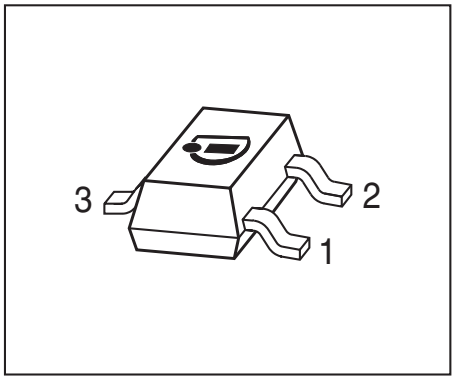
NPN Silicon Darlington Transistors



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

Type	Marking	Pin Configuration			Package
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, $t_p \leq 10$ ms	I_{CM}	800	
Base current	I_B	100	
Peak base current	I_{BM}	200	
Total power dissipation- $T_S \leq 74$ °C	P_{tot}	360	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

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 AN077 (Thermal Resistance Calculation)

Electrical Characteristics at T_A = 25°C, unless otherwise specified

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

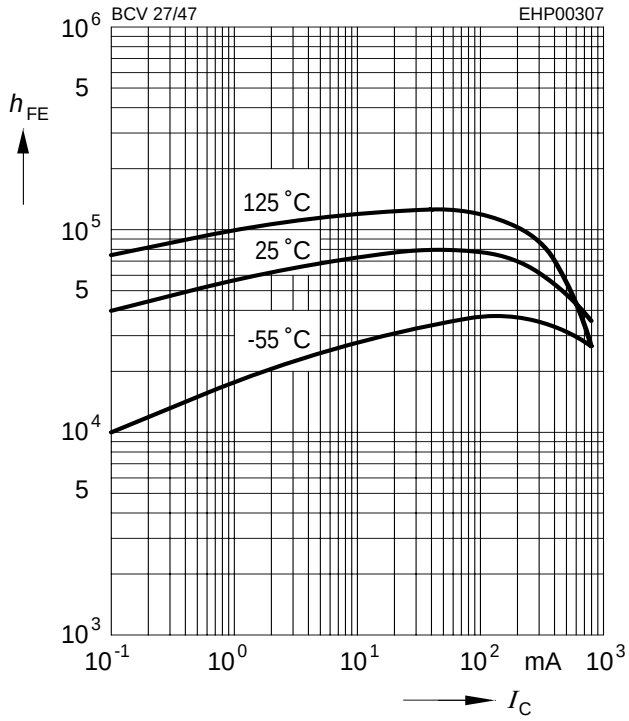
[1]Pulse test: t < 300µs; D < 2%

Electrical Characteristics at T_A = 25°C, unless otherwise specified

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

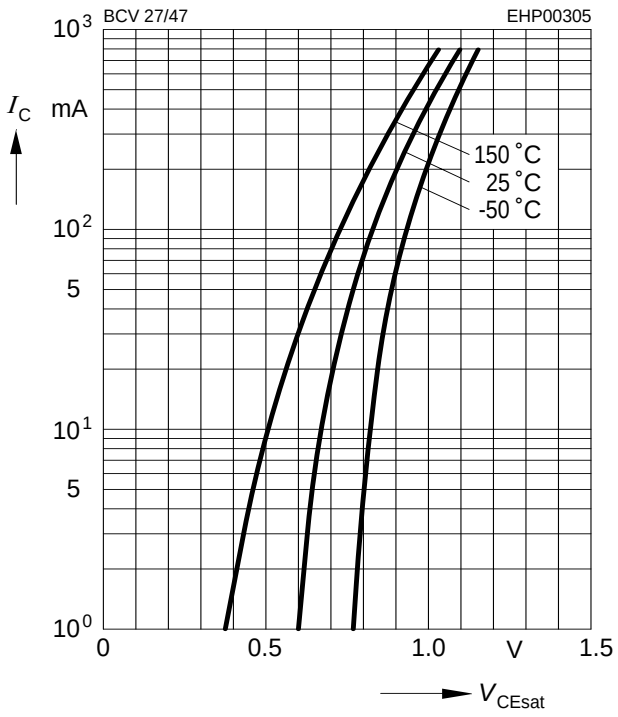
DC current gain $h_{FE} = f(I_C)$

V_{CE} = 5 V



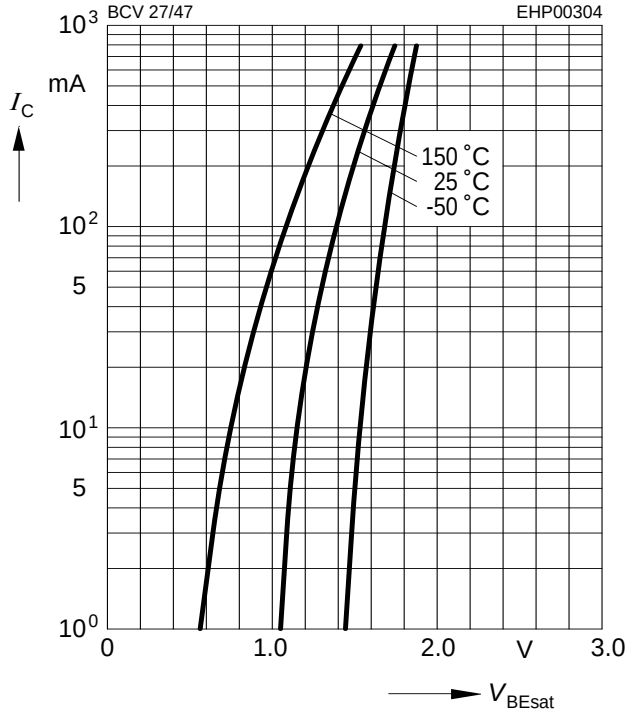
Collector-emitter saturation voltage

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



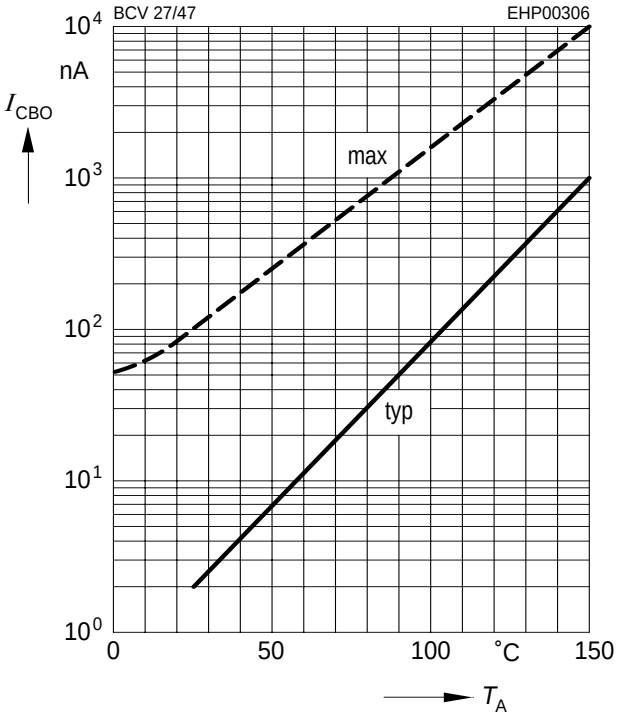
Base-emitter saturation voltage

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



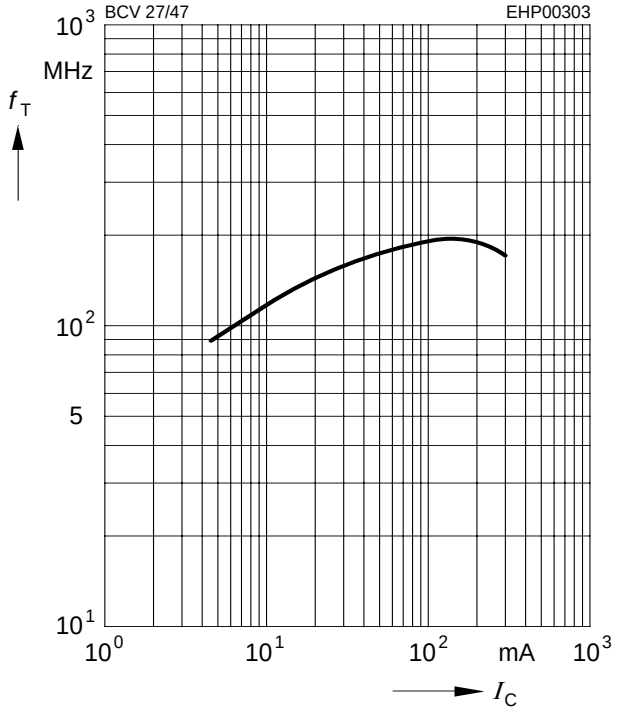
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = V_{CEmax}$



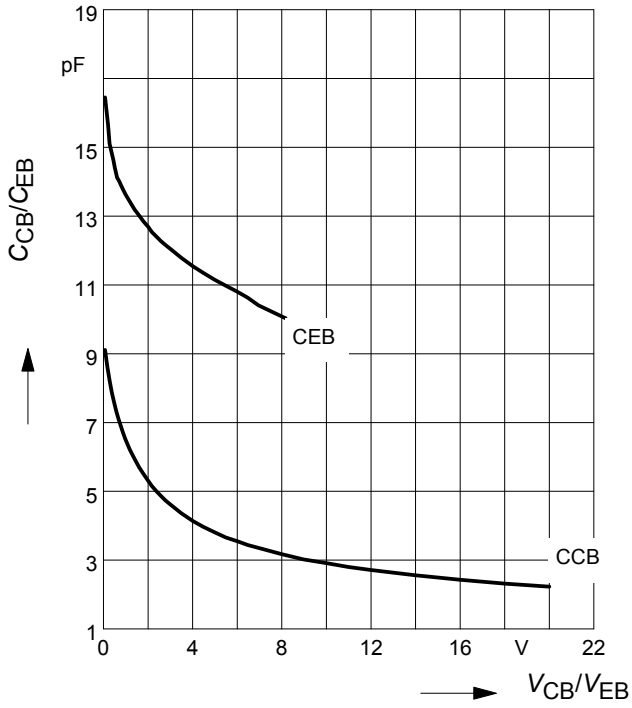
Transition frequency $f_T = f(I_C)$

V_{CE} = 5 V

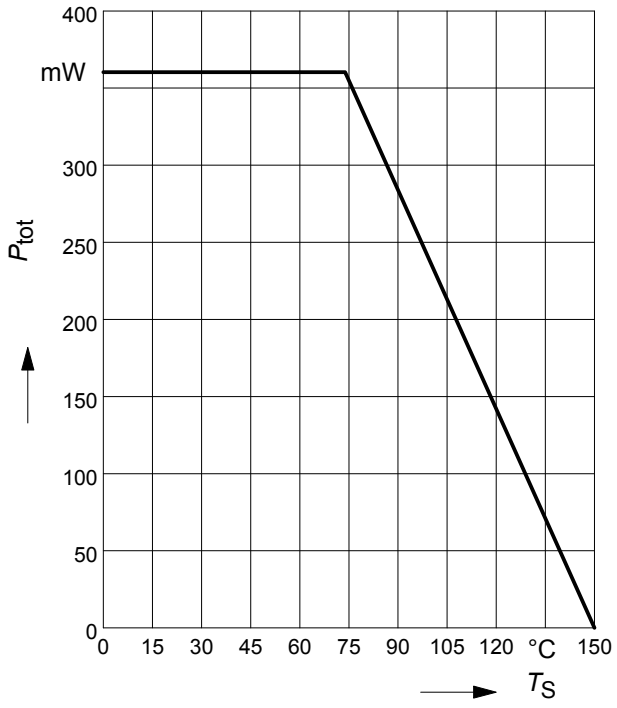


Collector-base capacitance $C_{cb} = f(V_{CB})$

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

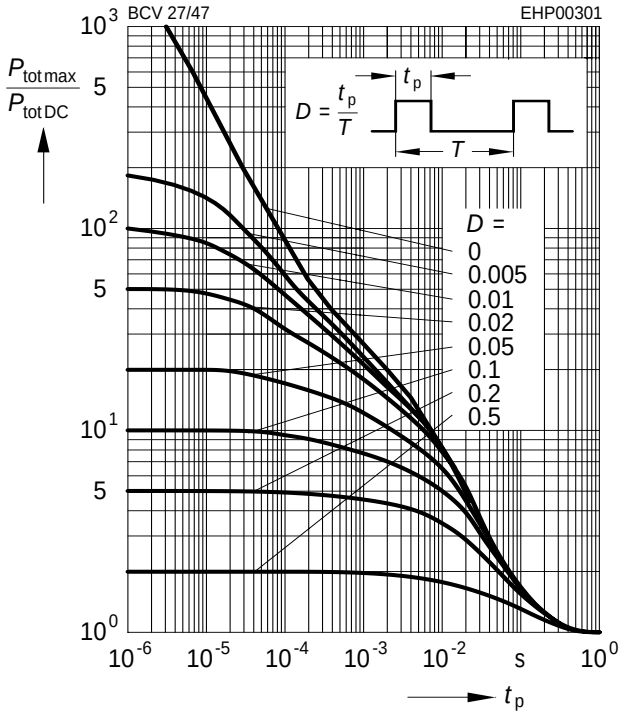


Total power dissipation $P_{tot} = f(T_S)$

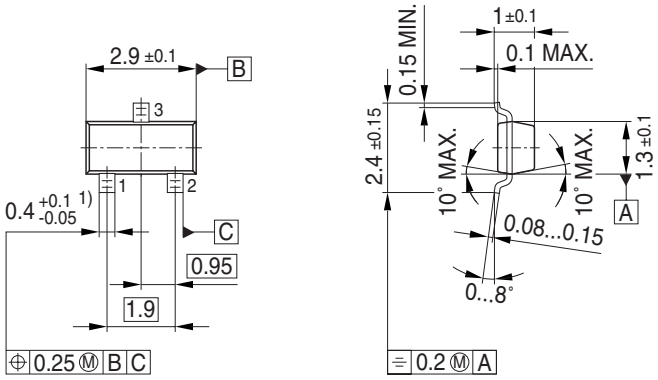


Permissible Pulse Load

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

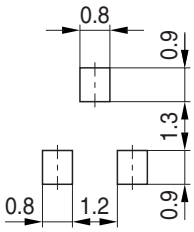


Package Outline

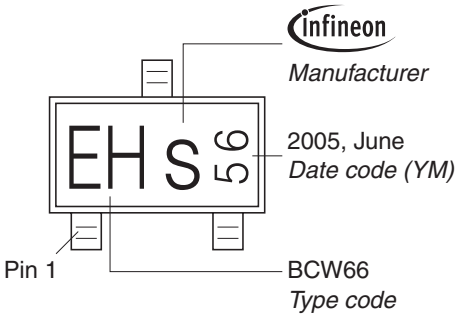


1) Lead width can be 0.6 max. in dambar area

Foot Print

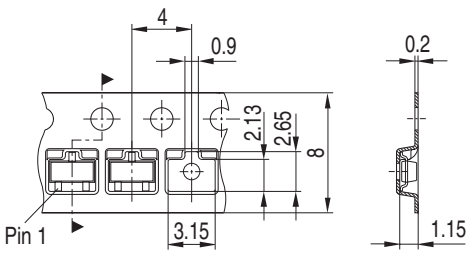


Marking Layout (Example)



Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel



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