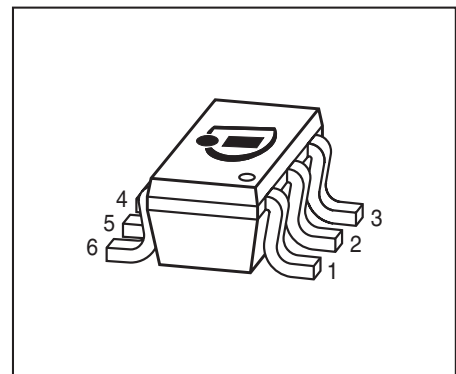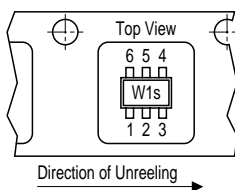## NPN Silicon AF Transistor Array

- For AF stages and driver applications

- High current gain

- Low collector-emitter saturation voltage

- Two (galvanic) internal isolated
  NPN/PNP transistors in one package

- Pb-free (RoHS compliant) package
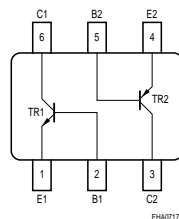
- Qualified according AEC Q101

Tape loading orientation

Marking on SC74 package
(for example W1s)
corresponds to pin 1 of device

Position in tape: pin 1
opposite of feed hole side

Type	Marking	Pin Configuration						Package
BC817UPN	1Bs	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SC74

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	45	V
Collector-base voltage	V_{CBO}	50	
Emitter-base voltage	V_{EBO}	5	
Collector current	I_C	500	mA
Peak collector current, $t_p \leq 10$ ms	I_{CM}	1000	
Base current	I_B	100	
Peak base current	I_{BM}	200	
Total power dissipation- $T_S \leq 115$ °C	P_{tot}	330	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

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Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[1]	R_{thJS}	≤ 105	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 I_C = 10 mA, I_B = 0	$V_{(BR)CEO}$	45	-	-	V
Collector-base breakdown voltage I_C = 10 µA, I_E = 0	$V_{(BR)CBO}$	50	-	-	
Emitter-base breakdown voltage I_E = 10 µA, I_C = 0	$V_{(BR)EBO}$	5	-	-	
Collector-base cutoff current V_{CB} = 25 V, I_E = 0 V_{CB} = 25 V, I_E = 0 , T_A = 150 °C	I_{CBO}	- -	- -	0.1 50	µA
Emitter-base cutoff current V_{EB} = 4 V, I_C = 0	I_{EBO}	-	-	100	nA
DC current gain[2] I_C = 100 mA, V_{CE} = 1 V I_C = 300 mA, V_{CE} = 1 V	h_{FE}	160 100	250 -	400 -	-
Collector-emitter saturation voltage[2] I_C = 500 mA, I_B = 50 mA	V_{CEsat}	-	-	0.7	V
Base emitter saturation voltage[2] I_C = 500 mA, I_B = 50 mA	V_{BEsat}	-	-	1.2	
AC Characteristics					
Transition frequency I_C = 50 mA, V_{CE} = 5 V, f = 100 MHz	f_T	-	170	-	MHz
Collector-base capacitance f = 1 MHz, V_{BE} = 10 V	C_{cb}	-	6	-	pF
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz	C_{eb}	-	60	-	

[1] For calculation of R_{thJA} please refer to Application Note AN077 (Thermal Resistance Calculation)
[2] Pulse test: t < 300µs; D < 2%
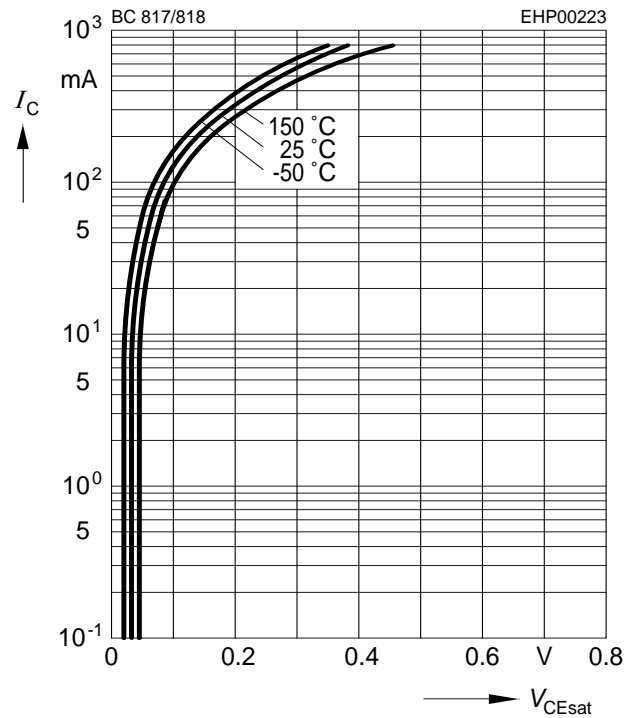
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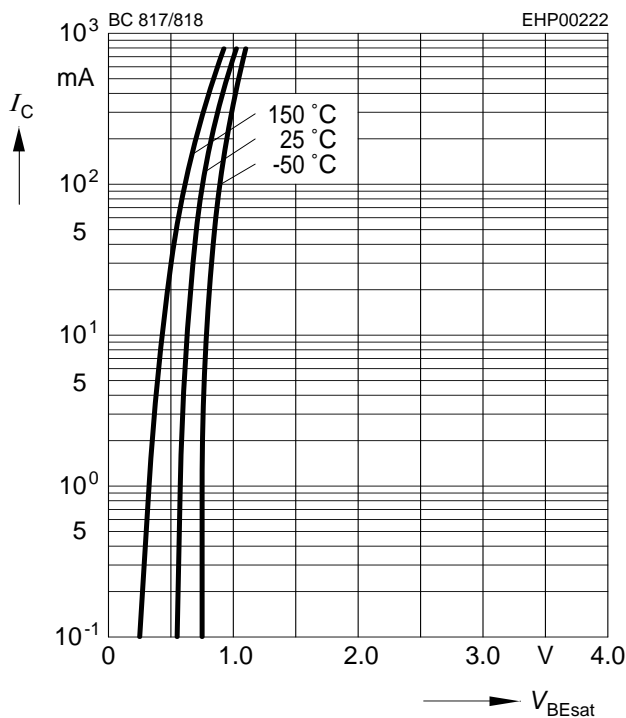**DC current gain** $h_{FE} = f(I_C)$

V_{CE} = 1 V
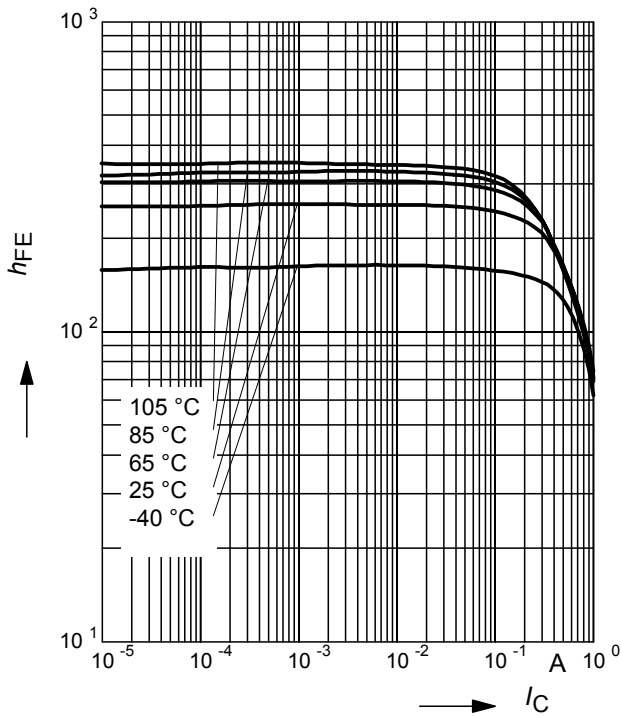
Collector-emitter saturation voltage

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

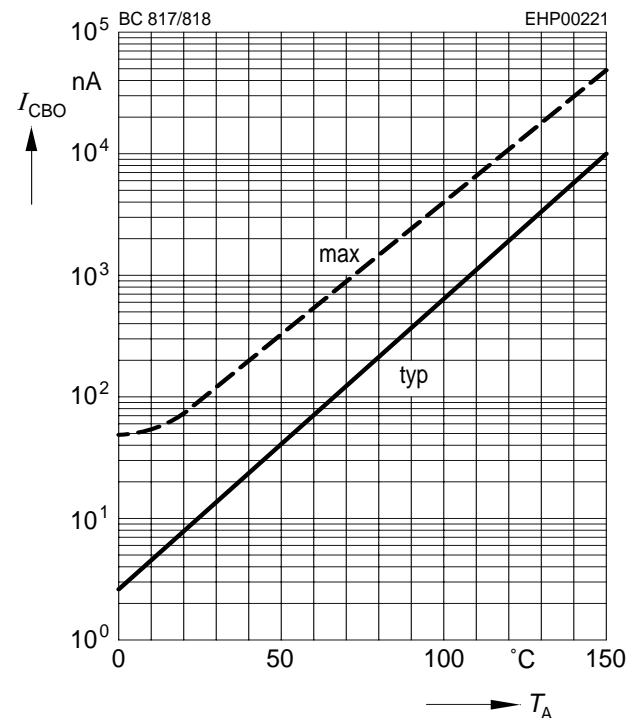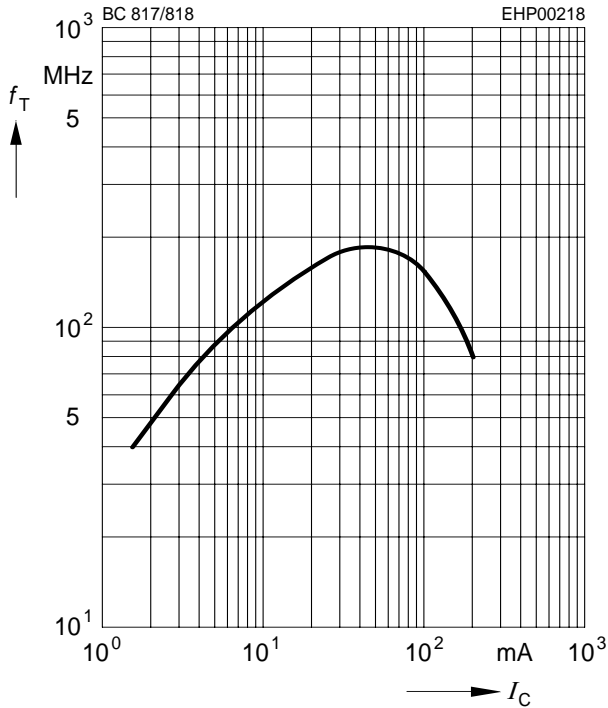**Base-emitter saturation voltage**

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

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

V_{CBO} = 25 V

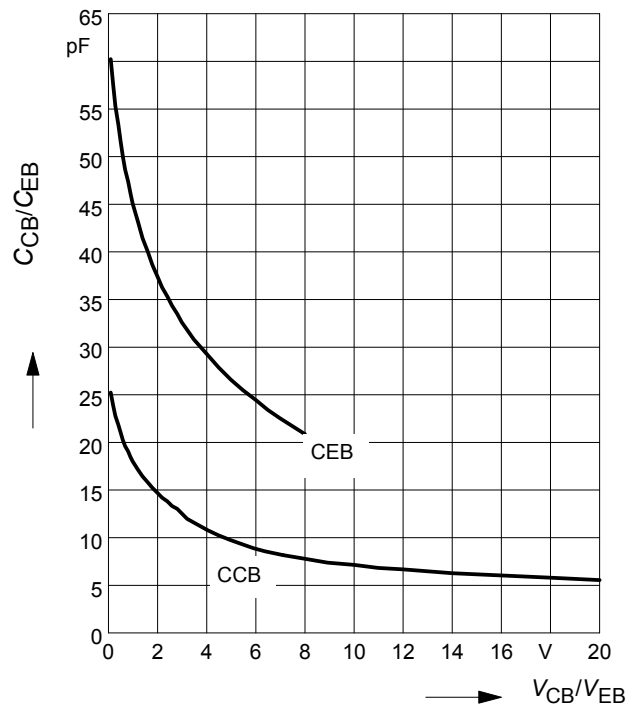3   2011-09-15

Transition frequency $f_T = f(I_C)$

V_{CE} = parameter in V, f = 2 GHz
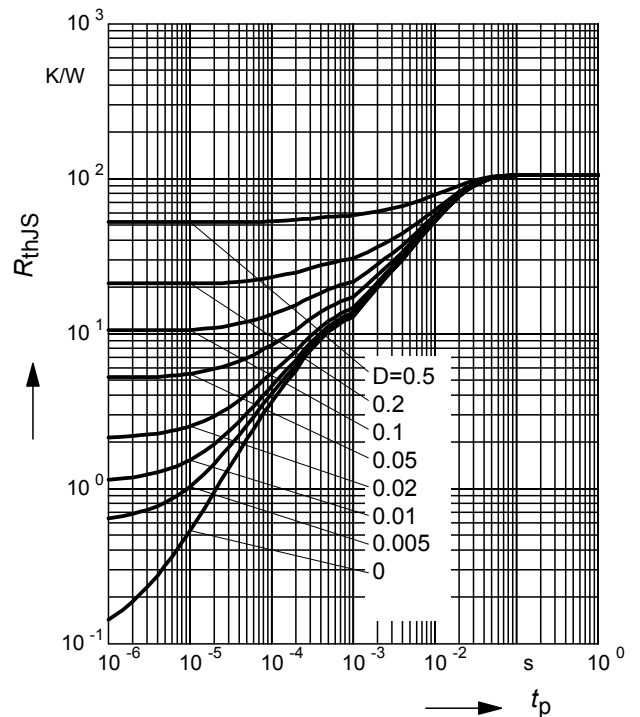
Collector-base capacitance $C_{cb} = f(V_{CB})$

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

BC 817/818   EHP00218

f_T [MHz]

10^3, 5, 10^2, 5, 10^1

10^0, 10^1, 10^2, mA, 10^3

I_C

C_{CB}/C_{EB} [pF]

65, 55, 50, 45, 40, 35, 30, 25, 20, 15, 10, 5, 0

CEB

CCB

0, 2, 4, 6, 8, 10, 12, 14, 16, V, 20

V_{CB}/V_{EB}

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

P_{tot} [mW]

400, 300, 250, 200, 150, 100, 50, 0

0, 20, 40, 60, 80, 100, 120, °C, 150

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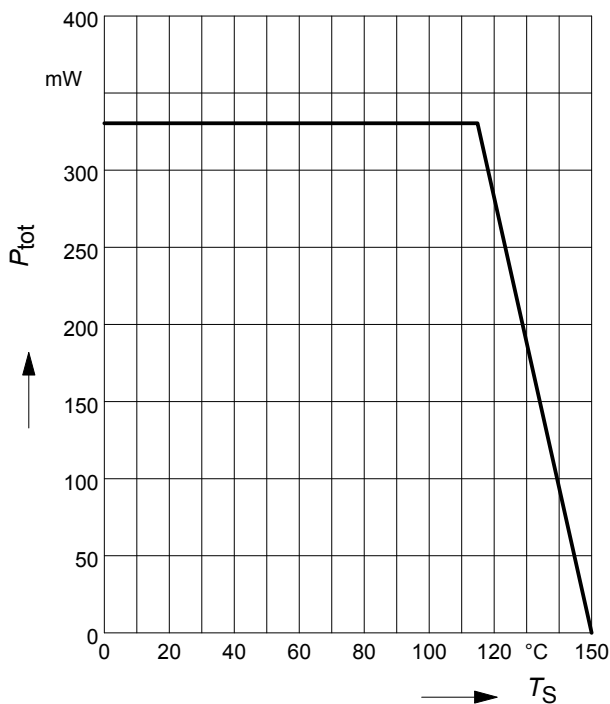
Permissible Pulse Load $R_{thJS} = f(t_p)$

R_{thJS} [K/W]

10^3, 10^2, 10^1, 10^0, 10^{-1}

D=0.5
0.2
0.1
0.05
0.02
0.01
0.005
0

10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}, 10^{-2}, s, 10^0

t_p

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Permissible Pulse Load

$P_{\text{totmax}}/P_{\text{totDC}} = f(t_\text{p})$
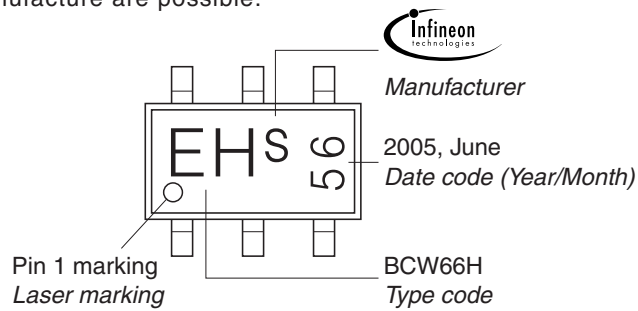
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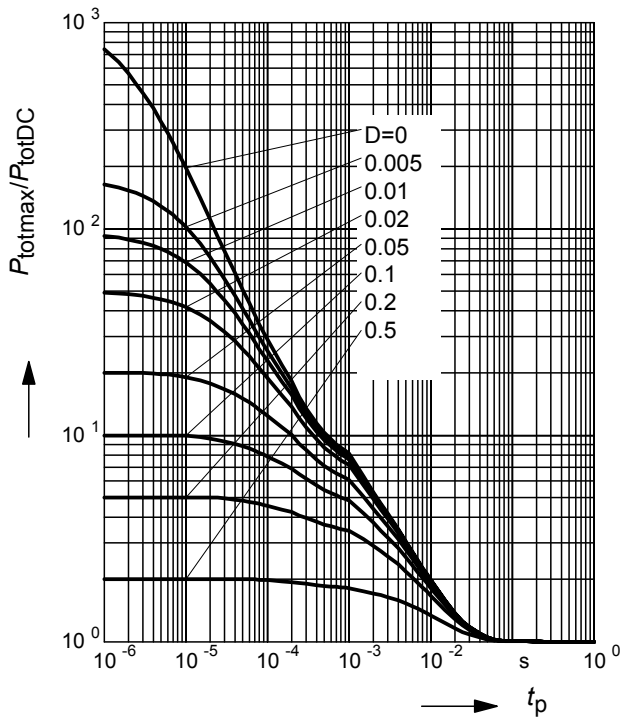
Package Outline
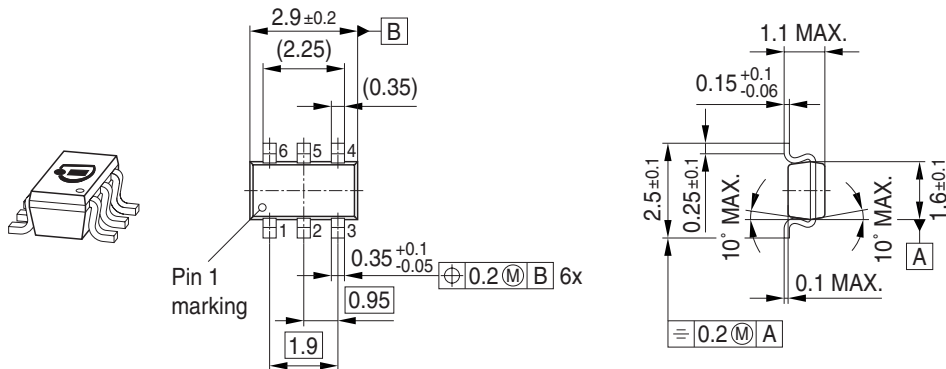
Foot Print

Marking Layout (Example)

Small variations in positioning of
Date code, Type code and Manufacture are possible.

Manufacturer

2005, June
Date code (Year/Month)

Pin 1 marking
Laser marking

BCW66H
Type code

Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel

For symmetric types no defined Pin 1 orientation in reel.

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