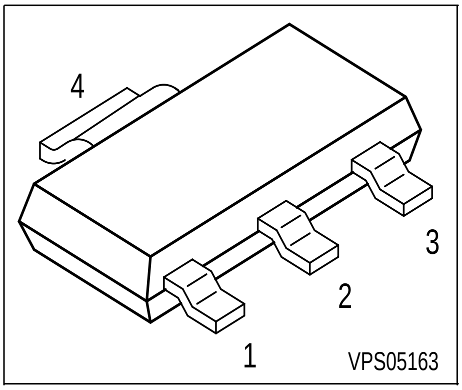
Silicon NPN Transistor



- For AF driver and output stages
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BDP948, BDP950 (PNP)

Type	Marking	Pin Configuration				Package
BDP947	BDP 947	1 = B	2 = C	3 = E	4 = C	SOT223
BDP949	BDP 949	1 = B	2 = C	3 = E	4 = C	SOT223

Maximum Ratings

Parameter	Symbol	BDP 947	BDP 949	Unit
Collector-emitter voltage	V_{CEO}	45	60	V
Collector-base voltage	V_{CBO}	45	60	
Emitter-base voltage	V_{EBO}	5	5	
DC collector current	I_C	3		A
Peak collector current	I_{CM}	5		
Base current	I_B	200		mA
Peak base current	I_{BM}	500		
Total power dissipation, T_S = 99 °C	P_{tot}	3		W
Junction temperature	T_j	150		°C
Storage temperature	T_{stg}	-65 ... 150		

Thermal Resistance

Junction - soldering point1)	R_{thJS}	≤17	K/W

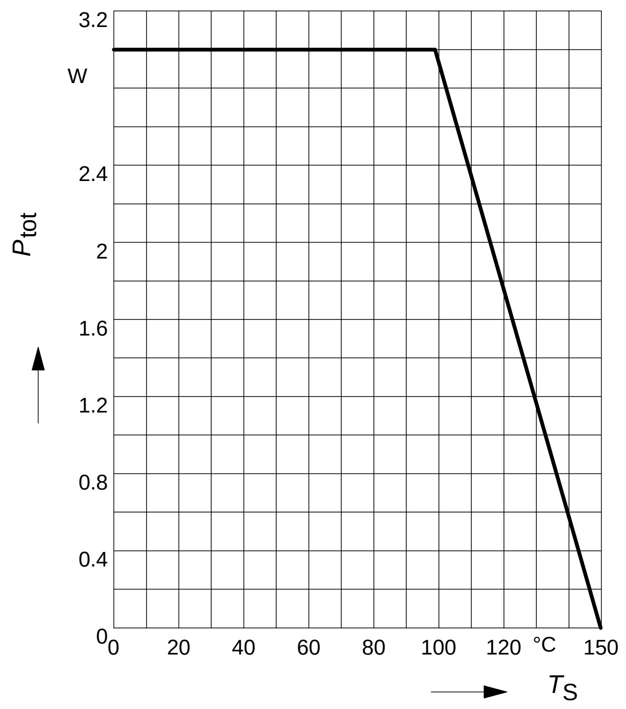
[1] For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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

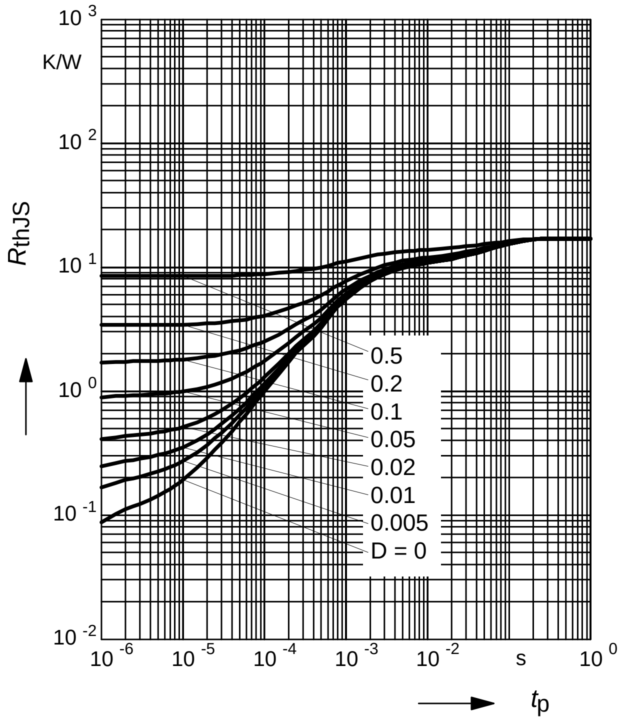
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage	$V_{(BR)CEO}$				V
I_C = 10 mA, I_B = 0 BDP947		45	-	-	
BDP949		60	-	-	
Collector-base breakdown voltage	$V_{(BR)CBO}$				
I_C = 100 µA, I_B = 0 BDP947		45	-	-	
BDP949		60	-	-	
Emitter-base breakdown voltage I_E = 10 µA, I_C = 0	$V_{(BR)EBO}$	5	-	-	
Collector cutoff current V_{CB} = 45 V, I_E = 0	I_{CBO}	-	-	100	nA
Collector cutoff current V_{CB} = 45 V, I_E = 0 , T_A = 150 °C	I_{CBO}	-	-	20	µA
Emitter cutoff current V_{EB} = 4 V, I_C = 0	I_{EBO}	-	-	100	nA
DC current gain 1)	h_{FE}				-
I_C = 10 mA, V_{CE} = 5 V		25	-	-	
I_C = 500 mA, V_{CE} = 1 V		85	-	475	
I_C = 2 A, V_{CE} = 2 V		50	-	-	
Collector-emitter saturation voltage1) I_C = 2 A, I_B = 0.2 A	V_{CEsat}	-	-	0.5	V
Base-emitter saturation voltage 1) I_C = 2 A, I_B = 0.2 A	V_{BEsat}	-	-	1.3	
AC Characteristics					
Transition frequency I_C = 50 mA, V_{CE} = 10 V, f = 100 MHz	f_T	-	100	-	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	25	-	pF

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

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

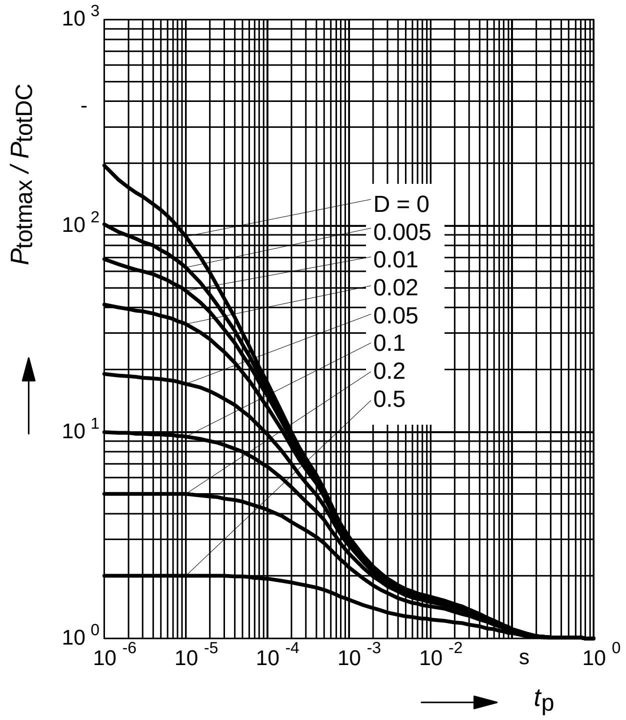


Permissible Pulse Load $R_{thJS} = f(t_p)$



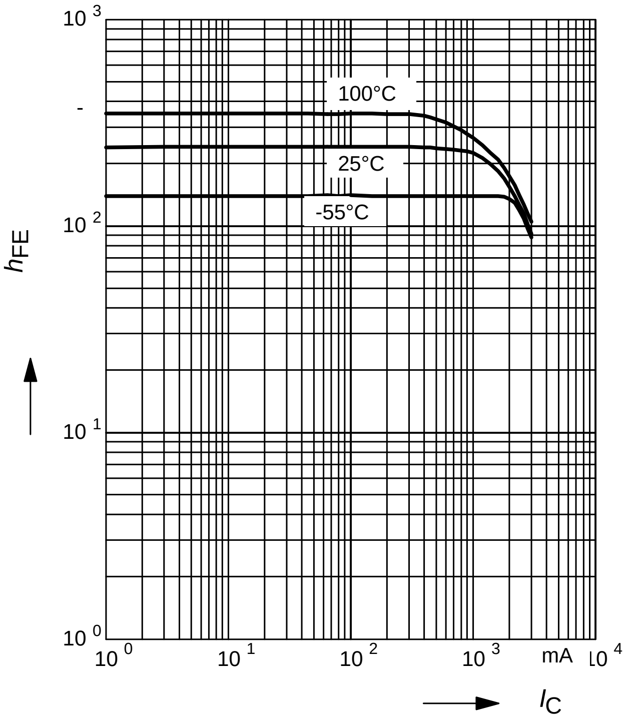
Permissible Pulse Load

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



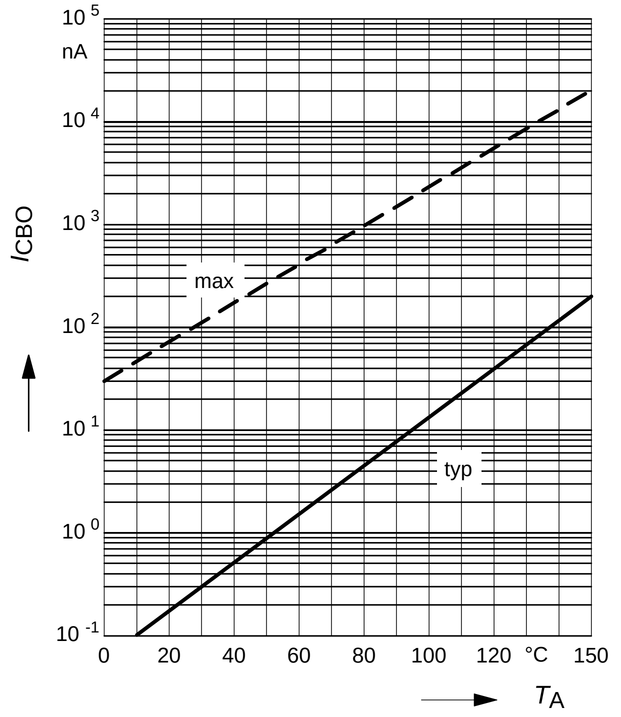
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 2V$



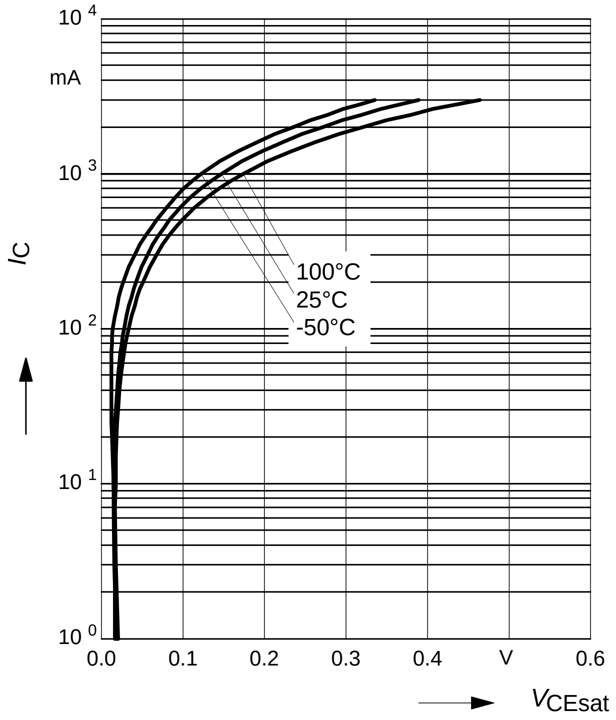
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 45V$



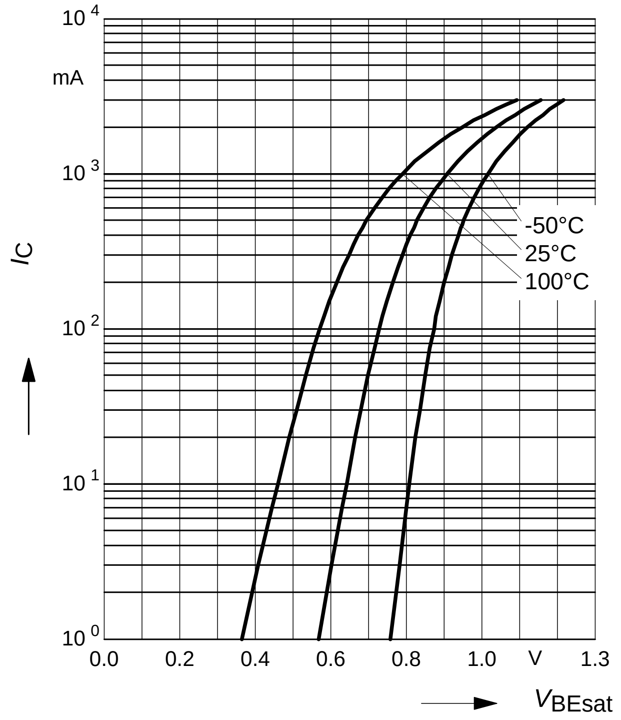
Collector-emitter saturation voltage

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



Base-emitter saturation voltage

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



Collector current $I_C = f(V_{BE})$

$V_{CE} = 2V$