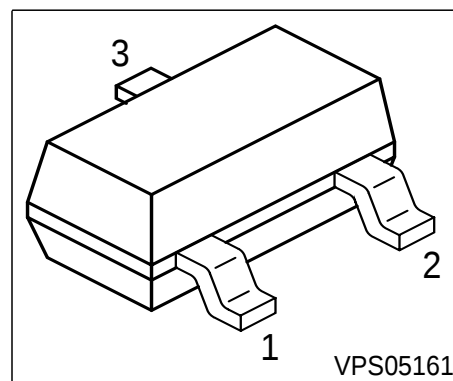


NPN Silicon Darlington Transistors

- For general AF applications
- High collector current
- High current gain
- Complementary types: BCV26, BCV46 (PNP)



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	BCV27	BCV47	Unit
Collector-emitter voltage	V_{CEO}	30	60	V
Collector-base voltage	V_{CBO}	40	80	
Emitter-base voltage	V_{EBO}	10	10	
DC 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, $T_S = 74\text{ °C}$	P_{tot}	360		mW
Junction temperature	T_j	150		
Storage temperature	T_{sto}	-65 ... 150		

Thermal Resistance

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

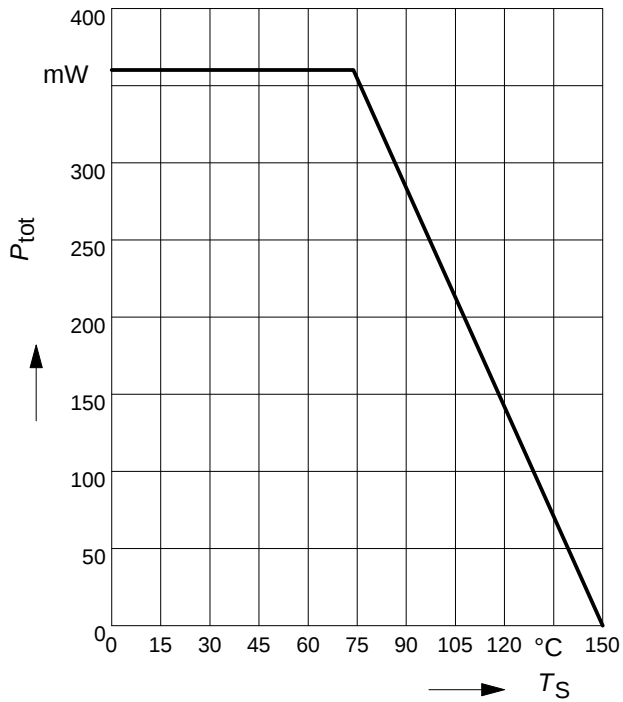
1) Pulse test: $t \leq 300\text{ }\mu\text{s}$, $D = 2\%$

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter saturation voltage1) $I_C = 100\text{ mA}$, $I_B = 0.1\text{ mA}$	V_{CEsat}	-	-	1	V
Base-emitter saturation voltage 1) $I_C = 100\text{ mA}$, $I_B = 0.1\text{ mA}$	V_{BEsat}	-	-	1.5	
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}	-	3.5	-	pF

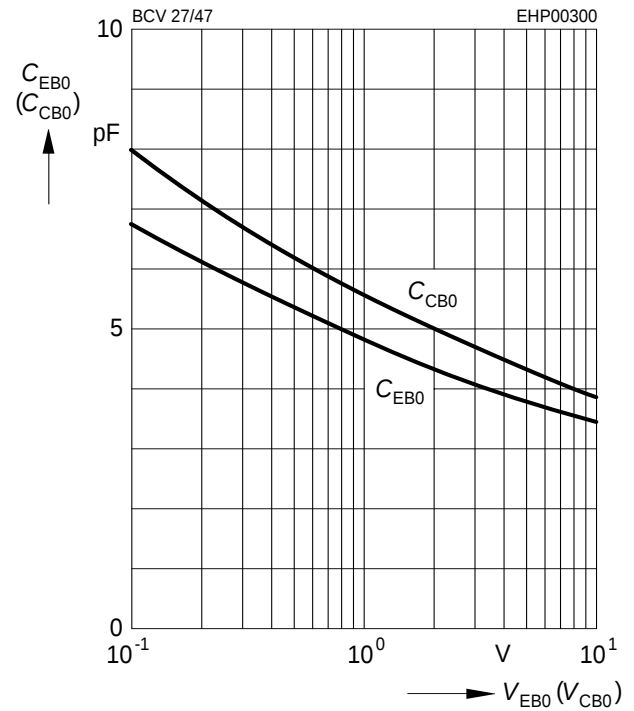
1) Pulse test: $t \leq 300\mu\text{s}$, $D = 2\%$

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



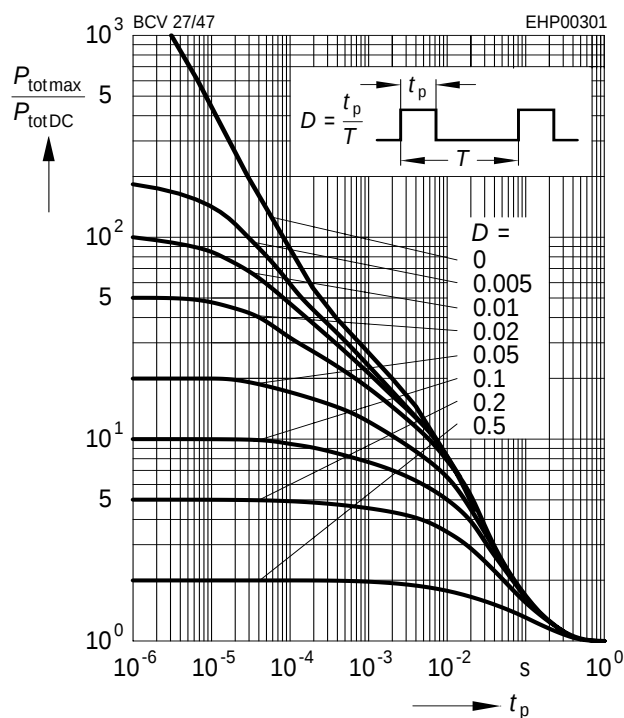
Collector-base capacitance $C_{CB} = f(V_{CB0})$

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



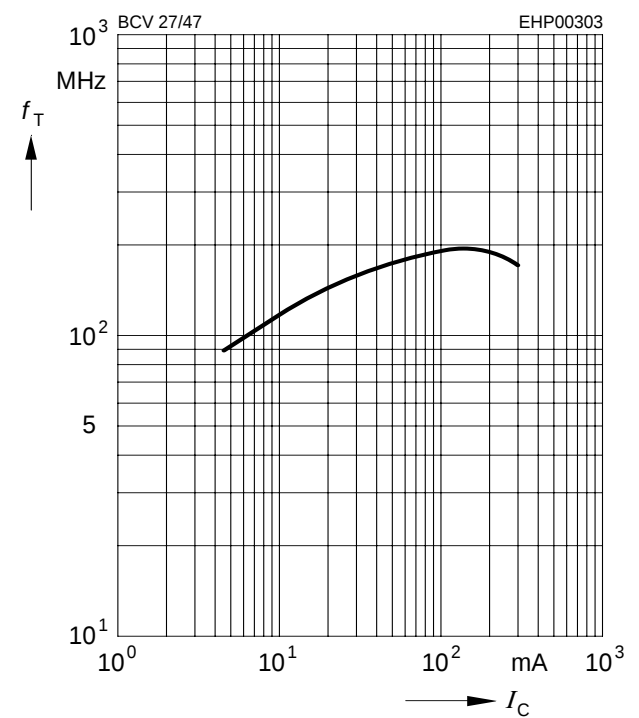
Permissible pulse load

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



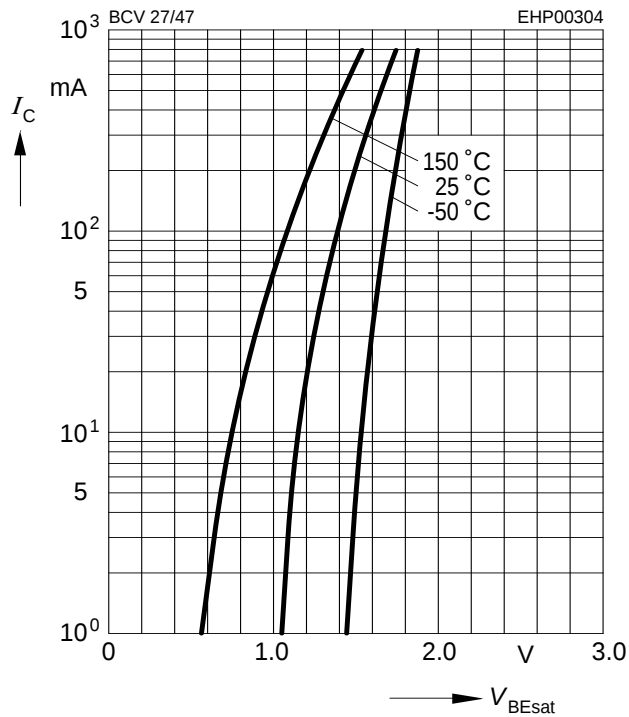
Transition frequency $f_T = f(I_C)$

$V_{CE} = 5V$



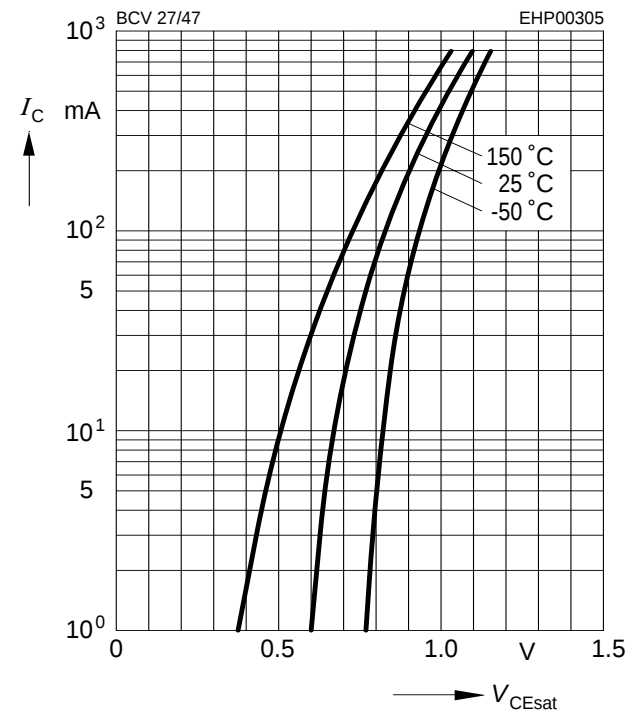
Base-emitter saturation voltage

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



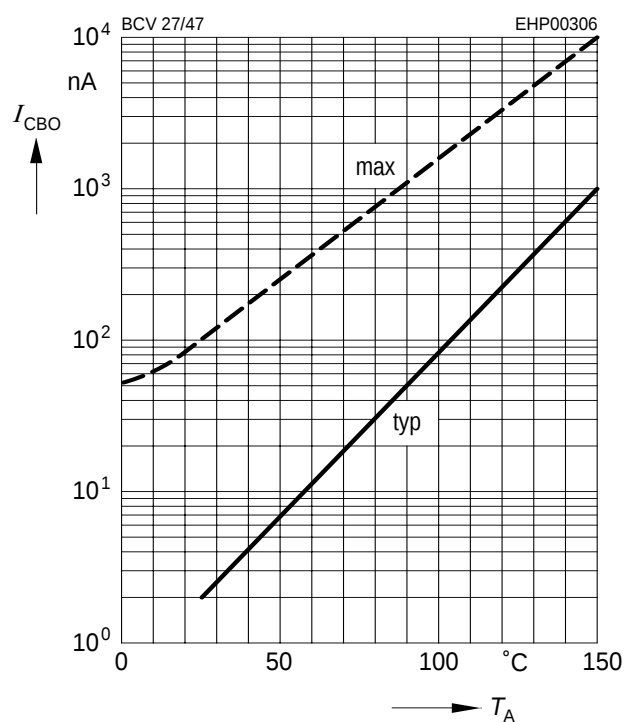
Collector-emitter saturation voltage

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



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

$$V_{CB} = V_{CEmax}$$



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

$$V_{CE} = 5V$$

