



Micro Commercial Components



Micro Commercial Components  
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# BC846AW/BW BC847AW/BW/CW BC848AW/BW/CW

## Features

- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Low current (max. 100mA)
- Low voltage (max. 65V)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Halogen free available upon request by adding suffix "-HF"

## Maximum Ratings

- Operating temperature : -65°C to +150°C
- Storage temperature : -65°C to +150°C
- Thermal resistance from junction to ambient\*: 625K/W
- Marking: BC846AW---1A ; BC846BW---1B  
BC847AW---1E ; BC847BW---1F ; BC847CW---1G  
BC848AW---1JS/1J ; BC848BW---1KS/1K ; BC848CW---1LS/1L

## Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
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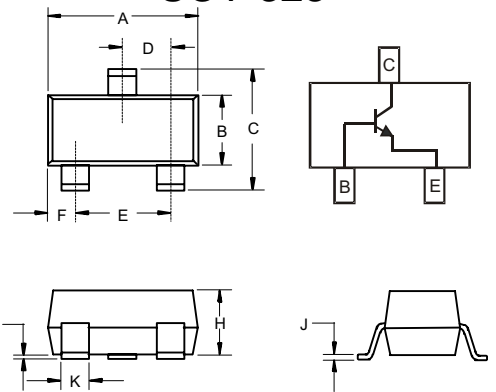
### OFF CHARACTERISTICS

$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ( $I_C=10\mu A$ , $I_E=0$ ) BC846AW/BW BC847AW/BW/CW BC848AW/BW/CW	---	80 50 30	Vdc
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage ( $I_C=10mA$ , $I_B=0$ ) BC846AW/BW BC847AW/BW/CW BC848AW/BW/CW	---	65 45 30	Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ( $I_E=1\mu A$ , $I_C=0$ ) BC846AW/BW, BC847AW/BW/CW BC848AW/BW/CW	---	6 5	Vdc
$I_C$	Collector Current (DC)	---	100	mAdc
$I_{CM}$	Peak Collector Current	---	200	mAdc
$I_{BM}$	Peak Base Current	---	200	mAdc

\* Transistor mounted on an FR4 printed-circuit board

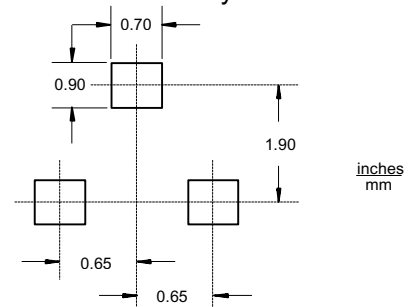
## NPN General Purpose Transistors

### SOT-323



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	.071	.087	1.80	2.20	
B	.045	.053	1.15	1.35	
C	.083	.096	2.10	2.45	
D	.026 Nominal		0.65 Nominal		
E	.047	.055	1.20	1.40	
F	.012	.016	.30	.40	
G	.000	.004	.000	.100	
H	.035	.039	.90	1.00	
J	.004	.010	.100	.250	
K	.006	.016	.15	.40	

### Suggested Solder Pad Layout



**ON CHARACTERISTICS**

Symbol	Parameter	Min	Typ	Max	Units
$I_{CBO}$	Collector-base Cut-off Current ( $I_{CE}=0, V_{CB}=30Vdc$ ) ( $I_{CE}=0, V_{CB}=30Vdc, T_j=150^{\circ}C$ )	---	---	15	nA
		---	---	5	$\mu A$
$I_{CEO}$	Emitter-base Cut-off Current ( $I_C=0, V_{EB}=5Vdc$ )	---	---	100	nA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ( $I_C=10mAdc, I_B=0.5mAdc$ ) ( $I_C=100mAdc, I_B=5mAdc^*$ )	---	90	250	mVdc
		---	200	600	mVdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ( $I_C=10mAdc, I_B=0.5mAdc$ ) ( $I_C=100mAdc, I_B=5mAdc^*$ )	---	700	---	mVdc
		---	900	---	mVdc
$h_{FE}$	DC Current Gain ( $I_C=10\mu A; V_{CE}=5V$ )	---	90	---	
	BC846AW; BC847AW; BC848AW	---	150	---	
	BC846BW; BC847BW; BC848BW	---	270	---	
	BC847CW; BC848CW	---		---	
	DC Current Gain ( $I_C=2mA; V_{CE}=5V$ )				
	BC846AW; BC847AW; BC848AW	110	180	220	
	BC846BW; BC847BW; BC848BW	200	290	450	
	BC847CW; BC848CW	420	520	800	
$V_{BE}$	Base-emitter Voltage ( $I_C=2mAdc, V_{CE}=5V$ ) ( $I_C=10mAdc, V_{CE}=5V$ )	580	660	700	mVdc
		---	---	770	mVdc
$C_C$	Collector Capacitance ( $V_{CB}=10V; I_E=I_C=0; f=1MHz$ )	---	---	4.5	pF
$f_T$	Transition Frequency ( $V_{CE}=5V; I_C=10mA; f=100MHz$ )	100	---	---	MHz
F	Noise Figure ( $V_{CE}=5V; I_C=200\mu A; f=1KHz; B=200Hz; R_s=2K\Omega$ )	---	---	10	dB

\* Pulse test:  $t_p \leq 300\mu s; \delta \leq 0.02$

**Typical Characteristics**

846AW, BW; BC847AW, BW, CW; BC848AW, BW, CW

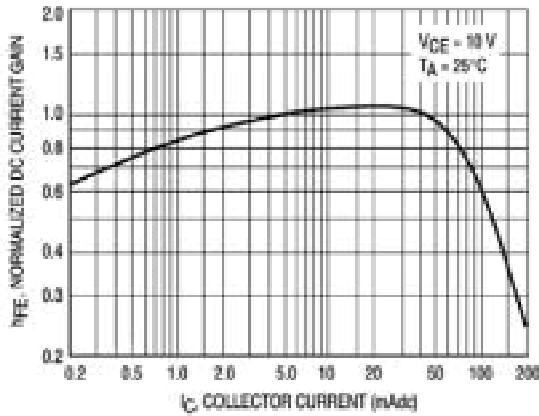


Figure 1. Normalized DC Current Gain

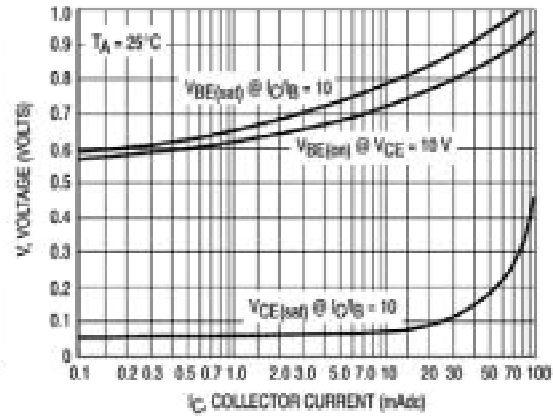


Figure 2. "Saturation" and "On" Voltages

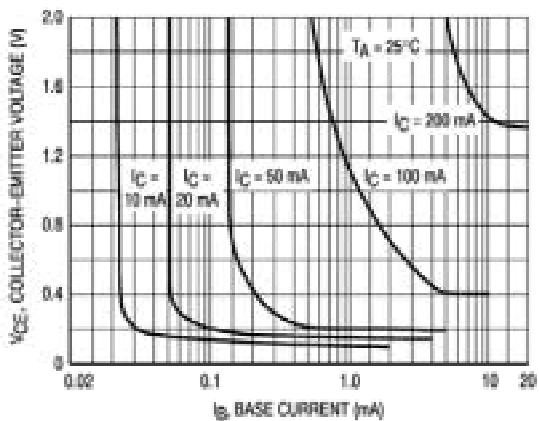


Figure 3. Collector Saturation Region

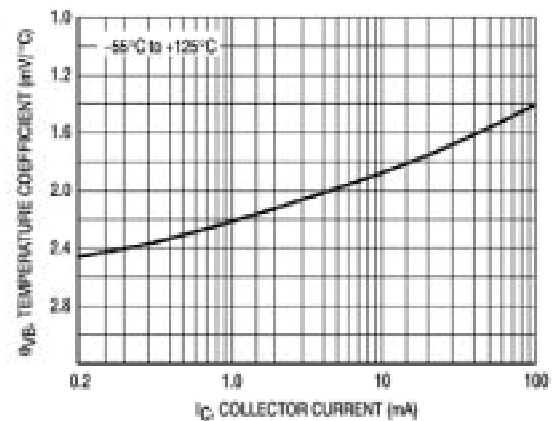


Figure 4. Base-Emitter Temperature Coefficient

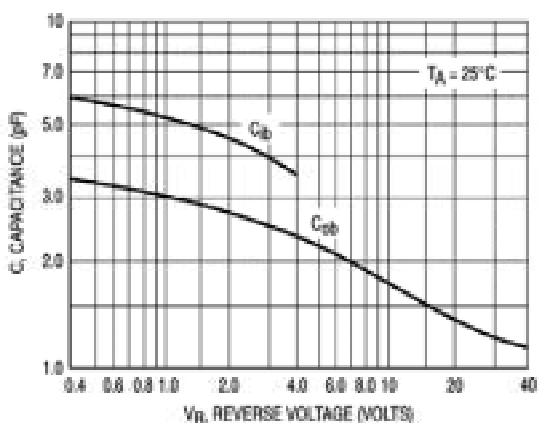


Figure 5. Capacitances

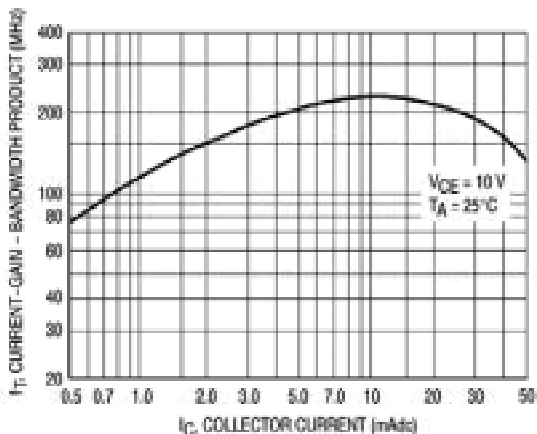


Figure 6. Current-Gain - Bandwidth Product

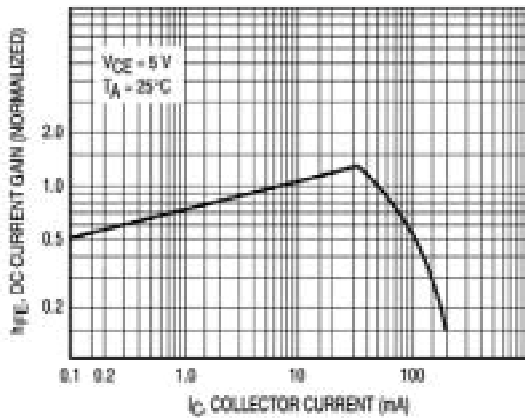


Figure 7. DC Current Gain

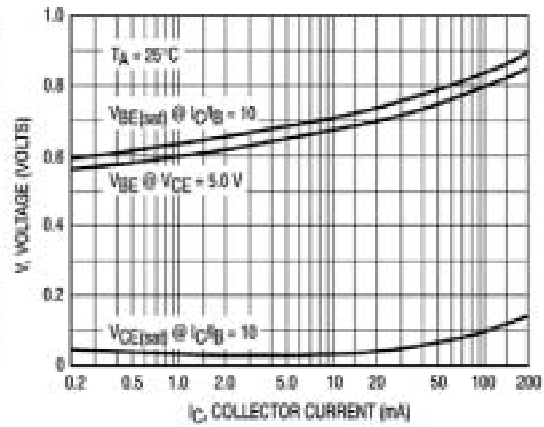


Figure 8. "On" Voltage

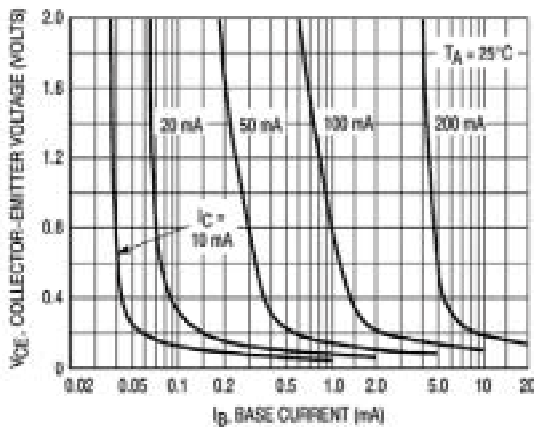


Figure 9. Collector Saturation Region

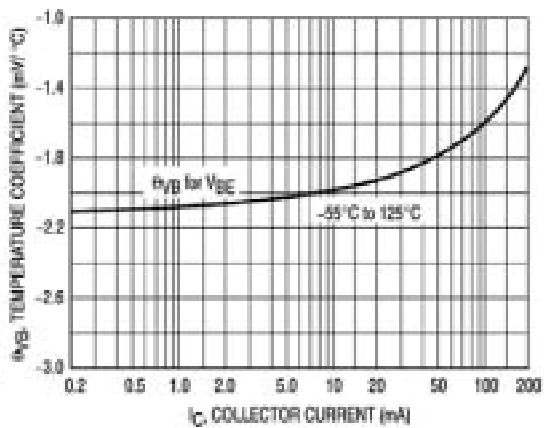


Figure 10. Base-Emitter Temperature Coefficient

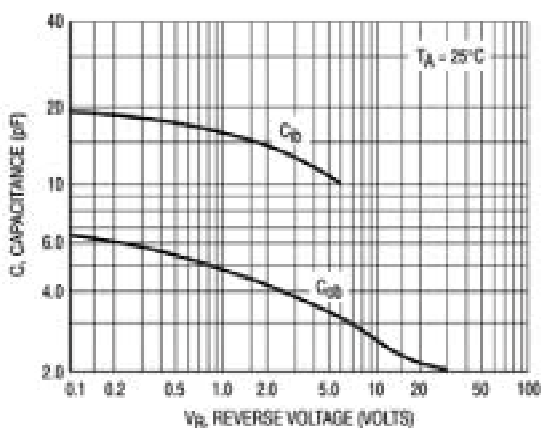


Figure 11. Capacitance

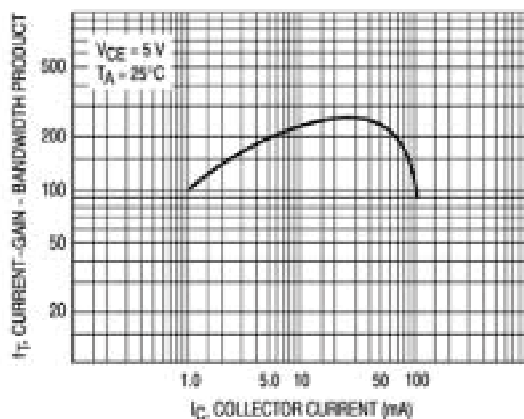


Figure 12. Current-Gain - Bandwidth Product



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### Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel; 3Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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