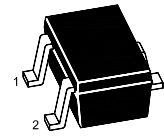


## NPN Silicon Epitaxial Planar Transistor

for general purpose and switching applications



1.Base 2.Emitter 3.Collector  
SOT-323 Plastic Package

### Absolute Maximum Ratings ( $T_a = 25\text{ }^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	BC846W 80	V
		BC847W 50	
		BC848W 30	
		BC849W 30	
		BC850W 50	
Collector Emitter Voltage	$V_{CEO}$	BC846W 65	V
		BC847W 45	
		BC848W 30	
		BC849W 30	
		BC850W 45	
Emitter Base Voltage	$V_{EBO}$	BC846W 6	V
		BC847W 6	
		BC848W 5	
		BC849W 5	
		BC850W 5	
Collector Current	$I_C$	100	mA
Peak Collector Current	$I_{CM}$	200	mA
Total Power Dissipation	$P_{tot}$	200	mW
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

## Characteristics at $T_a = 25\text{ }^\circ\text{C}$

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $V_{CE} = 5\text{ V}$ , $I_C = 2\text{ mA}$	BC846AW~BC850AW $h_{FE}$	110	220	-
	BC846BW~BC850BW $h_{FE}$	200	450	-
	BC846CW~BC850CW $h_{FE}$	420	800	-
Collector Base Voltage at $I_C = 10\text{ }\mu\text{A}$	BC846W	80	-	V
	BC847W	50	-	
	BC848W	30	-	
	BC849W	30	-	
	BC850W	50	-	
Collector Emitter Voltage at $I_C = 10\text{ mA}$	BC846W	65	-	V
	BC847W	45	-	
	BC848W	30	-	
	BC849W	30	-	
	BC850W	45	-	
Emitter Base Voltage at $I_E = 1\text{ }\mu\text{A}$	BC846W	6	-	V
	BC847W	6	-	
	BC848W	5	-	
	BC849W	5	-	
	BC850W	5	-	
Collector Base Cutoff Current at $V_{CB} = 30\text{ V}$	$I_{CBO}$	-	15	nA
Emitter Base Cutoff Current at $V_{EB} = 5\text{ V}$	$I_{EBO}$	-	100	nA
Collector Emitter Saturation Voltage at $I_C = 10\text{ mA}$ , $I_B = 0.5\text{ mA}$ $I_C = 100\text{ mA}$ , $I_B = 5\text{ mA}$	$V_{CE(sat)}$	-	0.25	V
		-	0.6	
Base Emitter Voltage at $V_{CE} = 5\text{ V}$ , $I_C = 2\text{ mA}$ $V_{CE} = 5\text{ V}$ , $I_C = 10\text{ mA}$	$V_{BE}$	0.58	0.7	V
		-	0.77	
Transition Frequency at $V_{CE} = 5\text{ V}$ , $I_C = 10\text{ mA}$ , $f = 100\text{ MHz}$	$f_T$	100	-	MHz
Collector Output Capacitance at $V_{CB} = 10\text{ V}$ , $I_E = 0$ , $f = 1\text{ MHz}$	$C_{ob}$	-	4.5	pF

## DEVICE MARKING

BC846AW=1A;BC846BW=1B;BC846CW=1C  
 BC847AW=1E;BC847BW=1F;BC847CW=1G  
 BC848AW=1J;BC848BW=1K;BC848CW=1L  
 BC849AW=1E;BC849BW=1F;BC849CW=1G  
 BC850AW=1E;BC850BW=1F;BC850CW=1G

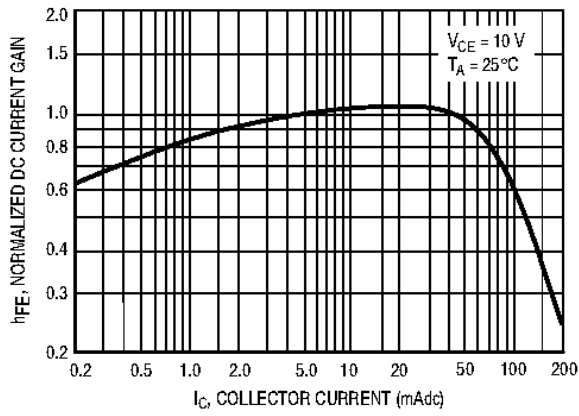


Figure 1. Normalized DC Current Gain

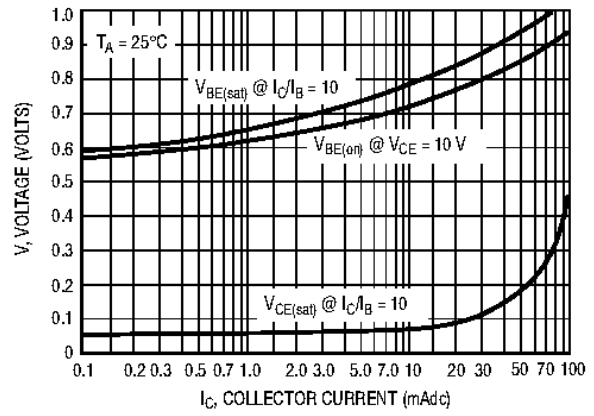


Figure 2. "Saturation" and "On" Voltages

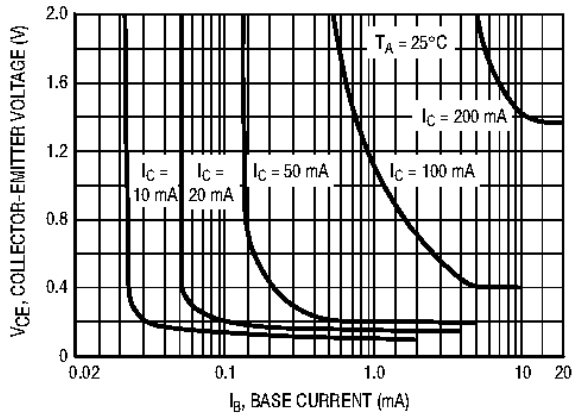


Figure 3. Collector Saturation Region

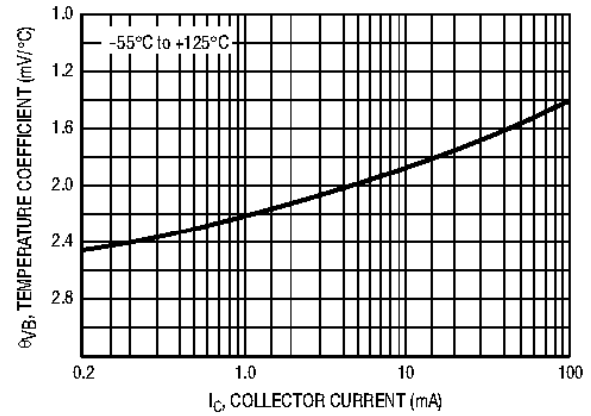


Figure 4. Base-Emitter Temperature Coefficient

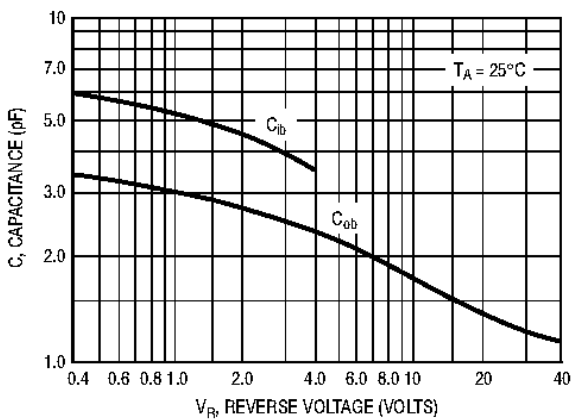


Figure 5. Capacitances

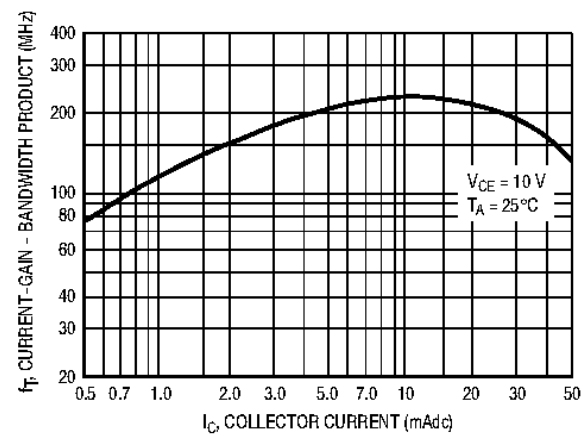


Figure 6. Current-Gain - Bandwidth Product

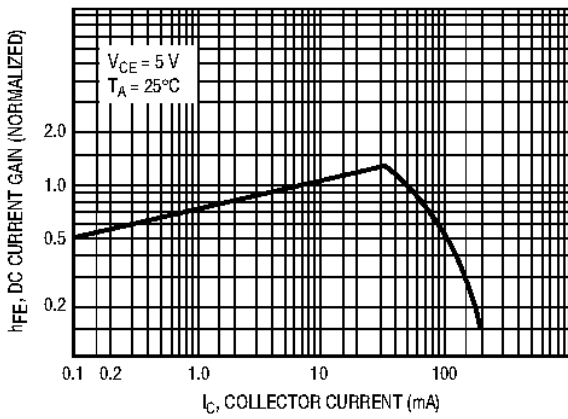


Figure 7. DC Current Gain

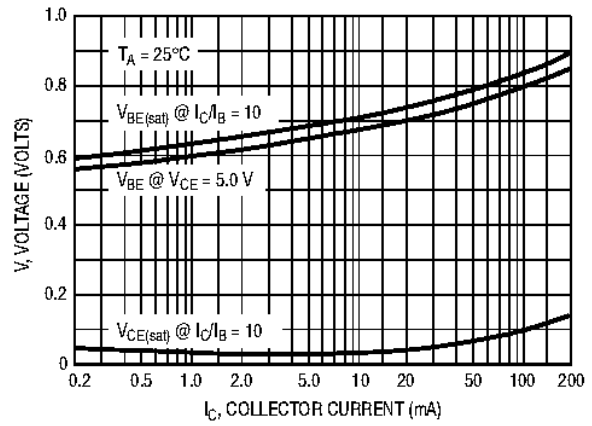


Figure 8. "On" Voltage

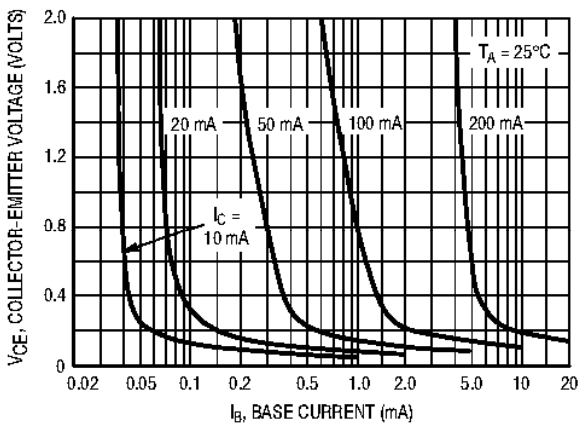


Figure 9. Collector Saturation Region

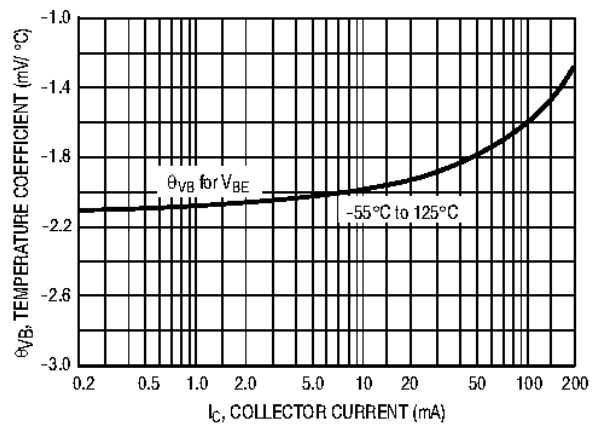


Figure 10. Base-Emitter Temperature Coefficient

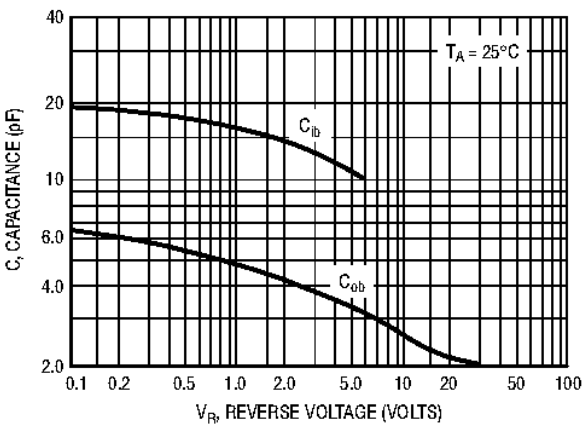


Figure 11. Capacitance

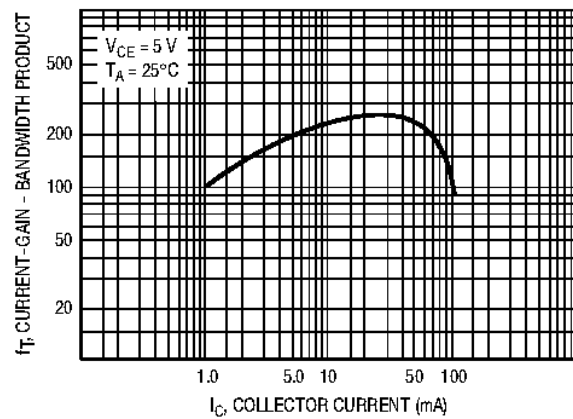
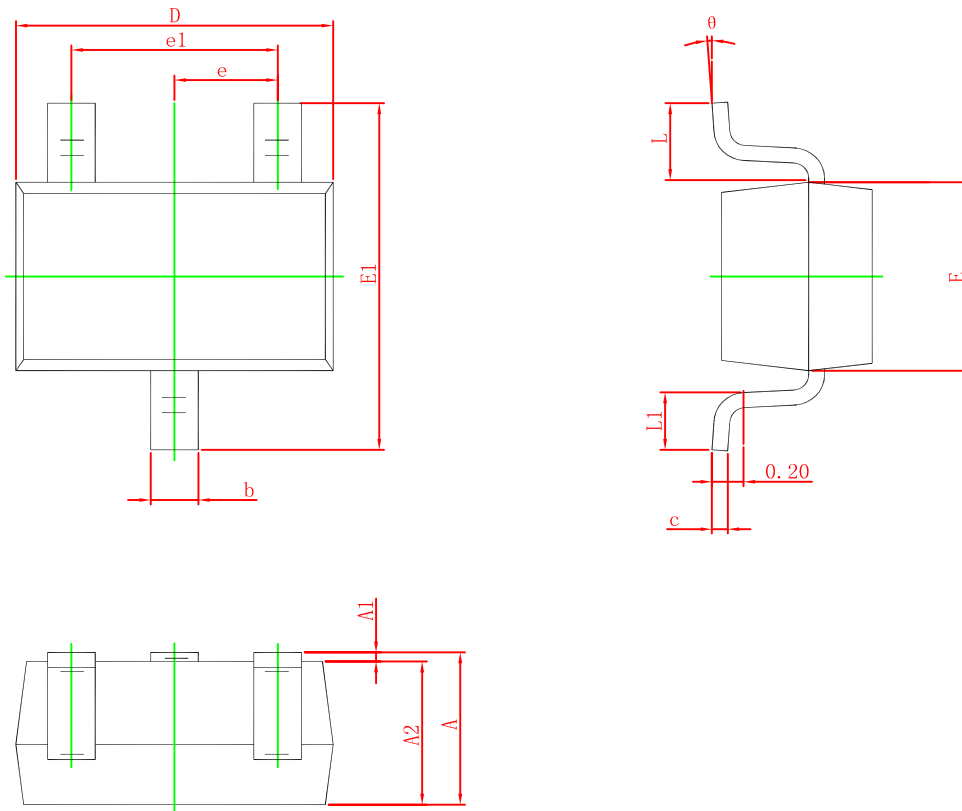


Figure 12. Current-Gain - Bandwidth Product

## SOT-323 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
$\theta$	0°	8°	0°	8°