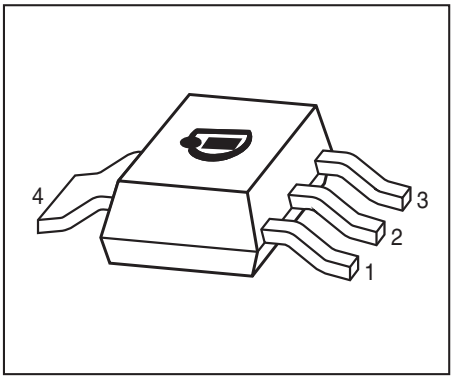
Silicon NPN Transistors



- For AF driver and output stages
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BDP948, BDP950, BDP954 (PNP)
- Pb-free (RoHS compliant) package [1)]
- Qualified according AEC Q101

Type	Marking	Pin Configuration						Package
BDP947	BDP947	1=B	2=C	3=E	4=C	-	-	SOT223
BDP949	BDP949	1=B	2=C	3=E	4=C	-	-	SOT223
BDP953	BDP953	1=B	2=C	3=E	4=C	-	-	SOT223

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}		V
BDP947		45	
BDP949		60	
BDP953		100	
Collector-base voltage	V_{CBO}		
BDP947		45	
BDP949		60	
BDP953		120	
Emitter-base voltage	V_{EBO}	5	
Collector current	I_C	3	A
Peak collector current, $t_p \leq 10$ ms	I_{CM}	5	
Base current	I_B	200	mA
Peak base current, $t_p \leq 10$ ms	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	

[1]Pb-containing package may be available upon special request

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[1)]	R_{thJS}	≤ 10	K/W

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

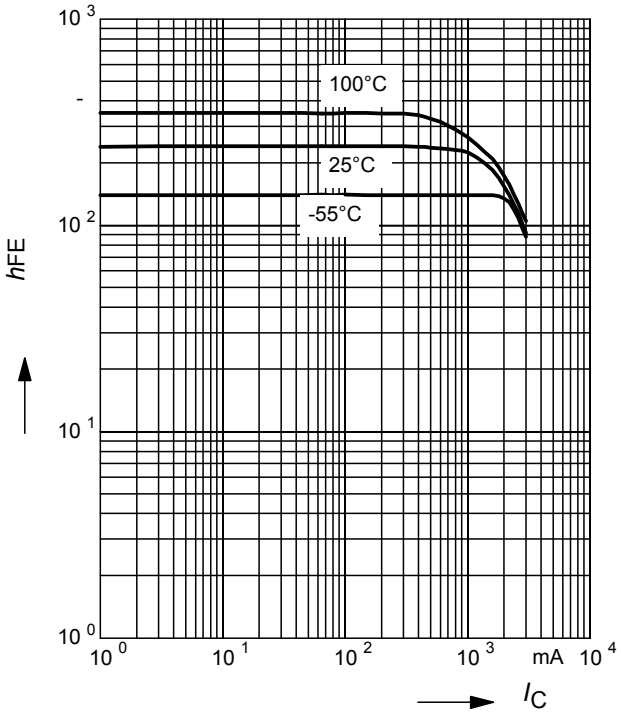
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage	$V_{(BR)CEO}$				V
I_C = 10 mA, I_B = 0 , BDP947		45	-	-	
I_C = 10 mA, I_B = 0 , BDP949		60	-	-	
I_C = 10 mA, I_B = 0 , BDP953		100	-	-	
Collector-base breakdown voltage	$V_{(BR)CBO}$				
I_C = 100 µA, I_E = 0 , BDP947		45	-	-	
I_C = 100 µA, I_E = 0 , BDP949		60	-	-	
I_C = 0 , I_E = 100 µA, BDP953		120	-	-	
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5	-	-	
I_E = 10 µA, I_C = 0					
Collector-base cutoff current	I_{CBO}				µA
V_{CB} = 45 V, I_E = 0		-	-	0.1	
V_{CB} = 45 V, I_E = 0 , T_A = 150 °C		-	-	20	
Emitter-base cutoff current	I_{EBO}	-	-	100	nA
V_{EB} = 4 V, I_C = 0					
DC current gain[2)]	h_{FE}				-
I_C = 10 mA, V_{CE} = 5 V		25	-	-	
I_C = 500 mA, V_{CE} = 1 V		100	-	475	
I_C = 2 A, V_{CE} = 2 V, BDP947, BDP949		50	-	-	
I_C = 2 A, V_{CE} = 2 V, BDP953		15	-	-	
Collector-emitter saturation voltage[2)]	V_{CEsat}	-	-	0.5	V
I_C = 2 A, I_B = 0.2 A					
Base emitter saturation voltage[2)]	V_{BEsat}	-	-	1.3	
I_C = 2 A, I_B = 0.2 A					
AC Characteristics					
Transition frequency	f_T	-	100	-	MHz
I_C = 50 mA, V_{CE} = 10 V, f = 100 MHz					
Collector-base capacitance	C_{cb}	-	25	-	pF
V_{CB} = 10 V, f = 1 MHz					

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

[2]Pulse test: t < 300µs; D < 2%

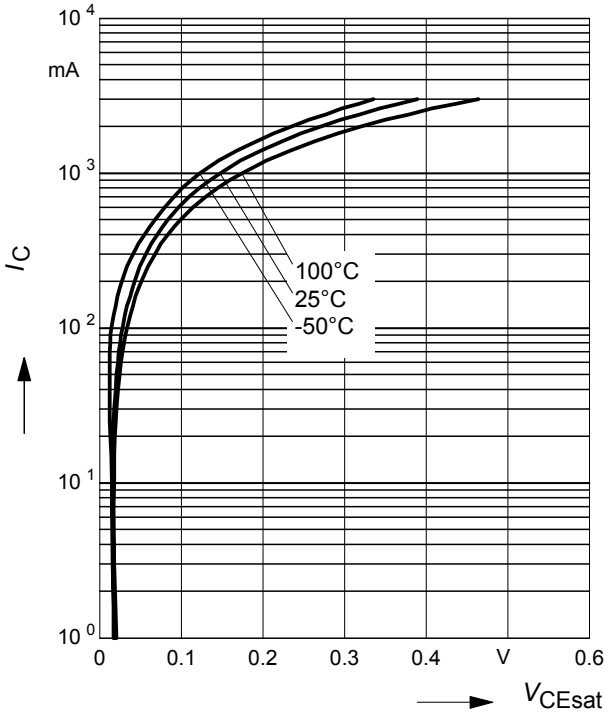
DC current gain $h_{FE} = f(I_C)$

V_{CE} = 2 V



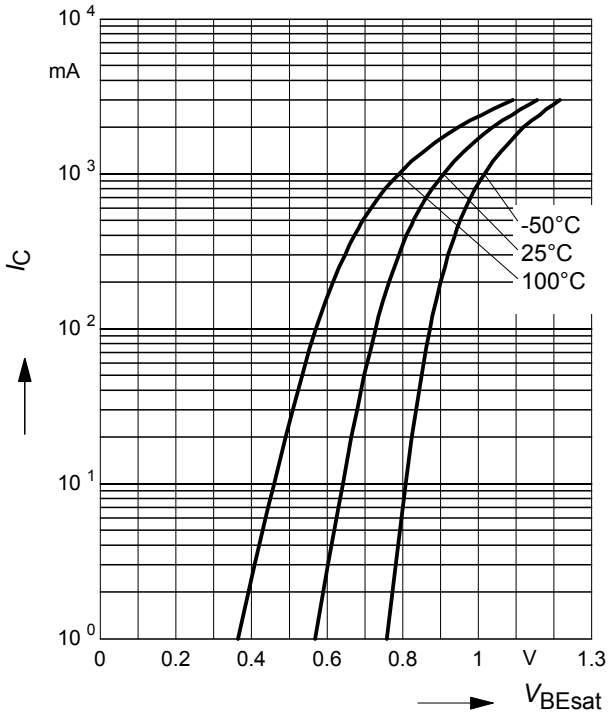
Collector-emitter saturation voltage

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



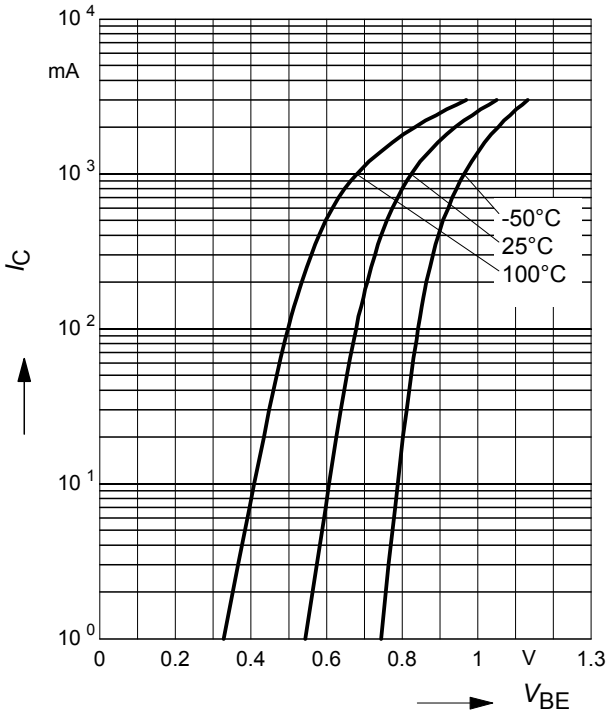
Base-emitter saturation voltage

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



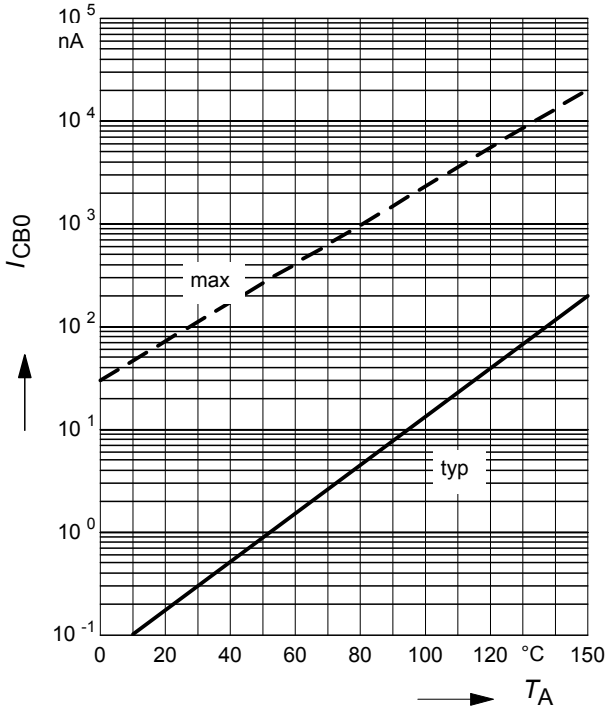
Collector current $I_C = f(V_{BE})$

V_{CE} = 2 V



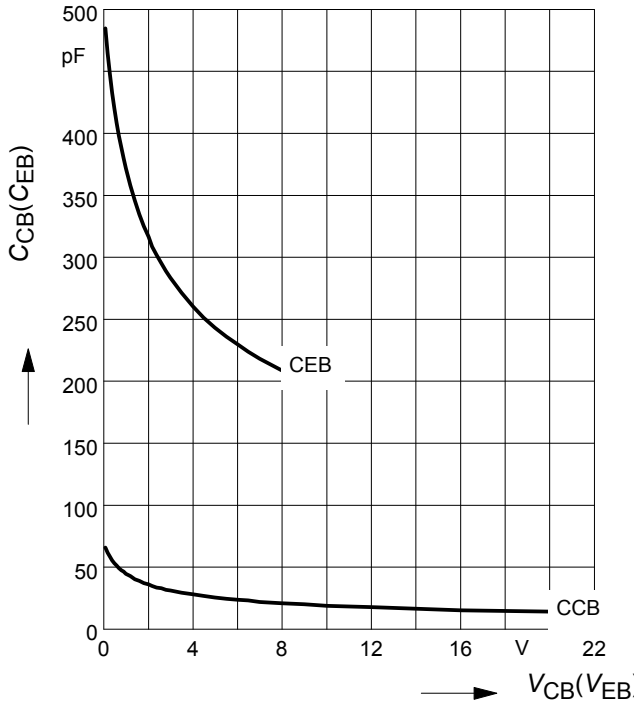
Collector cutoff current $I_{CBO} = f(T_A)$

V_{CB} = 45 V

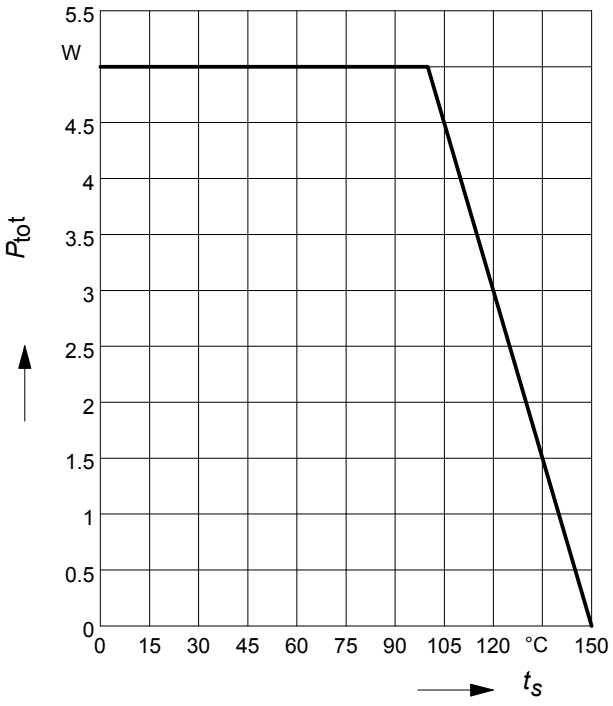


Collector-base capacitance $C_{cb} = f(V_{CB})$

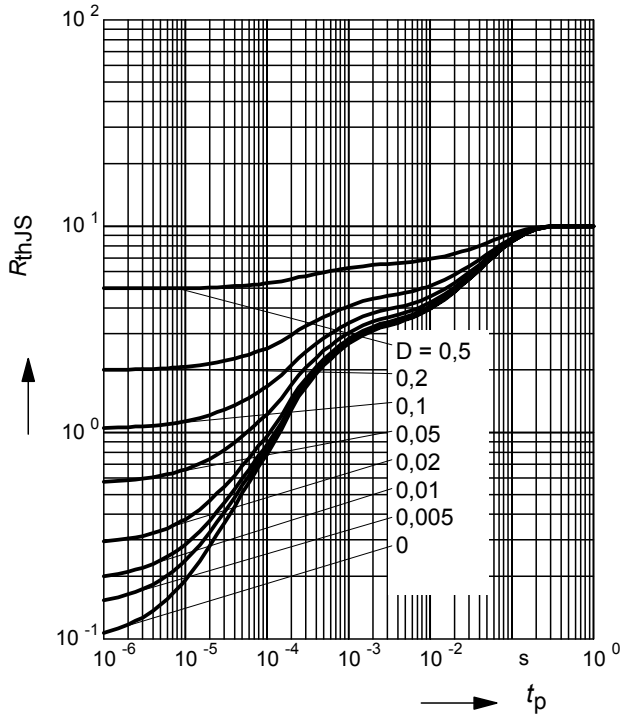
Emitter-base capacitance $C_{eb} = f(V_{EB})$



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

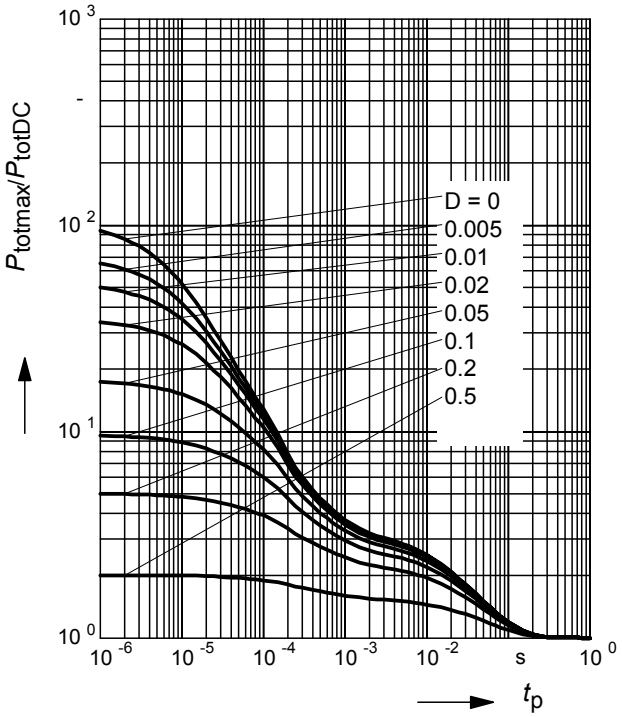


Permissible Pulse Load $R_{thJS} = f(t_p)$

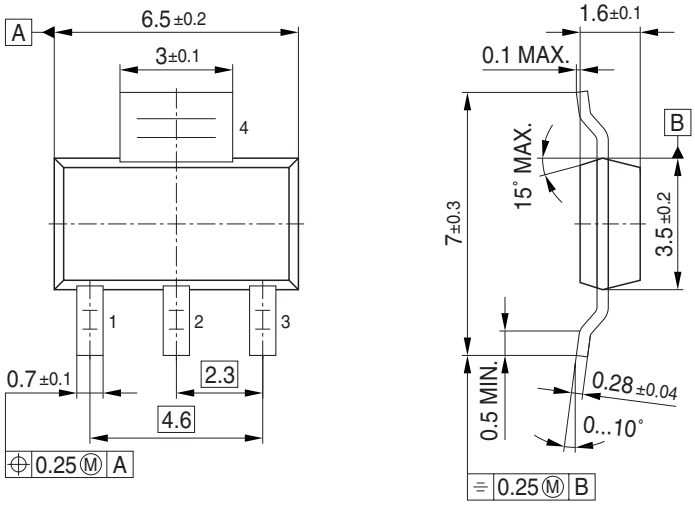


Permissible Pulse Load

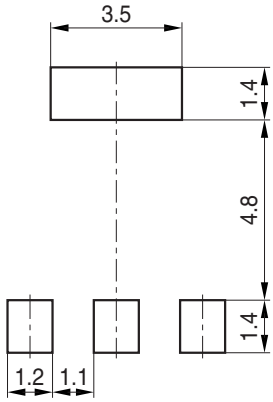
$P_{totmax}/P_{totDC} = f(t_p)$



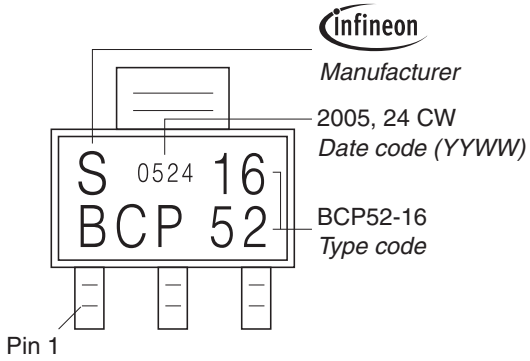
Package Outline



Foot Print

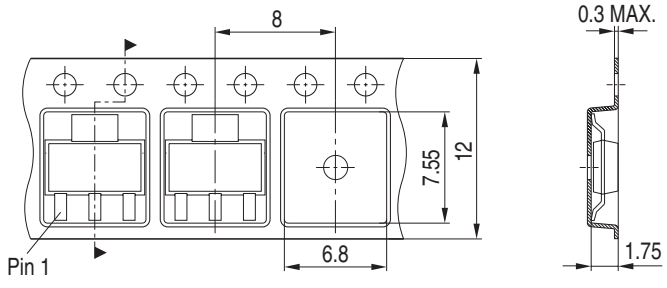


Marking Layout (Example)



Packing

Reel ø180 mm = 1.000 Pieces/Reel
Reel ø330 mm = 4.000 Pieces/Reel



Edition 2006-02-01
Published by
Infineon Technologies AG
81726 München, Germany

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