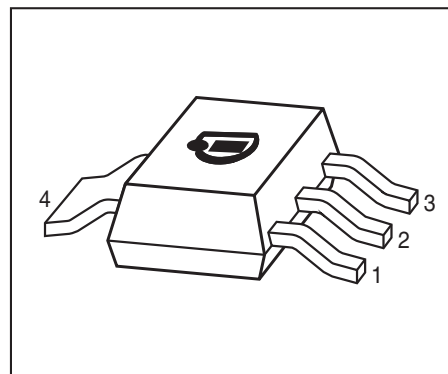


PNP Silicon AF Power Transistors

- For AF driver and output stages
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BDP947, BDP949
BDP953 (NPN)
- Pb-free (RoHS compliant) package¹⁾
- Qualified according AEC Q101



Type	Marking	Pin Configuration						Package
BDP948	BDP948	1=B	2=C	3=E	4=C	-	-	SOT223
BDP950	BDP950	1=B	2=C	3=E	4=C	-	-	SOT223
BDP954	BCP954	1=B	2=C	3=E	4=C	-	-	SOT223

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage BDP948 BDP950 BDP954	V_{CEO}	45 60 100	V
Collector-base voltage BDP948 BDP950 BDP954	V_{CBO}	45 60 120	
Emitter-base voltage	V_{EBO}	5	
Collector current	I_C	3	
Peak collector current, $t_p \leq 10$ ms	I_{CM}	5	
Base current	I_B	200	mA
Peak base current	I_{BM}	500	
Total power dissipation- $T_S \leq 100$ °C	P_{tot}	5	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ²⁾	R_{thJS}	≤ 10	K/W

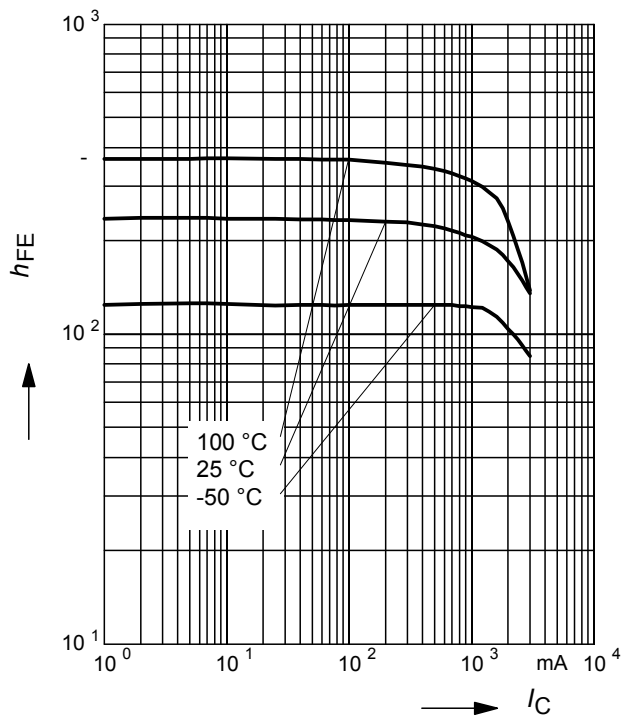
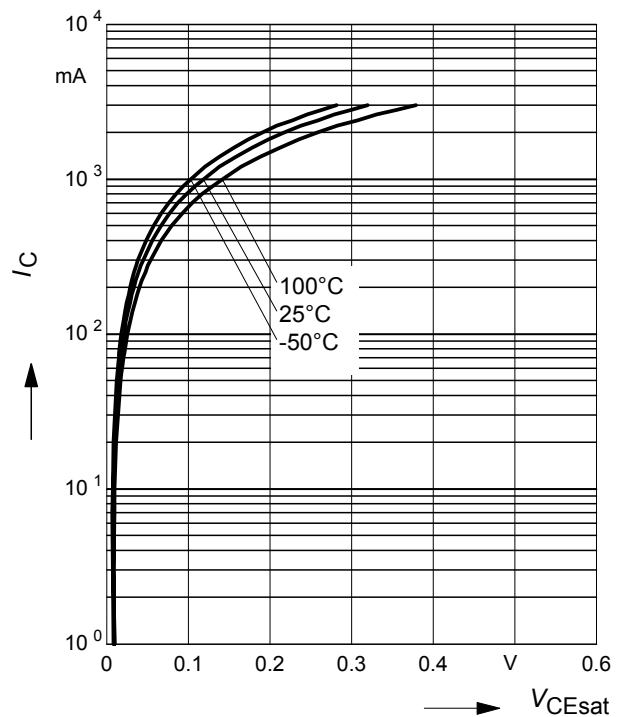
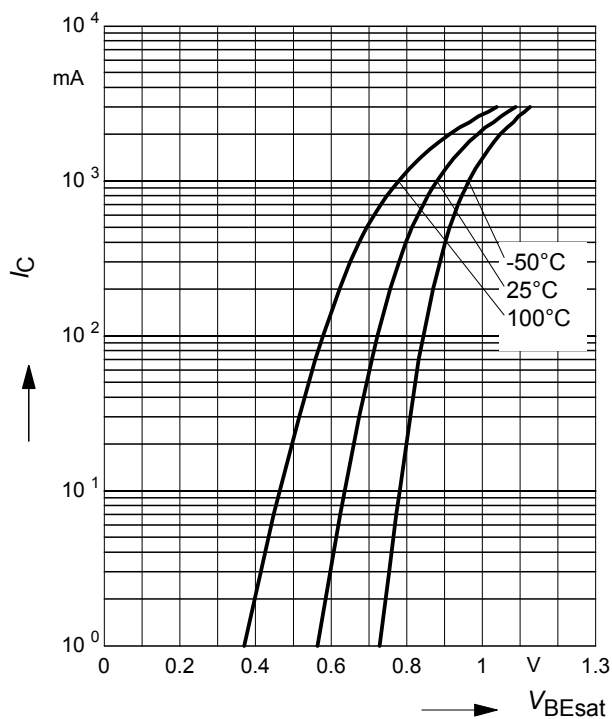
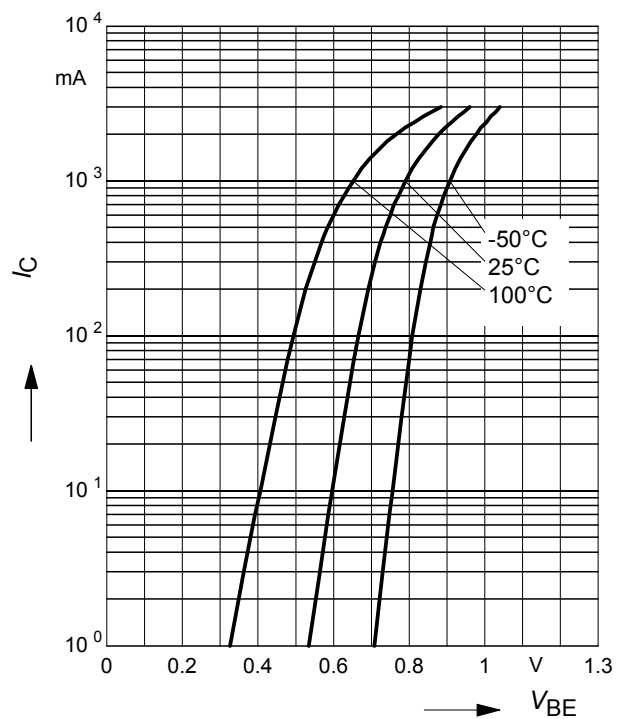
¹Pb-containing package may be available upon special request

²For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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

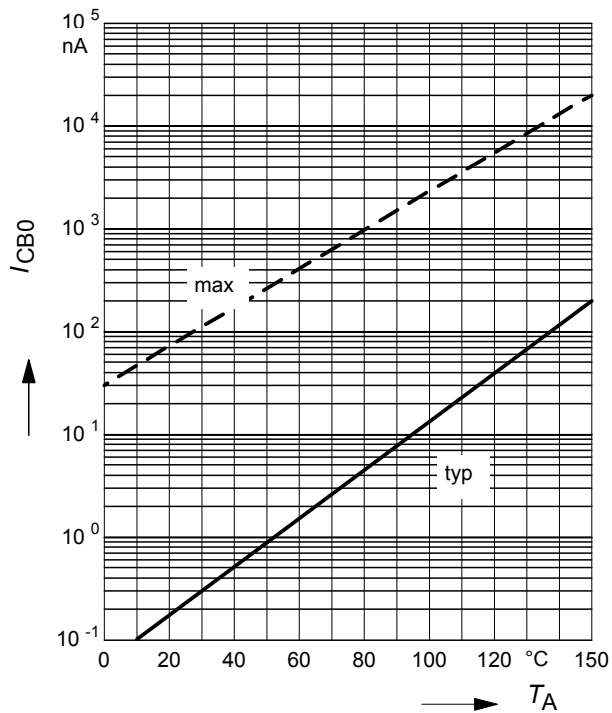
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$, $I_B = 0$, BDP948 $I_C = 10\text{ mA}$, $I_B = 0$, BDP950 $I_C = 10\text{ mA}$, $I_B = 0$, BDP954	$V_{(BR)CEO}$	45 60 100	- - -	- - -	V
Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$, BDP948 $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$, BDP950 $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$, BDP954	$V_{(BR)CBO}$	45 60 120	- - -	- - -	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$, $I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector-base cutoff current $V_{CB} = 45\text{ V}$, $I_E = 0$ $V_{CB} = 45\text{ V}$, $I_E = 0$, $T_A = 150\text{ }^\circ\text{C}$	I_{CBO}	- -	- -	0.1 20	
Emitter-base cutoff current $V_{EB} = 4\text{ V}$, $I_C = 0$	I_{EBO}	-	-	100	nA
DC current gain ¹⁾ $I_C = 10\text{ mA}$, $V_{CE} = 5\text{ V}$ $I_C = 500\text{ mA}$, $V_{CE} = 1\text{ V}$ $I_C = 1\text{ A}$, $V_{CE} = 2\text{ V}$ BDP948,BDP950 BDP954 $I_C = 1\text{ A}$, $V_{CE} = 2\text{ V}$	h_{FE}	25 85 50 15	- - - -	- 475 - -	-
Collector-emitter saturation voltage ¹⁾ $I_C = 2\text{ A}$, $I_B = 0.2\text{ A}$	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 $V_{CB} = 10\text{ V}$, $f = 100\text{ MHz}$	C_{cb}	-	40	-	pF

¹⁾Pulse test: $t < 300\mu\text{s}$; $D < 2\%$

DC current gain $h_{FE} = f(I_C)$
 $V_{CE} = 2 \text{ V}$

Collector-emitter saturation voltage
 $I_C = f(V_{CEsat}), h_{FE} = 10$

Base-emitter saturation voltage
 $I_C = (V_{BEsat}), h_{FE} = 10$

Collector current $I_C = f(V_{BE})$
 $V_{CE} = 2 \text{ V}$


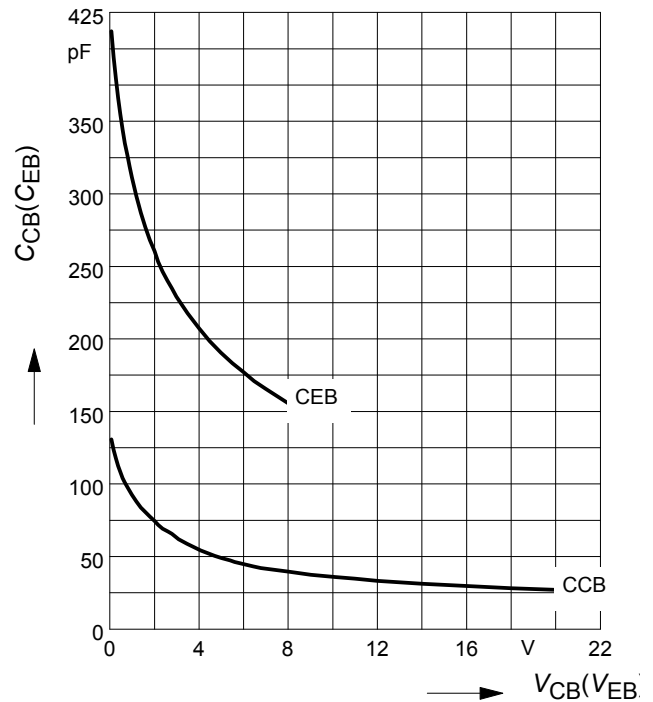
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 45 \text{ V}$

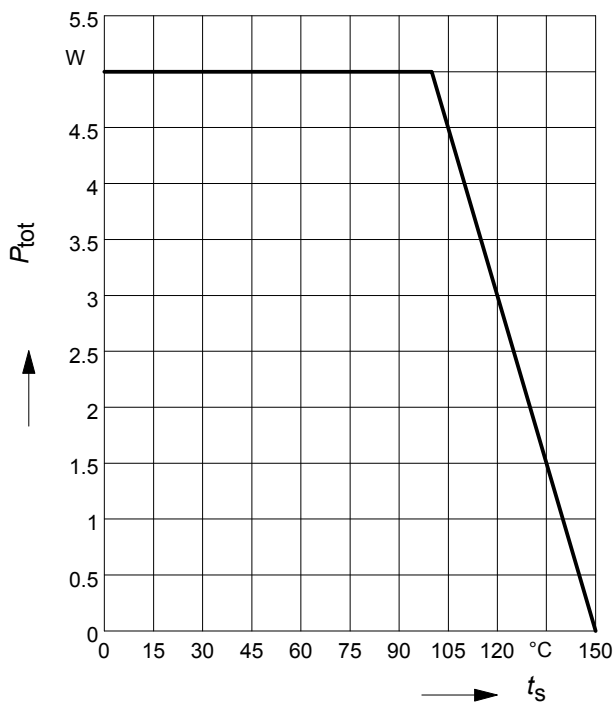


Collector-base capacitance $C_{cb} = f(V_{CB})$

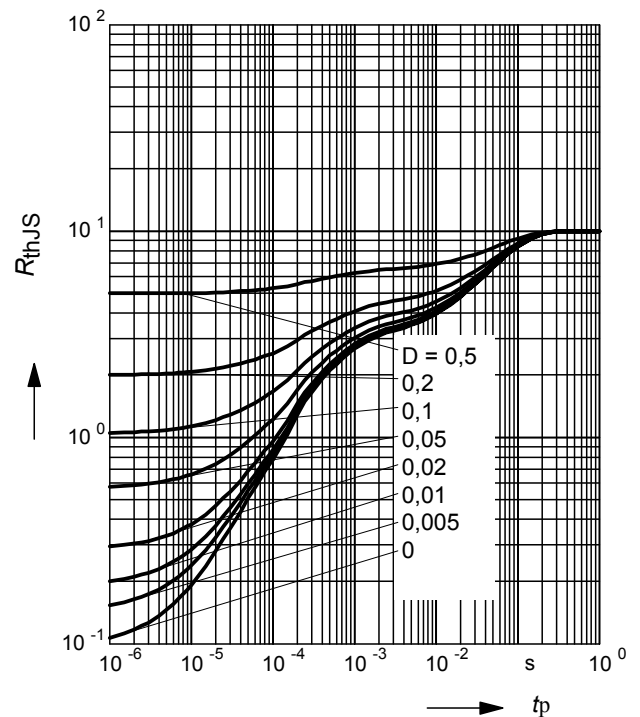
Emitter-base capacitance $C_{eb} = f(V_{EB})$



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

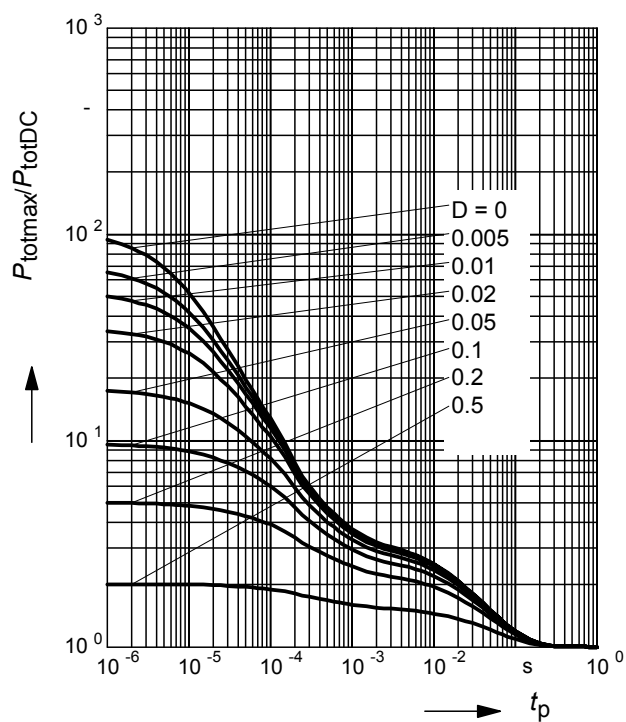


Permissible Pulse Load $R_{thJS} = f(t_p)$

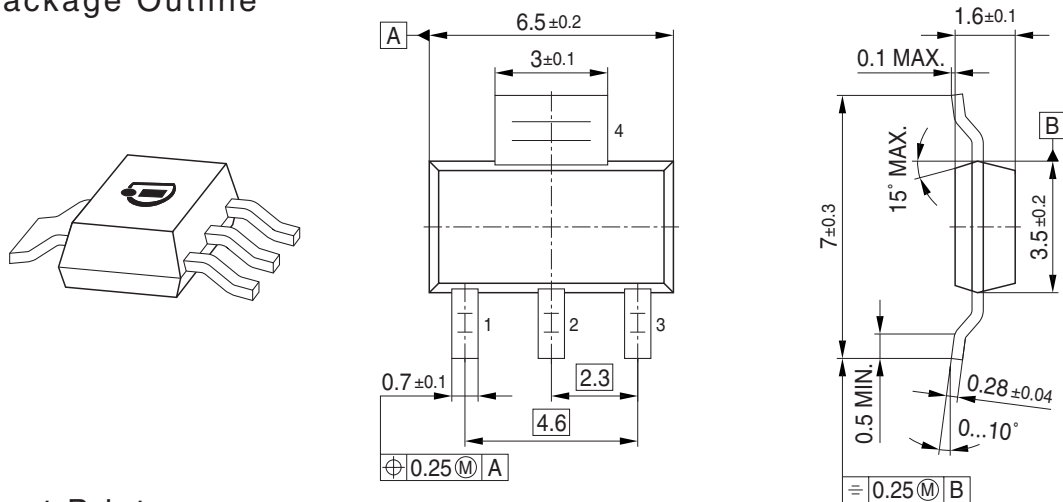


Permissible Pulse Load

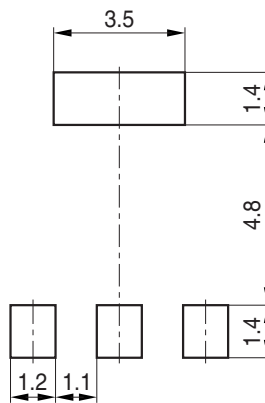
$$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$$



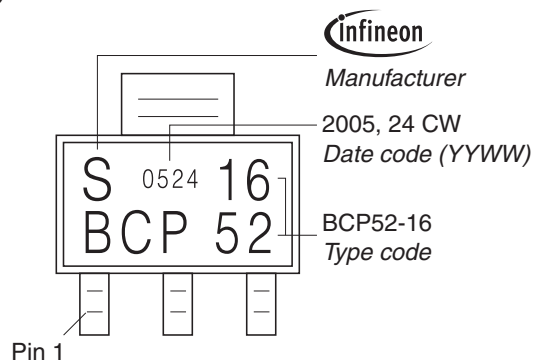
Package Outline



Foot Print

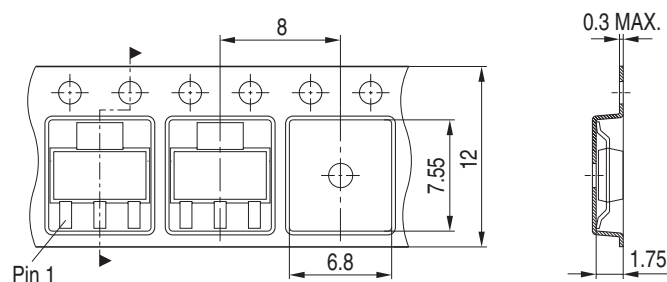


Marking Layout (Example)



Packing

Reel $\varnothing 180 \text{ mm}$ = 1.000 Pieces/Reel
 Reel $\varnothing 330 \text{ mm}$ = 4.000 Pieces/Reel



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