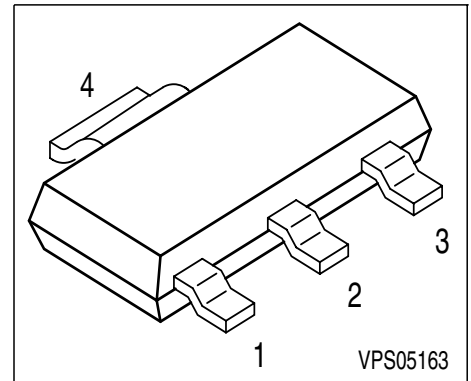


**Silicon NPN Transistor**

- 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	$T_{stg}$	-65 ... 150		

**Thermal Resistance**

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

1) Package mounted on pcb 40mm x 40mm x 1.5mm / 6cm<sup>2</sup> Cu

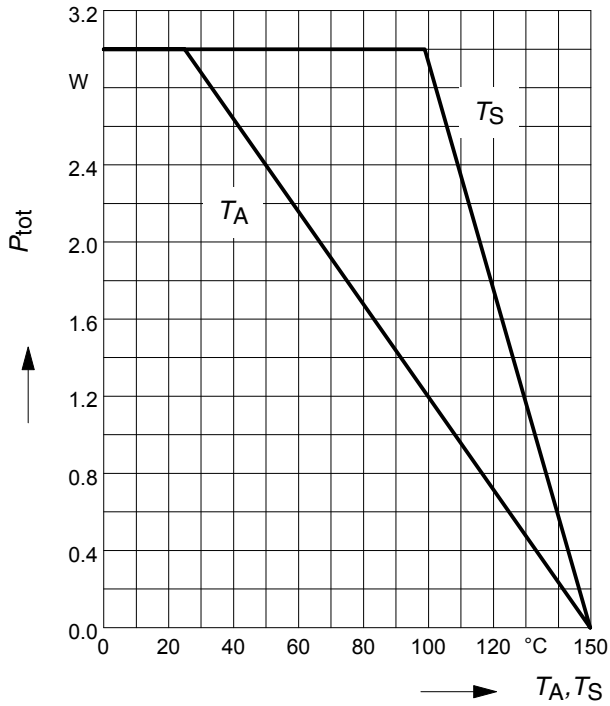
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}, I_B = 0$	$V_{(BR)CEO}$	45	-	-	V
BDP 947		60	-	-	
Collector-base breakdown voltage $I_C = 100\ \mu\text{A}, I_B = 0$	$V_{(BR)CBO}$	45	-	-	
BDP 949		60	-	-	
Emitter-base breakdown voltage $I_E = 10\ \mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector cutoff current $V_{CB} = 45\text{ V}, I_E = 0$	$I_{CBO}$	-	-	100	nA
Collector cutoff current $V_{CB} = 45\text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	$I_{CBO}$	-	-	20	$\mu\text{A}$
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	-	475	
		50	-	-	
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	
<b>AC Characteristics</b>					
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

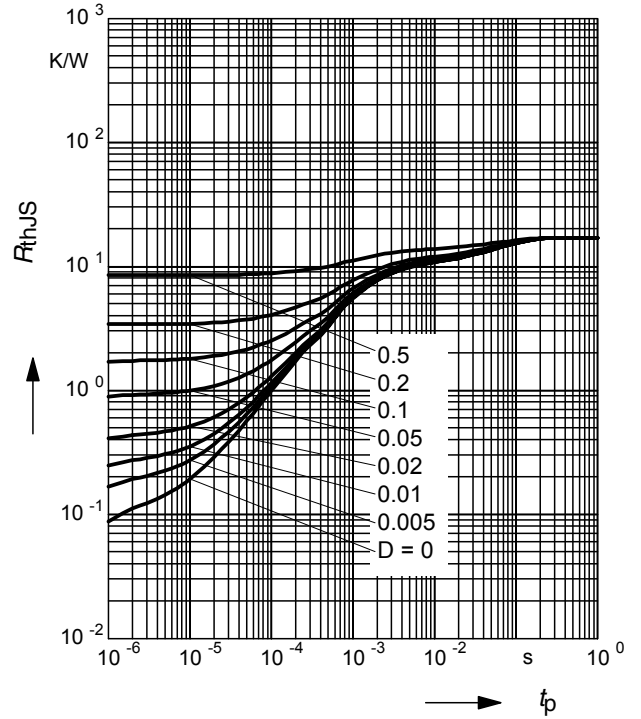
 1) Pulse test:  $t \leq 300\ \mu\text{s}$ ,  $D = 2\%$

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

\* Package mounted on epoxy

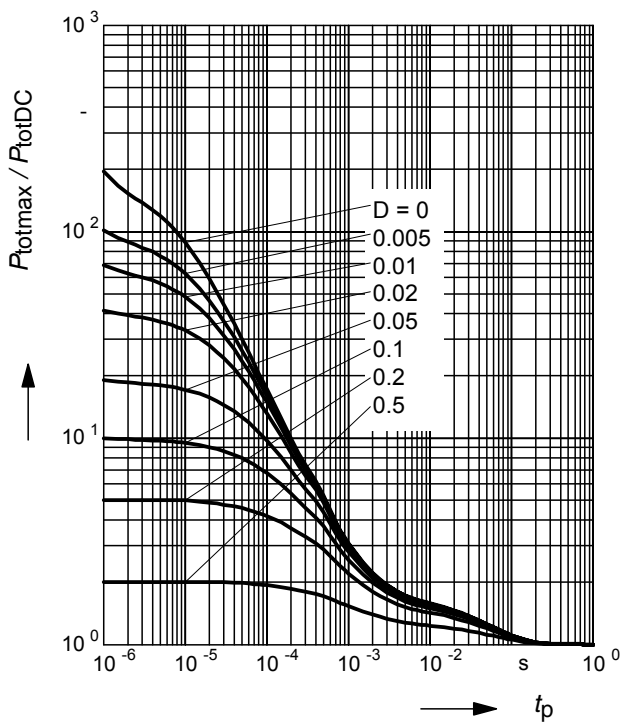


**Permissible Pulse Load  $R_{thJS} = f(t_p)$**



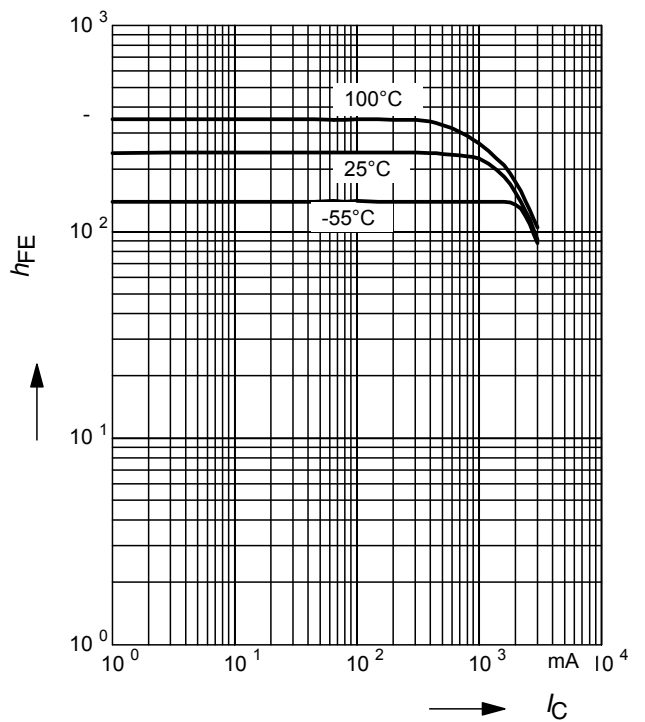
**Permissible Pulse Load**

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



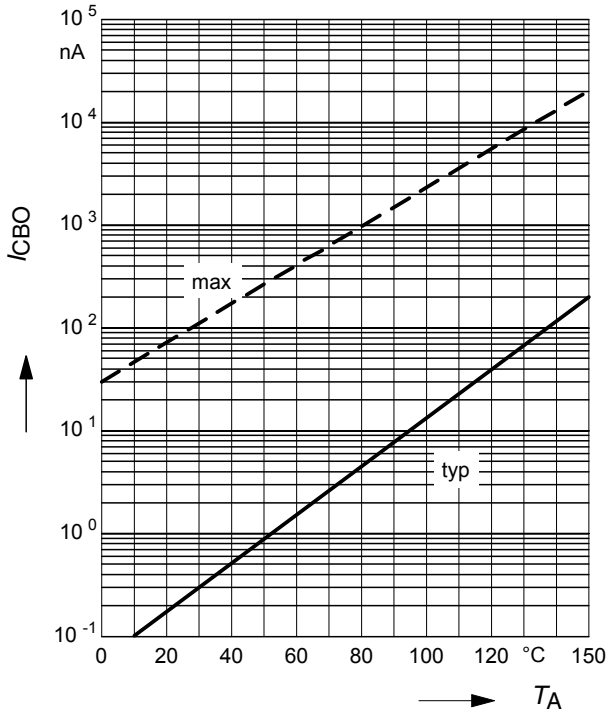
**DC current gain  $h_{FE} = f(I_C)$**

$V_{CE} = 2V$



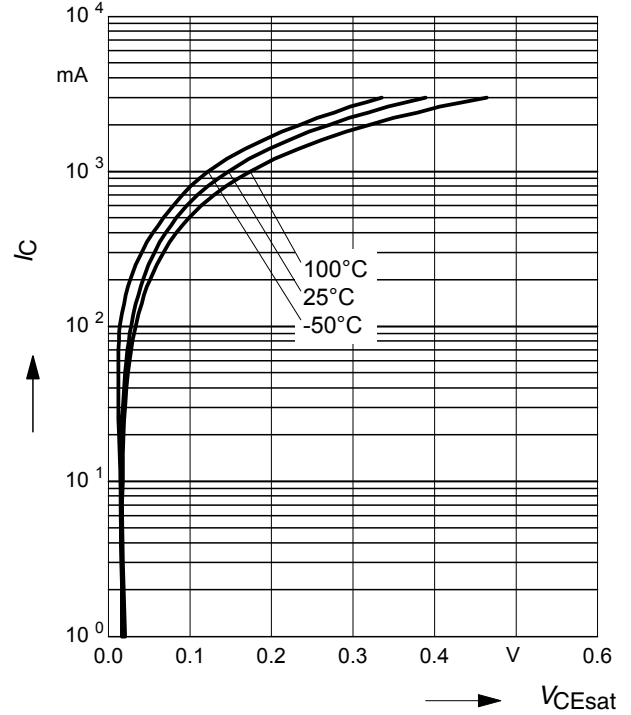
**Collector cutoff current  $I_{CBO} = f(T_A)$**

$V_{CB} = 45V$



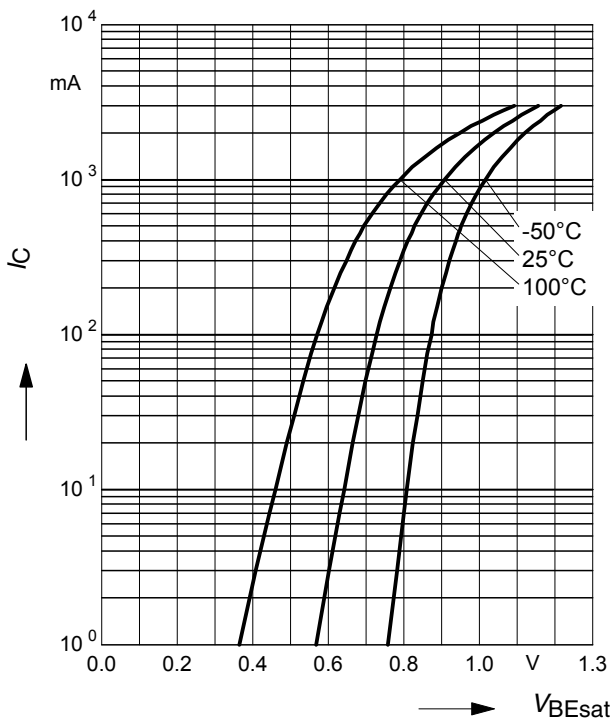
**Collector-emitter saturation voltage**

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



**Base-emitter saturation voltage**

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



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

$V_{CE} = 2V$

