

**NPN Silicon Darlington Transistors**

- For general AF applications
- High collector current
- High current gain
- Complementary types: BCV28, BCV48 (PNP)
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



Type	Marking	Pin Configuration			Package
		1=B	2=C	3=E	
BCV29	EF	1=B	2=C	3=E	SOT89
BCV49	EG	1=B	2=C	3=E	SOT89

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Collector-emitter voltage	$V_{CEO}$		V
BCV29		30	
BCV49		60	
Collector-base voltage	$V_{CBO}$		
BCV29		40	
BCV49		80	
Emitter-base voltage	$V_{EBO}$	10	
Collector current	$I_C$	500	mA
Peak collector current, $t_p \leq 10$ ms	$I_{CM}$	800	
Base current	$I_B$	100	
Peak base current	$I_{BM}$	200	
Total power dissipation- $T_S \leq 130$ °C	$P_{tot}$	1	W
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-65 ... 150	

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup>	$R_{thJS}$	$\leq 20$	K/W

<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note AN077 (Thermal Resistance Calculation)

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

**DC Characteristics**

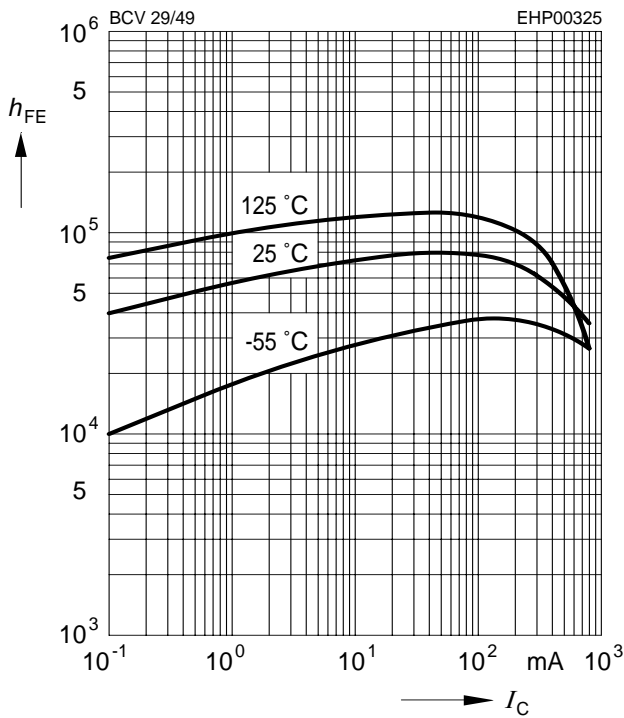
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$ , $I_B = 0$ , BCV29 $I_C = 10\text{ mA}$ , $I_B = 0$ , BCV49	$V_{(BR)CEO}$	30 60	- -	- -	V
Collector-base breakdown voltage $I_C = 100\ \mu\text{A}$ , $I_E = 0$ , BCV29 $I_C = 100\ \mu\text{A}$ , $I_E = 0$ , BCV49	$V_{(BR)CBO}$	40 80	- -	- -	
Emitter-base breakdown voltage $I_E = 10\ \mu\text{A}$ , $I_C = 0$	$V_{(BR)EBO}$	10	-	-	
Collector-base cutoff current $V_{CB} = 30\text{ V}$ , $I_E = 0$ , BCV29 $V_{CB} = 60\text{ V}$ , $I_E = 0$ , BCV49 $V_{CB} = 30\text{ V}$ , $I_E = 0$ , $T_A = 150^\circ\text{C}$ , BCV29 $V_{CB} = 60\text{ V}$ , $I_E = 0$ , $T_A = 150^\circ\text{C}$ , BCV49	$I_{CBO}$	- - - -	- - - -	0.1 0.1 10 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> $I_C = 100\ \mu\text{A}$ , $V_{CE} = 1\text{ V}$ , BCV29 $I_C = 100\ \mu\text{A}$ , $V_{CE} = 1\text{ V}$ , BCV49 $I_C = 10\text{ mA}$ , $V_{CE} = 5\text{ V}$ , BCV29 $I_C = 10\text{ mA}$ , $V_{CE} = 5\text{ V}$ , BCV49 $I_C = 100\text{ mA}$ , $V_{CE} = 5\text{ V}$ , BCV29 $I_C = 100\text{ mA}$ , $V_{CE} = 5\text{ V}$ , BCV49 $I_C = 0.5\text{ A}$ , $V_{CE} = 5\text{ V}$ , BCV29 $I_C = 0.5\text{ A}$ , $V_{CE} = 5\text{ V}$ , BCV49	$h_{FE}$	4000 2000 10000 4000 20000 10000 4000 2000	- - - - - - - -	- - - - - - - -	-
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 100\text{ mA}$ , $I_B = 0.1\text{ mA}$	$V_{CEsat}$	-	-	1	V
Base emitter saturation voltage <sup>1)</sup> $I_C = 100\text{ mA}$ , $I_B = 0.1\text{ mA}$	$V_{BEsat}$	-	-	1.5	

<sup>1</sup>Pulse test:  $t < 300\mu\text{s}$ ;  $D < 2\%$ 
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>AC Characteristics</b>					
Transition frequency $I_C = 50\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $f = 100\text{ MHz}$	$f_T$	-	150	-	MHz
Collector-base capacitance $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{cb}$	-	3	-	pF

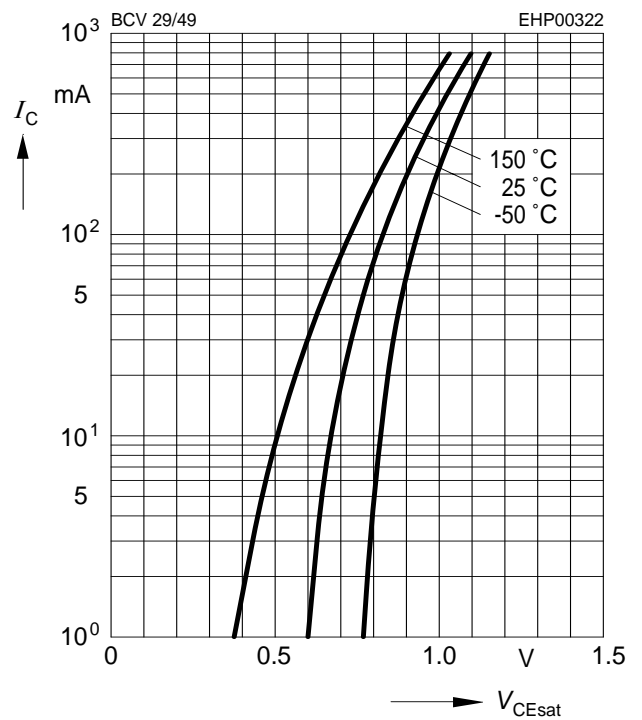
**DC current gain  $h_{FE} = f(I_C)$**

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



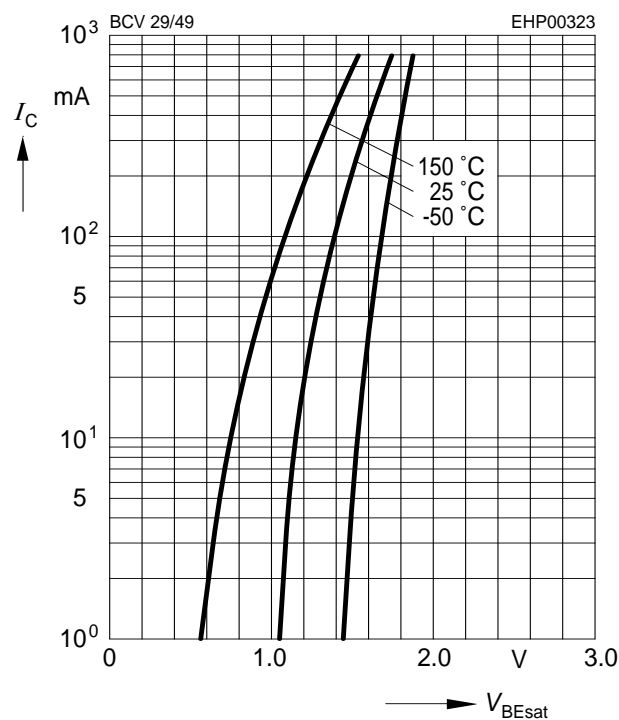
**Collector-emitter saturation voltage**

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



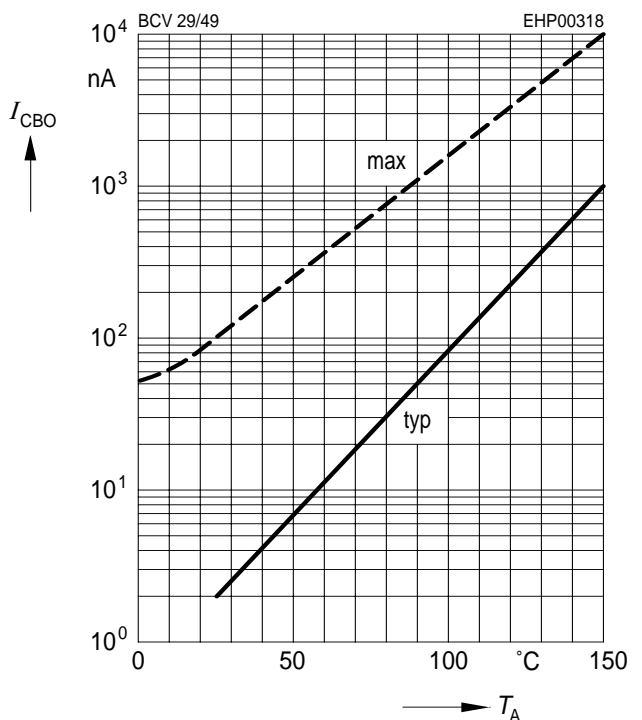
**Base-emitter saturation voltage**

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



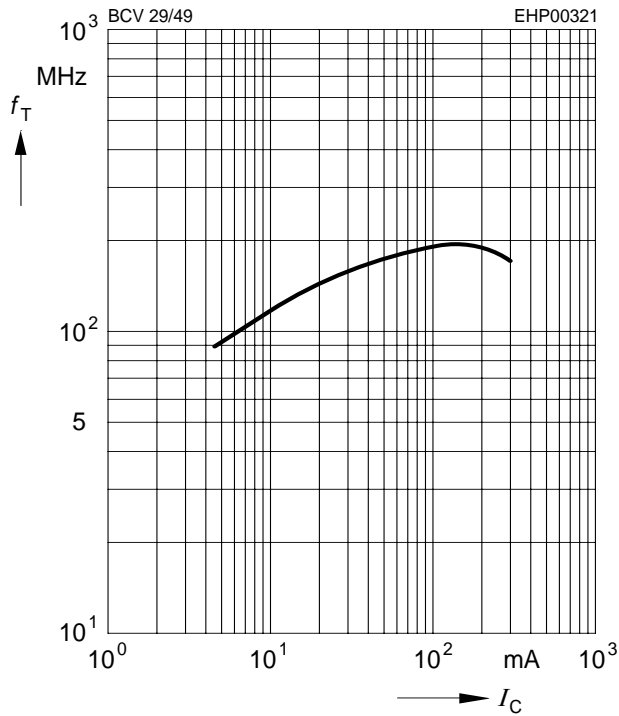
**Collector cutoff current  $I_{CBO} = f(T_A)$**

$V_{CB} = V_{CEmax}$



Transition frequency  $f_T = f(I_C)$

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

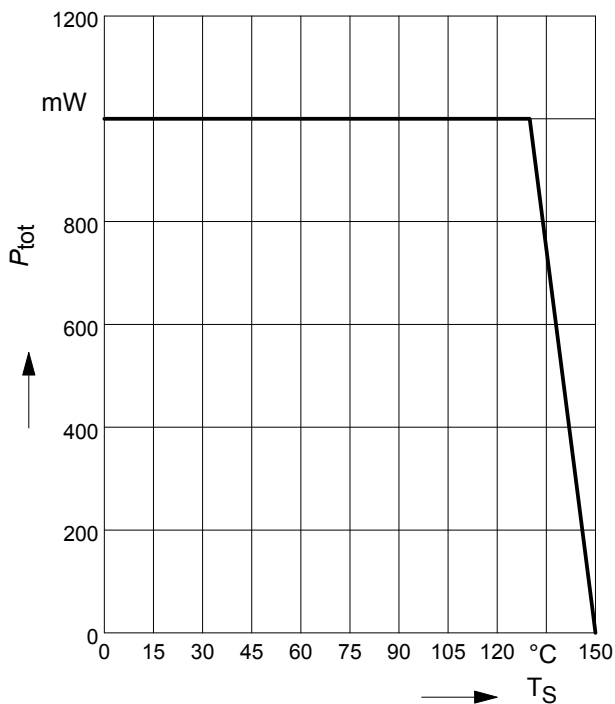


Collector-base capacitance  $C_{cb} = f(V_{CB})$

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

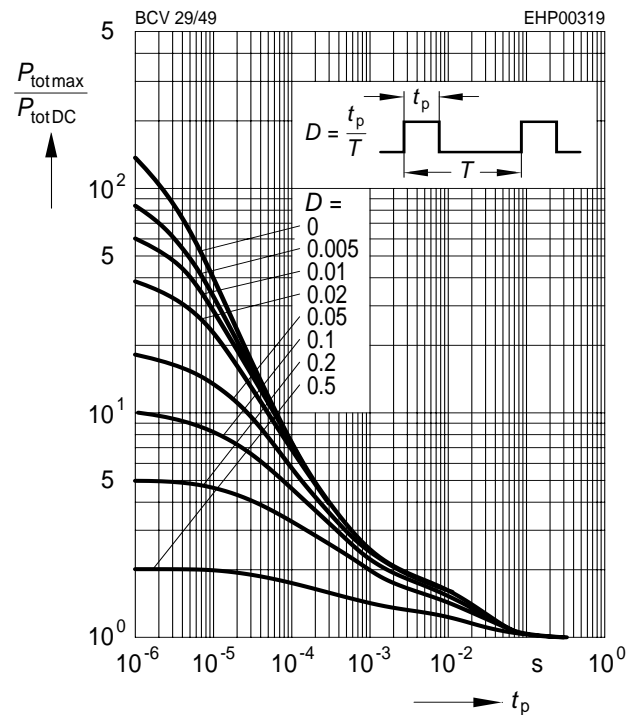


Total power dissipation  $P_{tot} = f(T_S)$

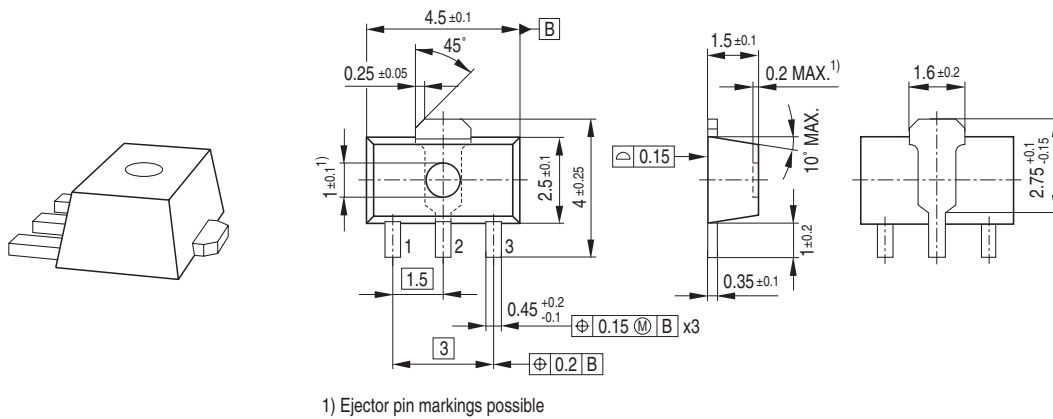


Permissible Pulse Load

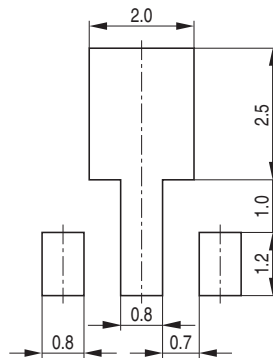
$P_{totmax}/P_{totDC} = f(t_p)$



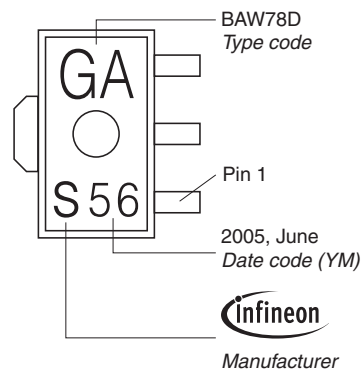
Package Outline



Foot Print

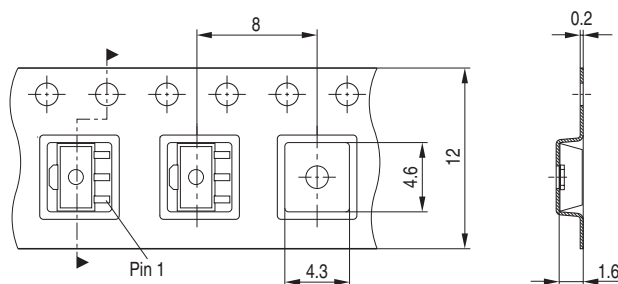


Marking Layout (Example)



Standard Packing

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



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