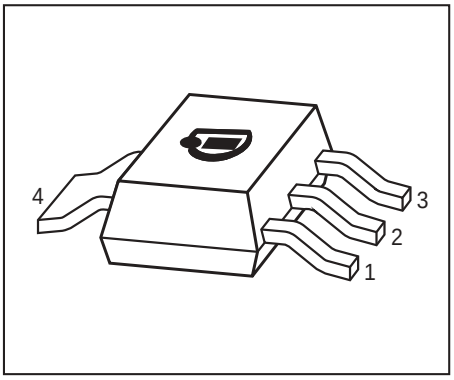
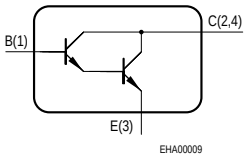
NPN Silicon Darlington Transistors



- For general AF applications
- High collector current
- High current gain
- Pb-free (RoHS compliant) package[1)]
- 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 °C	P_{tot}	1.5	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Junction - soldering point[2)]	R_{thJS}	≤17	K/W

[1]Pb-containing package may be available upon special request

[2]For calculation of R_{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 I_C = 1 mA, I_B = 0	$V_{(BR)CEO}$	60	-	-	V
Collector-base breakdown voltage I_C = 100 µA, I_E = 0	$V_{(BR)CBO}$	80	-	-	
Emitter-base breakdown voltage I_E = 10 µA, I_C = 0	$V_{(BR)EBO}$	10	-	-	
Collector cutoff current V_{CB} = 60 V, I_E = 0	I_{CBO}	-	-	100	nA
Collector cutoff current V_{CB} = 60 V, I_E = 0 , T_A = 150 °C	I_{CBO}	-	-	10	µA
Emitter cutoff current V_{EB} = 5 V, I_C = 0	I_{EBO}	-	-	100	nA
DC current gain 1) I_C = 100 µA, V_{CE} = 1 V	h_{FE}	2000	-	-	-
DC current gain 1) I_C = 10 mA, V_{CE} = 5 V	h_{FE}	4000	-	-	
DC current gain 1) I_C = 100 mA, V_{CE} = 5 V	h_{FE}	10000	-	-	
DC current gain 1) I_C = 500 mA, V_{CE} = 5 V	h_{FE}	2000	-	-	

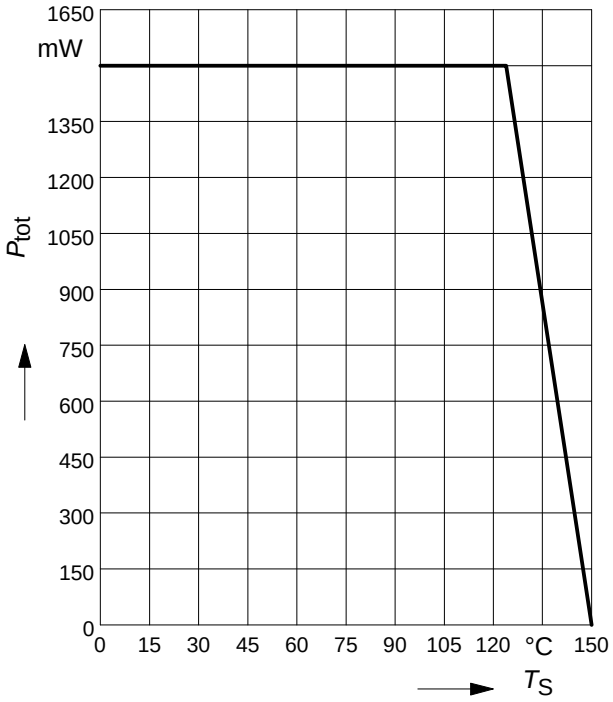
1) Pulse test: t ≤ 300µs, D = 2%

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter saturation voltage1) I_C = 100 mA, I_B = 0.1 mA	V_{CEsat}	-	-	1	V
Base-emitter saturation voltage 1) I_C = 100 mA, I_B = 0.1 mA	V_{BEsat}	-	-	1.5	
AC Characteristics					
Transition frequency I_C = 50 mA, V_{CE} = 5 V, f = 100 MHz	f_T	-	200	-	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	6.5	-	pF

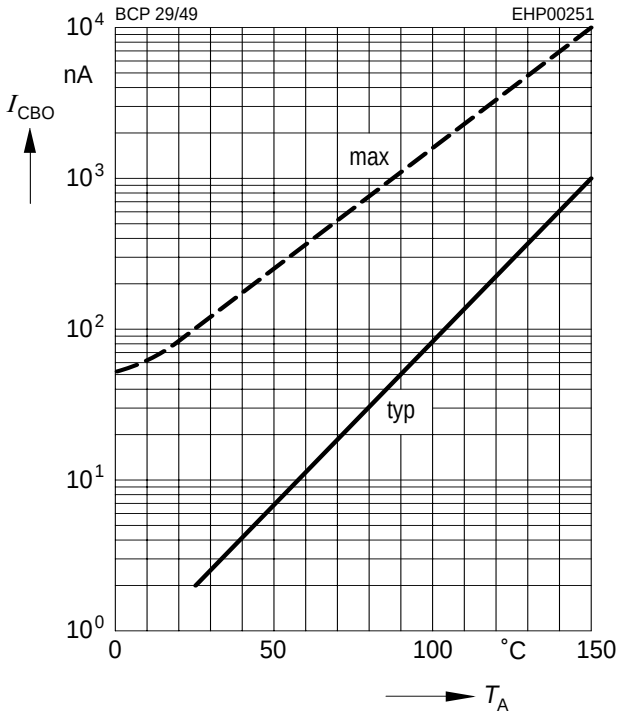
1) Pulse test: t ≤ 300µs, D = 2%

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



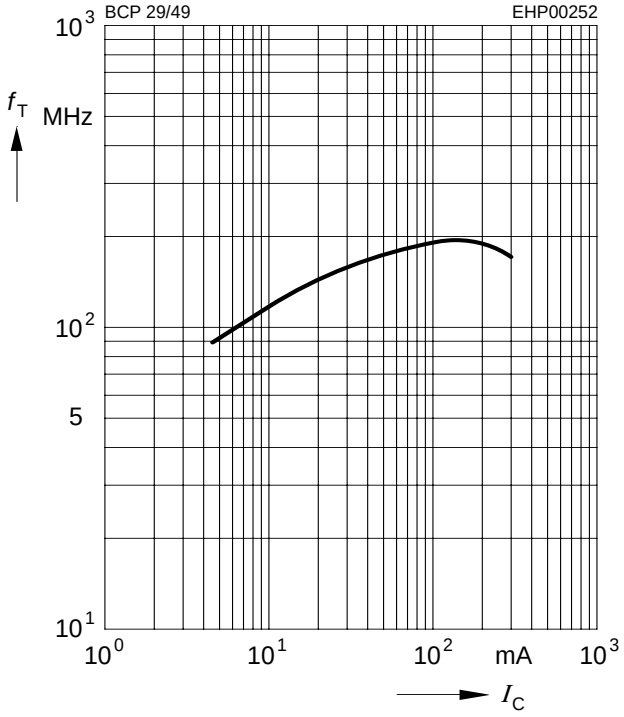
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = V_{CEmax}$



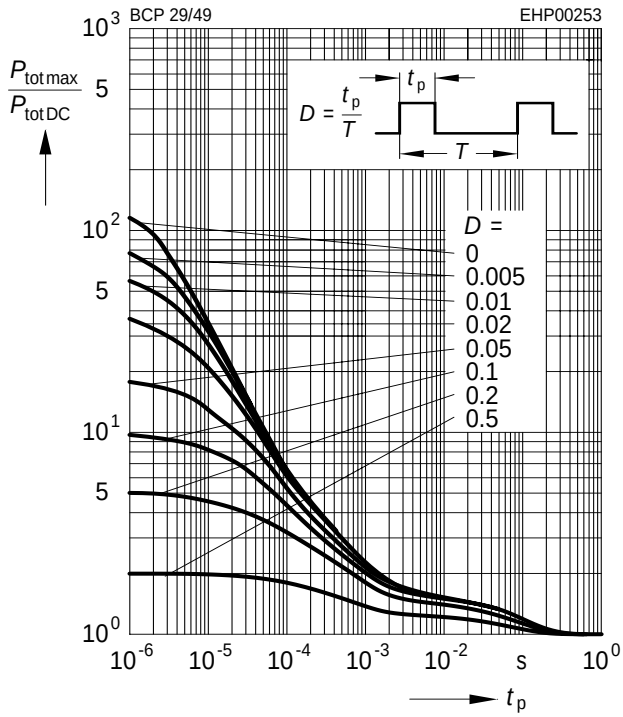
Transition frequency $f_T = f(I_C)$

$V_{CE} = 5V$



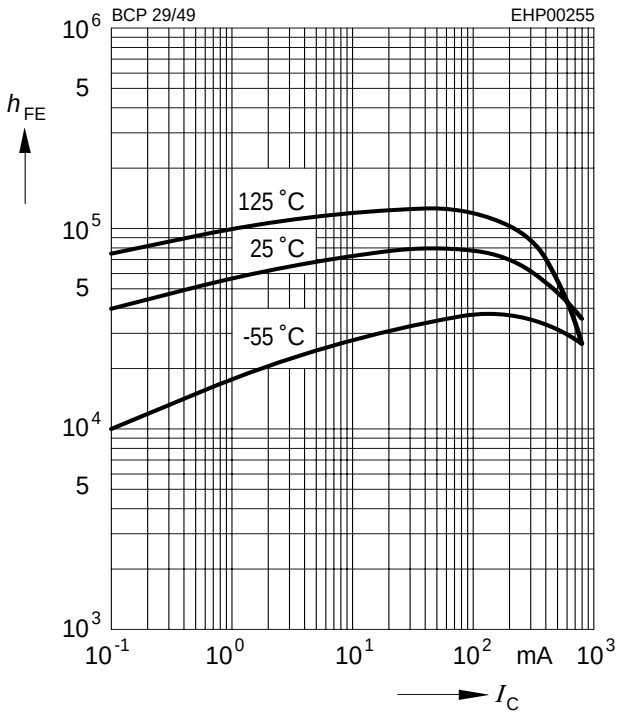
Permissible pulse load

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



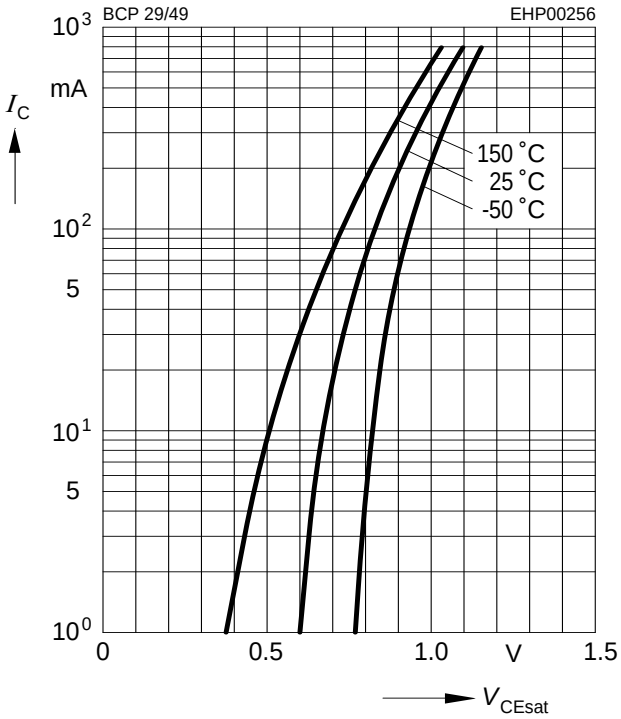
DC current gain $h_{FE} = f(I_C)$

V_{CE} = 5V



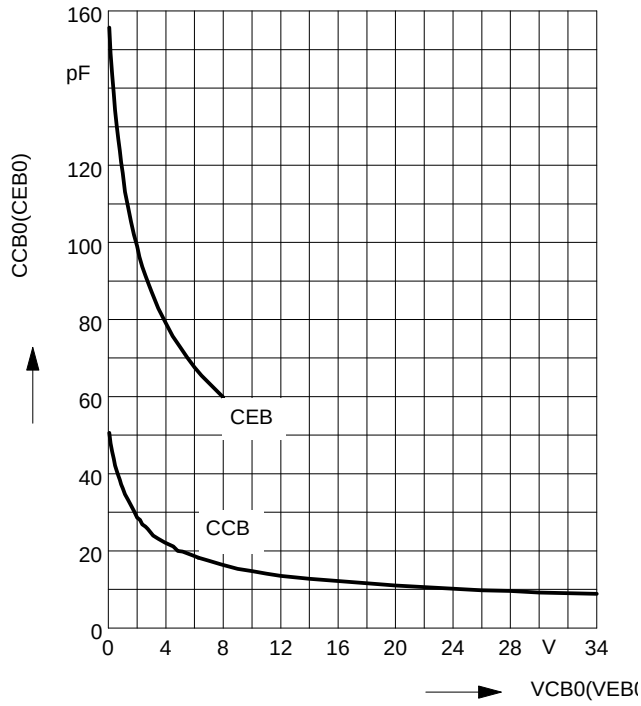
Collector-emitter saturation voltage

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



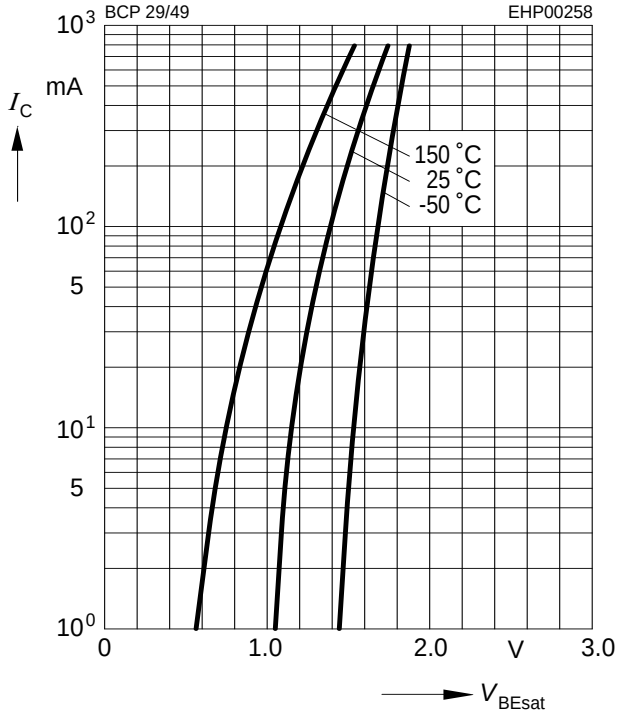
Collector-base capacitance $C_{cb} = f(V_{CB})$

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



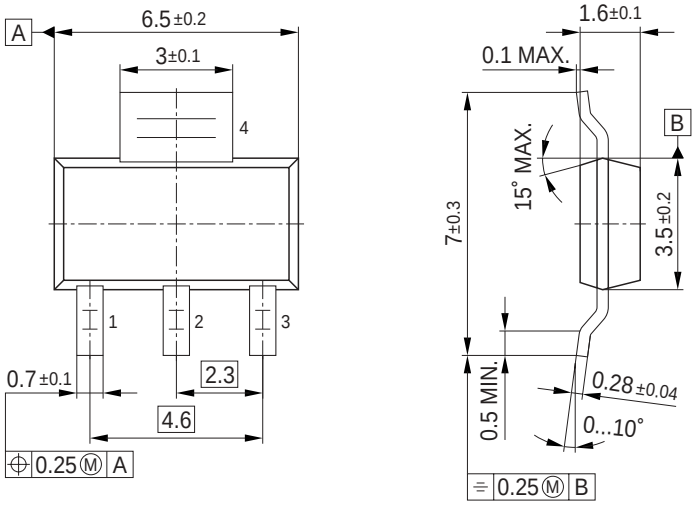
Base-emitter saturation voltage

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

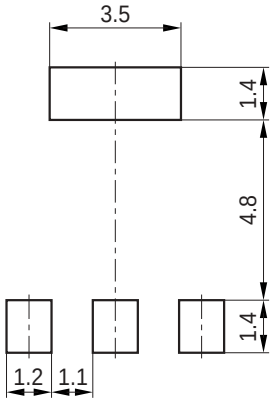


Package Outline

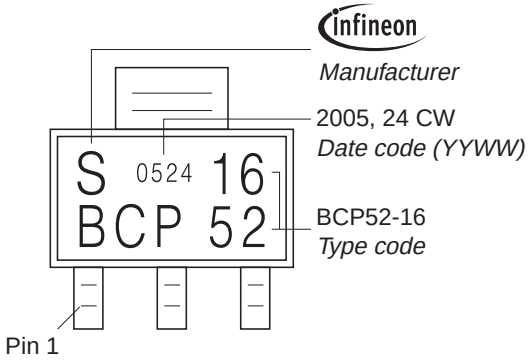




Foot Print

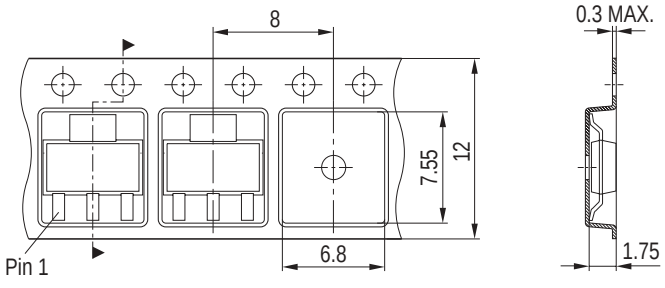


Marking Layout (Example)



Packing

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



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