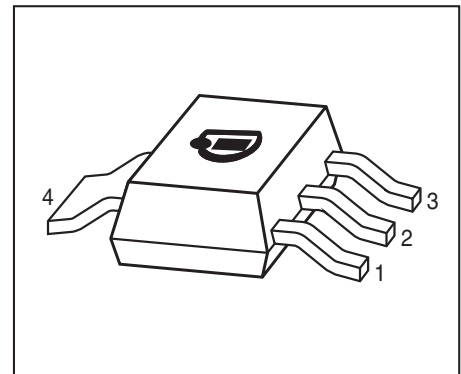


**NPN Silicon Darlington Transistor**

- 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
PZTA14	PZTA14	1=B	2=C	3=E	4=C	-	-	SOT223

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Collector-emitter voltage	$V_{CES}$	30	V
Collector-base voltage	$V_{CBO}$	30	
Emitter-base voltage	$V_{EBO}$	10	
Collector current	$I_C$	300	mA
Peak collector current	$I_{CM}$	500	
Base current	$I_B$	100	
Peak base current	$I_{BM}$	200	
Total power dissipation- $T_S \leq 124\text{ °C}$	$P_{tot}$	1.5	W
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-65 ... 150	

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>2)</sup>	$R_{thJS}$	$\leq 17$	K/W

<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

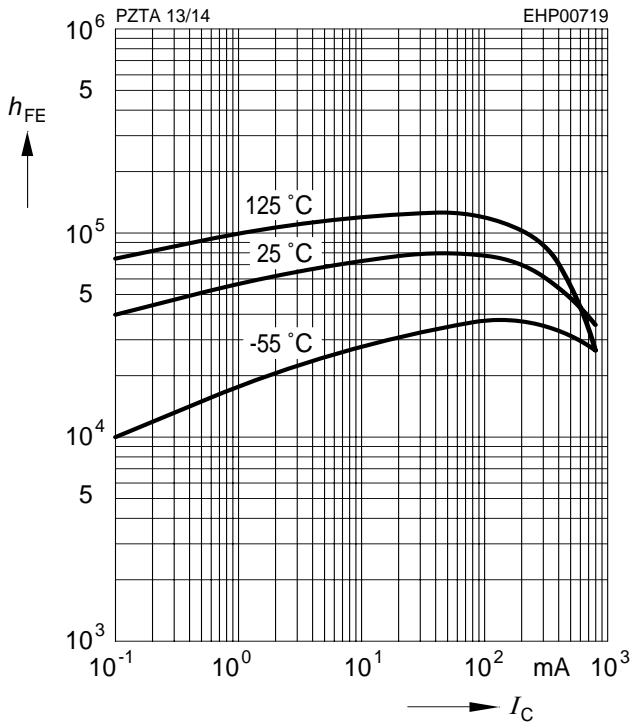
**Electrical Characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
Collector-base breakdown voltage $I_C = 100 \mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	30	-	-	V
Collector-emitter breakdown voltage $I_C = 100 \mu\text{A}, V_{BE} = 0$	$V_{(BR)CES}$	30	-	-	
Emitter-base breakdown voltage $I_E = 10 \mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	10	-	-	
Collector-base cutoff current $V_{CB} = 30 \text{ V}, I_E = 0$ $V_{CB} = 30 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	$I_{CBO}$	-	-	0.1 10	$\mu\text{A}$
Emitter-base cutoff current $V_{EB} = 10 \text{ V}, I_C = 0$	$I_{EBO}$	-	-	100	nA
DC current gain <sup>1)</sup> $I_C = 10 \text{ mA}, V_{CE} = 5 \text{ V}$ $I_C = 100 \text{ mA}, V_{CE} = 5 \text{ V}$	$h_{FE}$	10000 20000	- -	- -	-
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 100 \text{ mA}, I_B = 0.1 \text{ mA}$	$V_{CEsat}$	-	-	1.5	V
Base emitter saturation voltage <sup>1)</sup> $I_C = 100 \text{ mA}, I_B = 0.1 \text{ mA}$	$V_{BEsat}$	-	-	2	
<b>AC Characteristics</b>					
Transition frequency $I_C = 50 \text{ mA}, V_{CE} = 5 \text{ V}, f = 20 \text{ MHz}$	$f_T$	125	-	-	MHz
Collector-base capacitance $V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$	$C_{cb}$	-	3	-	pF

<sup>1)</sup>Pulse test:  $t < 300\mu\text{s}; D < 2\%$

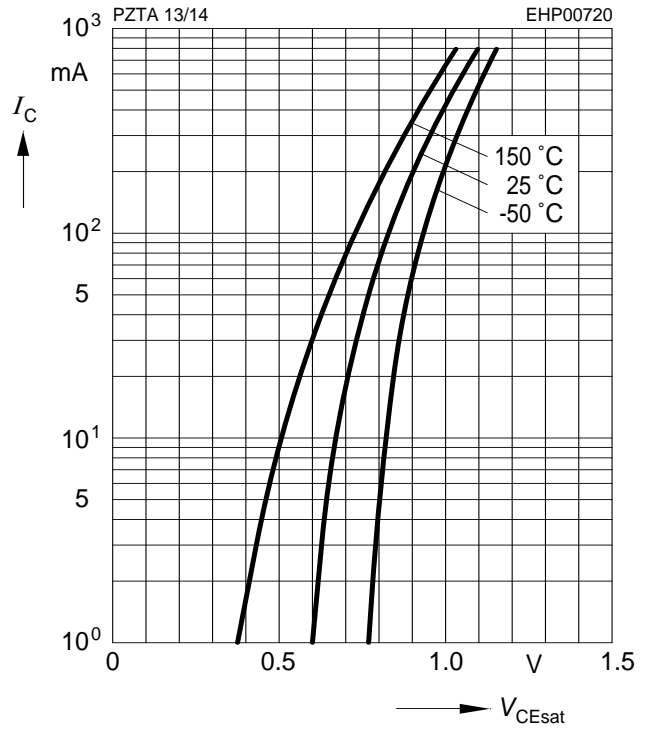
**DC current gain  $h_{FE} = f(I_C)$**

$V_{CE} = 5\text{ V}$



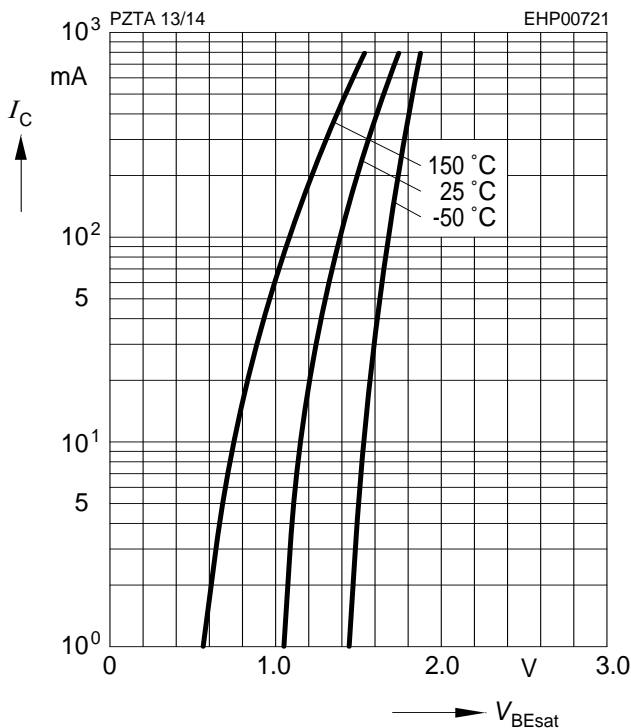
**Collector-emitter saturation voltage**

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



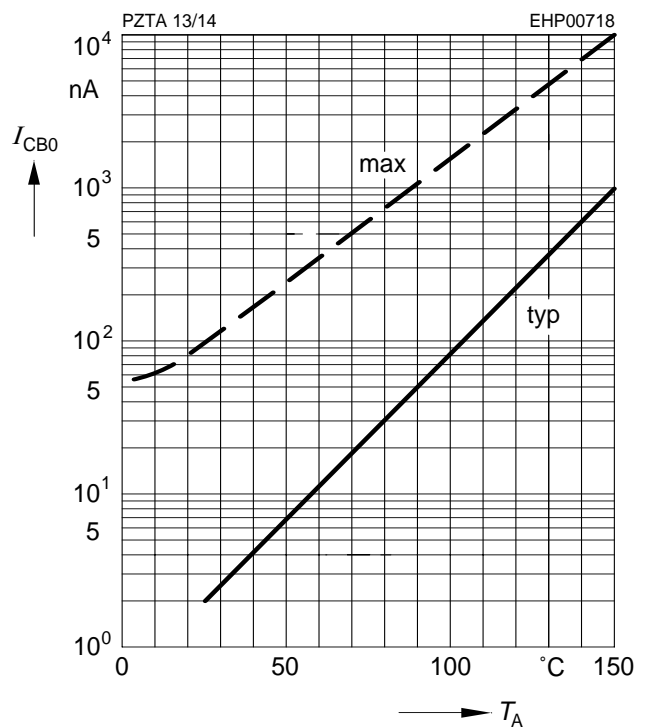
**Base-emitter saturation voltage**

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



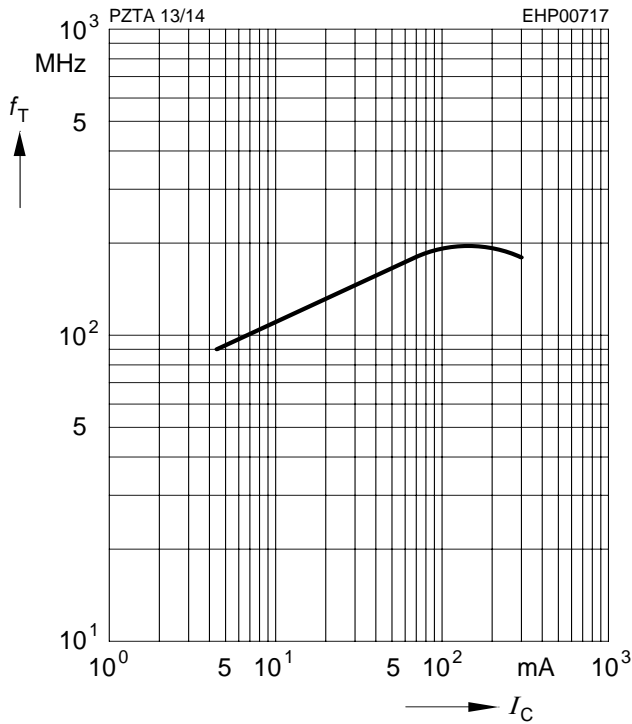
**Collector cutoff current  $I_{CBO} = f(T_A)$**

$V_{CBO} = 30\text{ V}$



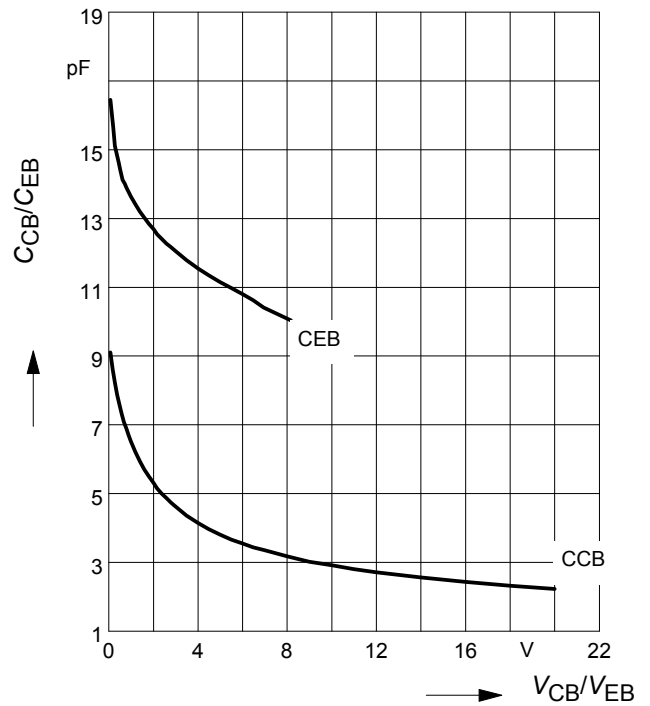
Transition frequency  $f_T = f(I_C)$

$V_{CE} = 5\text{ V}, f = 200\text{ MHz}$

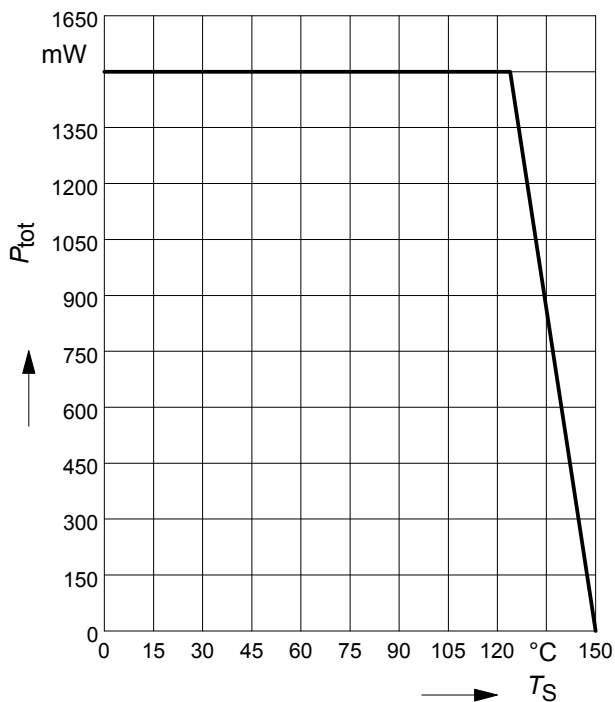


Collector-base capacitance  $C_{cb} = f(V_{CB})$

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

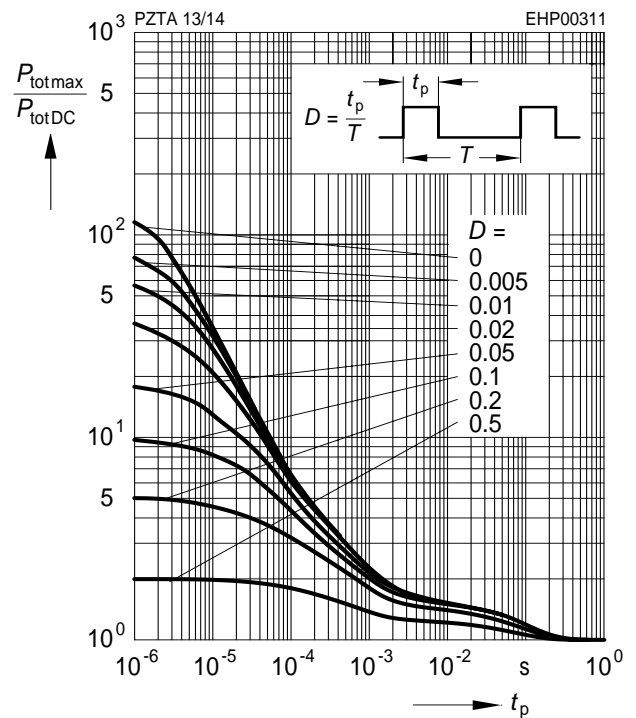


Total power dissipation  $P_{tot} = f(T_S)$

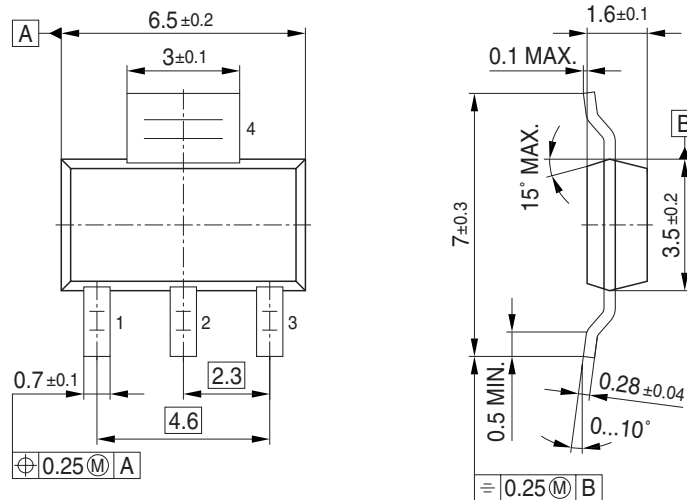


Permissible Pulse Load

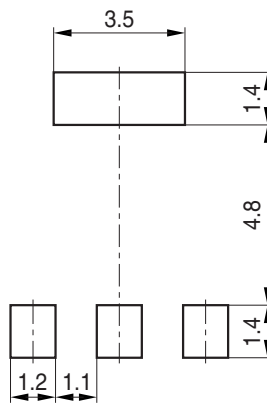
$P_{totmax}/P_{totDC} = f(t_p)$



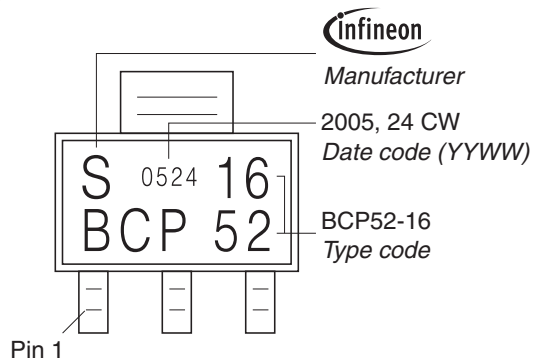
Package Outline



Foot Print

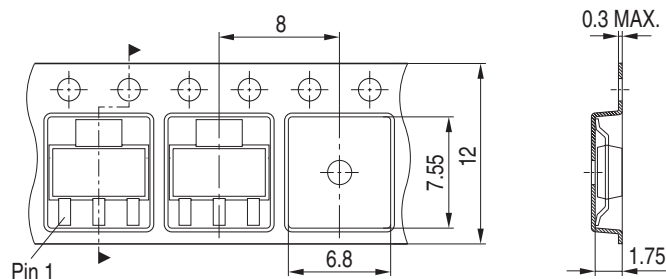


Marking Layout (Example)



Packing

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



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