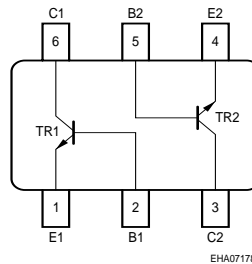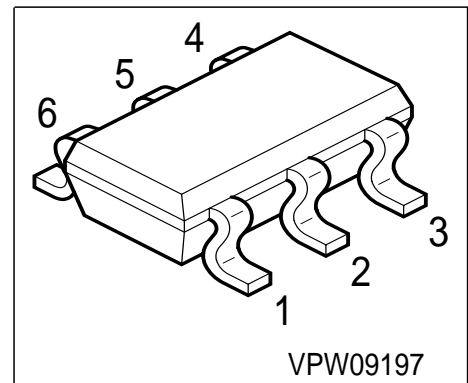## NPN Silicon AF Transistor Array

- 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

VPW09197

EHA07178

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

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	65	V
Collector-base voltage	V_{CBO}	80	
Collector-emitter voltage	V_{CES}	80	
Emitter-base voltage	V_{EBO}	6	
DC collector current	I_C	100	mA
Peak collector current	I_{CM}	200	
Total power dissipation, T_S = 118 °C	P_{tot}	250	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Junction - soldering point[1]	R_{thJS}	≤130	K/W

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

Nov-29-2001

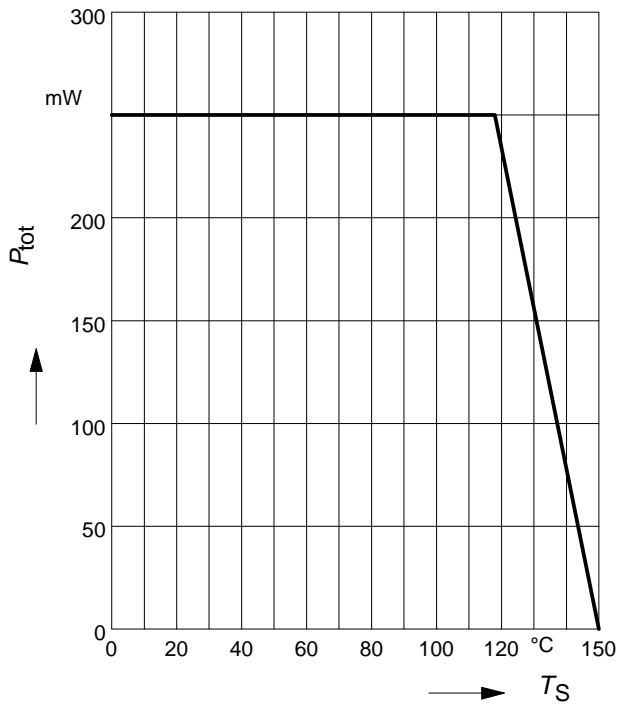**Electrical Characteristics** at T_A=25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics per Transistor					
Collector-emitter breakdown voltage $I_C = 10$ mA, $I_B = 0$	$V_{(BR)CEO}$	65	-	-	V
Collector-base breakdown voltage $I_C = 10$ µA, $I_E = 0$	$V_{(BR)CBO}$	80	-	-	
Collector-emitter breakdown voltage $I_C = 10$ µA, $V_{BE} = 0$	$V_{(BR)CES}$	80	-	-	
Emitter-base breakdown voltage $I_E = 10$ µA, $I_C = 0$	$V_{(BR)EBO}$	6	-	-	
Collector cutoff current $V_{CB} = 30$ V, $I_E = 0$	I_{CBO}	-	-	15	nA
Collector cutoff current $V_{CB} = 30$ V, $I_E = 0$, $T_A = 150$ °C	I_{CBO}	-	-	5	µA
DC current gain 1) $I_C = 10$ µA, $V_{CE} = 5$ V $I_C = 2$ mA, $V_{CE} = 5$ V	h_{FE}	- 200	250 290	- 450	-
Collector-emitter saturation voltage1) $I_C = 10$ mA, $I_B = 0.5$ mA $I_C = 100$ mA, $I_B = 5$ mA	V_{CEsat}	- -	90 200	250 650	mV
Base-emitter saturation voltage 1) $I_C = 10$ mA, $I_B = 0.5$ mA $I_C = 100$ mA, $I_B = 5$ mA	V_{BEsat}	- -	700 900	- -	
Base-emitter voltage 1) $I_C = 2$ mA, $V_{CE} = 5$ V $I_C = 10$ mA, $V_{CE} = 5$ V	$V_{BE(ON)}$	580 -	660 -	700 770	

1) Pulse test: t < 300µs; D < 2%

Nov-29-2001

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC characteristics					
Transition frequency I_C = 20 mA, V_{CE} = 5 V, f = 100 MHz	f_T	-	250	-	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	2	-	pF
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz	C_{eb}	-	10	-	
Short-circuit input impedance I_C = 2 mA, V_{CE} = 5 V, f = 1 kHz	h_{11e}	-	4.5	-	kΩ
Open-circuit reverse voltage transf.ratio I_C = 2 mA, V_{CE} = 5 V, f = 1 kHz	h_{12e}	-	2	-	10^{-4}
Short-circuit forward current transf.ratio I_C = 2 mA, V_{CE} = 5 V, f = 1 kHz	h_{21e}	-	330	-	-
Open-circuit output admittance I_C = 2 mA, V_{CE} = 5 V, f = 1 kHz	h_{22e}	-	30	-	µS
Noise figure I_C = 200 µA, V_{CE} = 5 V, R_S = 2 kΩ, f = 1 kHz, Δf = 200 Hz	F	-	-	10	dB

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

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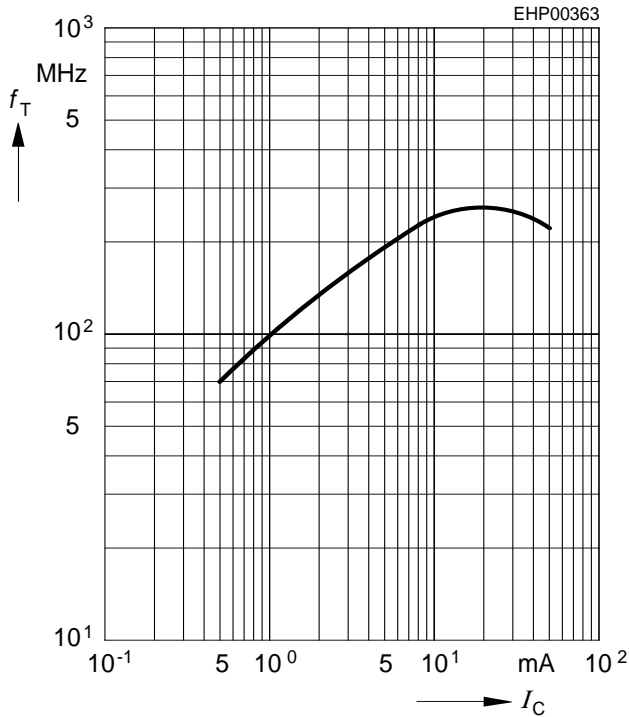

Permissible Pulse Load

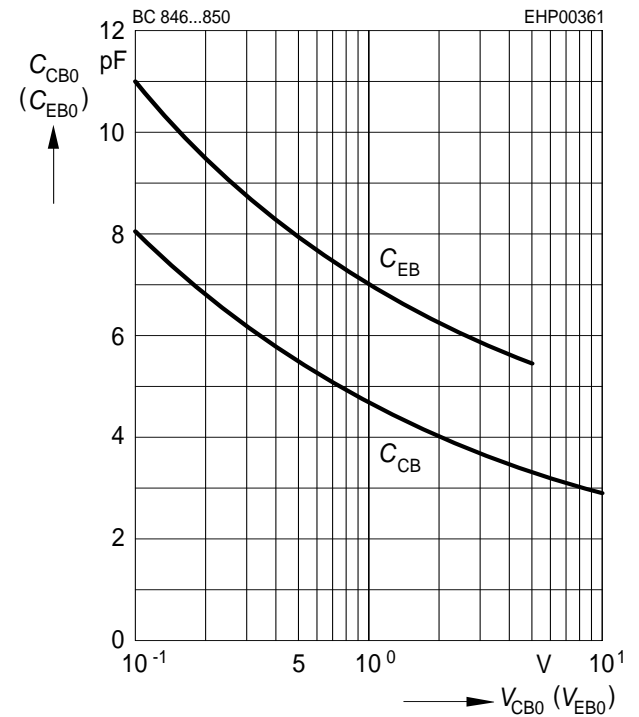$P_{\text{totmax}} / P_{\text{totDC}} = f(t_p)$

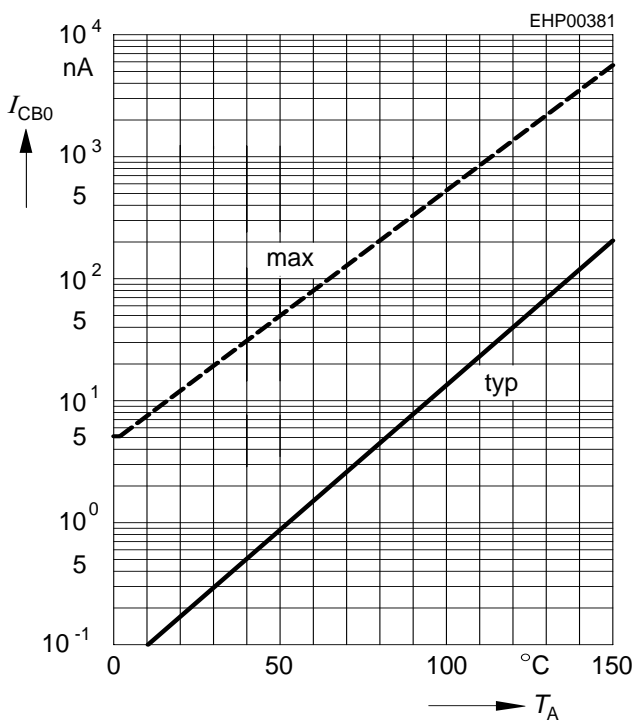**Transition frequency** $f_T = f(I_C)$

$V_{CE} = 5V$

Collector-base capacitance $C_{CB} = f(V_{CBO})$
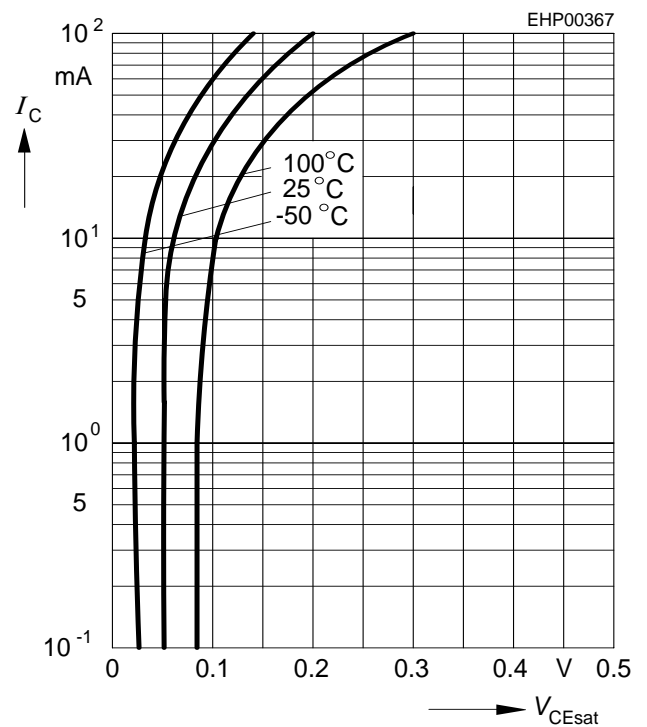
Emitter-base capacitance $C_{EB} = f(V_{EBO})$

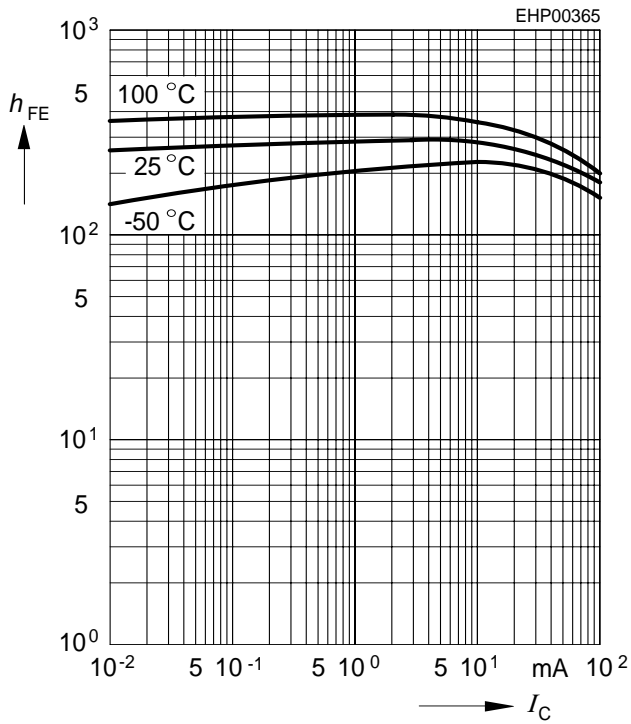**Collector cutoff current** $I_{CBO} = f(T_A)$

$V_{CB} = 30V$

Collector-emitter saturation voltage

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

Nov-29-2001

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

$V_{CE} = 5V$

Base-emitter saturation voltage

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

Nov-29-2001