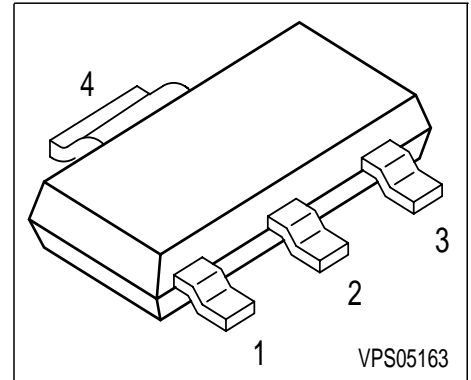


**NPN Silicon Darlington Transistors**

- For general AF applications
- High collector current
- High current gain
- Complementary types: PZTA63, PZTA64 (PNP)



Type	Marking	Pin Configuration				Package
PZTA13	PZTA 13	1 = B	2 = C	3 = E	4 = C	SOT223
PZTA14	PZTA 14	1 = B	2 = C	3 = E	4 = C	SOT223

**Maximum Ratings**

Parameter	Symbol	Values	Unit
Collector-emitter voltage	$V_{CES}$	30	V
Collector-base voltage	$V_{CBO}$	30	
Emitter-base voltage	$V_{EBO}$	10	
DC collector current	$I_C$	300	mA
Peak collector current	$I_{CM}$	500	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>1)</sup>	$R_{thJS}$	≤17	K/W
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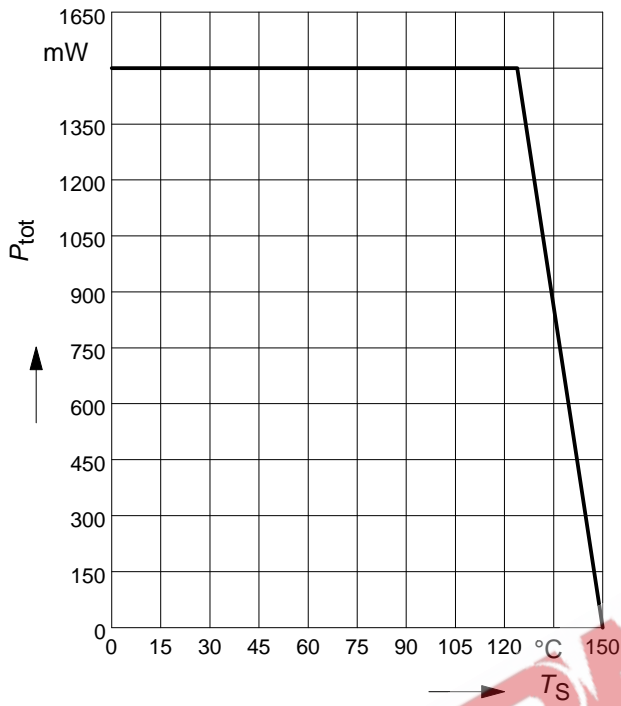
<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

**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 $I_C = 100 \mu\text{A}, V_{BE} = 0$	$V_{(BR)CES}$	30	-	-	V
Collector-base breakdown voltage $I_C = 100 \mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	30	-	-	
Emitter-base breakdown voltage $I_E = 10 \mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	10	-	-	
Collector cutoff current $V_{CB} = 30 \text{ V}, I_E = 0$	$I_{CBO}$	-	-	100	nA
Collector cutoff current $V_{CB} = 30 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	$I_{CBO}$	-	-	10	$\mu\text{A}$
Emitter cutoff current $V_{EB} = 10 \text{ V}, I_C = 0$	$I_{EBO}$	-	-	100	nA
DC current gain 1) $I_C = 10 \text{ mA}, V_{CE} = 5 \text{ V}$ $I_C = 100 \text{ mA}, V_{CE} = 5 \text{ V}$	$h_{FE}$	PZTA13 5000 PZTA14 10000 PZTA13 10000 PZTA14 20000	- - - - - -	- - - -	-
Collector-emitter saturation voltage1) $I_C = 100 \text{ mA}, I_B = 0.1 \text{ mA}$	$V_{CEsat}$	-	-	1.5	V
Base-emitter saturation voltage 1) $I_C = 100 \text{ mA}, I_B = 0.1 \text{ mA}$	$V_{BEsat}$	-	-	2	
<b>AC Characteristics</b>					
Transition frequency $I_C = 50 \text{ mA}, V_{CE} = 5 \text{ V}, f = 100 \text{ MHz}$	$f_T$	125	-	-	MHz

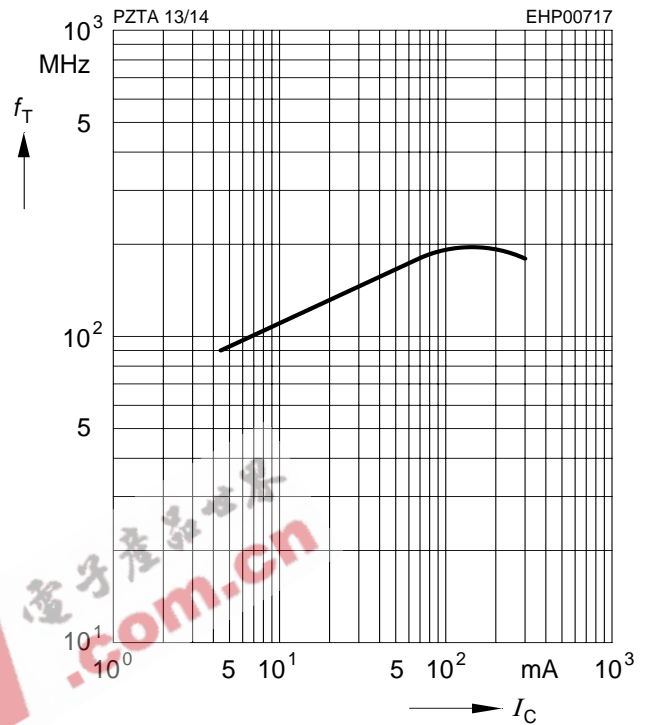
 1) Pulse test:  $t \leq 300 \mu\text{s}, D = 2\%$

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



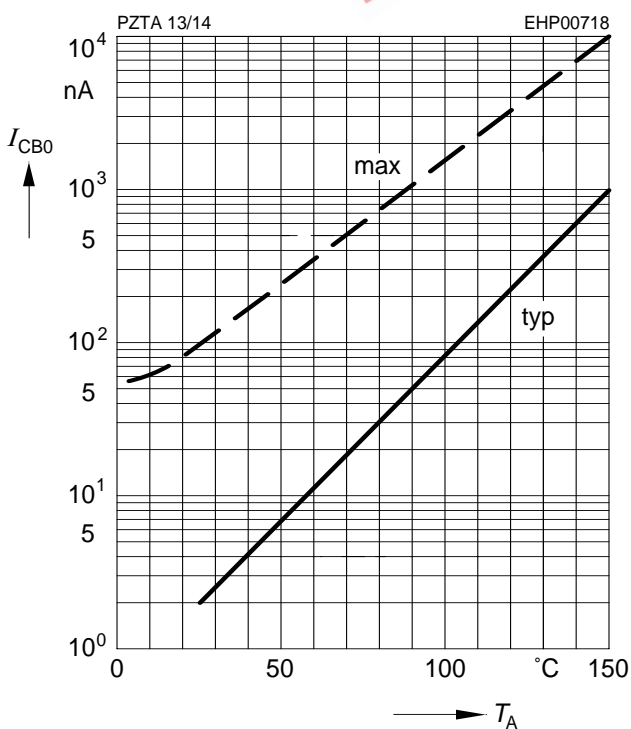
**Transition frequency  $f_T = f(I_C)$**

$V_{CE} = 5V, f = 100MHz$



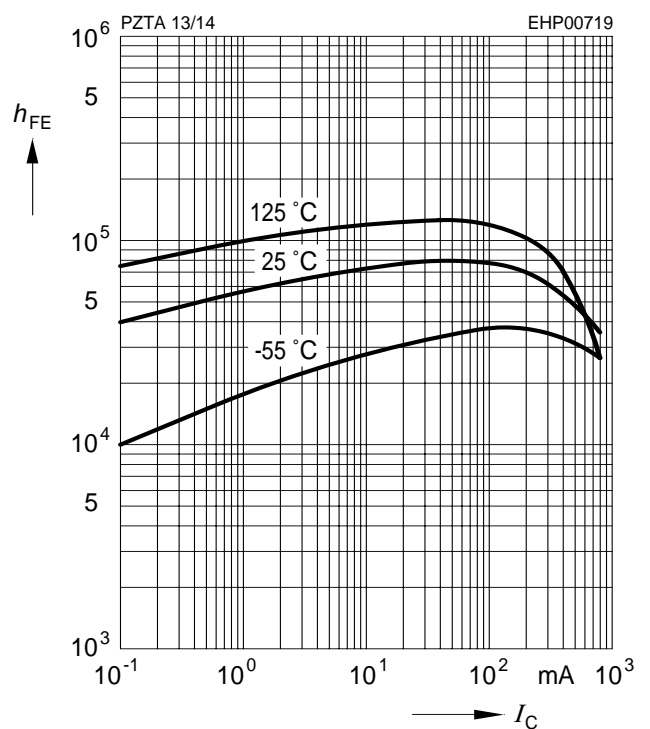
**Collector cutoff current  $I_{CBO} = f(T_A)$**

$V_{CB} = 30V$



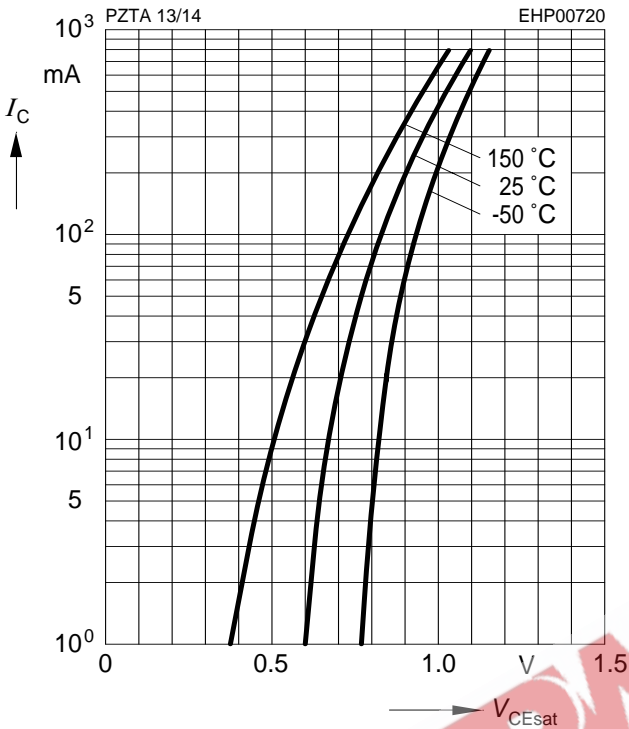
**DC current gain  $h_{FE} = f(I_C)$**

$V_{CE} = 5V$



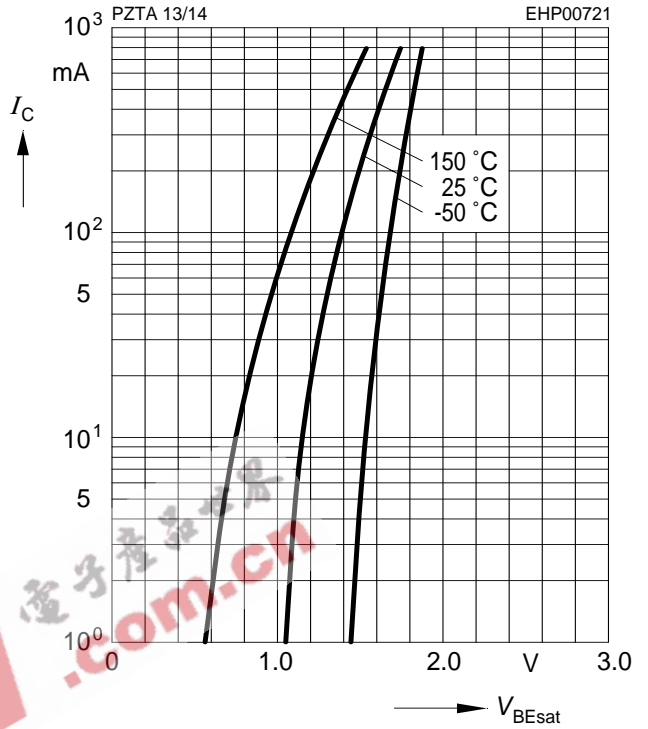
**Collector-emitter saturation voltage**

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



**Base-emitter saturation voltage**

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



**Permissible pulse load**

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

