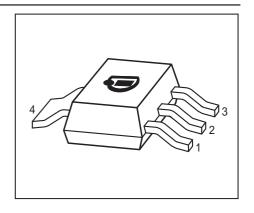


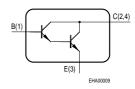
NPN Silicon Darlington Transistors

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









Туре	Marking		Pin Con	figuration	1	Package
BCP49	BCP 49	1 = B	2 = C	3 = E	4 = C	SOT223

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	$V_{\sf CEO}$	60	V
Collector-base voltage	V_{CBO}	80	
Emitter-base voltage	V_{EBO}	10	
DC collector current	l _C	500	mA
Peak collector current	/ CM	800	mA
Base current	l _B	100	
Peak base current	I _{BM}	200	
Total power dissipation, $T_S = 124 ^{\circ}\text{C}$	P_{tot}	1.5	W
Junction temperature	$T_{\rm j}$	150	°C
Storage temperature	$T_{\rm stg}$	-65 150	

Thermal Resistance

51 1100	Junction - soldering point ²⁾	R _{thJS}	≤17	K/W
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1

2007-04-27

¹Pb-containing package may be available upon special request

 $^{^2\}mbox{For calculation of }R_{\mbox{\scriptsize thJA}}$ please refer to Application Note Thermal Resistance



Electrical Characteristics at $T_A = 25$ °C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics	,				
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	60	-	-	V
$I_{\rm C} = 1 \text{ mA}, I_{\rm B} = 0$					
Collector-base breakdown voltage	$V_{(BR)CBO}$	80	-	-	
$I_{\rm C} = 100 \ \mu {\rm A}, \ I_{\rm E} = 0$					
Emitter-base breakdown voltage	$V_{(BR)EBO}$	10	-	-	
$I_{\rm E} = 10 \ \mu \text{A}, \ I_{\rm C} = 0$					
Collector cutoff current	I _{CBO}	-	-	100	nA
$V_{\rm CB} = 60 \text{ V}, I_{\rm E} = 0$					
Collector cutoff current	I _{CBO}	-	-	10	μA
$V_{\text{CB}} = 60 \text{ V}, I_{\text{E}} = 0 , T_{\text{A}} = 150 ^{\circ}\text{C}$					
Emitter cutoff current	I _{EBO}	-	-	100	nA
$V_{EB} = 5 \text{ V}, I_{C} = 0$					
DC current gain 1)	h _{FE}	2000	-	-	-
$I_{\rm C} = 100 \mu{\rm A}, \ V_{\rm CE} = 1 \rm V$					
DC current gain 1)	h _{FE}	4000	-	-	
$I_{\rm C} = 10 \text{ mA}, \ V_{\rm CE} = 5 \text{ V}$					
DC current gain 1)	h _{FE}	10000	-	-	
$I_{\rm C} = 100 \text{ mA}, \ V_{\rm CE} = 5 \text{ V}$					
DC current gain 1)	h _{FE}	2000	-	-	
$I_{\rm C} = 500 \text{ mA}, \ V_{\rm CE} = 5 \text{ V}$					

¹⁾ Pulse test: $t \le 300\mu s$, D = 2%



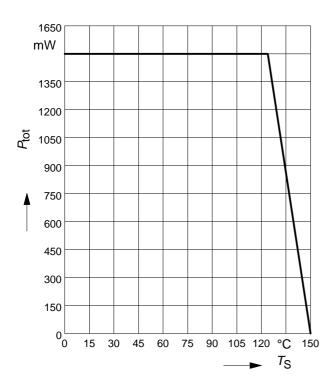
Electrical Characteristics at $T_A = 25$ °C, unless otherwise specified.

Parameter	Symbol	Values		Unit	
		min.	typ.	max.	
DC Characteristics	•				
Collector-emitter saturation voltage1)	V _{CEsat}	-	-	1	V
$I_{\rm C}$ = 100 mA, $I_{\rm B}$ = 0.1 mA					
Base-emitter saturation voltage 1)	V_{BEsat}	-	-	1.5	
$I_{\rm C}$ = 100 mA, $I_{\rm B}$ = 0.1 mA					
AC Characteristics					
Transition frequency	f _T	-	200	-	MHz
$I_{\rm C} = 50 \text{ mA}, \ V_{\rm CE} = 5 \text{ V}, \ f = 100 \text{ MHz}$					
Collector-base capacitance	C _{cb}	-	6.5	-	pF
$V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$					

¹⁾ Pulse test: $t \le 300\mu s$, D = 2%

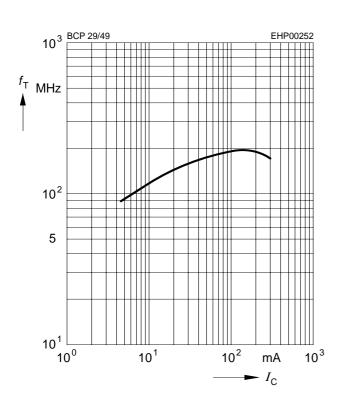


Total power dissipation $P_{tot} = f(T_S)$



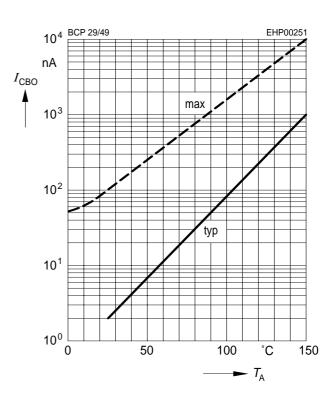
Transition frequency $f_T = f(I_C)$

$$V_{CE} = 5V$$



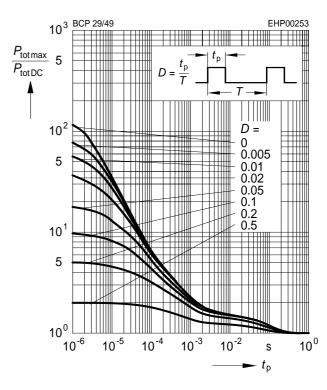
Collector cutoff current $I_{CBO} = f(T_A)$

$$V_{\text{CB}} = V_{\text{CEmax}}$$



Permissible pulse load

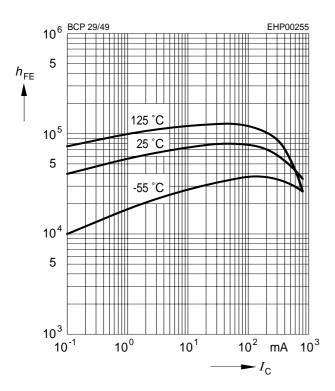
$$P_{\text{totmax}} / P_{\text{totDC}} = f(t_p)$$



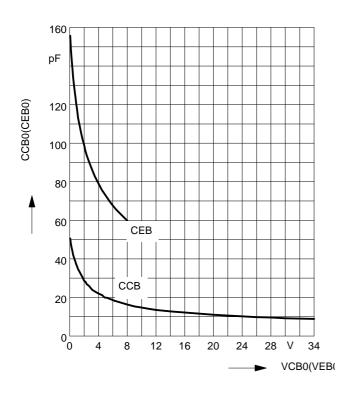


DC current gain $h_{FE} = f(I_C)$

$$V_{CE} = 5V$$

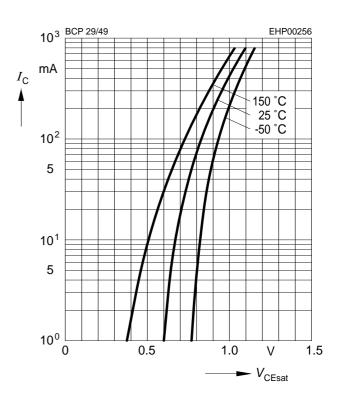


Collector-base capacitance $C_{cb} = f(V_{CB})$ Emitter-base capacitance $C_{eb} = f(V_{EB})$



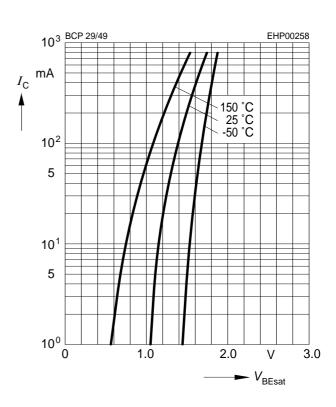
Collector-emitter saturation voltage

$$I_{\rm C} = f(V_{\rm CEsat}), h_{\rm FE} = 1000$$



Base-emitter saturation voltage

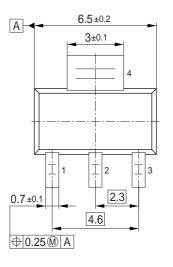
$$I_{\rm C} = f(V_{\rm BEsat}), h_{\rm FE} = 1000$$

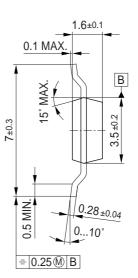




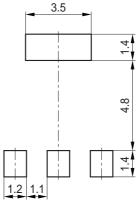
Package Outline



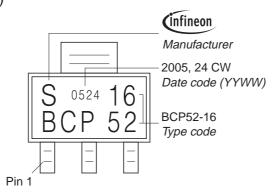




Foot Print

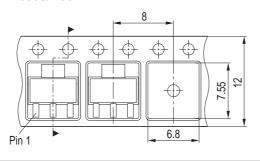


Marking Layout (Example)



Packing

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







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7

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