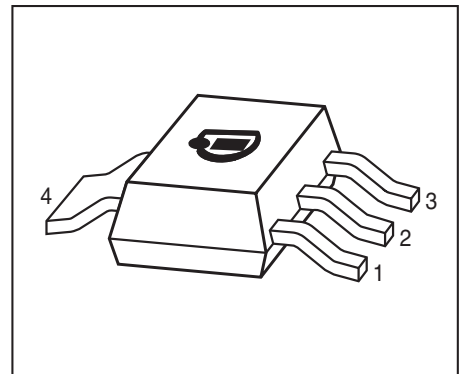**Silicon NPN Transistors**

- 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

- 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

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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	

Thermal Resistance

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

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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 AN077 (Thermal Resistance Calculation)

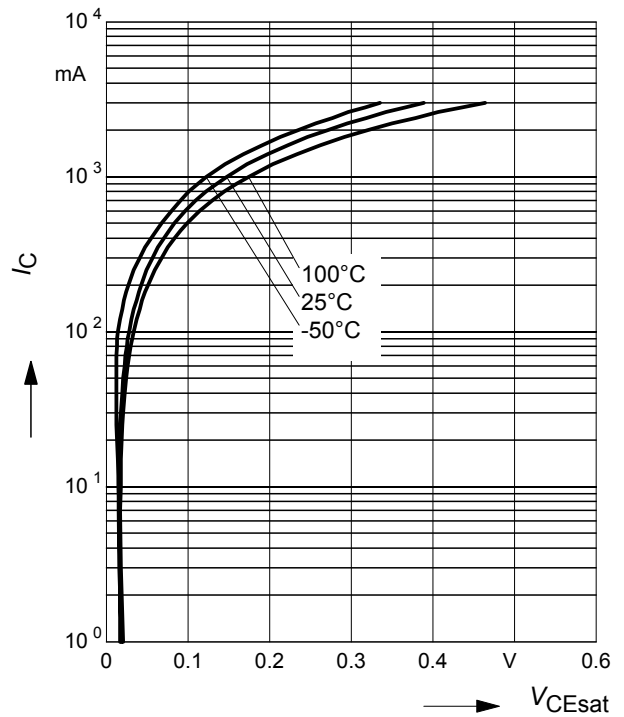[2]Pulse test: t < 300µs; D < 2%

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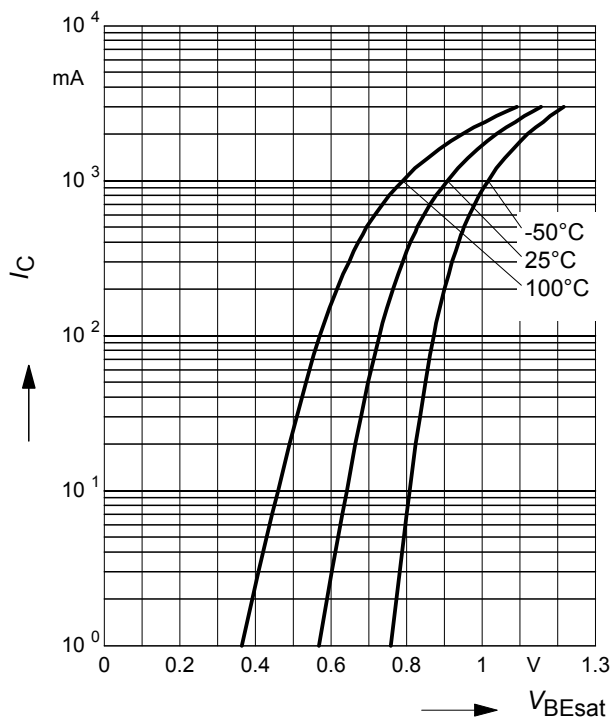**DC current gain** $h_{FE} = f(I_C)$

$V_{CE} = 2$ V
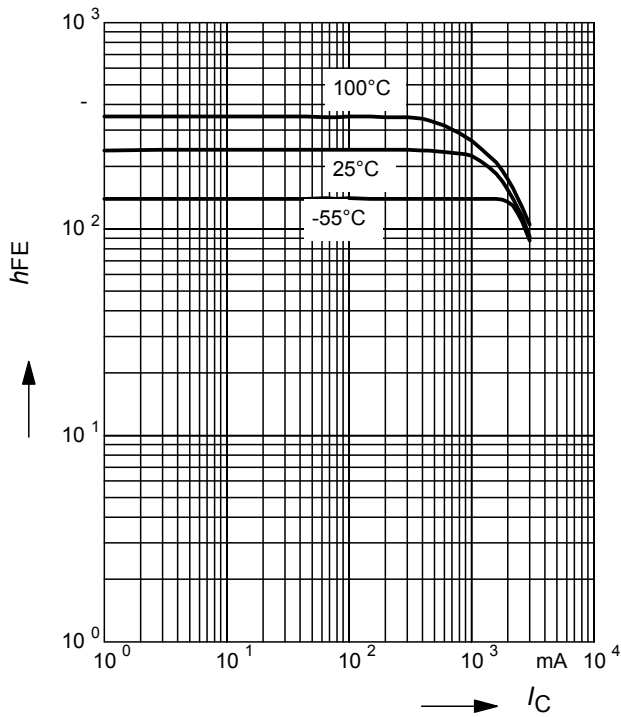
Collector-emitter saturation voltage

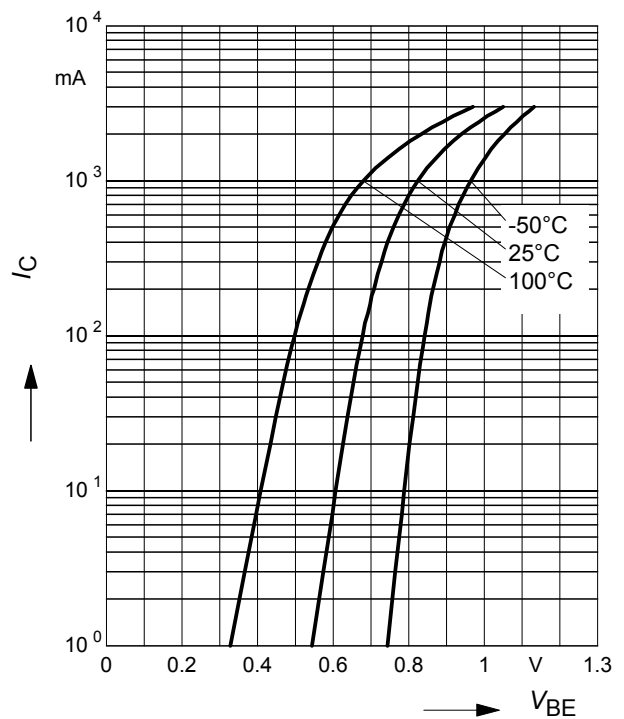$I_C = f(V_{CEsat})$, $h_{FE} = 10$

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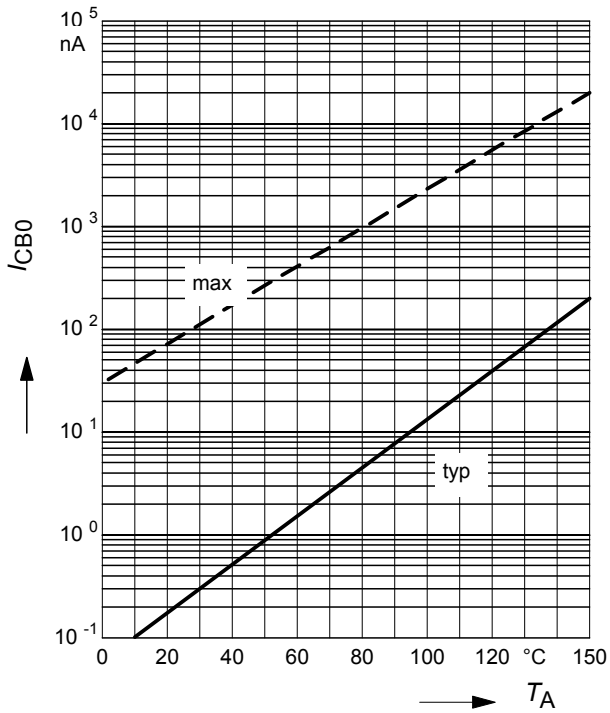
$I_C = (V_{BEsat})$, $h_{FE} = 10$

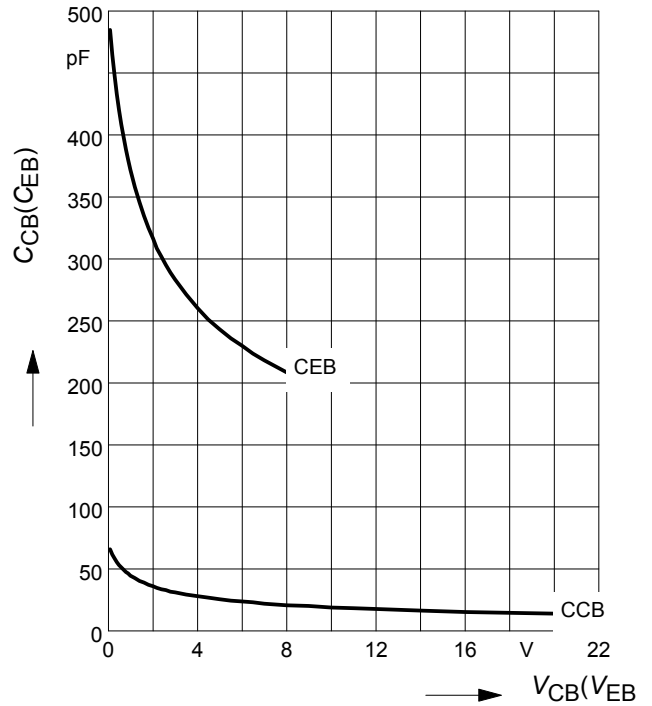**Collector current** $I_C = f(V_{BE})$

$V_{CE} = 2$ V

Collector cutoff current $I_{CBO} = f(T_A)$
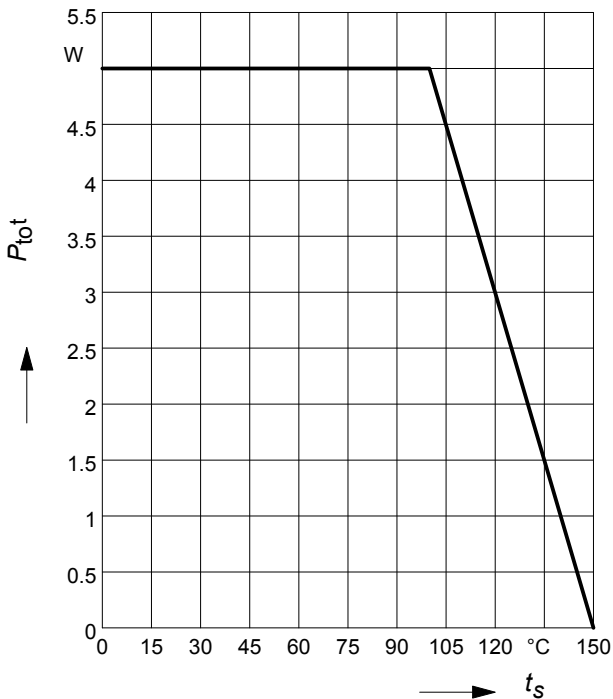V_{CB} = 45 V
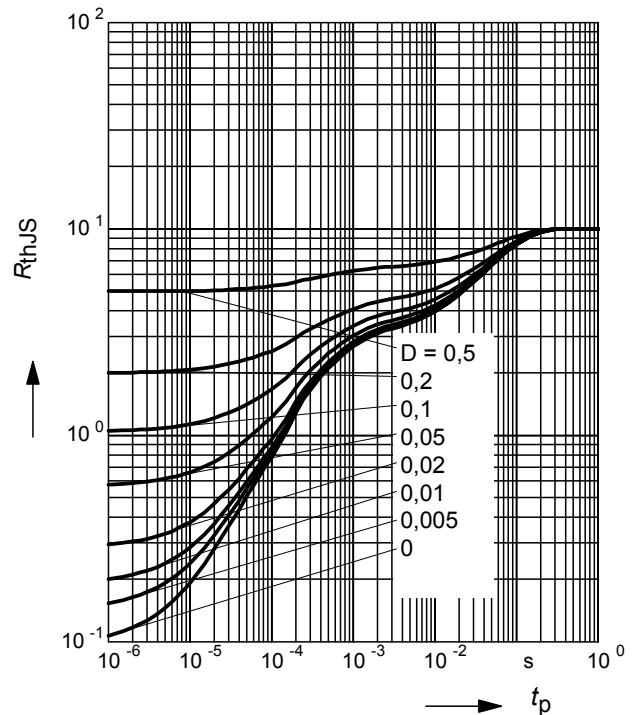
Collector-base capacitance $C_{cb} = f(V_{CB})$
Emitter-base capacitance $C_{eb} = f(V_{EB})$

Total power dissipation $P_{tot} = f(T_S)$
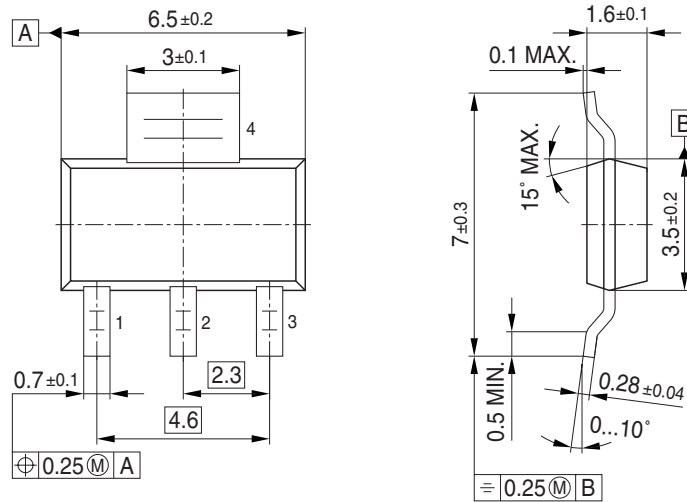
Permissible Pulse Load $R_{thJS} = f(t_p)$

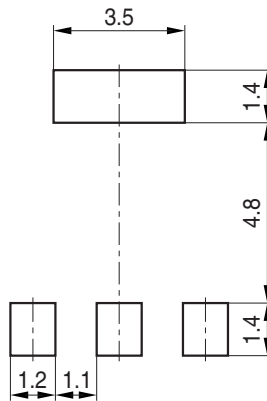5   2011-10-05

Permissible Pulse Load

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

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Package Outline

6.5±0.2

3±0.1

4

0.7±0.1

2.3

4.6

1

2

3

⊕ 0.25 Ⓜ A

1.6±0.1

0.1 MAX.

15° MAX.

B

7±0.3

3.5±0.2

0.5 MIN.

0.28 ±0.04

0...10°

= 0.25 Ⓜ B

Foot Print

3.5

1.4

4.8

1.4

1.2 1.1

Marking Layout (Example)

ıfıneon

Manufacturer

2005, 24 CW
Date code (YYWW)

S 0524 16

BCP 52

BCP52-16
Type code

Pin 1
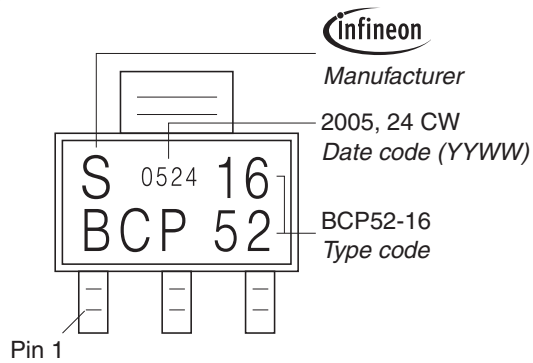
Packing

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

8

0.3 MAX.

7.55

12

6.8

1.75

Pin 1

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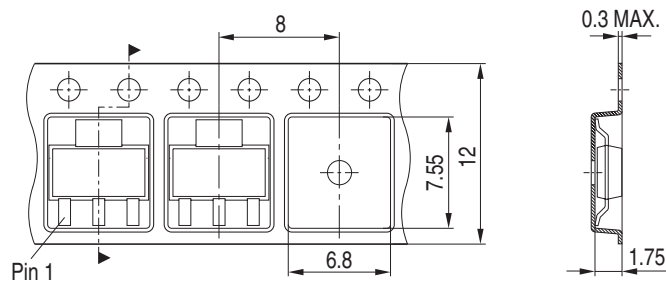
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