

NPN Silicon Darlington Transistors

- For general AF applications
- High collector current
- High current gain
- Complementary types: BCV26, BCV46 (PNP)
- Pb-free (RoHS compliant) package¹⁾
- Qualified according AEC Q101



Type	Marking	Pin Configuration			Package
		1=B	2=E	3=C	
BCV27	FFs	1=B	2=E	3=C	SOT23
BCV47	FGs	1=B	2=E	3=C	SOT23

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}		V
BCV27		30	
BCV47		60	
Collector-base voltage	V_{CBO}		
BCV27		40	
BCV47		80	
Emitter-base voltage	V_{EBO}	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- $T_S \leq 74 \text{ }^\circ\text{C}$	P_{tot}	360	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-65 ... 150	

¹Pb-containing package may be available upon special request

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ¹⁾	R_{thJS}	≤ 210	K/W

¹⁾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.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$, $I_B = 0$, BCV27 $I_C = 10\text{ mA}$, $I_B = 0$, BCV47	$V_{(BR)CEO}$	30 60	- -	- -	-
Collector-base breakdown voltage $I_C = 100\ \mu\text{A}$, $I_E = 0$, BCV27 $I_C = 100\ \mu\text{A}$, $I_E = 0$, BCV47	$V_{(BR)CBO}$	40 80	- -	- -	-
Emitter-base breakdown voltage $I_E = 10\ \mu\text{A}$, $I_C = 0$	$V_{(BR)EBO}$	10	-	-	V
Collector-base cutoff current $V_{CB} = 30\text{ V}$, $I_E = 0$, BCV27 $V_{CB} = 60\text{ V}$, $I_E = 0$, BCV47 $V_{CB} = 30\text{ V}$, $I_E = 0$, $T_A = 150^\circ\text{C}$, BCV27 $V_{CB} = 60\text{ V}$, $I_E = 0$, $T_A = 150^\circ\text{C}$, BCV47	I_{CBO}	- - - -	- - - -	0.1 0.1 10 10	μA
Emitter-base cutoff current $V_{EB} = 4\text{ V}$, $I_C = 0$	I_{EBO}	-	-	100	nA
DC current gain ¹⁾ $I_C = 100\ \mu\text{A}$, $V_{CE} = 1\text{ V}$, BCV27 $I_C = 100\ \mu\text{A}$, $V_{CE} = 1\text{ V}$, BCV47 $I_C = 10\text{ mA}$, $V_{CE} = 5\text{ V}$, BCV27 $I_C = 10\text{ mA}$, $V_{CE} = 5\text{ V}$, BCV47 $I_C = 100\text{ mA}$, $V_{CE} = 5\text{ V}$, BCV27 $I_C = 100\text{ mA}$, $V_{CE} = 5\text{ V}$, BCV47 $I_C = 0.5\text{ A}$, $V_{CE} = 5\text{ V}$, BCV27 $I_C = 0.5\text{ A}$, $V_{CE} = 5\text{ V}$, BCV47	h_{FE}	4000 2000 10000 4000 20000 10000 4000 2000	- - - - - - - -	- - - - - - - -	-
Collector-emitter saturation voltage ¹⁾ $I_C = 100\text{ mA}$, $I_B = 0.1\text{ mA}$	V_{CEsat}	-	-	1	V
Base emitter saturation voltage ¹⁾ $I_C = 100\text{ mA}$, $I_B = 0.1\text{ mA}$	V_{BEsat}	-	-	1.5	

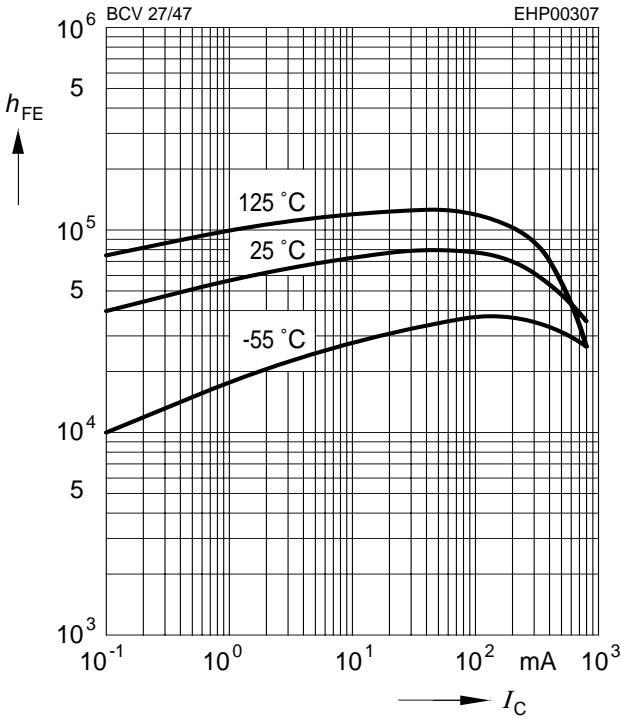
¹⁾Pulse test: $t < 300\ \mu\text{s}$; $D < 2\%$

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency $I_C = 50 \text{ mA}$, $V_{CE} = 5 \text{ V}$, $f = 100 \text{ MHz}$	f_T	-	170	-	MHz
Collector-base capacitance $V_{CB} = 10 \text{ V}$, $f = 1 \text{ MHz}$	C_{cb}	-	3	-	pF

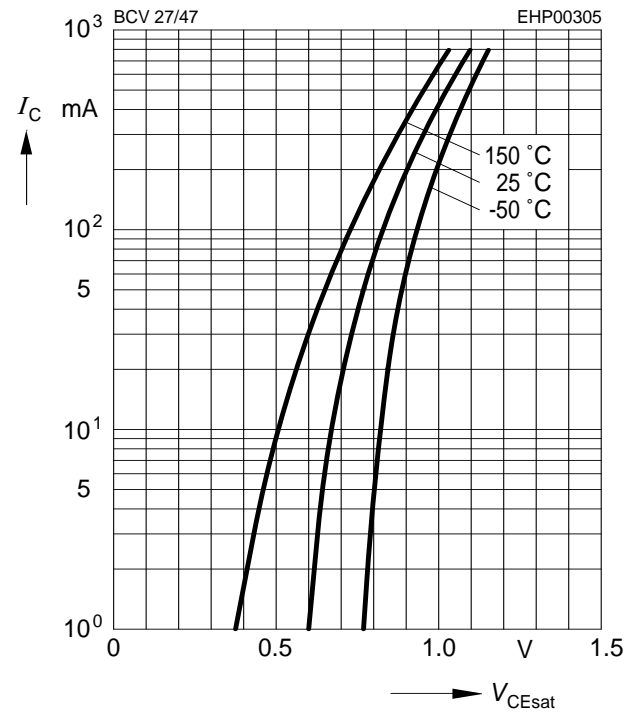
DC current gain $h_{FE} = f(I_C)$

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



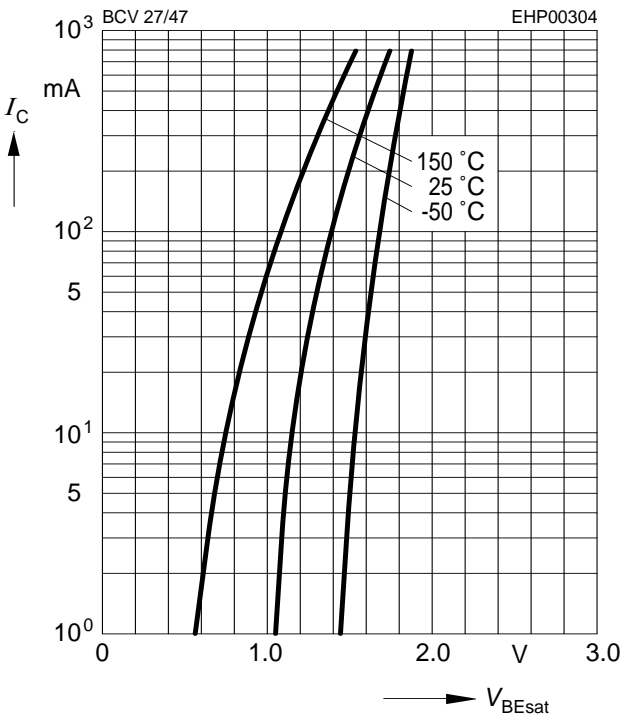
Collector-emitter saturation voltage

$I_C = f(V_{CEsat}), h_{FE} = 10$



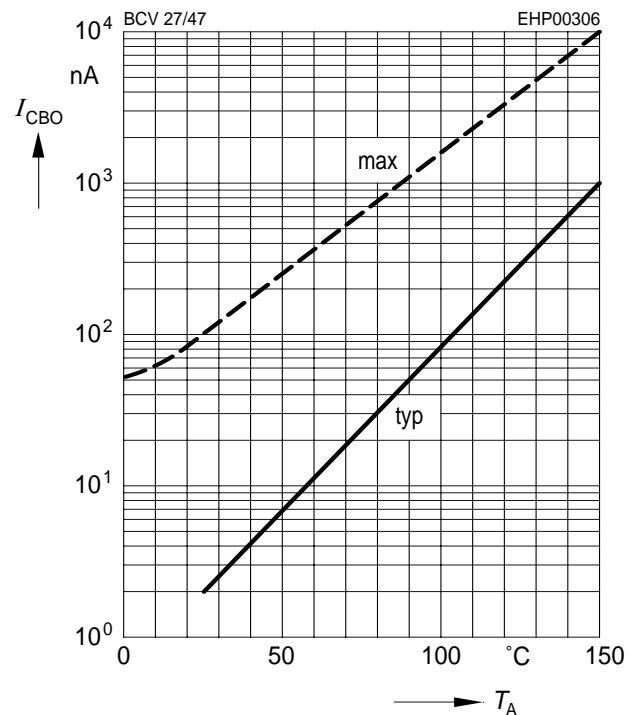
Base-emitter saturation voltage

$I_C = f(V_{BEsat}), h_{FE} = 10$



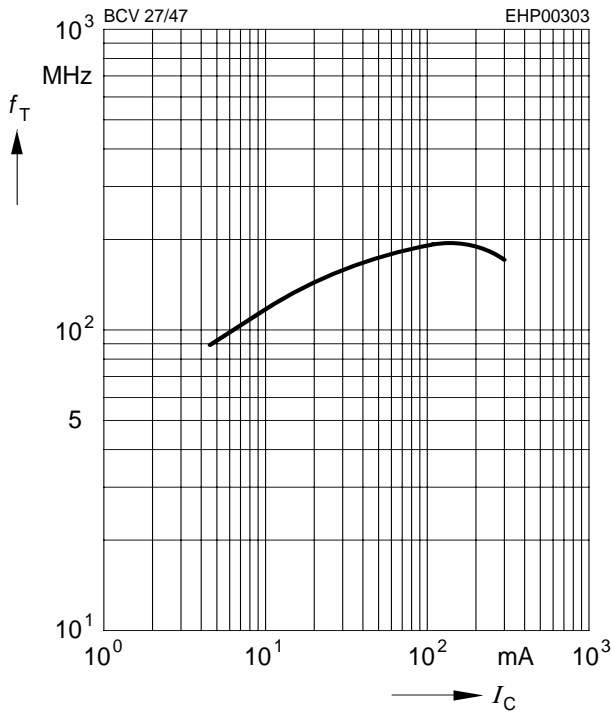
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = V_{CEmax}$



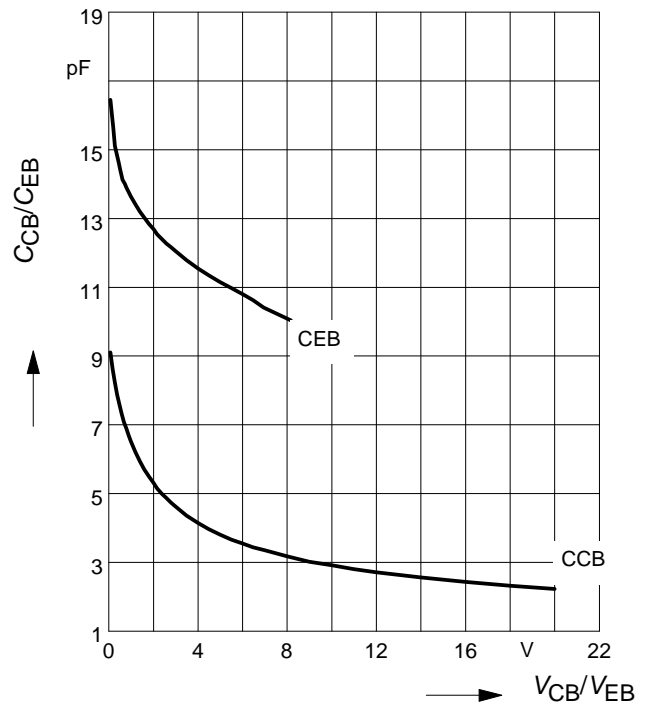
Transition frequency $f_T = f(I_C)$

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

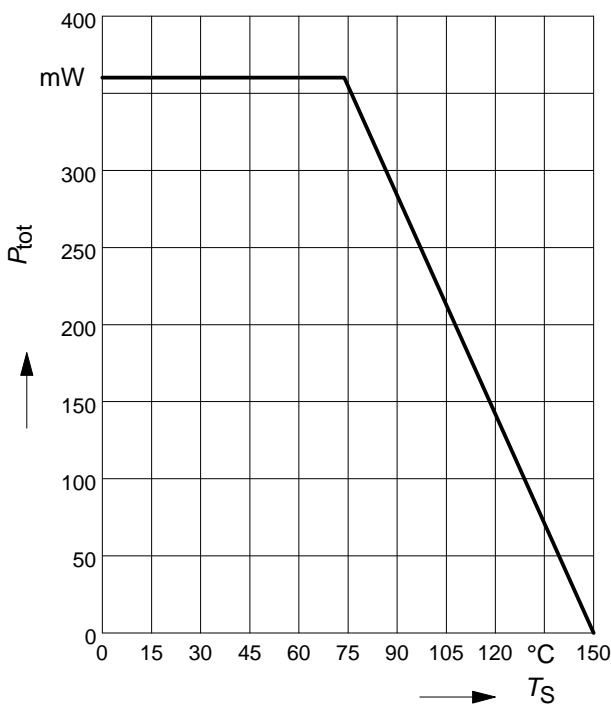


Collector-base capacitance $C_{cb} = f(V_{CB})$

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

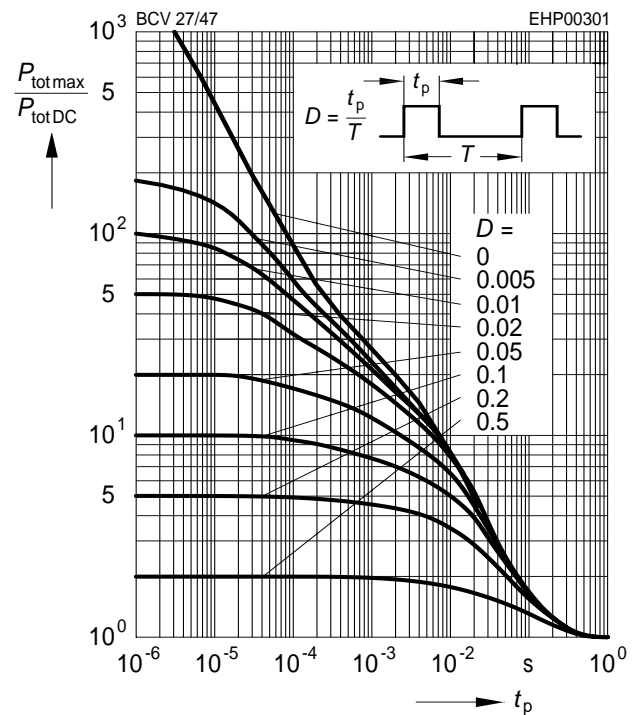


Total power dissipation $P_{tot} = f(T_S)$

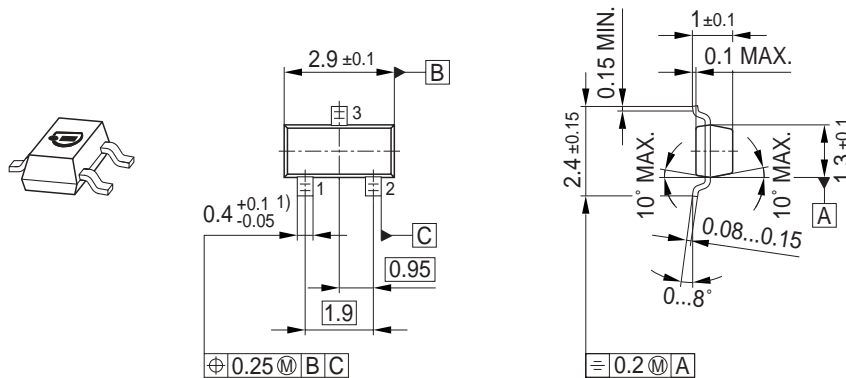


Permissible Pulse Load

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

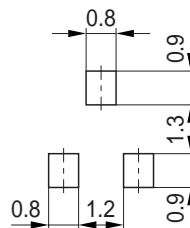


Package Outline

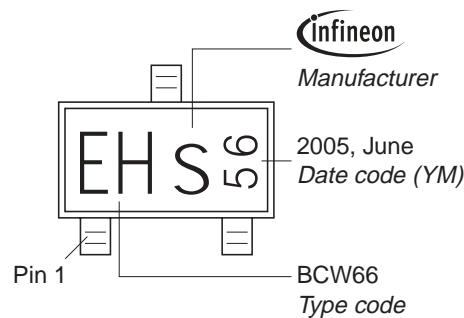


1) Lead width can be 0.6 max. in dambar area

Foot Print

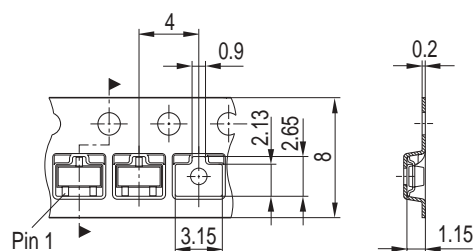


Marking Layout (Example)



Standard Packing

Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Reel \varnothing 330 mm = 10.000 Pieces/Reel



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