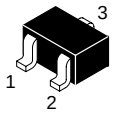
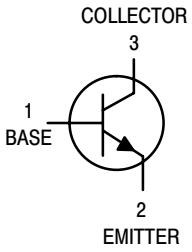
BC846AWT1 Series, BC847AWT1 Series, BC848AWT1 Series

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.



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°C	P_D	150	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	833	°C/W
Total Device Dissipation	P_D	2.4	mW/°C
Junction and Storage Temperature	T_J, T_{stg}	–55 to +150	°C

DEVICE MARKING

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

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

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

1. FR–5 = 1.0 x 0.75 x 0.062 in

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

Characteristic		Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS						
DC Current Gain	BC846A, BC847A, BC848A	h_{FE}	—	90	—	—
(I_C = 10 μA, V_{CE} = 5.0 V)	BC846B, BC847B, BC848B		—	150	—	
	BC847C, BC848C		—	270	—	
(I_C = 2.0 mA, V_{CE} = 5.0 V)	BC846A, BC847A, BC848A		110	180	220	
	BC846B, BC847B, BC848B		200	290	450	
	BC847C, BC848C		420	520	800	
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)			—	—	0.6	
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} = 5.0 V)		$V_{BE(on)}$	580	660	700	mV
(I_C = 10 mA, V_{CE} = 5.0 V)			—	—	770	
SMALL–SIGNAL CHARACTERISTICS						
Current–Gain — Bandwidth Product (I_C = 10 mA, V_{CE} = 5.0 Vdc, f = 100 MHz)		f_T	100	—	—	MHz
Output Capacitance (V_{CB} = 10 V, f = 1.0 MHz)		C_{obo}	—	—	4.5	pF
Noise Figure (I_C = 0.2 mA, V_{CE} = 5.0 Vdc, R_S = 2.0 kΩ, f = 1.0 kHz, BW = 200 Hz)		NF	—	—	10	dB

BC847 SERIES & BC848 SERIES

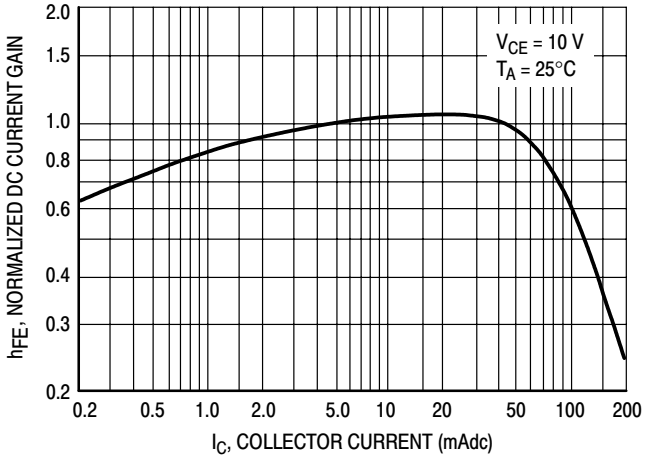


Figure 1. Normalized DC Current Gain

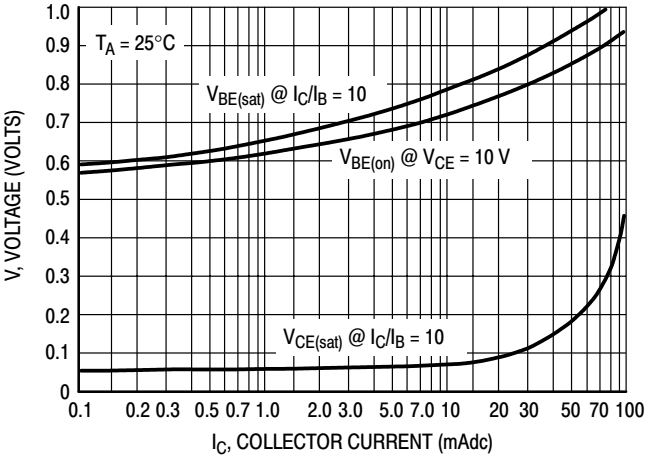


Figure 2. “Saturation” and “On” Voltages

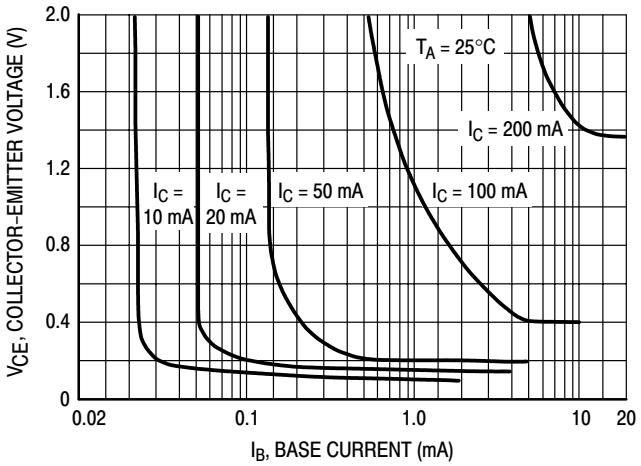


Figure 3. Collector Saturation Region

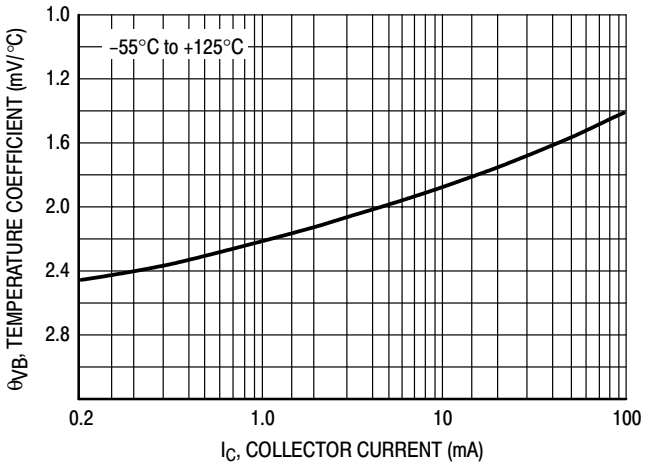


Figure 4. Base−Emitter Temperature Coefficient

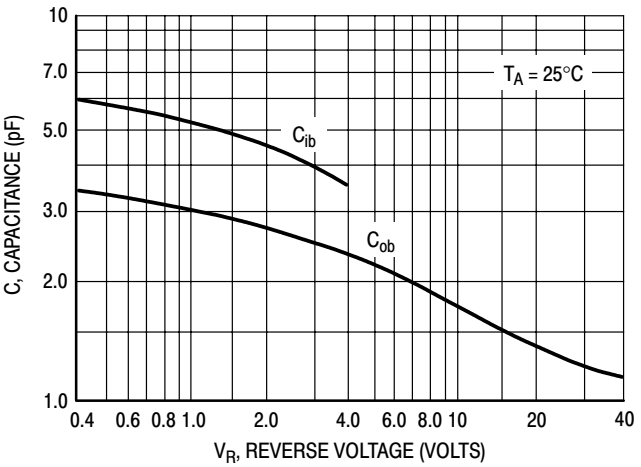


Figure 5. Capacitances

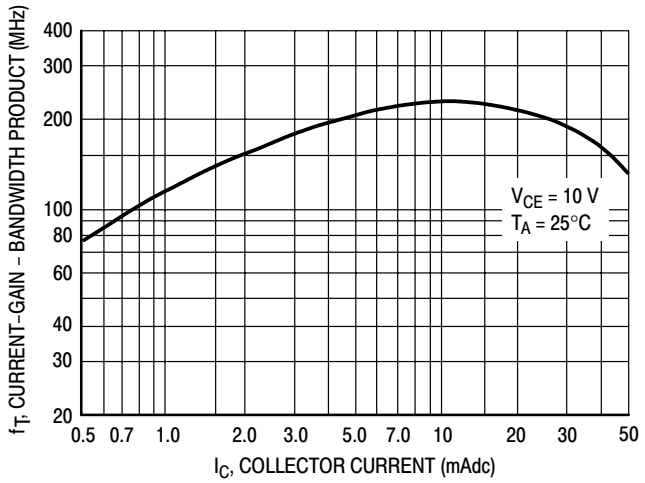


Figure 6. Current−Gain − Bandwidth Product

BC846 SERIES

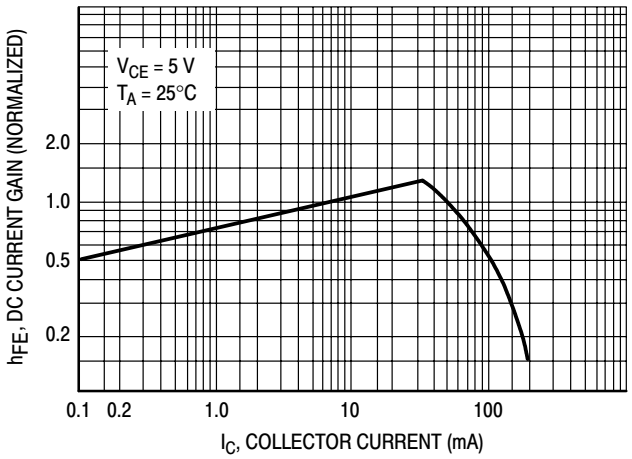


Figure 7. DC Current Gain

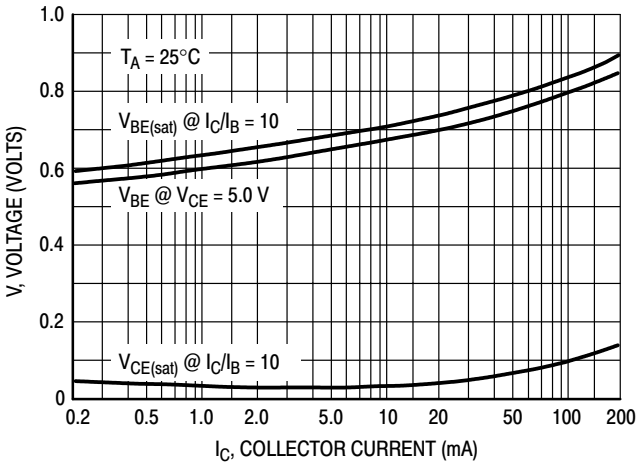


Figure 8. “On” Voltage

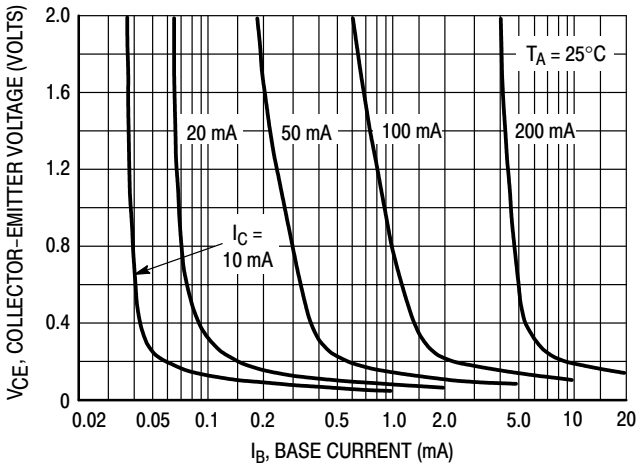


Figure 9. Collector Saturation Region

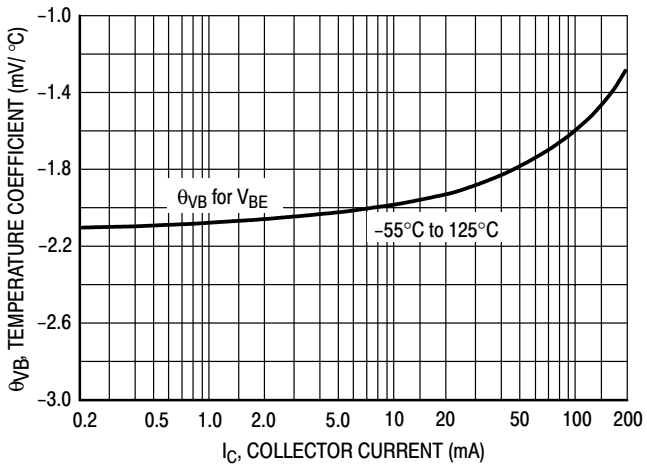


Figure 10. Base–Emitter Temperature Coefficient

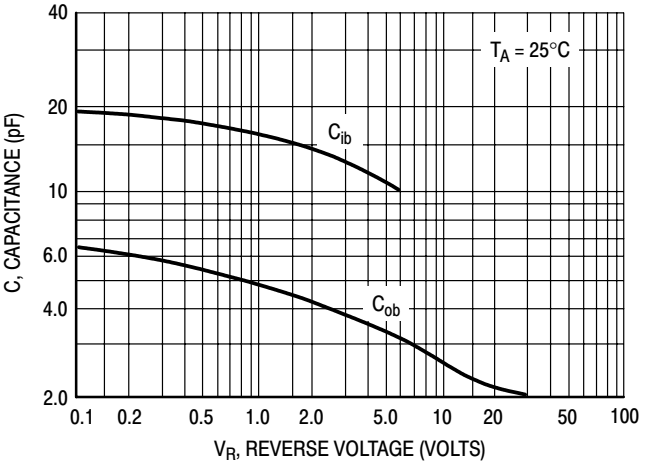


Figure 11. Capacitance

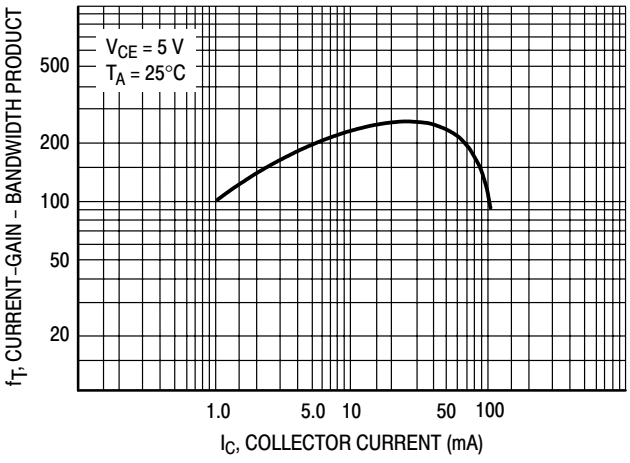


Figure 12. Current–Gain – Bandwidth Product