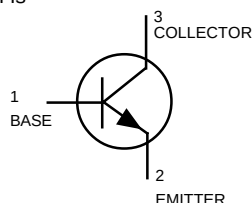


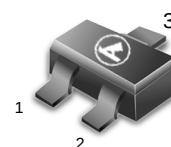
General Purpose Transistors

NPN Silicon

These transistors are designed for general purpose amplifier applications. They are housed in the SOT-323/SC-70 which is designed for low power surface mount applications.



BC846AWT1,BWT1
BC847AWT1,BWT1
CWT1
BC848AWT1,BWT1
CWT1



CASE 419-02, STYLE 3
SOT-323 /SC-70

MAXIMUM RATINGS

Rating	Symbol	BC846	BC847	BC848	Unit
Collector-Emitter Voltage	V_{CEO}	65	45	30	V
Collector-Base Voltage	V_{CBO}	80	50	30	V
Emitter-Base Voltage	V_{EBO}	6.0	6.0	5.0	V
Collector Current — Continuous	I_C	100	100	100	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (1) $T_A = 25^\circ\text{C}$	P_D	150	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	833	$^\circ\text{C/W}$
Total Device Dissipation	P_D	2.4	mW/ $^\circ\text{C}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

DEVICE MARKING

BC846AWT1 = 1A; BC846BWT1 = 1B; BC847AWT1 = 1E; BC847BWT1 = 1F;
BC847CWT1 = 1G; BC848AWT1 = 1J; BC848BWT1 = 1K; BC848CWT1 = 1L

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = 10\text{ mA}$)	BC846 Series	65	—	—	V
	BC847 Series	45	—	—	
	BC848 Series	30	—	—	
Collector-Emitter Breakdown Voltage ($I_C = 10\text{ }\mu\text{A}$, $V_{EB} = 0$)	BC846 Series	80	—	—	V
	BC847 Series	50	—	—	
	BC848 Series	30	—	—	
Collector-Base Breakdown Voltage ($I_C = 10\text{ }\mu\text{A}$)	BC846 Series	80	—	—	V
	BC847 Series	50	—	—	
	BC848 Series	30	—	—	
Emitter-Base Breakdown Voltage ($I_E = 1.0\text{ }\mu\text{A}$)	BC846 Series	6.0	—	—	V
	BC847 Series,	6.0	—	—	
	BC848 Series	5.0	—	—	
Collector Cutoff Current ($V_{CB} = 30\text{ V}$) ($V_{CB} = 30\text{ V}$, $T_A = 150^\circ\text{C}$)	I_{CBO}	—	—	15	nA
		—	—	5.0	μA

1.FR-5=1.0 x 0.75 x 0.062in

BC846AWT1,BWT1 BC847AWT1,BWT1 CWT1 BC848AWT1,BWT1,CWT1

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS					
DC Current Gain ($I_C = 10\ \mu\text{A}$, $V_{CE} = 5.0\ \text{V}$)	h_{FE}	—	90	—	—
		—	150	—	—
		—	270	—	—
($I_C = 2.0\ \text{mA}$, $V_{CE} = 5.0\ \text{V}$)		110	180	220	
		200	290	450	
		420	520	800	
Collector-Emitter Saturation Voltage ($I_C = 10\ \text{mA}$, $I_B = 0.5\ \text{mA}$) ($I_C = 100\ \text{mA}$, $I_B = 5.0\ \text{mA}$)	$V_{CE(sat)}$	—	—	0.25 0.6	V
Base-Emitter Saturation Voltage ($I_C = 10\ \text{mA}$, $I_B = 0.5\ \text{mA}$) ($I_C = 100\ \text{mA}$, $I_B = 5.0\ \text{mA}$)	$V_{BE(sat)}$	—	0.7 0.9	—	V
Base-Emitter Voltage ($I_C = 2.0\ \text{mA}$, $V_{CE} = 5.0\ \text{V}$) ($I_C = 10\ \text{mA}$, $V_{CE} = 5.0\ \text{V}$)	$V_{BE(on)}$	580	660	700 770	mV

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ($I_C = 10\ \text{mA}$, $V_{CE} = 5.0\ \text{Vdc}$, $f = 100\ \text{MHz}$)	f_T	100	—	—	MHz
Output Capacitance ($V_{CB} = 10\ \text{V}$, $f = 1.0\ \text{MHz}$)	C_{obo}	—	—	4.5	pF
Noise Figure ($I_C = 0.2\ \text{mA}$, $V_{CE} = 5.0\ \text{Vdc}$, $R_S = 2.0\ \text{k}\Omega$, $f = 1.0\ \text{kHz}$, $BW = 200\ \text{Hz}$)	NF	—	—	10 4.0	dB

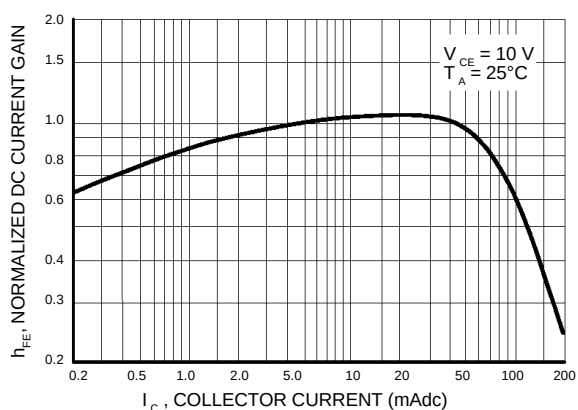


Figure 1. Normalized DC Current Gain

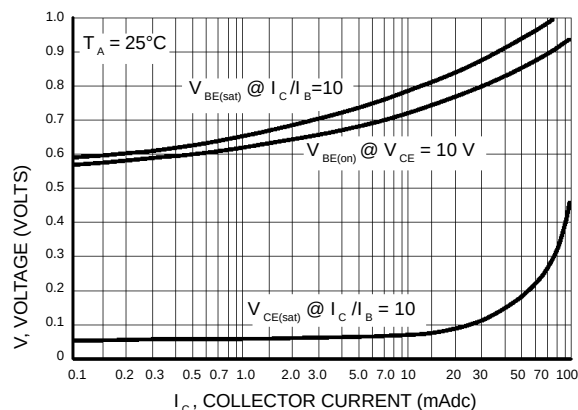


Figure 2. "Saturation" and "On" Voltages

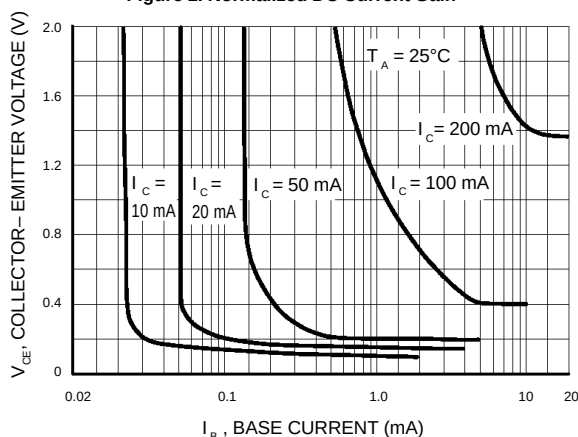


Figure 3. Collector Saturation Region

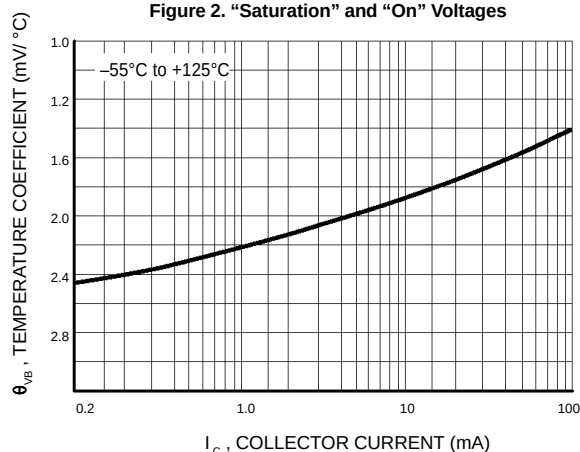


Figure 4. Base-Emitter Temperature Coefficient

BC846AWT1, BWT1 BC847AWT1, BWT1, CWT1 BC848AWT1, BWT1, CWT1

BC847/BC848

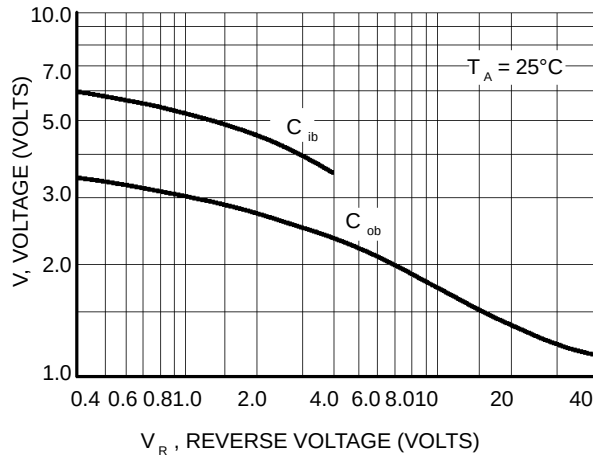


Figure 5. Capacitances

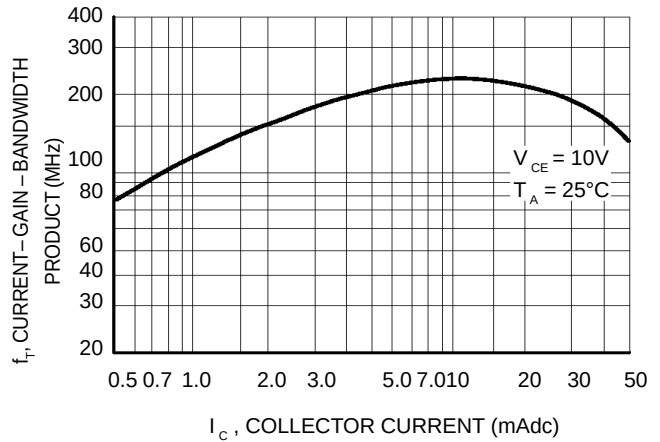


Figure 6. Current-Gain - Bandwidth Product

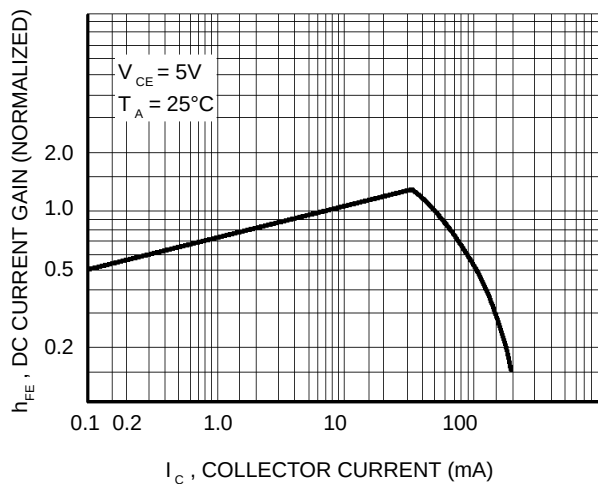


Figure 7. DC Current Gain

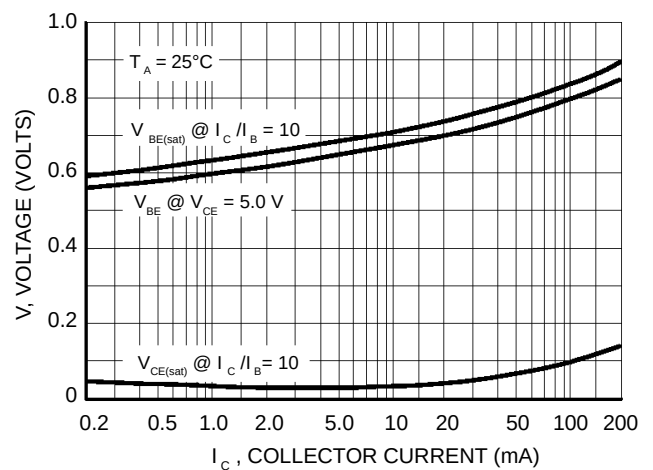


Figure 8. "On" Voltage

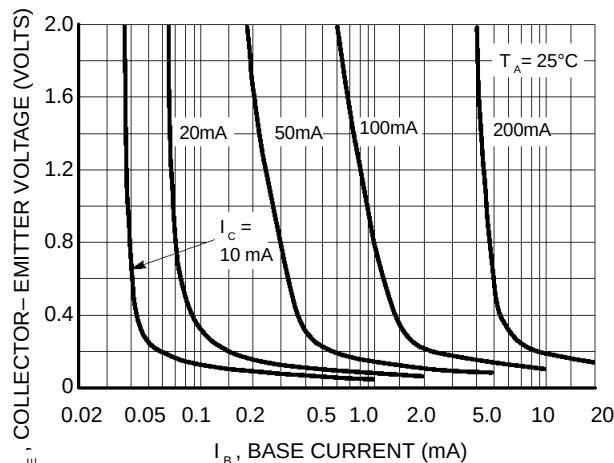


Figure 9. Collector Saturation Region

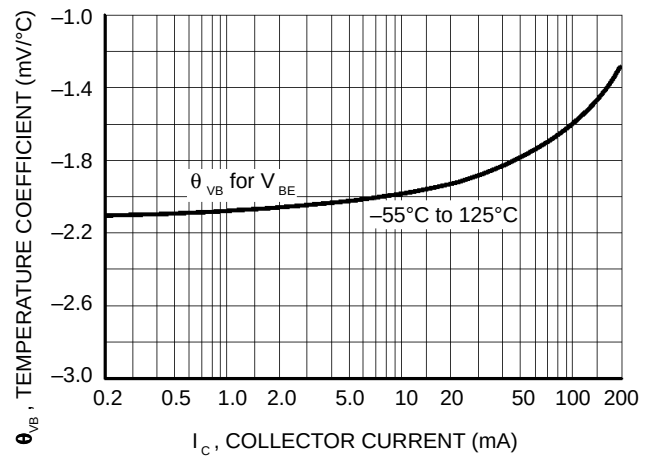


Figure 10. Base-Emitter Temperature Coefficient

BC846AWT1, BWT1 BC847AWT1, BWT1, CWT1 BC848AWT1, BWT1, CWT1

BC846

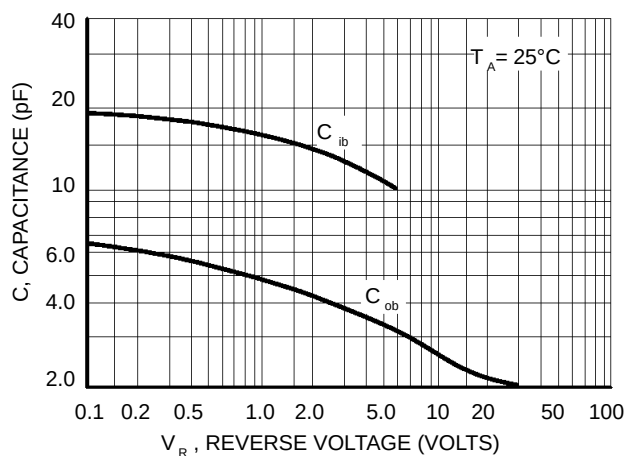


Figure 11. Capacitance

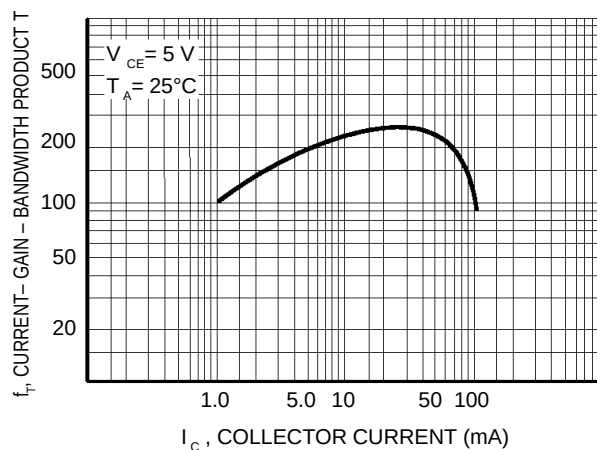


Figure 12. Current-Gain - Bandwidth Product