

# General Purpose Transistors

## NPN Silicon

### MAXIMUM RATINGS

Rating	Symbol	BC847 BC848			Unit
		BC846	BC850	BC849	
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
Collector Current(Peak value)	$I_{CM}$	200	200	200	mAdc
Emitter Current(Peak value)	$I_{EM}$	200	200	200	mAdc
Base Current(Peak value)	$I_{BM}$	200	200	200	mAdc

### SOLDERING CHARACTERISTICS

Characteristic	Symbol	Unit
Solder Heat Resistance	265	°C
Solderability	240 to 265	°C

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR– 5 Board, (1) $T_A = 25^\circ\text{C}$	$P_D$	225	mW
Derate above $25^\circ\text{C}$		1.8	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, (2) $T_A = 25^\circ\text{C}$	$P_D$	300	mW
Derate above $25^\circ\text{C}$		2.4	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

BC846ALT1 = 1A; BC846BLT1 = 1B; BC847ALT1 = 1E; BC847BLT1 = 1F;  
BC847CLT1 = 1G; BC848ALT1 = 1J; BC848BLT1 = 1K; BC848CLT1 = 1L

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

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

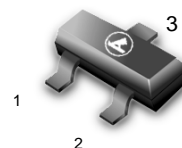
### OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ( $I_C = 10\text{ mA}$ )	BC846A,B	65	—	—	
	BC847A,B,C, BC850B,C	$V_{(BR)CEO}$	45	—	v
	BC848A,B,C, BC849B,C	30	—	—	
Collector–Emitter Breakdown Voltage ( $I_C = 10\text{ }\mu\text{A}$ , $V_{EB} = 0$ )	BC846A,B	80	—	—	
	BC847A,B,C, BC850B,C	$V_{(BR)CES}$	50	—	v
	BC848A,B,C, BC849B,C	30	—	—	
Collector–Base Breakdown Voltage ( $I_C = 10\text{ }\mu\text{A}$ )	BC846A,B	80	—	—	
	BC847A,B,C, BC850B,C	$V_{(BR)CBO}$	50	—	v
	BC848A,B,C, BC849B,C	30	—	—	
Emitter–Base Breakdown Voltage ( $I_E = 1.0\text{ }\mu\text{A}$ )	BC846A,B BC847A,B,C	6.0	—	—	
	BC848A,B,C, BC849B,C,	$V_{(BR)EBO}$	5.0	—	
	BC850B,C	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	$\mu\text{A}$

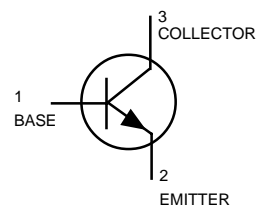
1. FR–5 = 1.0 x 0.75 x 0.062 in

2. Alumina = 0.4 x 0.3 x 0.024 in, 99.5% alumina.

BC846ALT1,BLT1  
BC847ALT1,BLT1  
CLT1 thru  
BC850BLT1,CLT1



CASE 318–08, STYLE 6  
SOT–23 (TO–236AB)

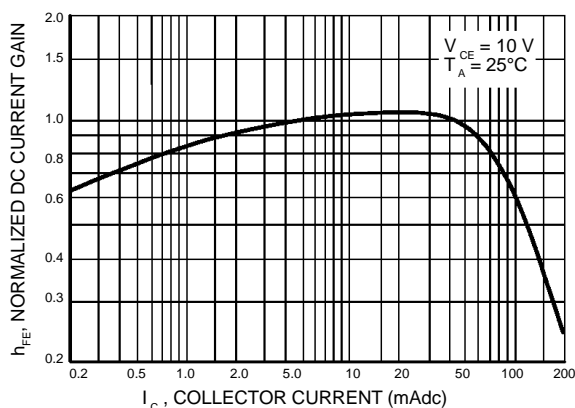
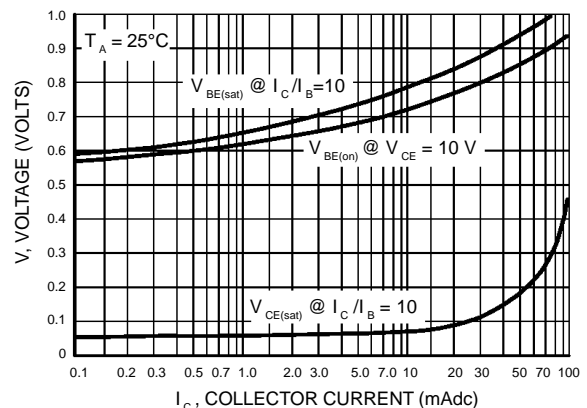
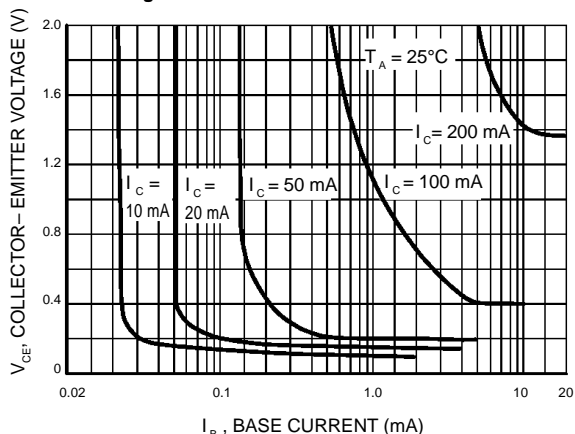
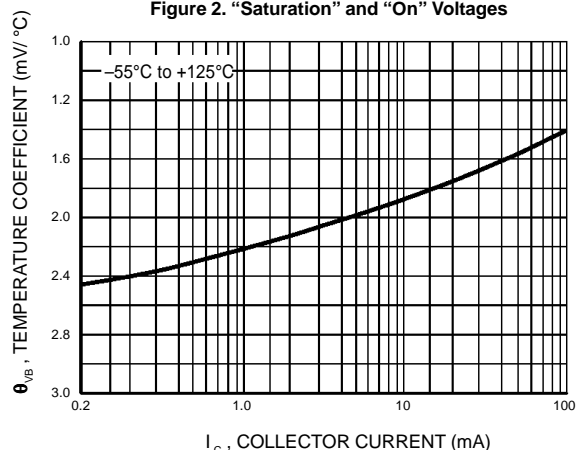


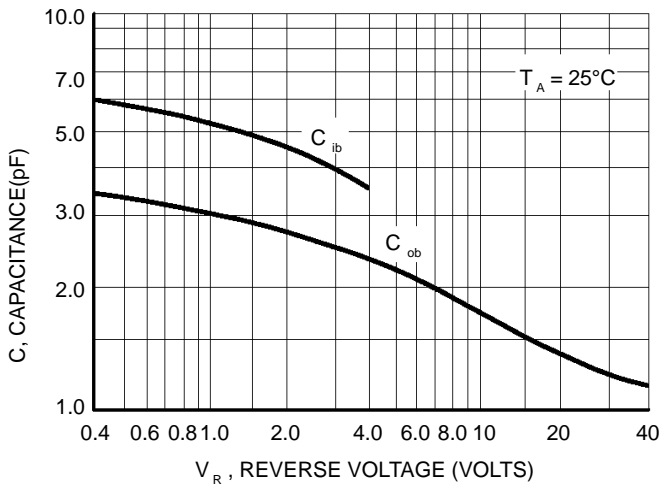
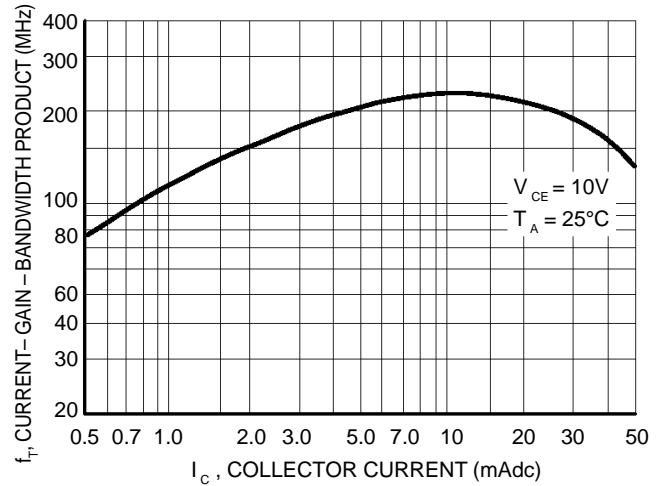
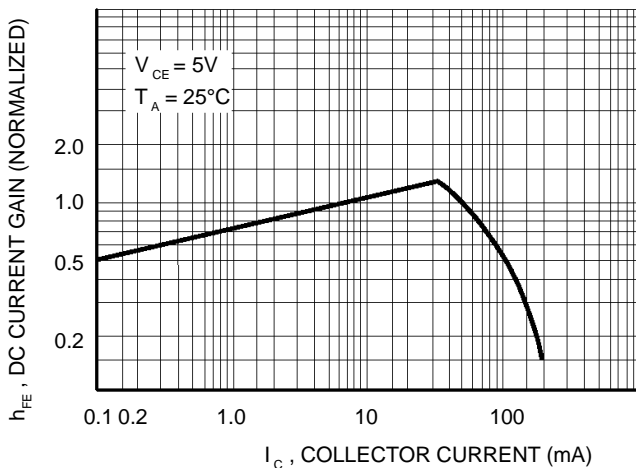
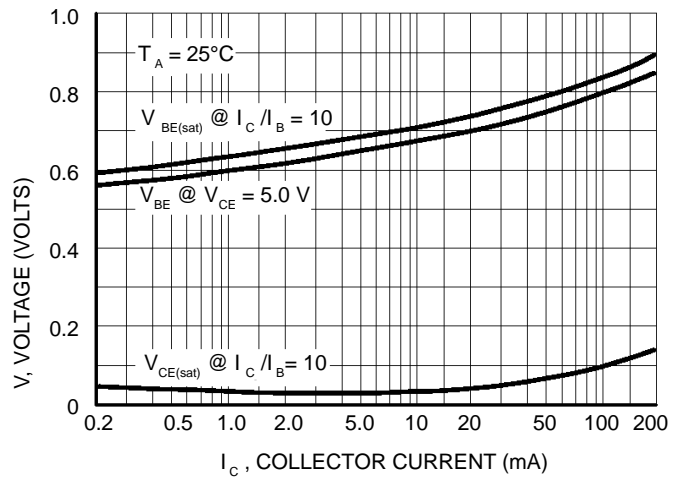
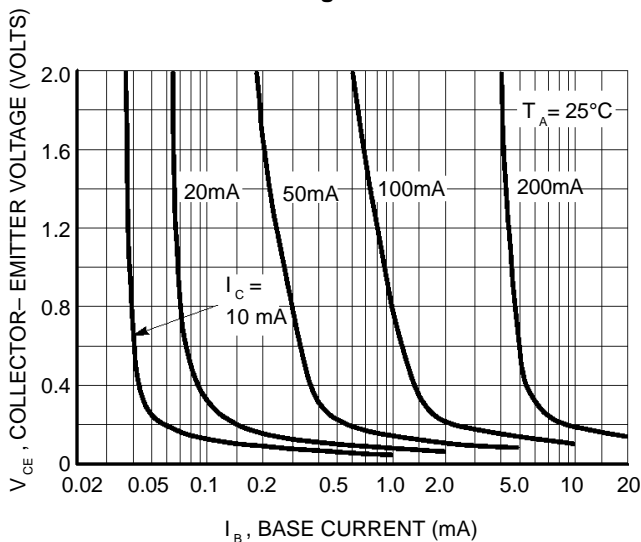
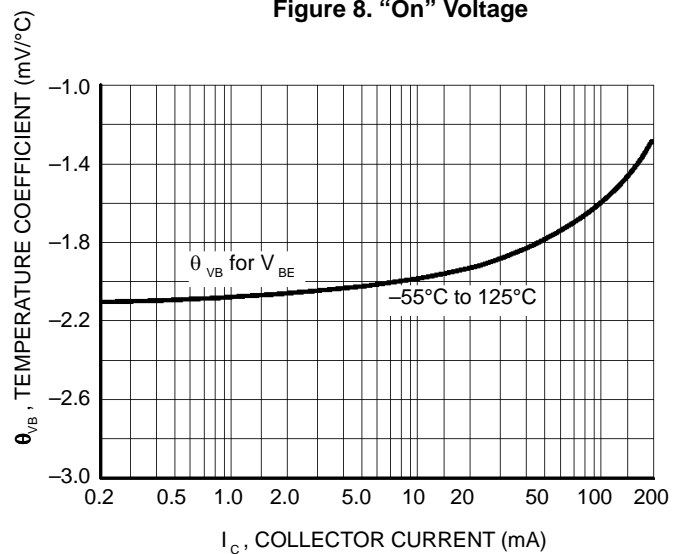
**BC846ALT1,BLT1 BC847ALT1,BLT1 CLT1 thru BC850BLT1,CLT1**
**ELECTRICAL CHARACTERISTICS**( $T_A = 25^\circ\text{C}$  unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>ON CHARACTERISTICS</b>					
DC Current Gain ( $I_C = 10\ \mu\text{A}$ , $V_{CE} = 5.0\ \text{V}$ )	BC846A, BC847A, BC848A BC846B, BC847B, BC848B BC847C, BC848C	$h_{FE}$	—	90	—
( $I_C = 2.0\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ )	BC846A, BC847A, BC848A BC846B, BC847B, BC848B, BC849B, BC850B BC847C, BC848C, BC849C, BC850C		110	180	220
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 ( $I_C = 0.2\ \text{mA}$ , BC846A, BC847A, BC848A $V_{CE} = 5.0\ \text{Vdc}$ , $R_S = 2.0\ \text{k}\Omega$ , BC846B, BC847B, BC848B $f = 1.0\ \text{kHz}$ , $\text{BW} = 200\ \text{Hz}$ ) BC847C, BC848C BC849B,C, BC850B,C	NF	—	—	10	dB
		—	—	4.0	


**Figure 1. Normalized DC Current Gain**

**Figure 2. "Saturation" and "On" Voltages**

**Figure 3. Collector Saturation Region**

**Figure 4. Base–Emitter Temperature Coefficient**

**BC846ALT1,BLT1 BC847ALT1,BLT1 CLT1 thru BC850BLT1,CLT1**
**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**

BC846ALT1, BLT1 BC847ALT1, BLT1 CLT1 thru BC850BLT1, CLT1

BC846

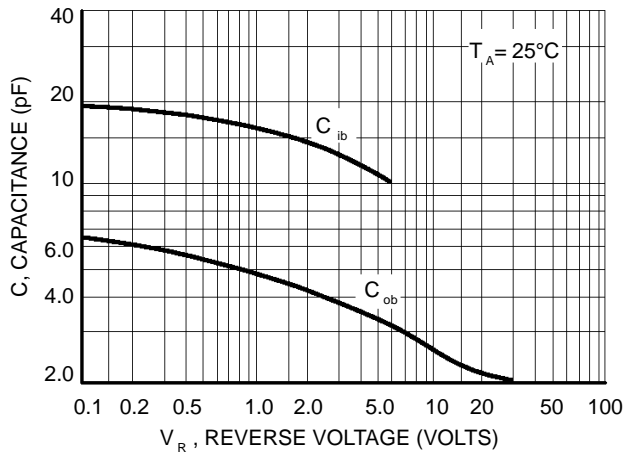


Figure 11. Capacitance

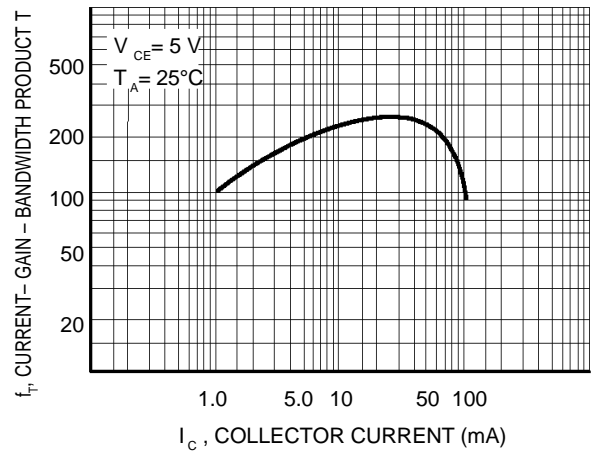


Figure 12. Current-Gain - Bandwidth Product

This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.