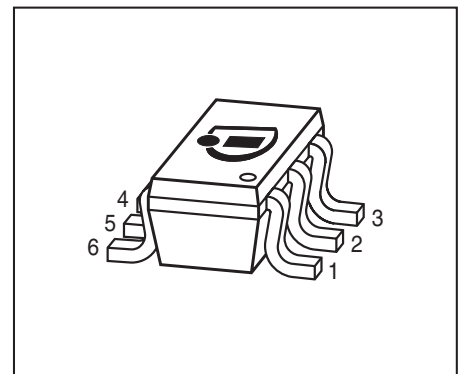
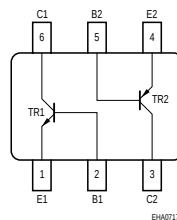
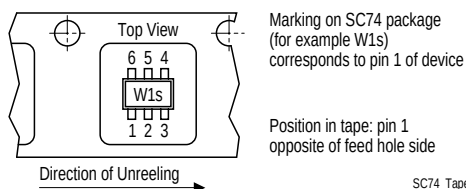


NPN / PNP Silicon AF Transistor Array

- High breakdown voltage
- Low collector-emitter saturation voltage
- Two (galvanic) internal isolated NPN/PNP Transistor in one package
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



Tape loading orientation



Type	Marking	Pin Configuration						Package
SMBTA06UPN	s2P	1=E	2=B	3=C	4=E	5=B	6=C	SC74

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	80	V
Collector-base voltage	V_{CBO}	80	
Emitter-base voltage	V_{EBO}	4	
Collector current	I_C	500	mA
Peak collector current, $t_p \leq 10$ ms	I_{CM}	1	A
Base current	I_B	100	mA
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	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ¹⁾	R_{thJS}	≤ 105	K/W

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 $I_C = 1\text{ mA}, I_B = 0$	$V_{(BR)CEO}$	80	-	-	V
Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	80	-	-	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	4	-	-	
Collector-base cutoff current $V_{CB} = 80\text{ V}, I_E = 0$ $V_{CB} = 80\text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	I_{CBO}	- -	- -	0.1 20	μA
Collector-emitter cutoff current $V_{CE} = 60\text{ V}, I_B = 0$	I_{CEO}	-	-	100	nA
DC current gain ²⁾ $I_C = 10\text{ mA}, V_{CE} = 1\text{ V}$ $I_C = 100\text{ mA}, V_{CE} = 1\text{ V}$	h_{FE}	100 100	- -	- -	-
Collector-emitter saturation voltage ²⁾ $I_C = 100\text{ mA}, I_B = 10\text{ mA}$	V_{CEsat}	-	-	0.25	V
Base-emitter voltage ²⁾ $I_C = 100\text{ mA}, V_{CE} = 1\text{ V}$	$V_{BE(ON)}$	-	-	1.2	

AC Characteristics

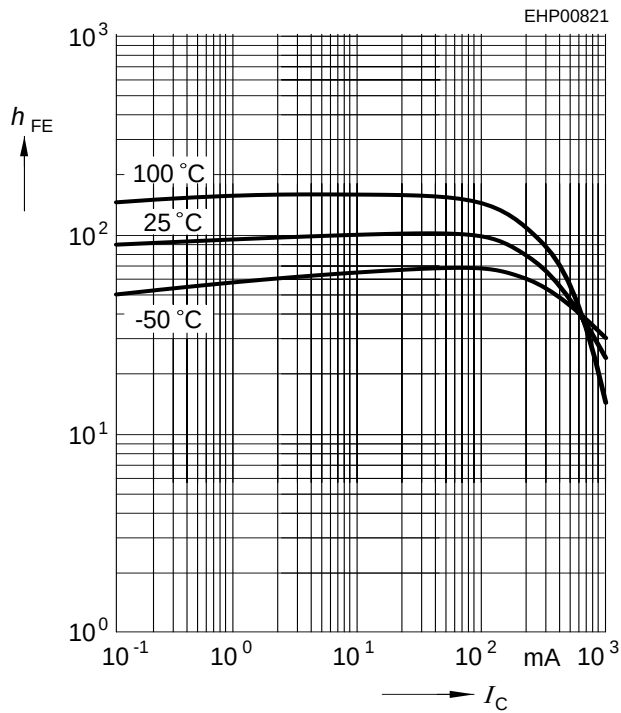
Transition frequency $I_C = 20\text{ mA}, V_{CE} = 5\text{ V}, f = 20\text{ MHz}$	f_T	-	100	-	MHz
Collector-base capacitance $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$	C_{cb}	-	7	-	pF

¹⁾For calculation of R_{thJA} please refer to Application Note AN077 (Thermal Resistance Calculation)

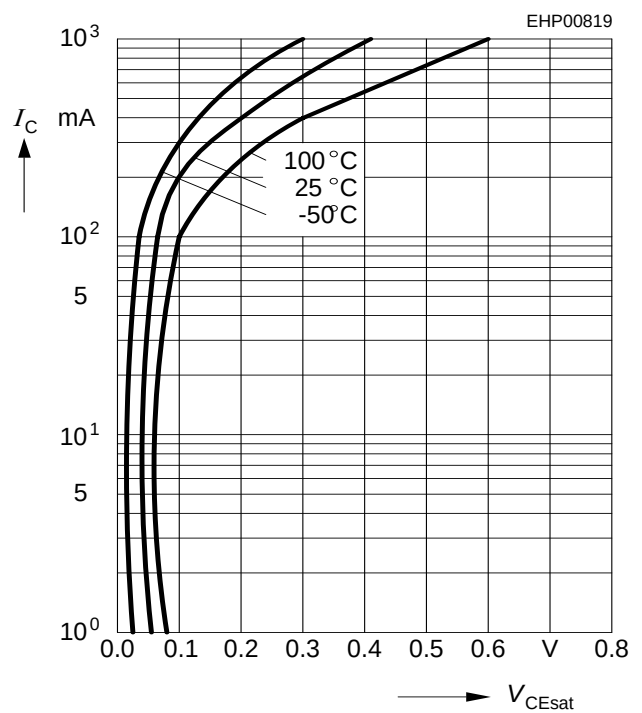
²⁾Pulse test: $t < 300\mu\text{s}$; $D < 2\%$

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

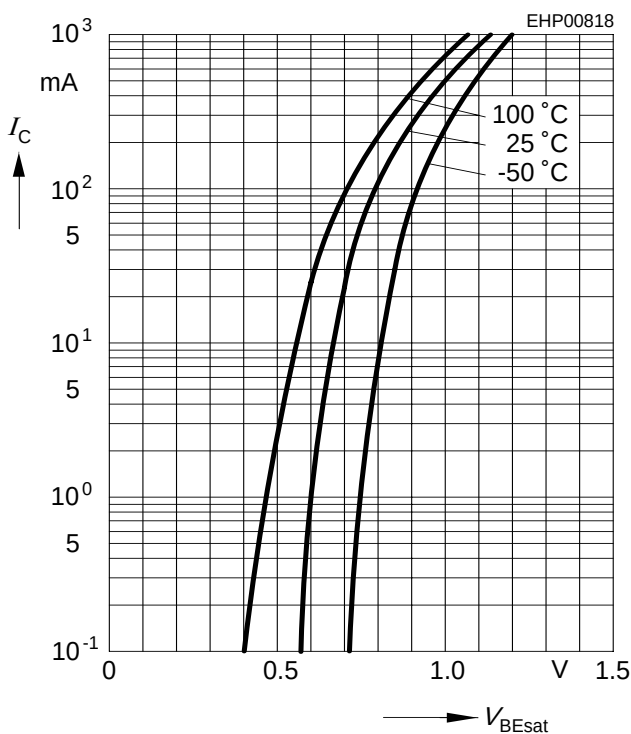
$$V_{CE} = 1 \text{ V}$$


Collector-emitter saturation voltage

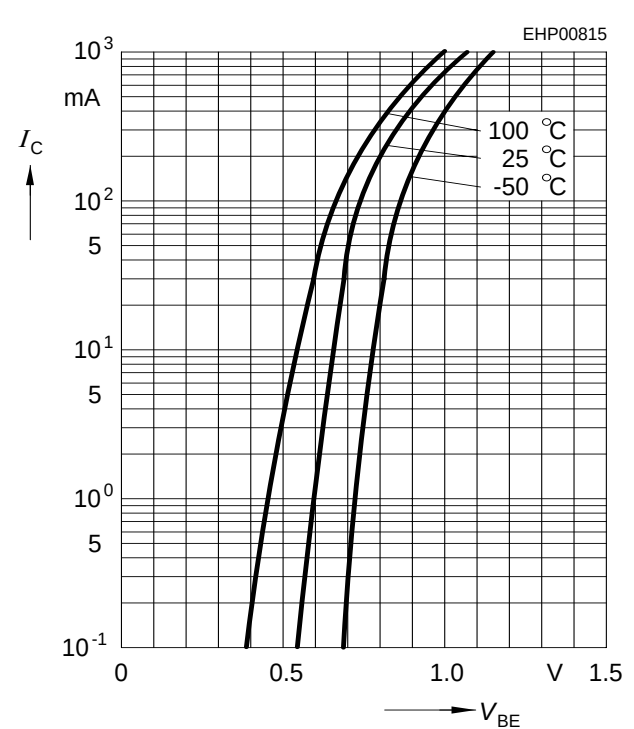
$$I_C = f(V_{CEsat}), h_{FE} = 10$$


Base-emitter saturation voltage

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

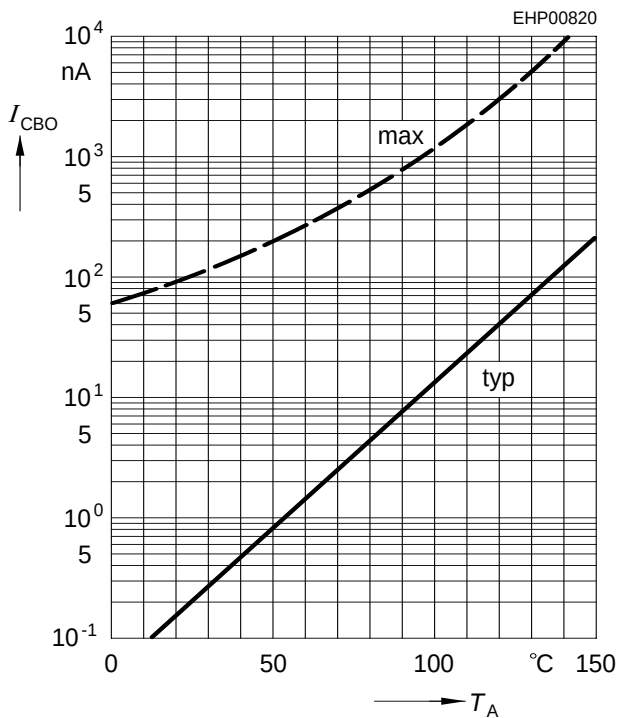

Collector current $I_C = f(V_{BE})$

$$V_{CE} = 1 \text{ V}$$



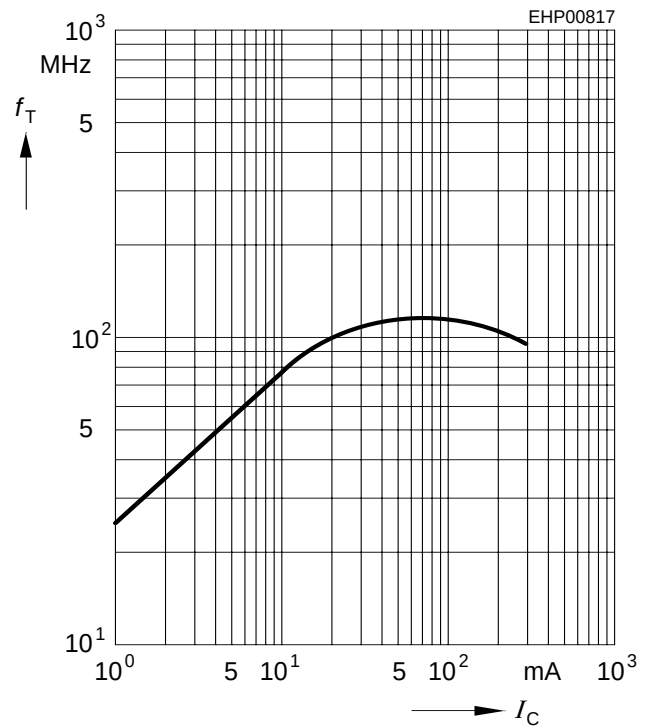
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CBO} = 80 \text{ V}$



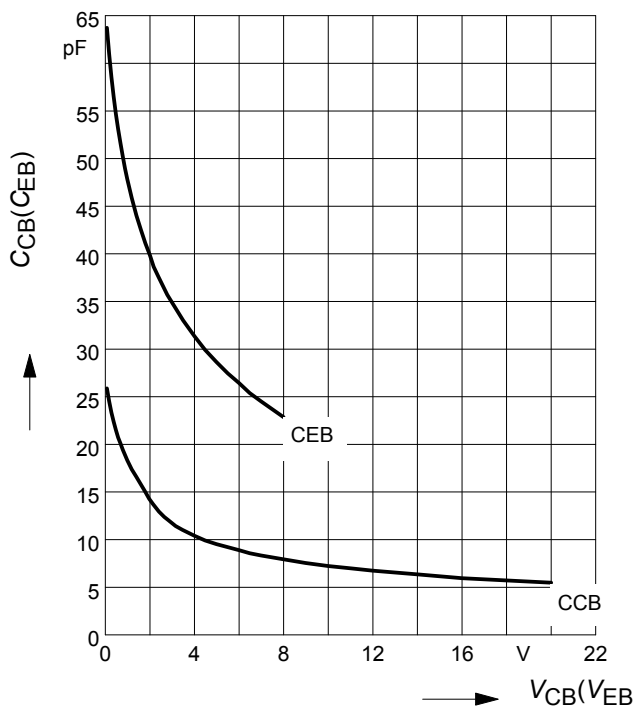
Transition frequency $f_T = f(I_C)$

$V_{CE} = \text{parameter in V, } f = 2 \text{ GHz}$

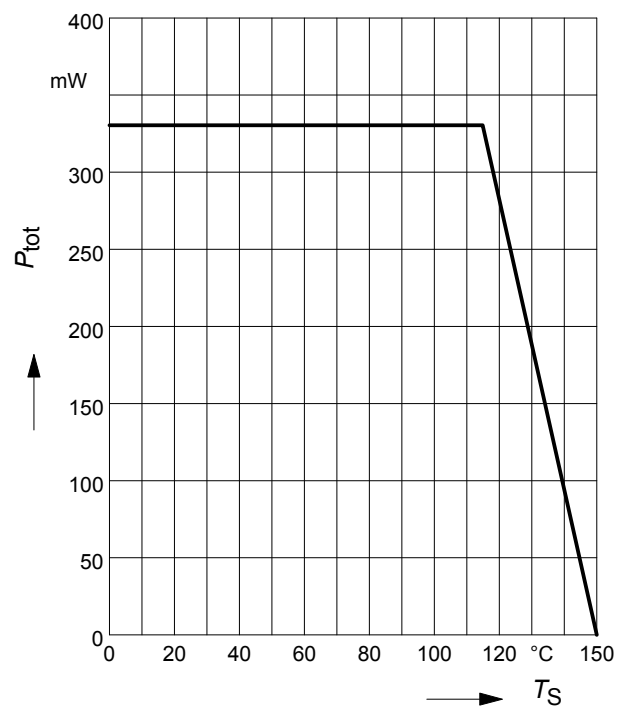


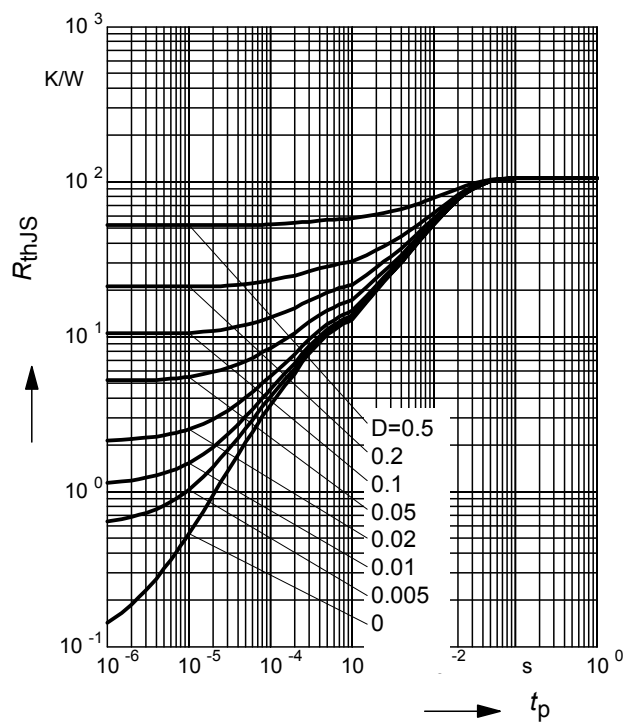
Collector-base capacitance $C_{cb} = f(V_{CB})$

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

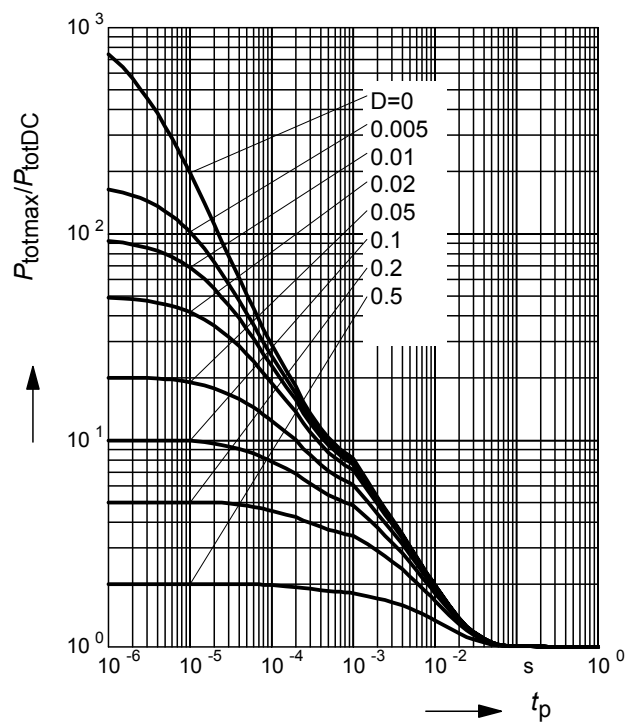


Total power dissipation $P_{tot} = f(T_S)$

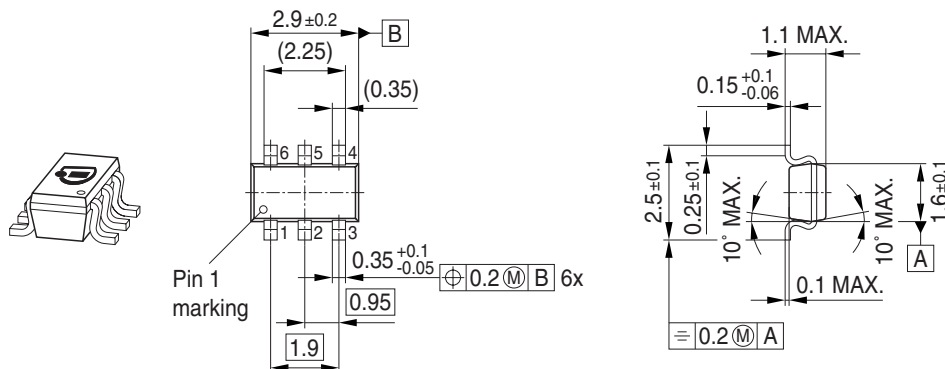


Permissible Pulse Load $R_{thJS} = f(t_p)$

Permissible Pulse Load

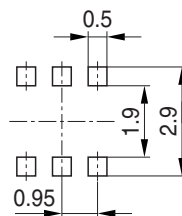
$$P_{totmax}/P_{totDC} = f(t_p)$$



Package Outline

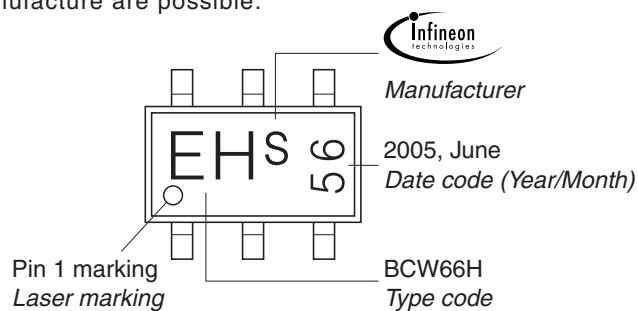


Foot Print



Marking Layout (Example)

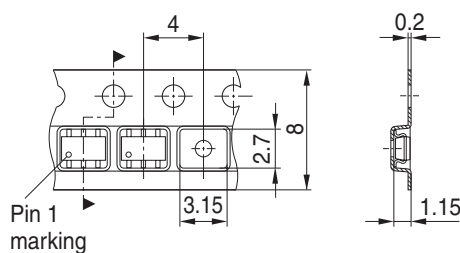
Small variations in positioning of Date code, Type code and Manufacture are possible.



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.



Edition 2009-11-16

**Published by
Infineon Technologies AG
81726 Munich, Germany**

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