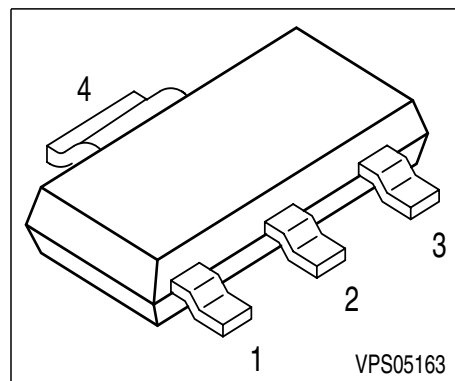


Silicon NPN Transistor

- For AF driver and output stages
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BDP 948, BDP 950 (PNP)



Type	Marking	Pin Configuration				Package
BDP 947	BDP 947	1 = B	2 = C	3 = E	4 = C	SOT-223
BDP 949	BDP 949	1 = B	2 = C	3 = E	4 = C	SOT-223

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, $T_S = 99\text{ °C}$	P_{tot}	3		W
Junction temperature	T_j	150		°C
Storage temperature	T_{sta}	-65 ... 150		

Thermal Resistance

Junction ambient ¹⁾	R_{thJA}	≤72	K/W
Junction - soldering point	R_{thJS}	≤17	

1) Package mounted on pcb 40mm x 40mm x 1.5mm / 6cm² Cu

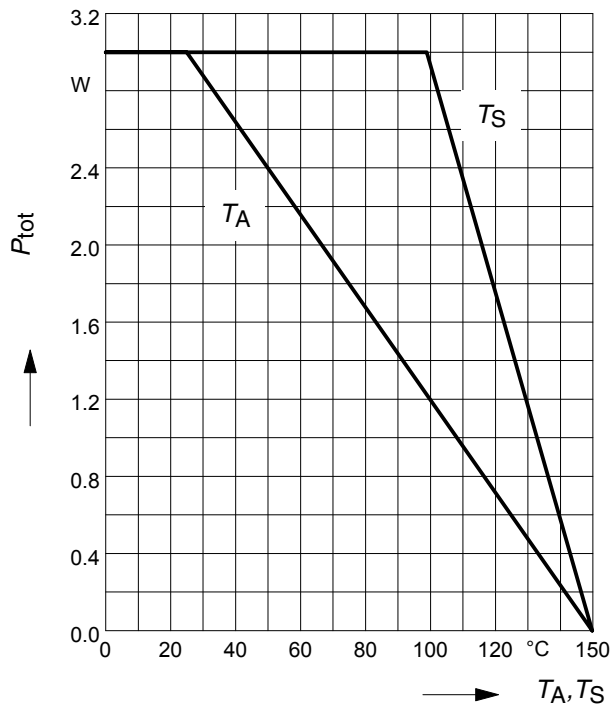
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$, $I_B = 0$ BDP 947 BDP 949	$V_{(BR)CEO}$	45 60	- -	- -	V
Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$, $I_B = 0$ BDP 947 BDP 949	$V_{(BR)CBO}$	45 60	- -	- -	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$, $I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector cutoff current $V_{CB} = 45\text{ V}$, $I_E = 0$	I_{CBO}	-	-	100	nA
Collector cutoff current $V_{CB} = 45\text{ V}$, $I_E = 0$, $T_A = 150\text{ }^\circ\text{C}$	I_{CBO}	-	-	20	μA
Emitter cutoff current $V_{EB} = 4\text{ V}$, $I_C = 0$	I_{EBO}	-	-	100	nA
DC current gain 1) $I_C = 10\text{ mA}$, $V_{CE} = 5\text{ V}$ $I_C = 500\text{ mA}$, $V_{CE} = 1\text{ V}$ $I_C = 2\text{ A}$, $V_{CE} = 2\text{ V}$	h_{FE}	25 85 50	- - -	- 475 -	-
Collector-emitter saturation voltage1) $I_C = 2\text{ A}$, $I_B = 0.2\text{ A}$	V_{CEsat}	-	-	0.5	V
Base-emitter saturation voltage 1) $I_C = 2\text{ A}$, $I_B = 0.2\text{ A}$	V_{BEsat}	-	-	1.3	
AC Characteristics					
Transition frequency $I_C = 50\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 100\text{ MHz}$	f_T	-	100	-	MHz
Collector-base capacitance $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$	C_{cb}	-	25	-	pF

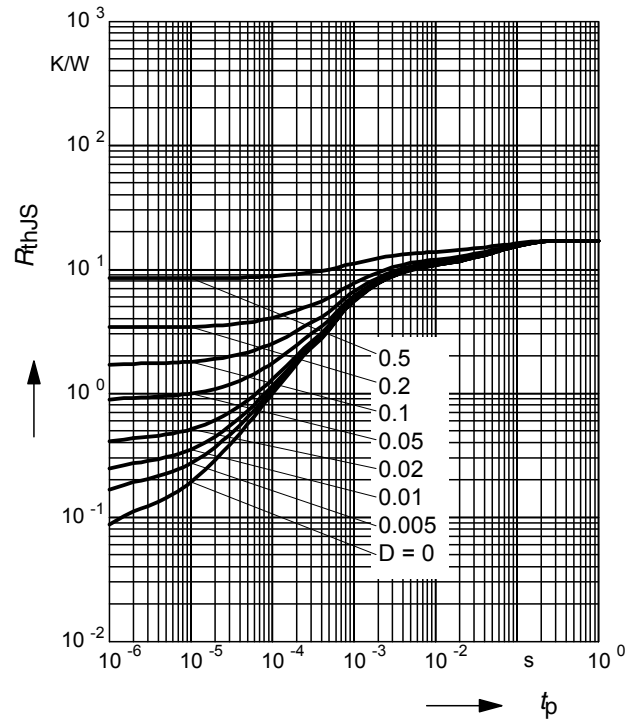
1) Pulse test: $t \leq 300\mu\text{s}$, $D = 2\%$

Total power dissipation $P_{\text{tot}} = f(T_A^*; T_S)$

* Package mounted on epoxy

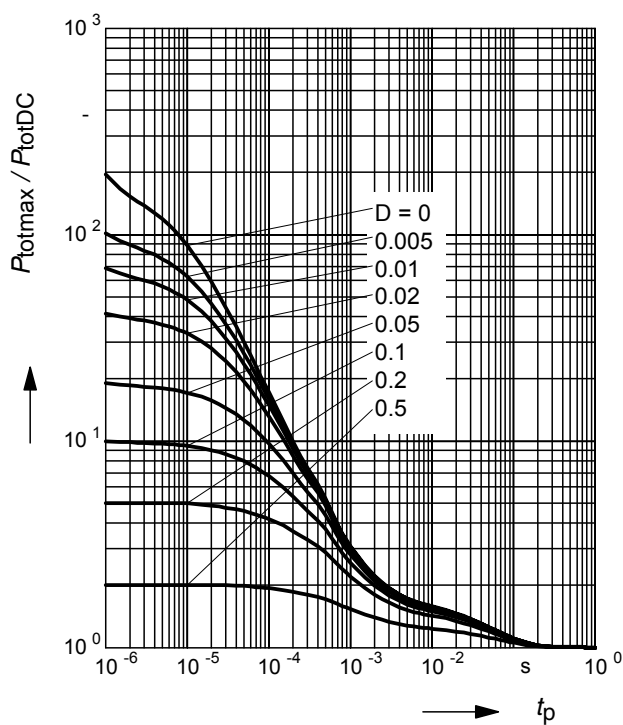


Permissible Pulse Load $R_{\text{thJS}} = f(t_p)$



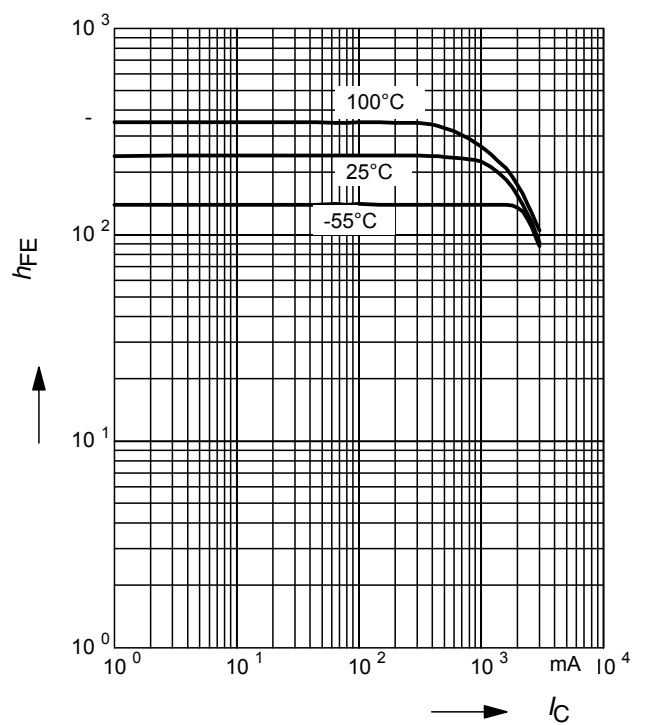
Permissible Pulse Load

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



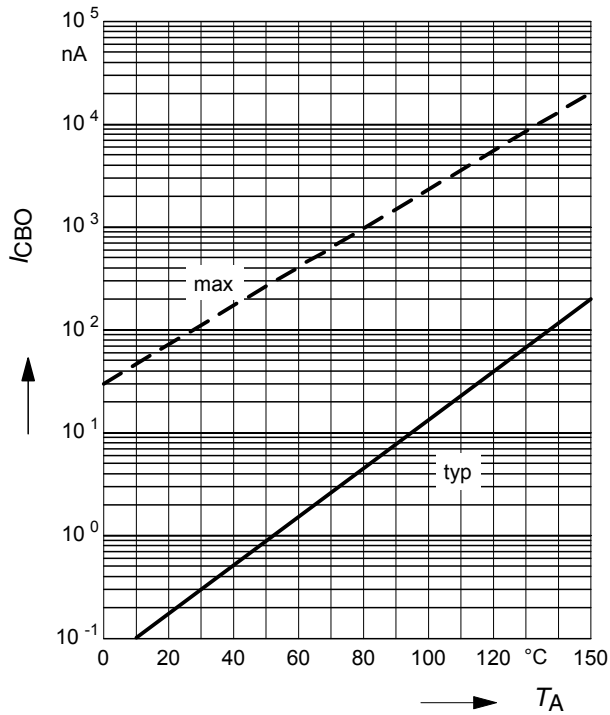
DC current gain $h_{\text{FE}} = f(I_C)$

$$V_{\text{CE}} = 2\text{V}$$



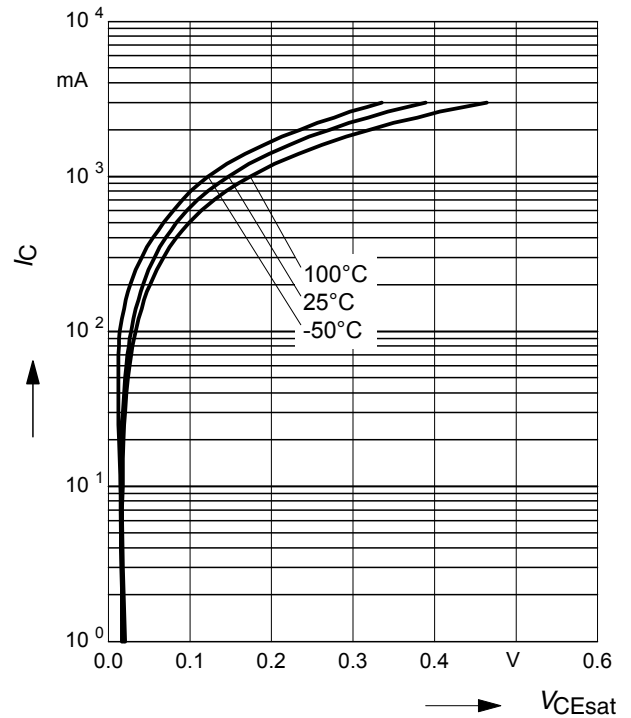
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 45V$



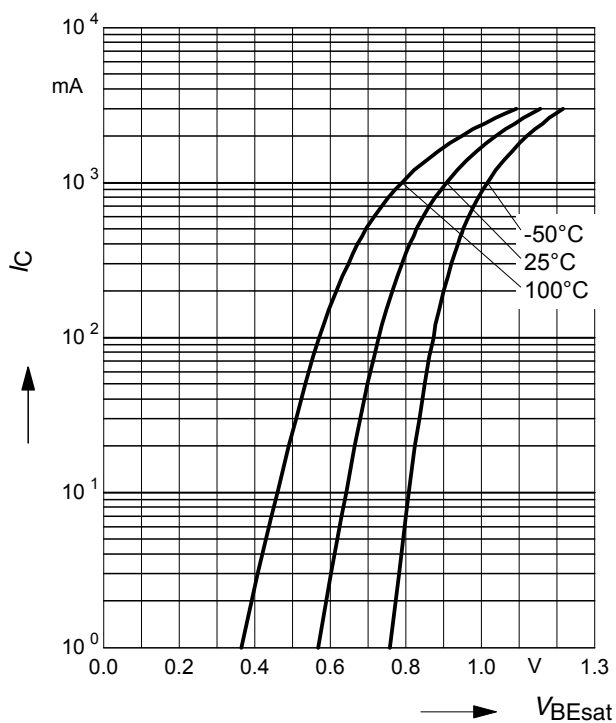
Collector-emitter saturation voltage

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



Base-emitter saturation voltage

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



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

$V_{CE} = 2V$

