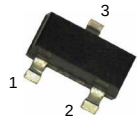
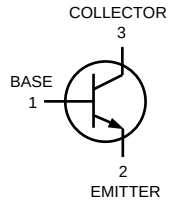
General Purpose Transistor

NPN Silicon

BC846A,B



SOT-23



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	65	Vdc
Collector-Base Voltage	V_{CBO}	80	Vdc
Emitter-Base Voltage	V_{EBO}	6.0	Vdc
Collector Current-Continuous	I_C	100	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max.	Unit
Total Device Dissipation FR-5 Board[1] T_A=25°C Derate above 25°C	P_D	225 1.8	mW mW / °C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	556	°C / W
Total Device Dissipation Alumina Substrate,[2] T_A=25°C Derate above 25°C	P_D	300 2.4	mW mW / °C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	°C / W
Junction and Storage Temperature	T_J,T_{STG}	-55 to +150	°C

DEVICE MARKING

BC846A = 1A,BC846B = 1B

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdowe Voltage (I_C=10mAdc)	$V_{(BR)CEO}$	65	-	-	Vdc
Collector-Emitter Breakdowe Voltage (I_C=10 uAdc, V_{EB}=0)	$V_{(BR)CES}$	80	-	-	Vdc
Collector-Base Breakdowe Voltage (I_C=10 uAdc)	$V_{(BR)CBO}$	80	-	-	Vdc
Emitter-Base Breakdowe Voltage (I_E=1.0 uA)	$V_{(BR)EBO}$	6.0	-	-	Vdc
Collector Cutoff Current (V_{CB}=30 V) (V_{CB}=30 V, T_A = 150°C)	I_{CBO}	- -	- -	15 5.0	nAdc uAdc

(1) FR-5=1.0 x 0.75 x 0.062in.
(2) Alumina=0.4 x 0.3 x 0.024in. 99.5% alumina.

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted) (Continued)

Characteristic		Symbol	Min.	Typ.	Max.	Unit
ON CHARACTERISTICS						
DC Current Gain						
(I_C= 10 uA, V_{CE}= 5.0 V)	BC846A	H_{FE}	-	90	-	-
	BC846B		-	150	-	
(I_C= 2.0 mA, V_{CE}= 5.0 V)	BC846A		110	180	220	
	BC846B		200	290	450	
Collector-Emitter Saturation Voltage						
(I_C= 10 mA, I_B= 0.5 mA)		V_{CE}(sat)	-	-	0.25	V
(I_C= 100 mA, I_B= 5.0 mA)			-	-	0.60	
Base-Emitter Saturation Voltage						
(I_C= 10 mA, I_B= 0.5 mA)		V_{BE}(sat)	-	0.7	-	V
(I_C= 100 mA, I_B= 5.0 mA)			-	0.9	-	
Base-Emitter Voltage						
(I_C= 2.0 mA, V_{CE}= 5.0V)		V_{BE}(on)	580	660	700	mV
(I_C= 10 mA, V_{CE}= 5.0V)			-	-	770	
SMALL-SIGNAL CHARACTERISTIC						
Current-Gain-Bandwidth Product (I_C= 10 mA, V_{CE}= 5.0 V, f=100 MHz)		f_T	100	-	-	MHz
Output Capacitance (V_{CB}= 10 V, f=1.0 MHz)		Cobo	-	-	4.5	pF
Noise Figure (V_{CE}= 5.0 Vdc, I_C= 0.2 mA, R_S= 2.0k ohms, f=1.0 kHz, BW = 200Hz)		N_F	-	-	10	dB

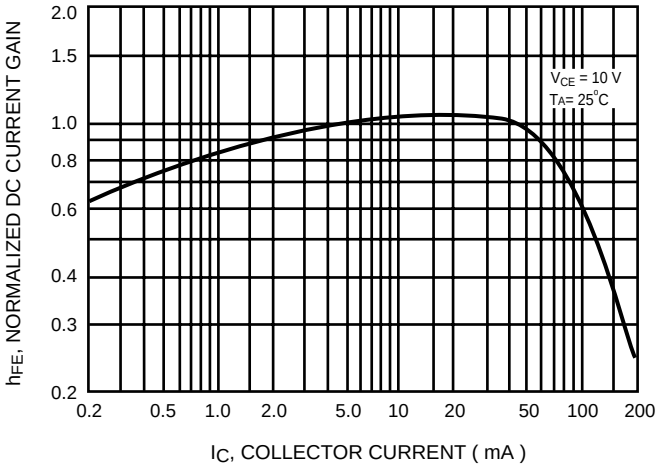


Figure 1. Normalized DC Current Gain

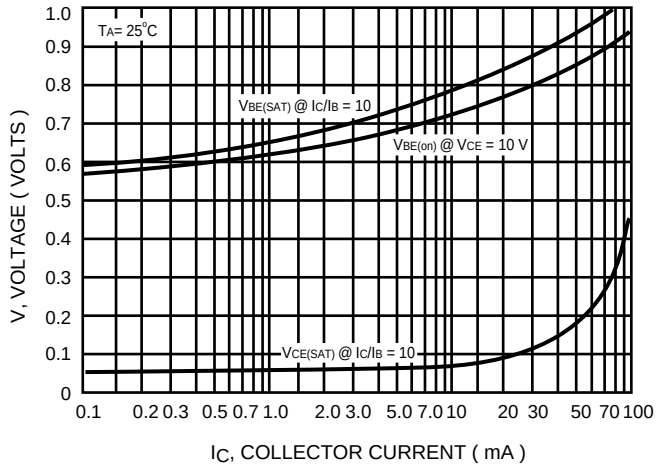


Figure 2. "Saturation" and "On" Voltage

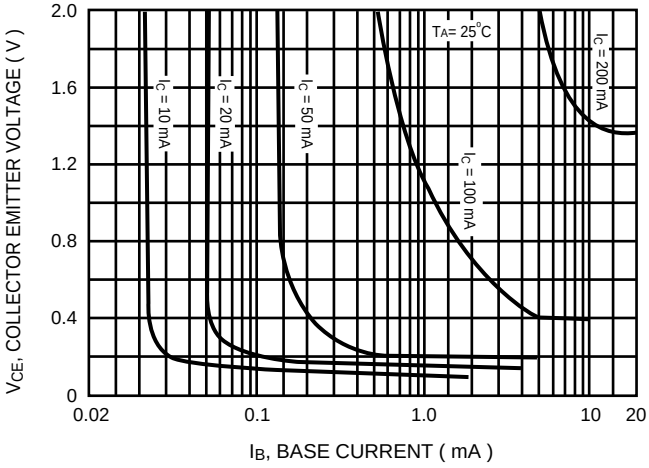


Figure 3. Collector Saturation Region

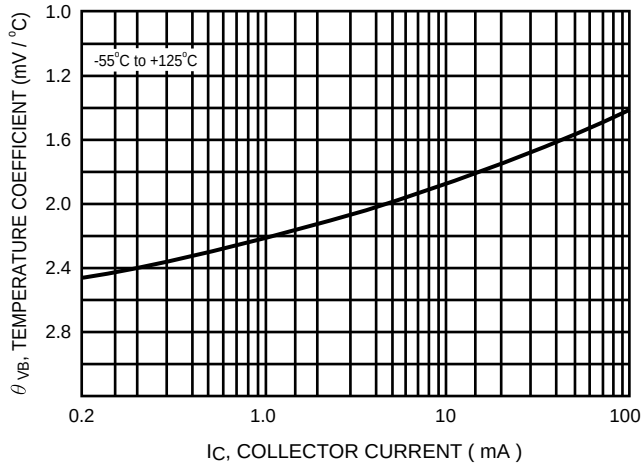


Figure 4. Base-Emitter Temperature Coefficient

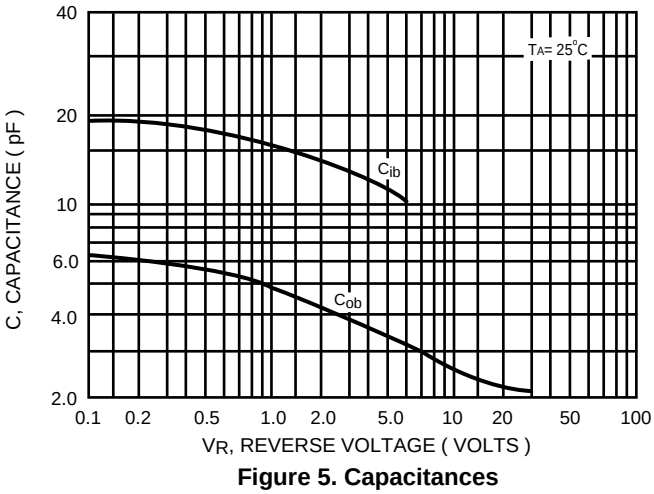


Figure 5. Capacitances

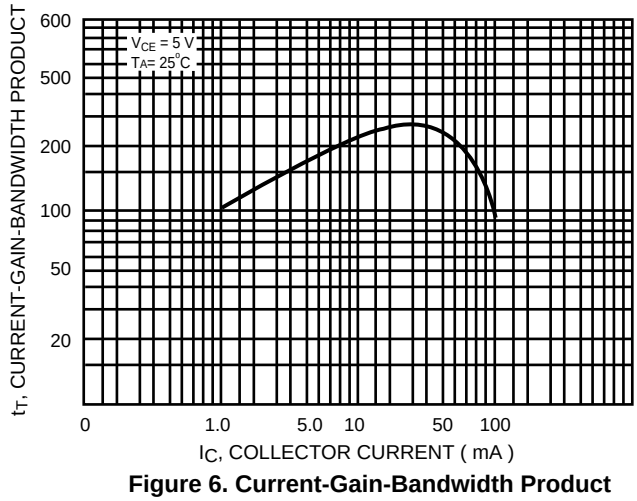


Figure 6. Current-Gain-Bandwidth Product