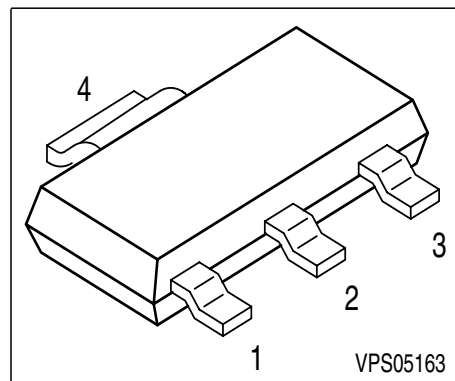


NPN Silicon Darlington Transistors

- For general AF applications
- High collector current
- High current gain
- Complementary types: PZTA 63, PZTA 64 (PNP)



Type	Marking	Pin Configuration				Package
PZTA 13	PZTA 13	1 = B	2 = C	3 = E	4 = C	SOT-223
PZTA 14	PZTA 14	1 = B	2 = C	3 = E	4 = C	SOT-223

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	
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	
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Junction ambient ¹⁾	R_{thJA}	≤72	K/W
Junction - soldering point	R_{thJS}	≤17	

1) Package mounted on pcb 40mm x 40mm x 1.5mm / 6cm² Cu

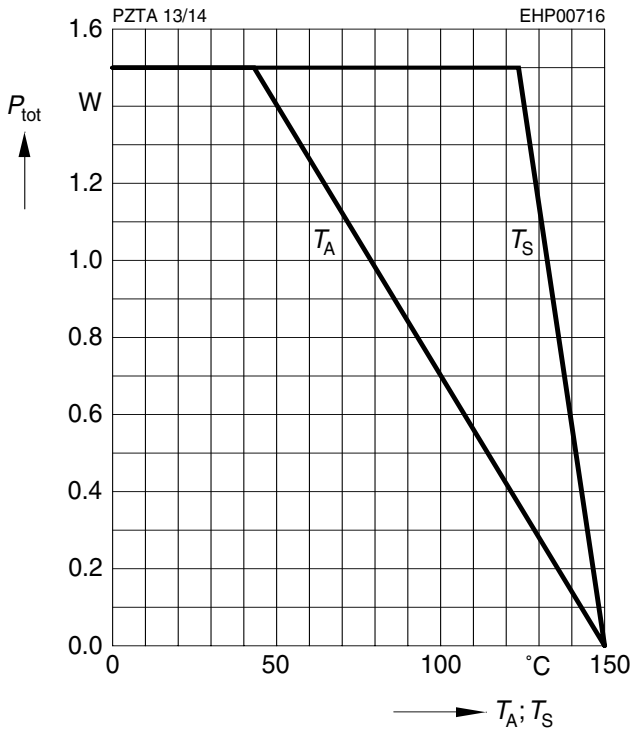
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit	
		min.	typ.	max.		
DC Characteristics						
Collector-emitter breakdown voltage $I_C = 100\ \mu\text{A}$, $V_{BE} = 0$	$V_{(BR)CES}$	30	-	-	V	
Collector-base breakdown voltage $I_C = 100\ \mu\text{A}$, $I_B = 0$	$V_{(BR)CBO}$	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	μA	
Emitter cutoff current $V_{EB} = 10\ \text{V}$, $I_C = 0$	I_{EBO}	-	-	100	nA	
DC current gain 1) $I_C = 10\ \text{mA}$, $V_{CE} = 5\ \text{V}$ PZTA 13 PZTA 14 $I_C = 100\ \text{mA}$, $V_{CE} = 5\ \text{V}$ PZTA 13 PZTA 14	h_{FE}	5000 10000 10000 20000	- - - -	- - - -	-	
Collector-emitter saturation voltage1)	V_{CEsat}	-	-	1.5		
Base-emitter saturation voltage 1)	V_{BEsat}	-	-	2		
AC Characteristics						
Transition frequency $I_C = 50\ \text{mA}$, $V_{CE} = 5\ \text{V}$, $f = 100\ \text{MHz}$	f_T	125	-	-		MHz

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

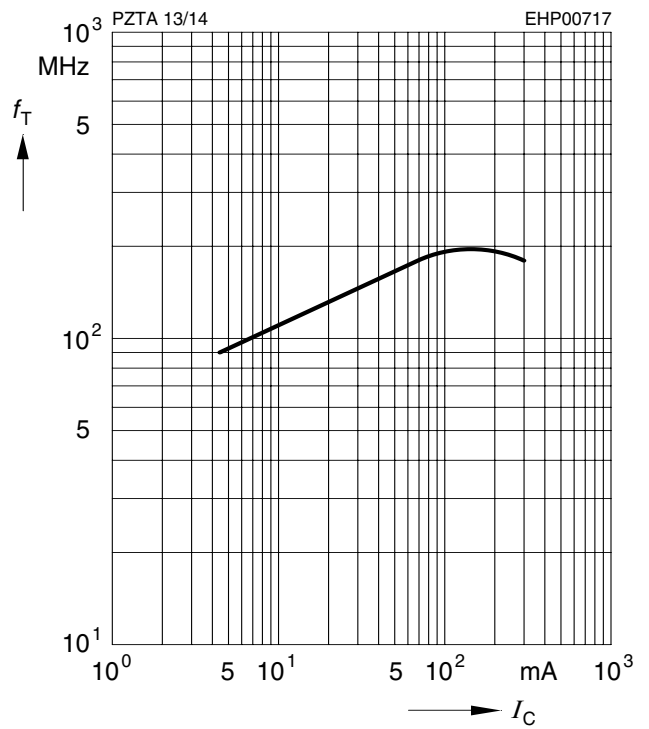
Total power dissipation $P_{\text{tot}} = f(T_A^*; T_S)$

* Package mounted on epoxy



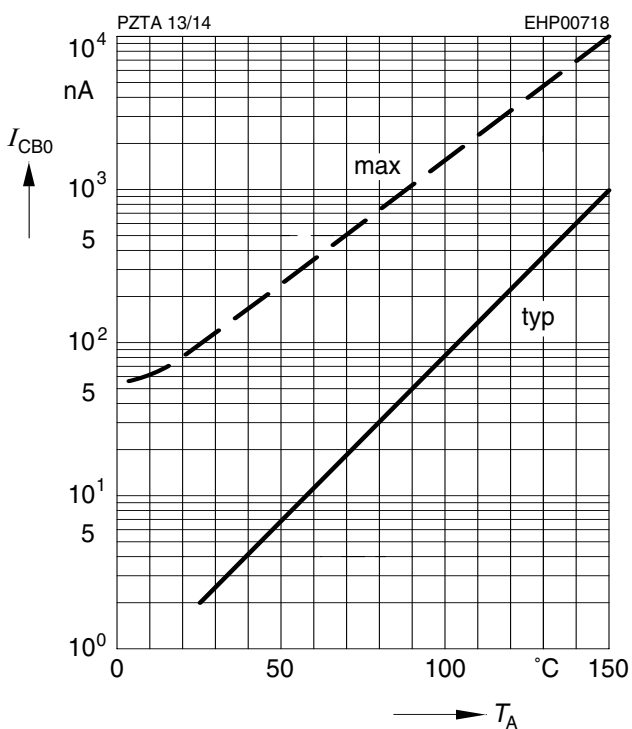
Transition frequency $f_T = f(I_C)$

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



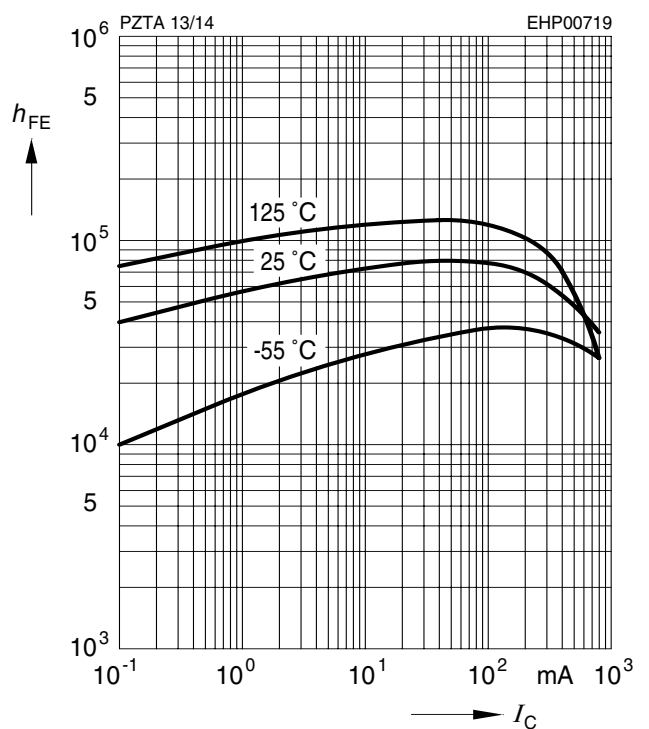
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 30V$



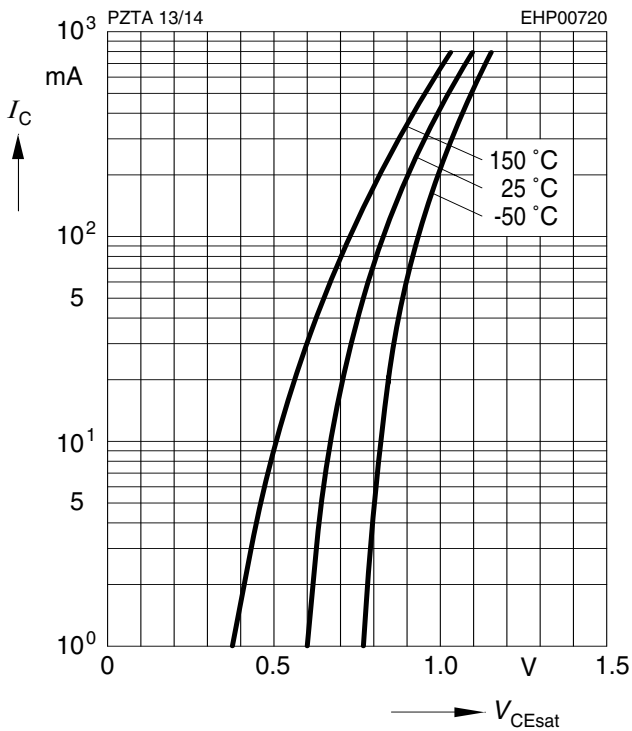
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 5V$



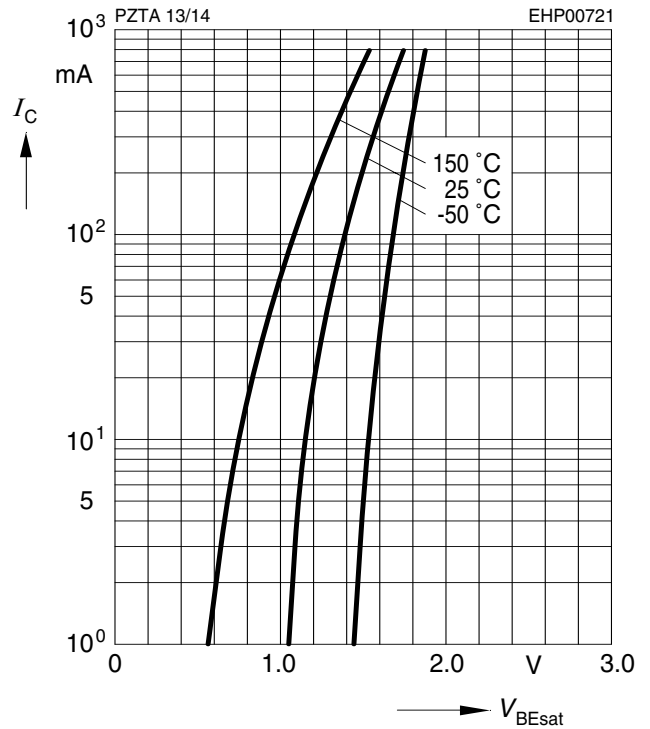
Collector-emitter saturation voltage

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



Base-emitter saturation voltage

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



Permissible pulse load

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

