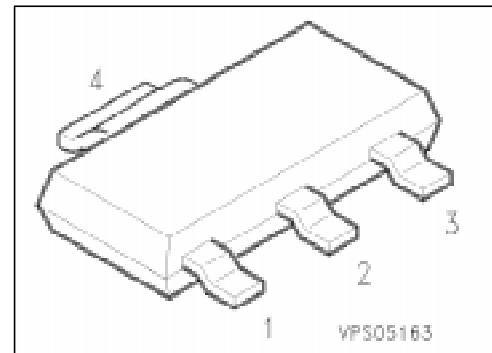


## NPN Silicon Darlington Transistors

BCP 29  
BCP 49

- For general AF applications
- High collector current
- High current gain
- Complementary types: BCP 28/48 (PNP)



Type	Marking	Ordering Code (tape and reel)	Pin Configuration	Package <sup>1)</sup>
BCP 29	BCP 29	Q62702-C2136		SOT-223
BCP 49	BCP 49	Q62702-C2137		

### Maximum Ratings

Parameter	Symbol	Values		Unit
		BCP 29	BCP 49	
Collector-emitter voltage	$V_{CE0}$	30	60	V
Collector-base voltage	$V_{CB0}$	40	80	
Emitter-base voltage	$V_{EB0}$	10	10	
Collector current	$I_C$	500		mA
Peak collector current	$I_{CM}$	800		
Base current	$I_B$	100		
Peak base current	$I_{BM}$	200		
Total power dissipation, $T_S = 124^\circ\text{C}^2$	$P_{tot}$	1.5		W
Junction temperature	$T_j$	150		$^\circ\text{C}$
Storage temperature range	$T_{stg}$	– 65 ... + 150		

### Thermal Resistance

Junction - ambient <sup>2)</sup>	$R_{th JA}$	$\leq 75$	K/W
Junction - soldering point	$R_{th JS}$	$\leq 17$	

<sup>1)</sup> For detailed information see chapter Package Outlines.

<sup>2)</sup> Package mounted on epoxy pcb 40 mm × 40 mm × 1.5 mm/6 cm<sup>2</sup> 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 $I_C = 1 \text{ mA}, I_B = 0$	$V_{(\text{BR})\text{CE}0}$	30 60	— —	— —	V
Collector-base breakdown voltage $I_C = 100 \mu\text{A}, I_B = 0$	$V_{(\text{BR})\text{CB}0}$	40 80	— —	— —	
Emitter-base breakdown voltage $I_E = 10 \mu\text{A}, I_C = 0$	$V_{(\text{BR})\text{EB}0}$	10	—	—	
Collector-base cutoff current $V_{CB} = 30 \text{ V}, I_E = 0$	$I_{CBO}$	—	—	100	nA
$V_{CB} = 60 \text{ V}, I_E = 0$		—	—	100	nA
$V_{CB} = 30 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	BCP 29	—	—	10	$\mu\text{A}$
$V_{CB} = 60 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	BCP 49	—	—	10	$\mu\text{A}$
Emitter-base cutoff current $V_{EB} = 4 \text{ V}, I_C = 0$	$I_{EBO}$	—	—	100	nA
DC current gain <sup>1)</sup> $I_C = 100 \mu\text{A}, V_{CE} = 1 \text{ V}$	$h_{FE}$	4000 2000	— —	— —	—
$I_C = 10 \text{ mA}, V_{CE} = 5 \text{ V}$	BCP 29 BCP 49	10000 4000	— —	— —	
$I_C = 100 \text{ mA}, V_{CE} = 5 \text{ V}$	BCP 29 BCP 49	20000 10000	— —	— —	
$I_C = 500 \text{ mA}, V_{CE} = 5 \text{ V}$	BCP 29 BCP 49	4000 2000	— —	— —	
Collector-emitter saturation voltage $I_C = 100 \text{ mA}, I_B = 0.1 \text{ mA}$	$V_{\text{CEsat}}$	—	—	1.0	V
Base-emitter saturation voltage $I_C = 100 \text{ mA}, I_B = 0.1 \text{ mA}$	$V_{\text{BESat}}$	—	—	1.5	

<sup>1)</sup> Pulse test conditions:  $t \leq 300 \mu\text{s}$ ,  $D = 2\%$ .

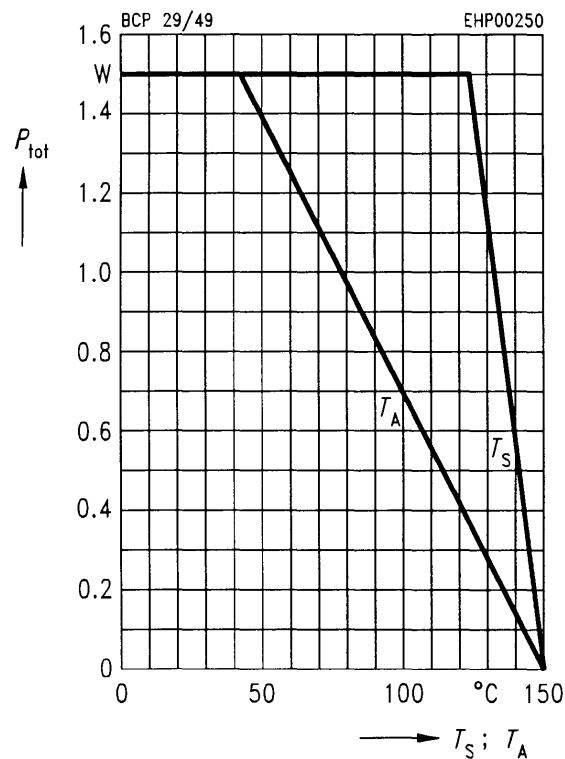
**Electrical Characteristics**at  $T_A = 25^\circ\text{C}$ , unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

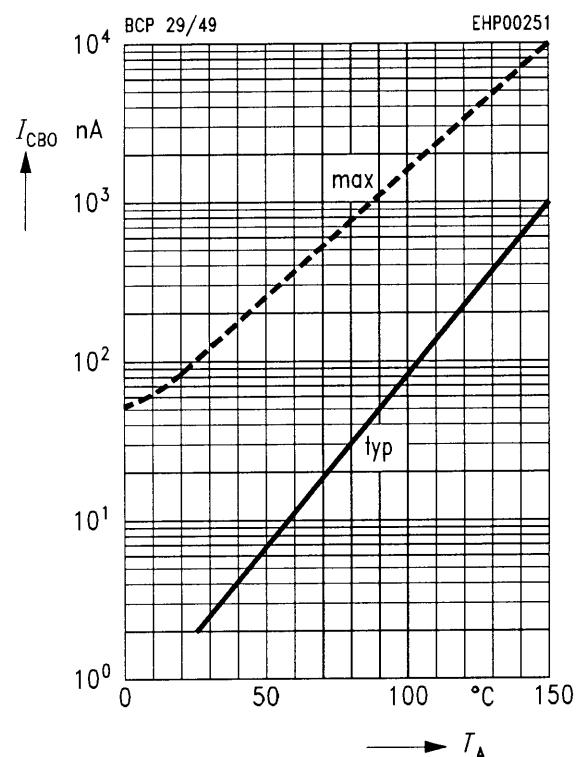
**AC characteristics**

Transition frequency $I_C = 50 \text{ mA}, V_{CE} = 5 \text{ V}, f = 100 \text{ MHz}$	$f_T$	—	200	—	MHz
Output capacitance $V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$	$C_{obo}$	—	6.5	—	pF

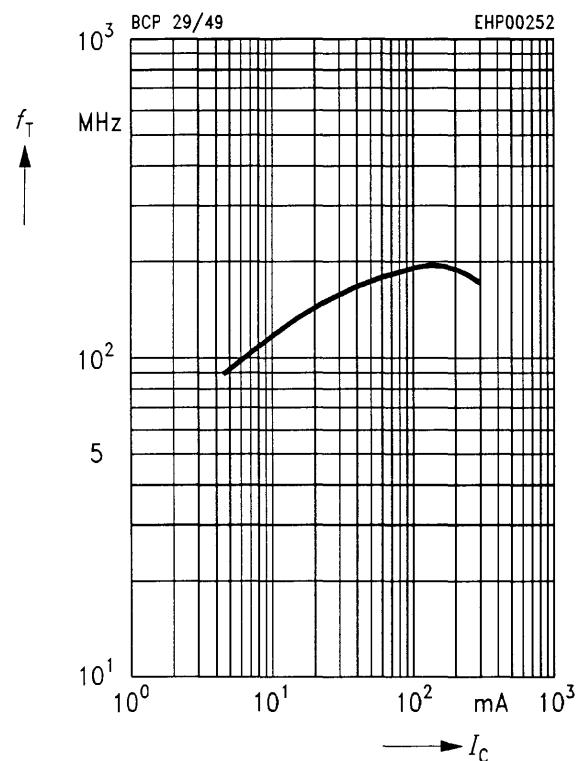
**Total power dissipation**  $P_{\text{tot}} = f(T_A^*; T_S)$   
 \* Package mounted on epoxy



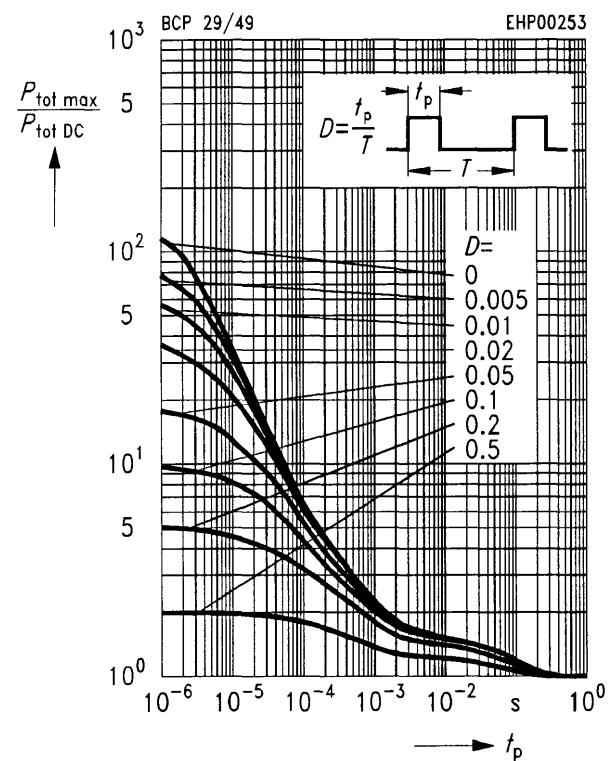
**Collector cutoff current**  $I_{\text{CBO}} = f(T_A)$   
 $V_{\text{CB}} = V_{\text{CE max}}$



**Transition frequency**  $f_T = f(I_C)$   
 $V_{\text{CE}} = 5 \text{ V}$

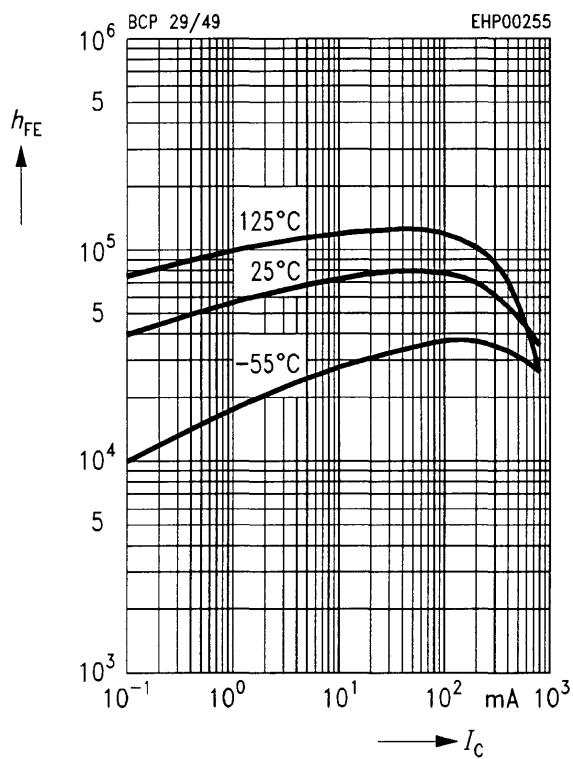


**Permissible pulse load**  $P_{\text{tot max}}/P_{\text{tot DC}} = f(t_p)$



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

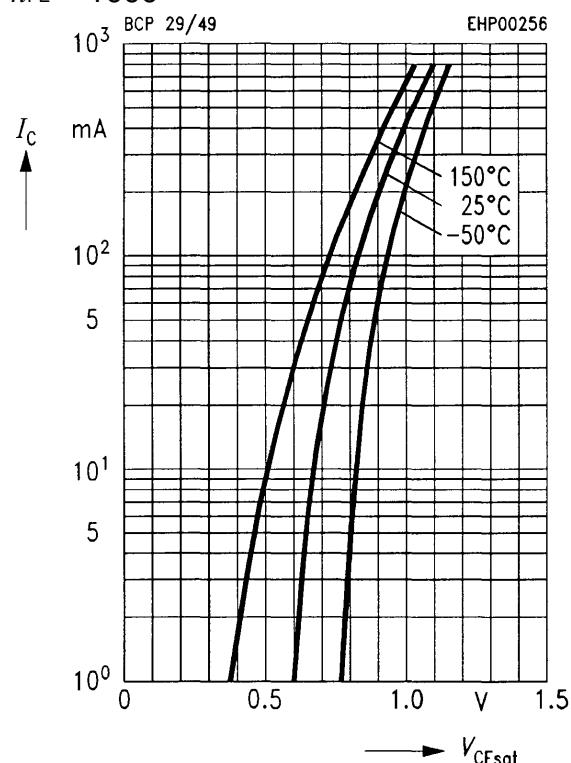
$V_{CE} = 10 \text{ V}$



**Collector-emitter saturation voltage**

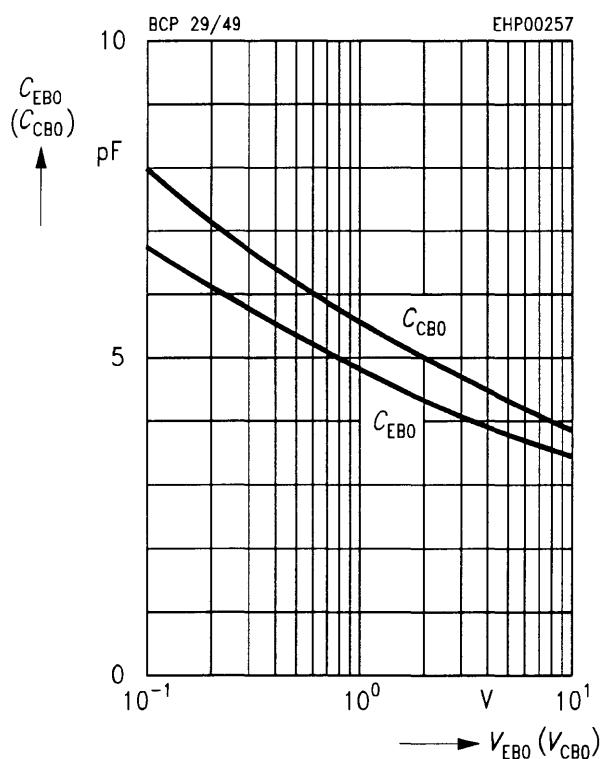
$I_C = f(V_{CEsat})$

$h_{FE} = 1000$



**Collector-base capacitance**  $C_{CB0} = f(V_{CB0})$

**Emitter-base capacitance**  $C_{EB0} = f(V_{EB0})$



**Base-emitter saturation voltage**

$I_C = f(V_{BEsat})$

$h_{FE} = 1000$

