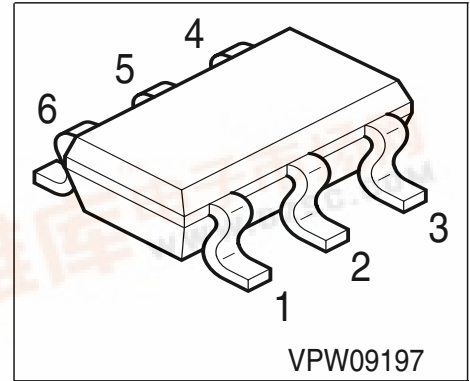




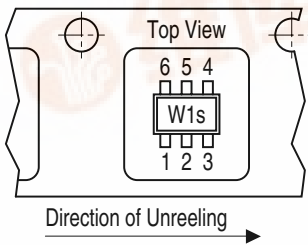
BC846UPN

NPN/PNP Silicon AF Transistor Array

- For AF input stages and driver applications
- High current gain
- Low collector-emitter saturation voltage
- Two (galvanic) internal isolated NPN/PNP Transistors in one package

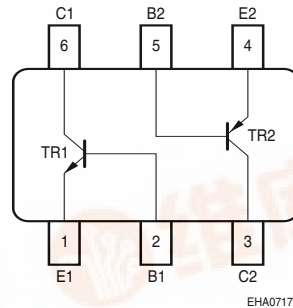


Tape loading orientation



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	
BC846UPN	10s	1=E	2=B	3=C	4=E	5=B	6=C	SC74

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	65	V
Collector-base voltage	V_{CBO}	80	V
Collector-emitter voltage	V_{CES}	80	V
Emitter-base voltage	V_{EBO}	5	V
DC collector current	I_C	100	mA
Peak collector current	I_{CM}	200	mA
Total power dissipation, $T_S = 118\text{ }^\circ\text{C}$	P_{tot}	250	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-65 ... 150	$^\circ\text{C}$

Thermal Resistance

Junction - soldering point ¹⁾	R_{thJS}	≤ 130	K/W
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¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance



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

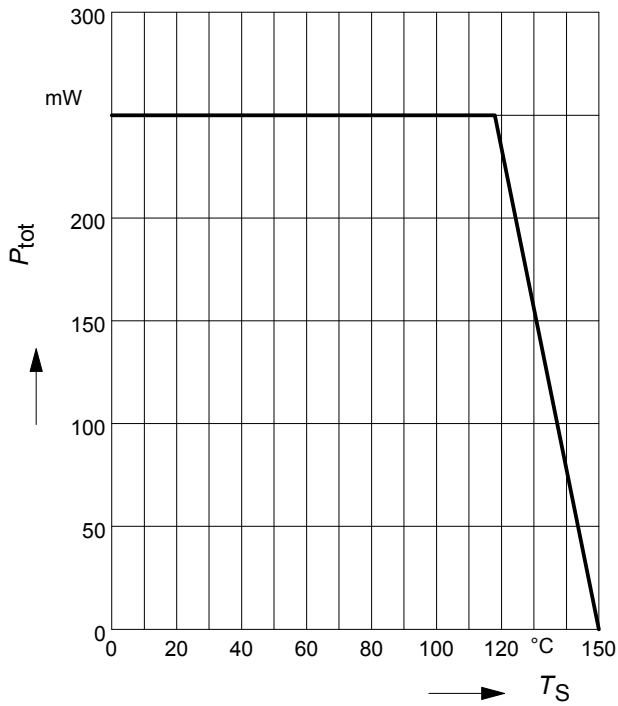
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics per Transistor					
Collector-emitter breakdown voltage $I_C = 10 \text{ mA}, I_B = 0$	$V_{(BR)CEO}$	65	-	-	V
Collector-base breakdown voltage $I_C = 10 \mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	80	-	-	
Collector-emitter breakdown voltage $I_C = 10 \mu\text{A}, V_{BE} = 0$	$V_{(BR)CES}$	80	-	-	
Emitter-base breakdown voltage $I_E = 10 \mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector cutoff current $V_{CB} = 30 \text{ V}, I_E = 0$	I_{CBO}	-	-	15	nA
Collector cutoff current $V_{CB} = 30 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	I_{CBO}	-	-	5	μA
DC current gain 1) $I_C = 10 \mu\text{A}, V_{CE} = 5 \text{ V}$ $I_C = 2 \text{ mA}, V_{CE} = 5 \text{ V}$	h_{FE}	- 200	250 290	- 450	-
Collector-emitter saturation voltage1) $I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$ $I_C = 100 \text{ mA}, I_B = 5 \text{ mA}$	V_{CEsat}	- -	90 200	300 650	mV
Base-emitter saturation voltage 1) $I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$ $I_C = 100 \text{ mA}, I_B = 5 \text{ mA}$	V_{BEsat}	- -	700 900	- -	mV
Base-emitter voltage 1) $I_C = 2 \text{ mA}, V_{CE} = 5 \text{ V}$ $I_C = 10 \text{ mA}, V_{CE} = 5 \text{ V}$	$V_{BE(ON)}$	580 -	660 -	750 820	

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

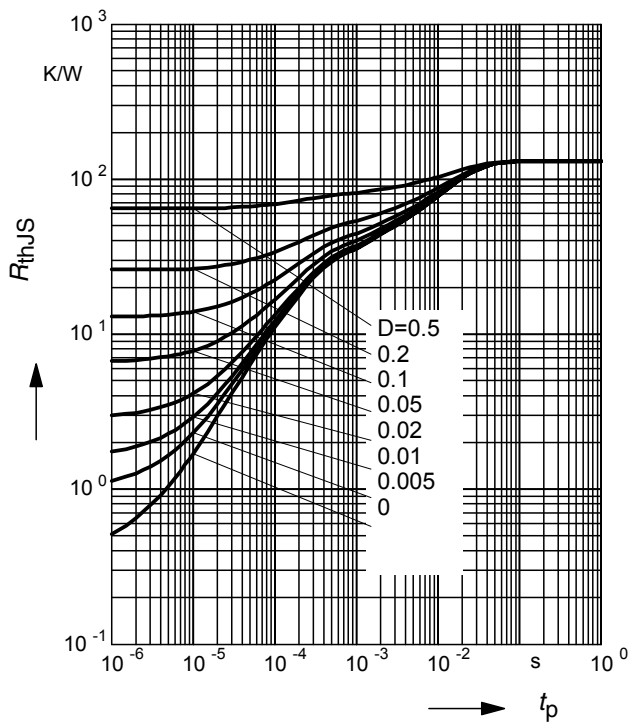
Electrical Characteristics at $T_A=25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics per Transistor					
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}	-	2	-	pF
Emitter-base capacitance $V_{EB} = 0.5 \text{ V}$, $f = 1 \text{ MHz}$	C_{eb}	-	10	-	
Short-circuit input impedance $I_C = 2 \text{ mA}$, $V_{CE} = 5 \text{ V}$, $f = 1 \text{ kHz}$	h_{11e}	-	4.5	-	k Ω
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	-	μS

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

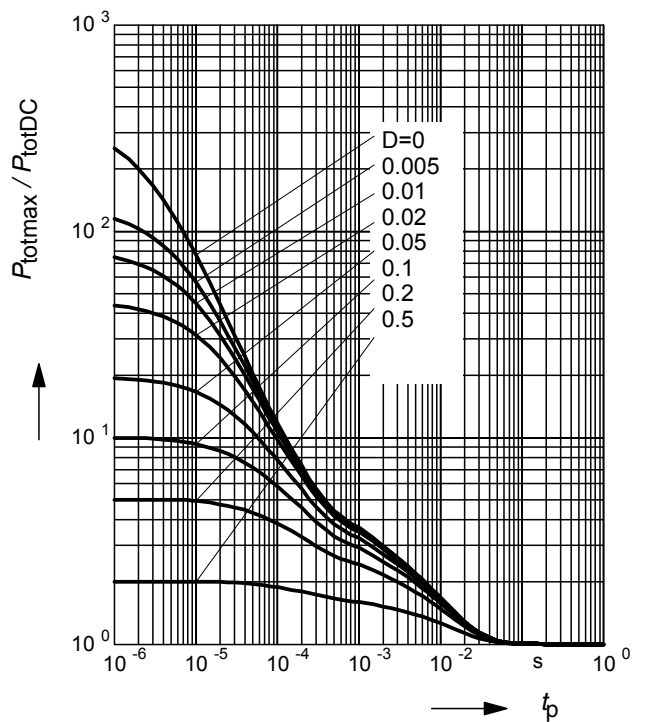


Permissible Pulse Load $R_{thJS} = f(t_p)$



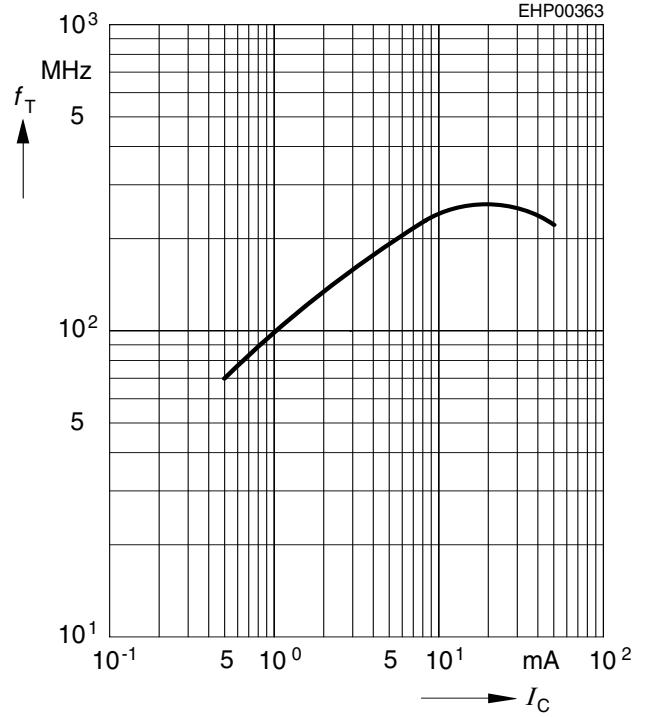
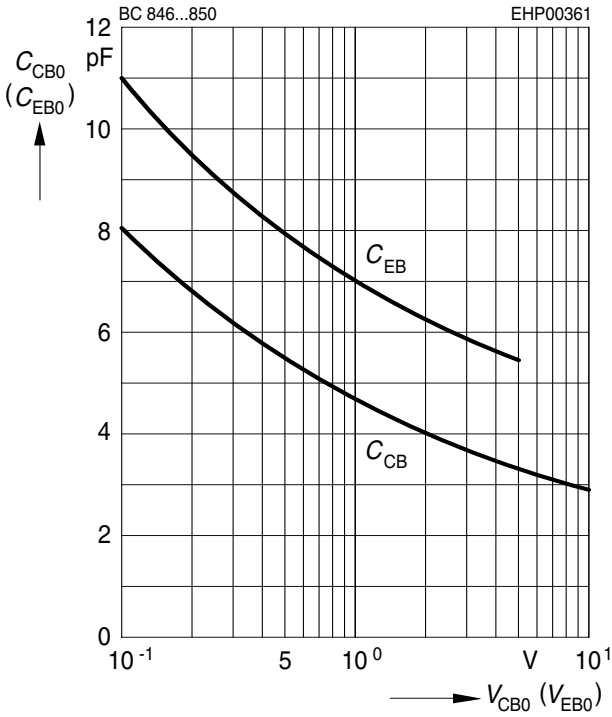
Permissible Pulse Load

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



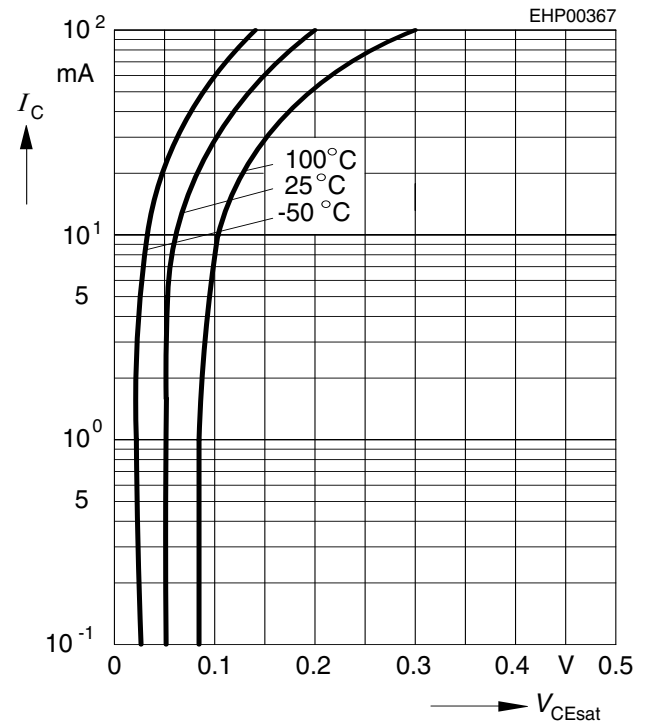
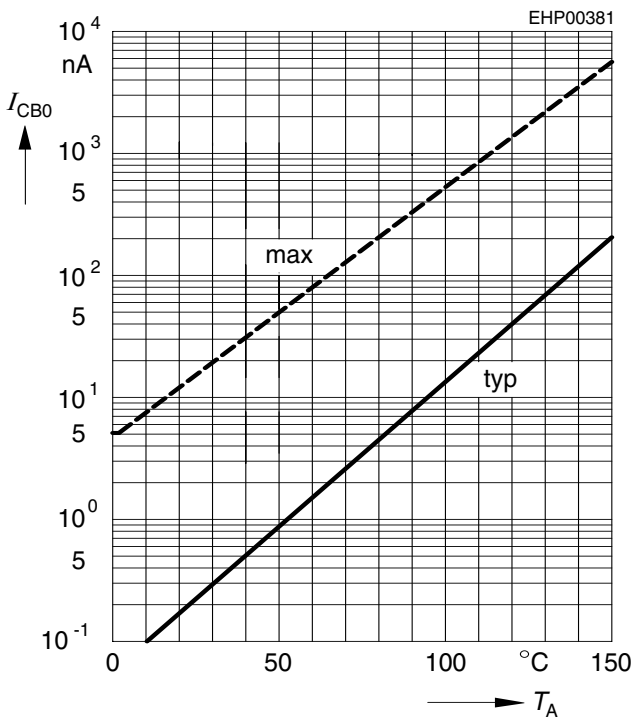
Collector-base capacitance $C_{CB} = f(V_{CB0})$
Emitter-base capacitance $C_{EB} = f(V_{EBO})$

Transition frequency $f_T = f(I_C)$
 $V_{CE} = 5V$



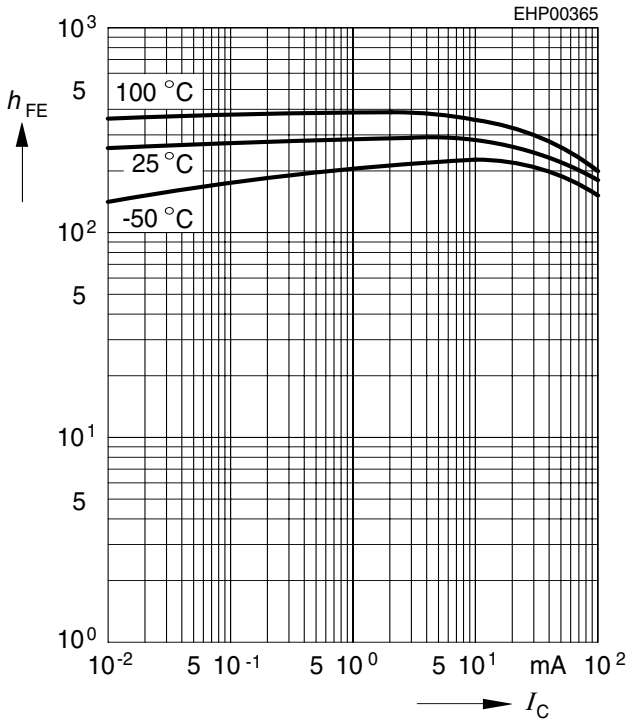
Collector cutoff current $I_{CBO} = f(T_A)$
 $V_{CB} = 30V$

Collector-emitter saturation voltage
 $I_C = f(V_{CEsat}), h_{FE} = 20$



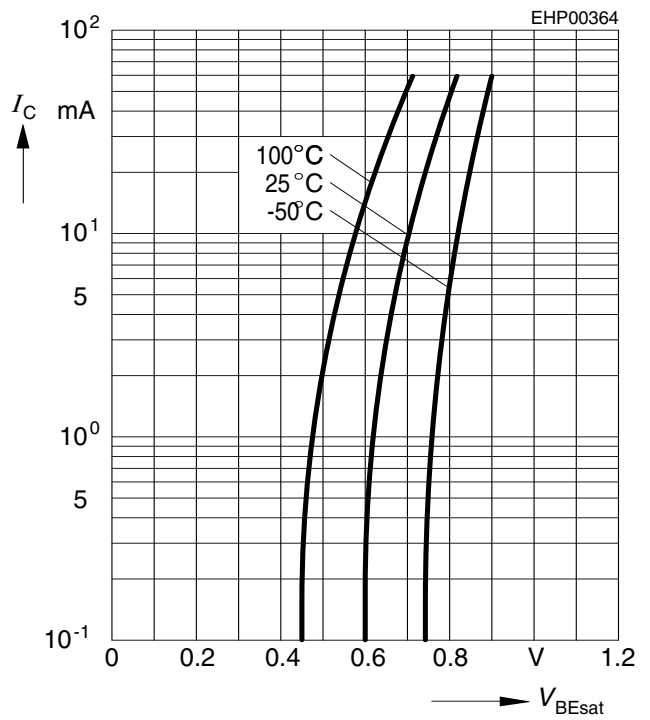
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 5V$



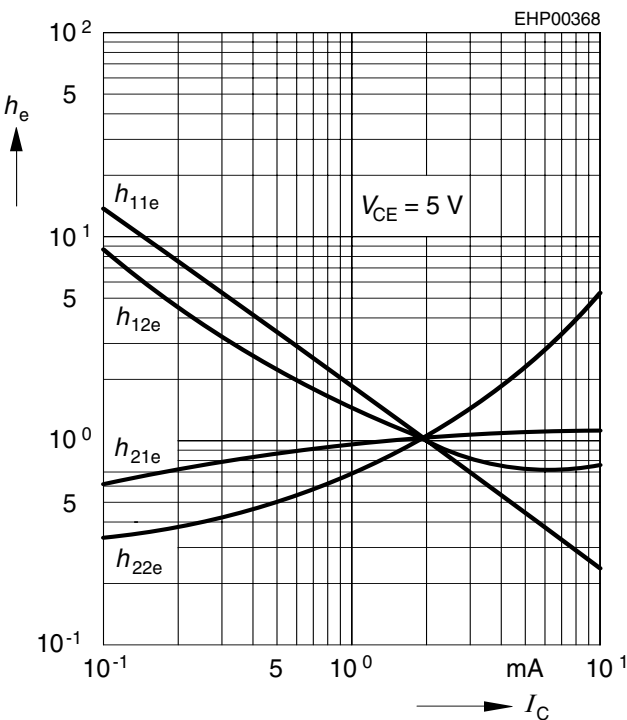
Base-emitter saturation voltage

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



h parameter $h_e = f(I_C)$ normalized

$V_{CE} = 5V$



h parameter $h_e = f(V_{CE})$ normalized

$I_C = 2mA$

