



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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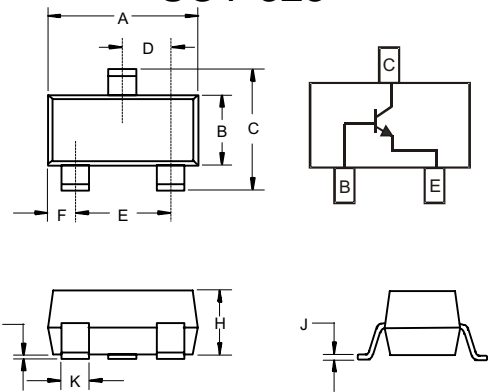
**OFF CHARACTERISTICS**

$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ( $I_C=10\mu A_{dc}$ , $I_E=0$ )			Vdc
	BC846AW/BW	---	80	
	BC847AW/BW/CW	---	50	
	BC848AW/BW/CW	---	30	
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage ( $I_C=10mAdc$ , $I_B=0$ )			Vdc
	BC846AW/BW	---	65	
	BC847AW/BW/CW	---	45	
	BC848AW/BW/CW	---	30	
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ( $I_E=1\mu A_{dc}$ , $I_C=0$ )			Vdc
	BC846AW/BW, BC847AW/BW/CW	---	6	
	BC848AW/BW/CW	---	5	
$I_C$	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

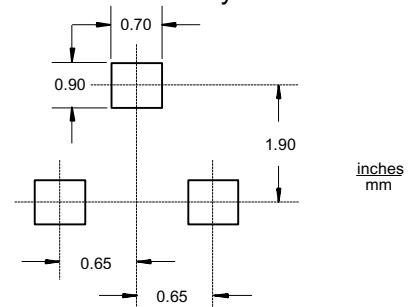
**NPN  
General Purpose  
Transistors**

**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 <sub>CBO</sub>	Collector-base Cut-off Current (I <sub>CE</sub> =0, V <sub>CB</sub> =30Vdc) (I <sub>CE</sub> =0, V <sub>CB</sub> =30Vdc, T <sub>J</sub> =150°C)	---	---	15	nA
		---	---	5	μA
I <sub>EBO</sub>	Emitter-base Cut-off Current (I <sub>C</sub> =0, V <sub>EB</sub> =5Vdc)	---	---	100	nA
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage (I <sub>C</sub> =10mAdc, I <sub>B</sub> =0.5mAdc) (I <sub>C</sub> =100mAdc, I <sub>B</sub> =5mAdc*)	---	90	250	mVdc
		---	200	600	mVdc
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage (I <sub>C</sub> =10mAdc, I <sub>B</sub> =0.5mAdc) (I <sub>C</sub> =100mAdc, I <sub>B</sub> =5mAdc*)	---	700	---	mVdc
		---	900	---	mVdc
h <sub>FE</sub>	DC Current Gain (I <sub>C</sub> =10μA; V <sub>CE</sub> =5V) BC846AW; BC847AW; BC848AW BC846BW; BC847BW; BC848BW BC847CW; BC848CW	---	90	---	
		---	150	---	
		---	270	---	
	DC Current Gain (I <sub>C</sub> =2mA; V <sub>CE</sub> =5V) BC846AW; BC847AW; BC848AW BC846BW; BC847BW; BC848BW BC847CW; BC848CW	110	180	220	
		200	290	450	
		420	520	800	
V <sub>BE</sub>	Base-emitter Voltage (I <sub>C</sub> =2mAdc, V <sub>CE</sub> =5V) (I <sub>C</sub> =10mAdc, V <sub>CE</sub> =5V)	580 ---	660 ---	700 770	mVdc mVdc
C <sub>C</sub>	Collector Capacitance (V <sub>CB</sub> =10V; I <sub>E</sub> =I <sub>B</sub> =0; f=1MHz)	---	---	4.5	pF
f <sub>T</sub>	Transition Frequency (V <sub>CE</sub> =5V; I <sub>C</sub> =10mA; f=100MHz)	100	---	---	MHz
F	Noise Figure (V <sub>CE</sub> =5V; I <sub>C</sub> =200μA; f=1KHz; B=200Hz; R <sub>S</sub> =2KΩ)	---	---	10	dB

\* Pulse test: t<sub>p</sub> ≤ 300μs; δ ≤ 0.02

**Typical Characteristics**

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

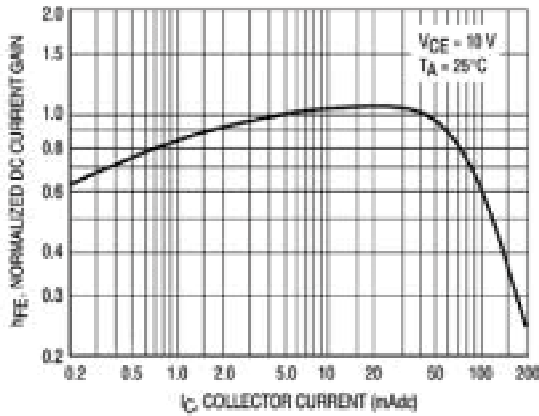


Figure 1. Normalized DC Current Gain

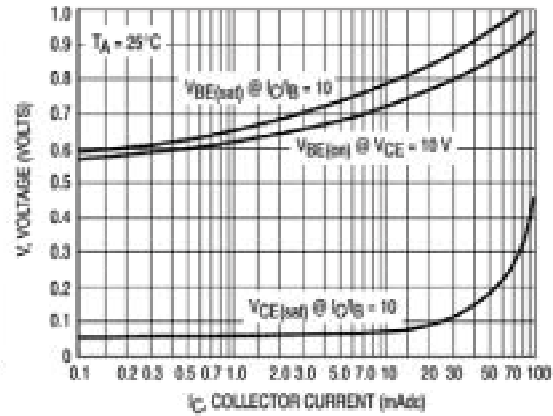


Figure 2. "Saturation" and "On" Voltages

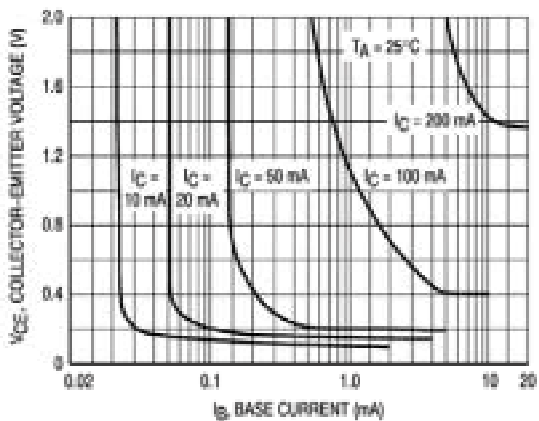


Figure 3. Collector Saturation Region

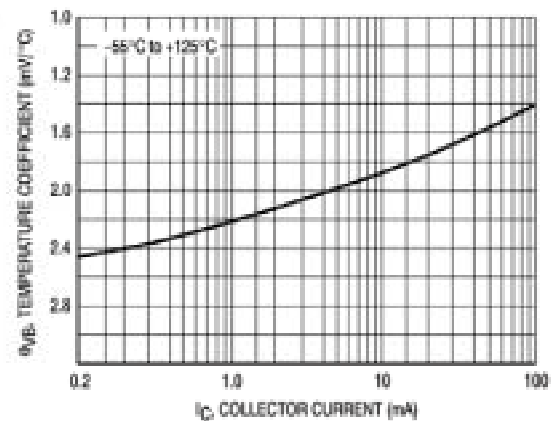


Figure 4. Base-Emitter Temperature Coefficient

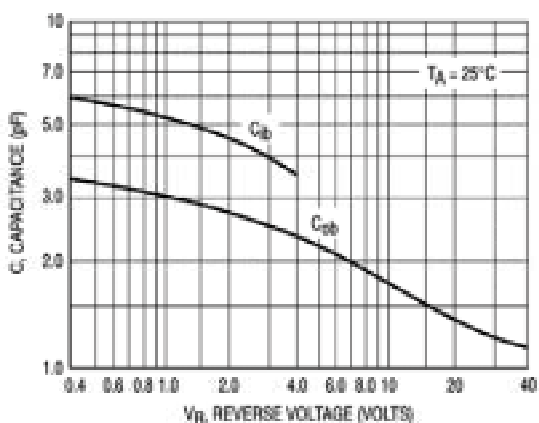


Figure 5. Capacitances

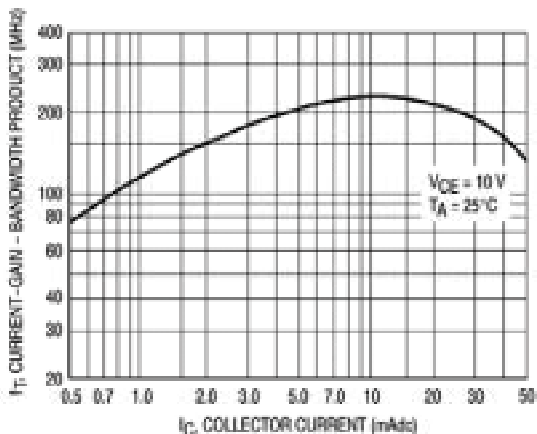


Figure 6. Current-Gain - Bandwidth Product

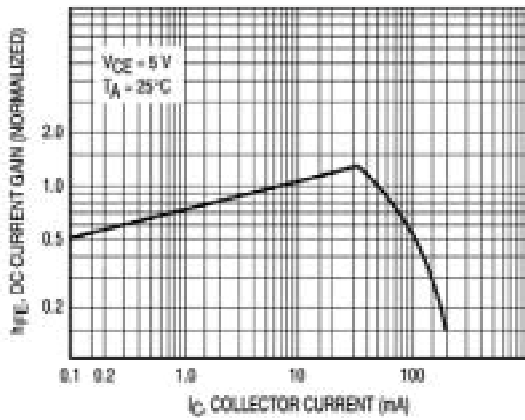


Figure 7. DC Current Gain

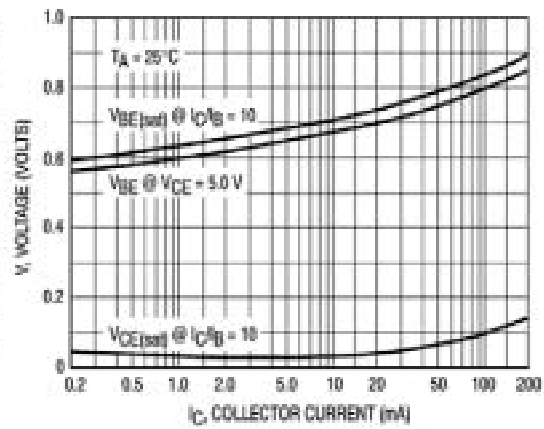


Figure 8. "On" Voltage

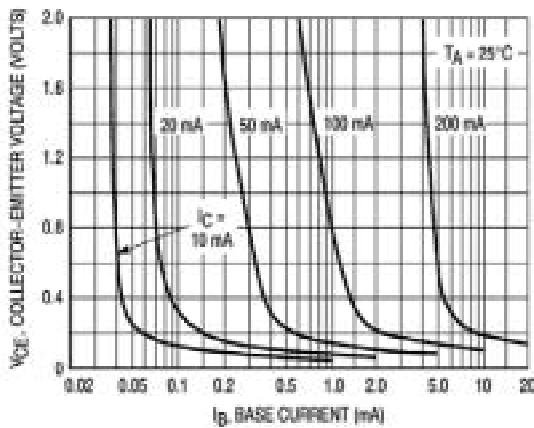


Figure 9. Collector Saturation Region

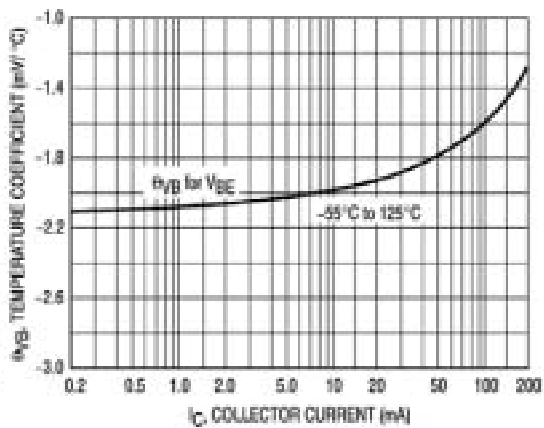


Figure 10. Base-Emitter Temperature Coefficient

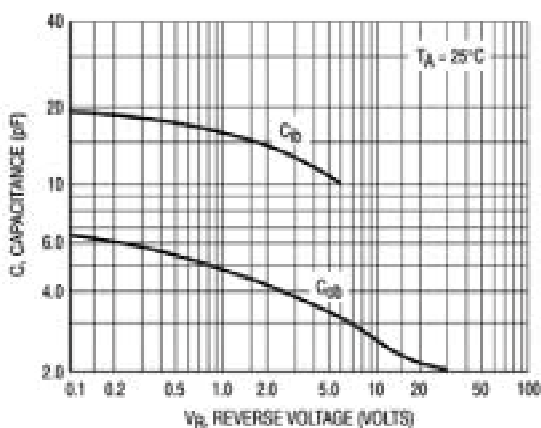


Figure 11. Capacitance

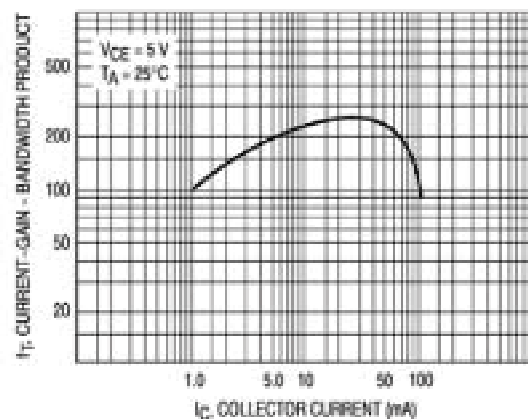


Figure 12. Current-Gain - Bandwidth Product



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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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