

**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	$V_{CBO}$	80	V
BC846W		50	
BC847W		30	
BC848W		30	
BC849W		50	
BC850W			
Collector Emitter Voltage	$V_{CEO}$	65	V
BC846W		45	
BC847W		30	
BC848W		30	
BC849W		45	
BC850W			
Emitter Base Voltage	$V_{EBO}$	6	V
BC846W		6	
BC847W		5	
BC848W		5	
BC849W		5	
BC850W			
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	$T_S$	- 55 to + 150	$^\circ\text{C}$

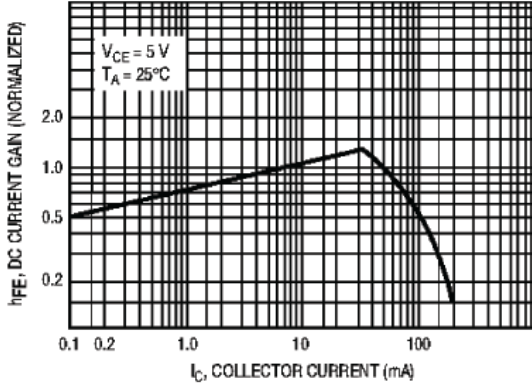


Figure 7. DC Current Gain

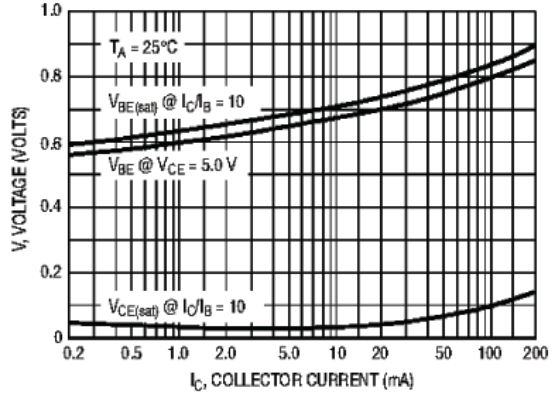


Figure 8. "On" Voltage

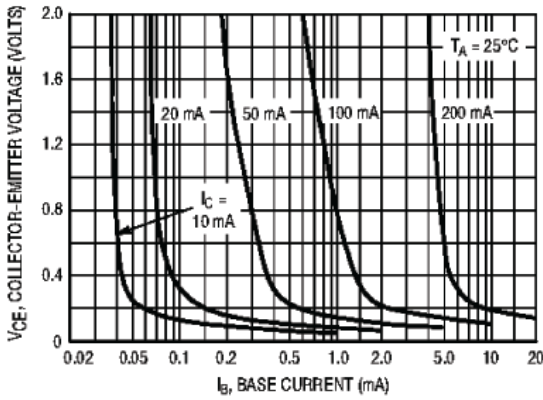


Figure 9. Collector Saturation Region

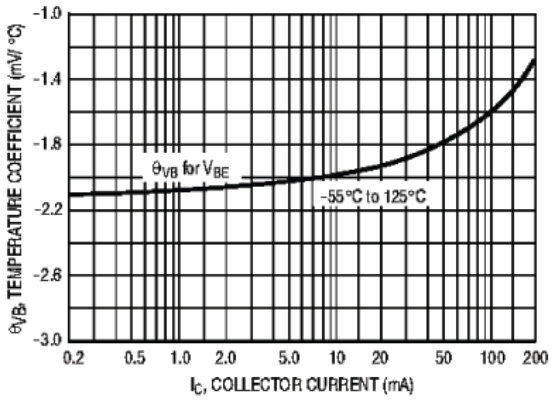


Figure 10. Base-Emitter Temperature Coefficient

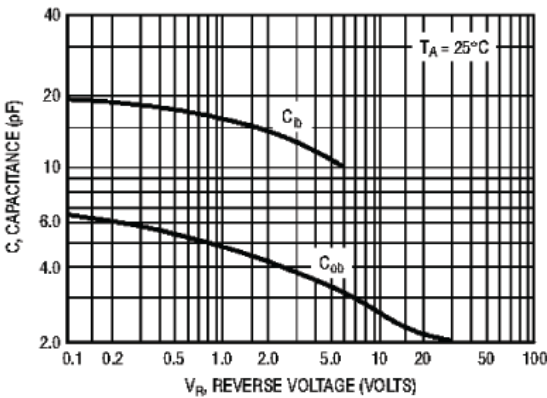


Figure 11. Capacitance

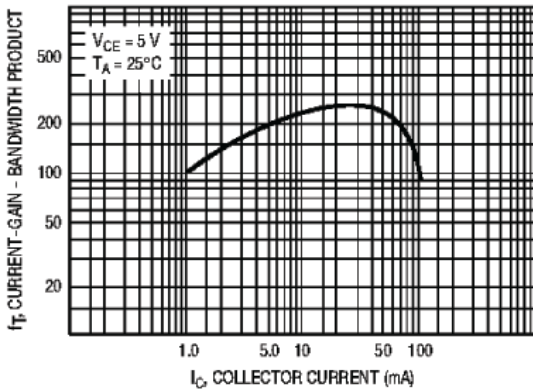


Figure 12. Current-Gain - Bandwidth Product

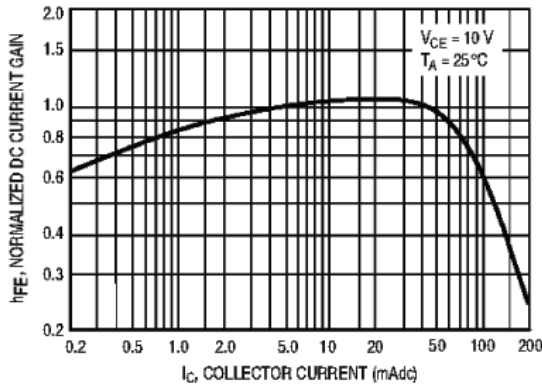


Figure 1. Normalized DC Current Gain

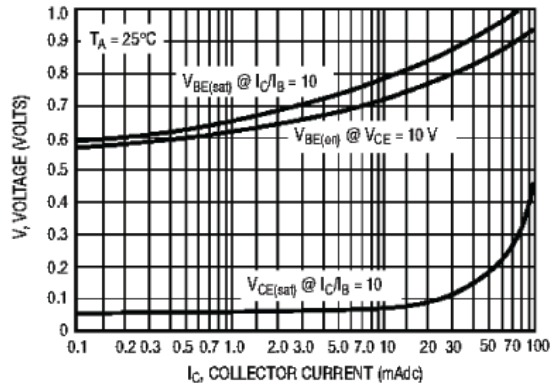


Figure 2. "Saturation" and "On" Voltages

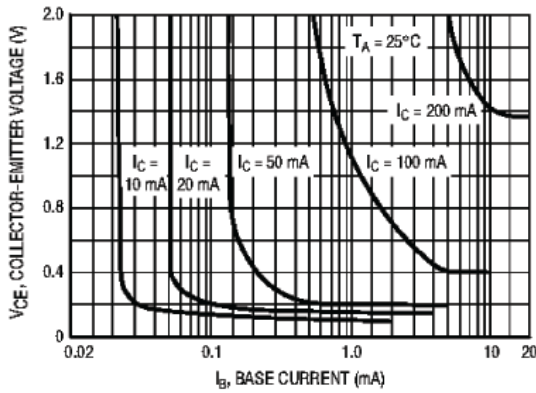


Figure 3. Collector Saturation Region

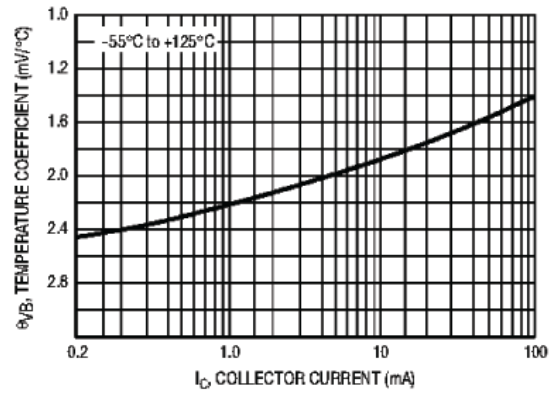


Figure 4. Base-Emitter Temperature Coefficient

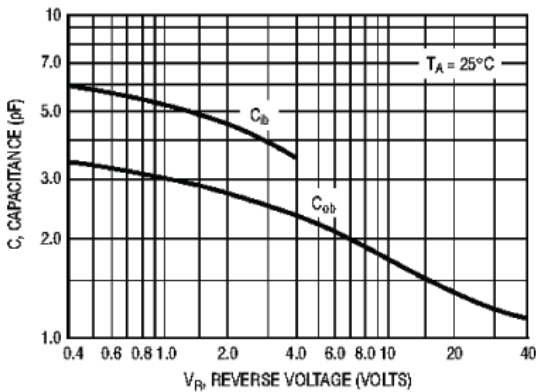


Figure 5. Capacitances

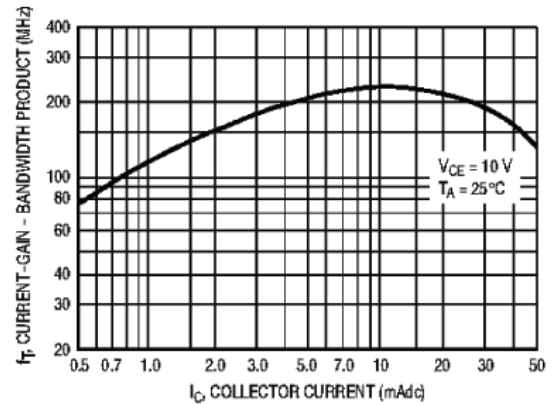


Figure 6. Current-Gain - Bandwidth Product

**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	$V_{CBO}$	80	-	V
BC847W		50	-	
BC848W		30	-	
BC849W		30	-	
BC850W		50	-	
Collector Emitter Voltage at $I_C = 10\text{ mA}$				
BC846W	$V_{CEO}$	65	-	V
BC847W		45	-	
BC848W		30	-	
BC849W		30	-	
BC850W		45	-	
Emitter Base Voltage at $I_E = 1\text{ }\mu\text{A}$				
BC846W	$V_{EBO}$	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 0.6	V
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 0.77	V
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