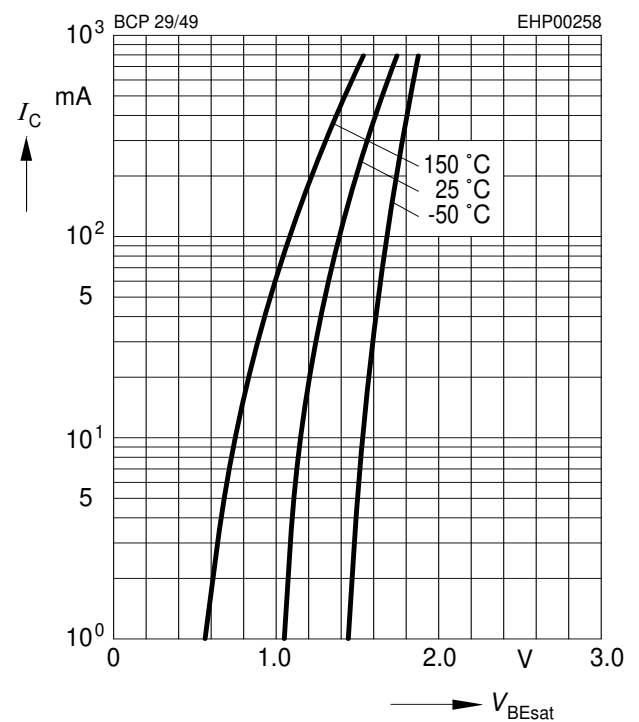
**Collector-base capacitance  $C_{cb} = f(V_{CB})$**

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

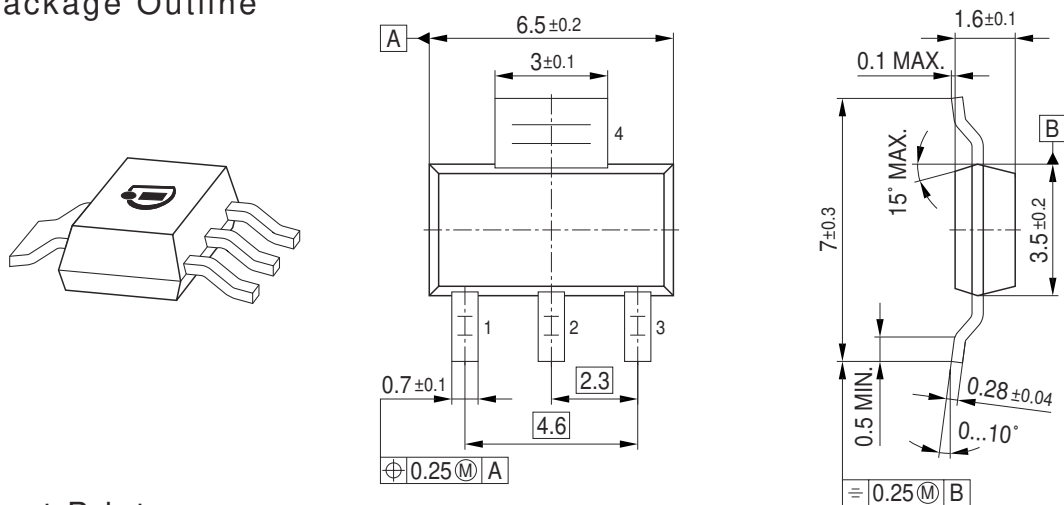


**Base-emitter saturation voltage**

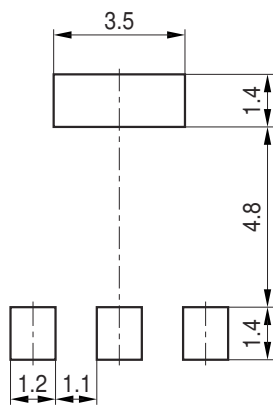
$I_C = f(V_{BEsat}), h_{FE} = 1000$



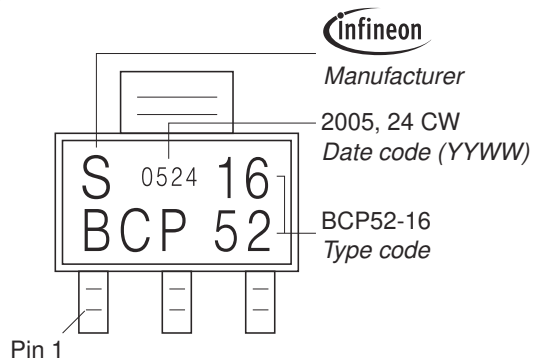
Package Outline



Foot Print

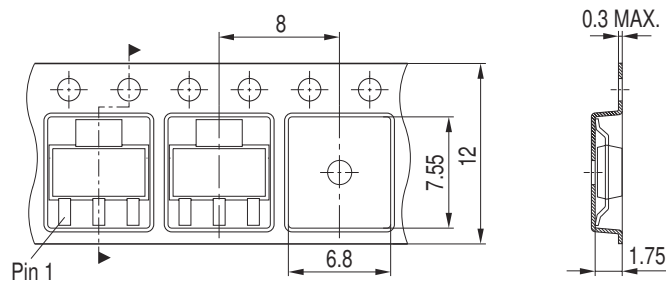


Marking Layout (Example)



Packing

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



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