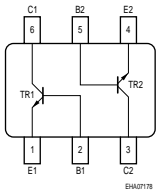


**NPN Silicon AF Transistor Arrays**

- For AF input stages and driver applications
- High current gain
- Low collector-emitter saturation voltage
- Two (galvanic) internal isolated transistors with good matching in one package
- BC846S / U, BC847S: For orientation in reel see package information below
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



**BC846S**  
**BC846U**  
**BC847S**



Type	Marking	Pin Configuration						Package
		1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	
BC846S	1Ds	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SOT363
BC846U	1Ds	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SC74
BC847S	1Cs	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SOT363

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Collector-emitter voltage BC846S/U BC847S	$V_{CEO}$	65 45	V
Collector-base voltage BC846S/U BC847S	$V_{CBO}$	80 50	
Emitter-base voltage	$V_{EBO}$	6	
Collector current	$I_C$	100	mA
Peak collector current, $t_p \leq 10$ ms	$I_{CM}$	200	
Total power dissipation- $T_S \leq 115$ °C, BC846S, BC847S $T_S \leq 118$ °C, BC846U	$P_{tot}$	250 250	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-65 ... 150	

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup> BC846S, BC847S BC847U	$R_{thJS}$	$\leq 140$ $\leq 130$	K/W

<sup>1</sup>For calculation of  $R_{thJA}$  please refer to Application Note AN077 (Thermal Resistance Calculation)

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$ , $I_B = 0$ , BC846S/U $I_C = 10\text{ mA}$ , $I_B = 0$ , BC847S	$V_{(BR)CEO}$	-	65 45	-	V
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}$ , $I_E = 0$ , BC846S/U $I_C = 10\text{ }\mu\text{A}$ , $I_E = 0$ , BC847S	$V_{(BR)CBO}$	-	80 50	-	
Emitter-base breakdown voltage $I_E = 1\text{ }\mu\text{A}$ , $I_C = 0$	$V_{(BR)EBO}$	-	6	-	
Collector-base cutoff current $V_{CB} = 45\text{ V}$ , $I_E = 0$ $V_{CB} = 30\text{ V}$ , $I_E = 0$ , $T_A = 150\text{ }^\circ\text{C}$	$I_{CBO}$	-	-	0.015 5	$\mu\text{A}$
DC current gain- $I_C = 10\text{ }\mu\text{A}$ , $V_{CE} = 5\text{ V}$ $I_C = 2\text{ mA}$ , $V_{CE} = 5\text{ V}$	$h_{FE}$	- 200	250 290	- 450	-
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 10\text{ mA}$ , $I_B = 0.5\text{ mA}$ $I_C = 100\text{ mA}$ , $I_B = 5\text{ mA}$	$V_{CEsat}$	-	90 200	250 600	mV
Base emitter saturation voltage <sup>1)</sup> $I_C = 10\text{ mA}$ , $I_B = 0.5\text{ mA}$ $I_C = 100\text{ mA}$ , $I_B = 5\text{ mA}$	$V_{BEsat}$	-	700 900	-	
Base-emitter voltage <sup>1)</sup> $I_C = 2\text{ mA}$ , $V_{CE} = 5\text{ V}$ $I_C = 10\text{ mA}$ , $V_{CE} = 5\text{ V}$	$V_{BE(ON)}$	580	660	700 770	

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

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>AC Characteristics</b>					
Transition frequency $I_C = 20\text{ mA}, V_{CE} = 5\text{ V}, f = 100\text{ MHz}$	$f_T$	-	250	-	MHz
Collector-base capacitance $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$	$C_{cb}$	-	0.95	-	pF
Emitter-base capacitance $V_{EB} = 0.5\text{ V}, f = 1\text{ MHz}$	$C_{eb}$	-	9	-	
Short-circuit input impedance $I_C = 2\text{ mA}, V_{CE} = 5\text{ V}, f = 1\text{ kHz}$	$h_{11e}$	-	4.5	-	$k\Omega$
Open-circuit reverse voltage transf. ratio $I_C = 2\text{ mA}, V_{CE} = 5\text{ V}, f = 1\text{ kHz}$	$h_{12e}$	-	2	-	$10^{-4}$
Short-circuit forward current transf. ratio $I_C = 2\text{ mA}, V_{CE} = 5\text{ V}, f = 1\text{ kHz}$	$h_{21e}$	-	330	-	-
Open-circuit output admittance $I_C = 2\text{ mA}, V_{CE} = 5\text{ V}, f = 1\text{ kHz}$	$h_{22e}$	-	30	-	$\mu\text{S}$
Noise figure $I_C = 200\text{ }\mu\text{A}, V_{CE} = 5\text{ V}, f = 1\text{ kHz},$ $\Delta f = 200\text{ Hz}, R_S = 2\text{ k}\Omega$	$F$	-	-	10	dB

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

$V_{CE} = 5\text{ V}$



**Collector-emitter saturation voltage**

$I_C = f(V_{CEsat}), h_{FE} = 20$



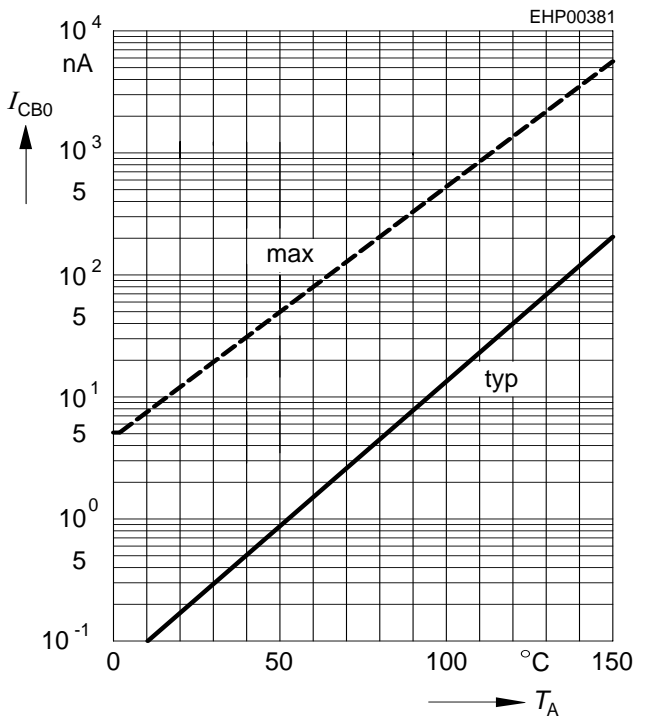
**Base-emitter saturation voltage**

$I_C = f(V_{BEsat}), h_{FE} = 20$



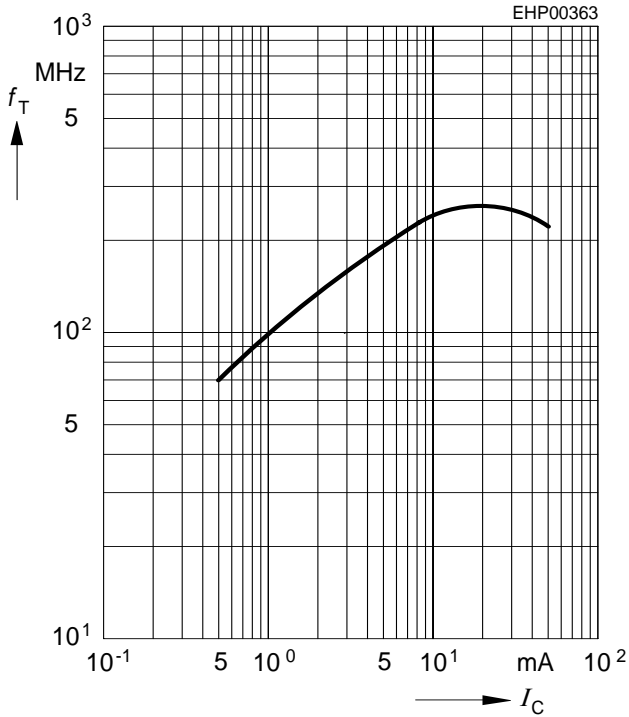
**Collector cutoff current  $I_{CBO} = f(T_A)$**

$V_{CBO} = 30\text{ V}$



Transition frequency  $f_T = f(I_C)$

$V_{CE} = 5\text{ V}$



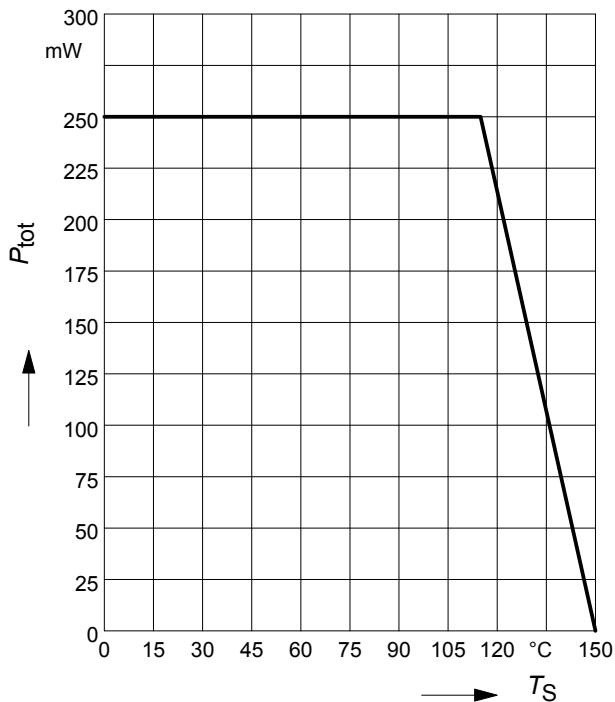
Collector-base capacitance  $C_{cb} = f(V_{CB})$

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



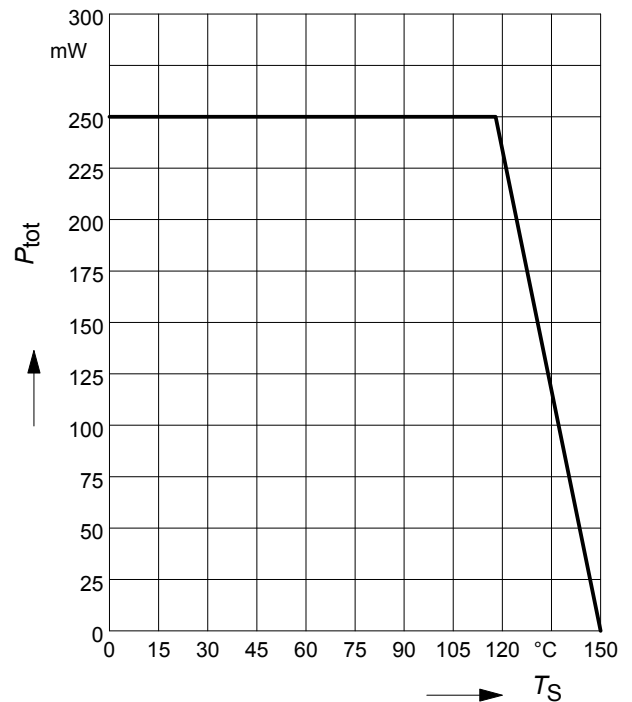
Total power dissipation  $P_{tot} = f(T_S)$

BC846S, BC847S



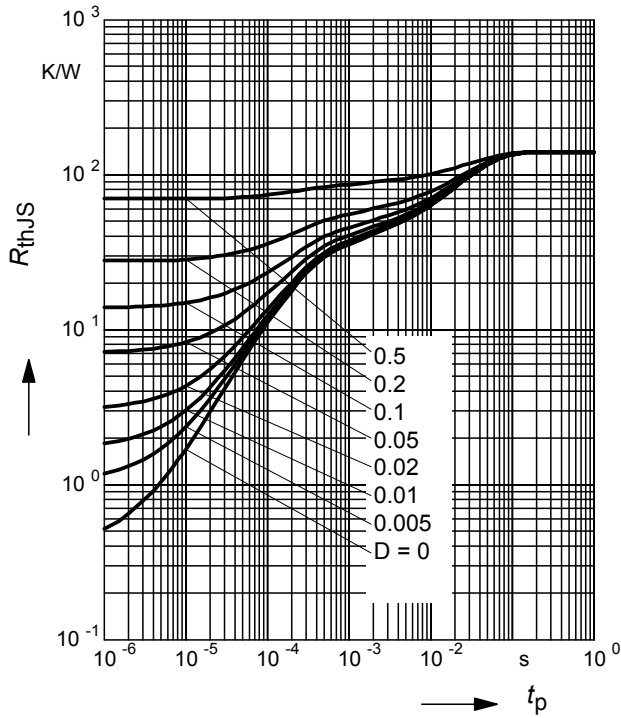
Total power dissipation  $P_{tot} = f(T_S)$

BC846U



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

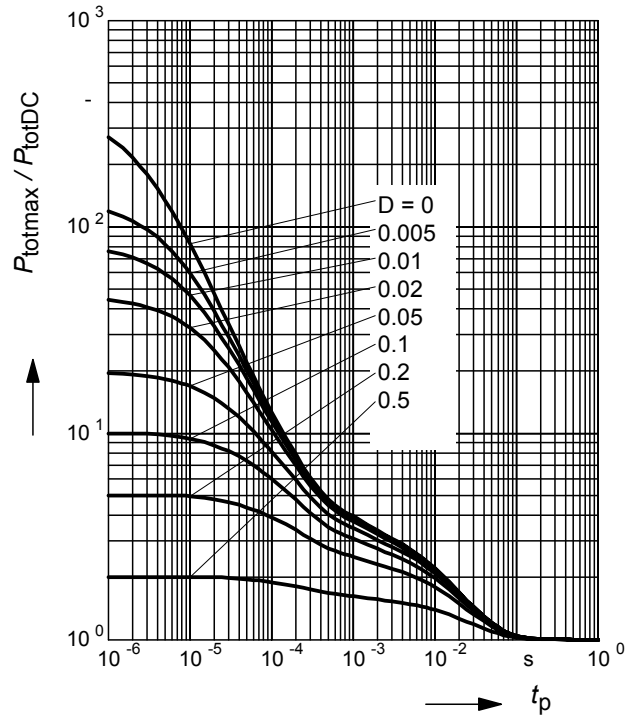
BC846S, BC847S



**Permissible Pulse Load**

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

BC846S, BC847S



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

BC846U



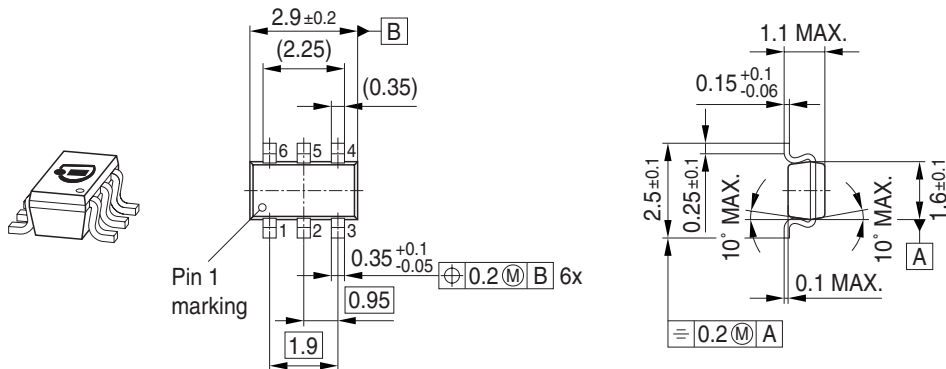
**Permissible Pulse Load**

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

BC846U



### Package Outline



### Foot Print



### Marking Layout (Example)

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



### Standard Packing

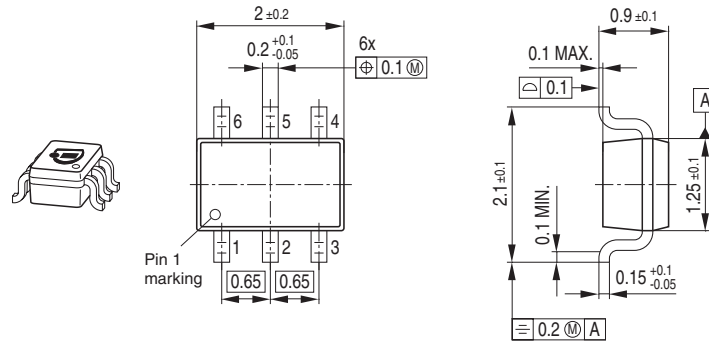
Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel

For symmetric types no defined Pin 1 orientation in reel.

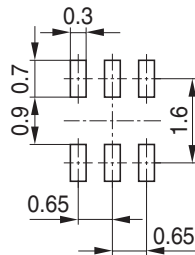




### Package Outline

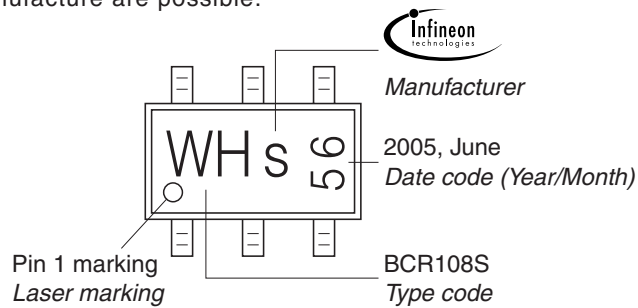


### Foot Print



### Marking Layout (Example)

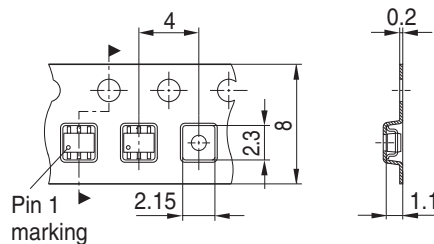
Small variations in positioning of Date code, Type code and Manufacturer are possible.



### Standard Packing

Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 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**

**© 2009 Infineon Technologies AG  
All Rights Reserved.**

### **Legal Disclaimer**

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

### **Information**

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office ([www.infineon.com](http://www.infineon.com)).

### **Warnings**

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.

Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Bipolar Transistors - BJT category](#):*

*Click to view products by [Infineon manufacturer](#):*

Other Similar products are found below :

[619691C](#) [MCH4017-TL-H](#) [BC546/116](#) [BC557/116](#) [BSW67A](#) [NTE158](#) [NTE187A](#) [NTE195A](#) [NTE2302](#) [NTE2330](#) [NTE63](#) [C4460](#)  
[2SA1419T-TD-H](#) [2SA1721-O\(TE85L,F\)](#) [2SA2126-E](#) [2SB1204S-TL-E](#) [2SC5488A-TL-H](#) [2SD2150T100R](#) [SP000011176](#) [FMMTA92QTA](#)  
[2N2369ADCSM](#) [2N5769](#) [2SC2412KT146S](#) [2SC5490A-TL-H](#) [2SD1816S-TL-E](#) [2SD1816T-TL-E](#) [CMXT2207 TR](#) [CPH6501-TL-E](#)  
[MCH4021-TL-E](#) [US6T6TR](#) [732314D](#) [CMXT3906 TR](#) [CPH3121-TL-E](#) [CPH6021-TL-H](#) [873787E](#) [UMX21NTR](#) [EMT2T2R](#) [MCH6102-TL-E](#)  
[FP204-TL-E](#) [NJL0302DG](#) [2N3583](#) [2SA1434-TB-E](#) [2SC3143-4-TB-E](#) [2SD1621S-TD-E](#) [NTE103](#) [30A02MH-TL-E](#) [NSV40301MZ4T1G](#)  
[NTE101](#) [NTE13](#) [NTE15](#)