

# BC847CW-TP Datasheet

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DiGi Electronics Part Number	BC847CW-TP-DG
Manufacturer	<a href="#">Micro Commercial Co</a>
Manufacturer Product Number	BC847CW-TP
Description	TRANS NPN 45V 0.1A SOT323
Detailed Description	Bipolar (BJT) Transistor NPN 45 V 100 mA 100MHz Surface Mount SOT-323

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## Purchase and inquiry

Manufacturer Product Number:

BC847CW-TP

Series:

-

Transistor Type:

NPN

Voltage - Collector Emitter Breakdown (Max):

45 V

Current - Collector Cutoff (Max):

100nA

Frequency - Transition:

100MHz

Mounting Type:

Surface Mount

Supplier Device Package:

SOT-323

Manufacturer:

Micro Commercial Co

Product Status:

Active

Current - Collector (Ic) (Max):

100 mA

Vce Saturation (Max) @ Ib, Ic:

600mV @ 5mA, 100mA

DC Current Gain (hFE) (Min) @ Ic, Vce:

420 @ 2mA, 5V

Operating Temperature:

-65°C ~ 150°C (TJ)

Package / Case:

SC-70, SOT-323

Base Product Number:

BC847

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99



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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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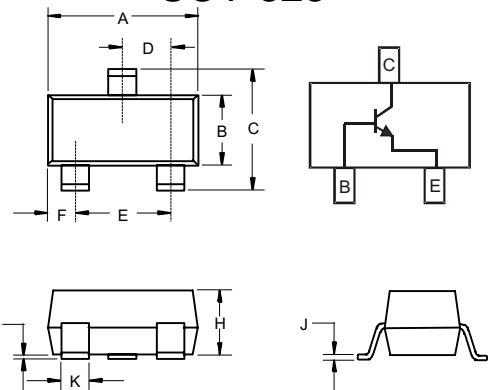
### OFF CHARACTERISTICS

$V_{(BR)CBO}$	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

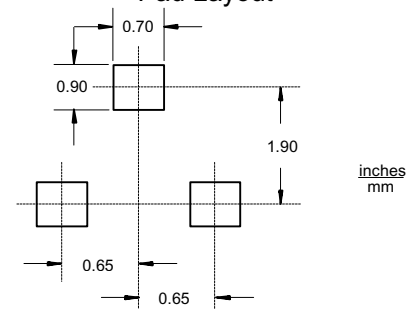
**NPN**  
**General Purpose**  
**Transistors**

## SOT-323



DIM	DIMENSIONS				NOTE
	INCHES		MM		
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





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**ON CHARACTERISTICS**

Symbol	Parameter	Min	Typ	Max	Units
$I_{CBO}$	Collector-base Cut-off Current ( $I_{CE}=0, V_{CB}=30V_{dc}$ ) ( $I_{CE}=0, V_{CB}=30V_{dc}, T_J=150^{\circ}C$ )	---	---	15	nA
		---	---	5	$\mu A$
$I_{CEO}$	Emitter-base Cut-off Current ( $I_C=0, V_{EB}=5V_{dc}$ )	---	---	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 ( $I_C=10\mu A; V_{CE}=5V$ ) BC846AW; BC847AW; BC848AW BC846BW; BC847BW; BC848BW BC847CW; BC848CW	---	90	---	
		---	150	---	
		---	270	---	
	DC Current Gain ( $I_C=2mA; V_{CE}=5V$ ) BC846AW; BC847AW; BC848AW BC846BW; BC847BW; BC848BW BC847CW; BC848CW	110	180	220	
200		290	450		
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

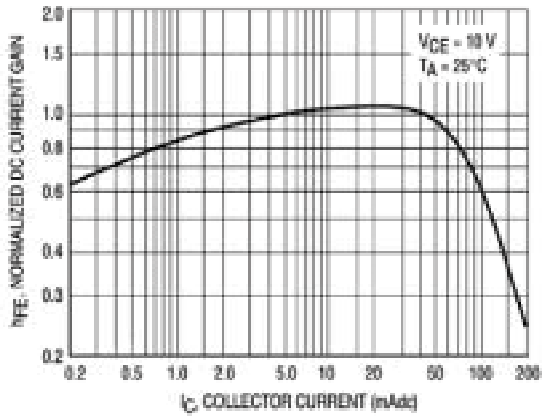


Figure 1. Normalized DC Current Gain

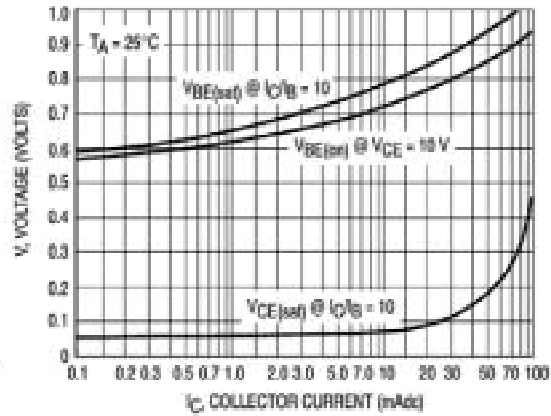


Figure 2. "Saturation" and "On" Voltages

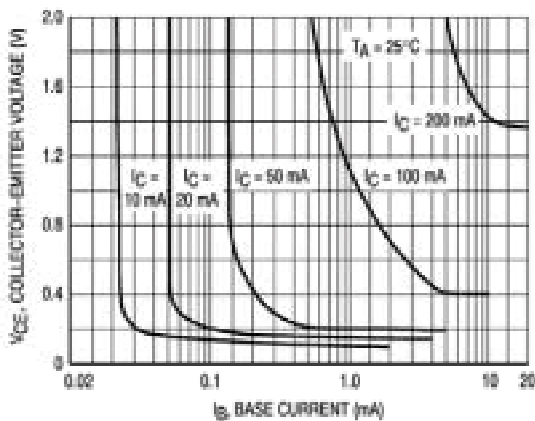


Figure 3. Collector Saturation Region

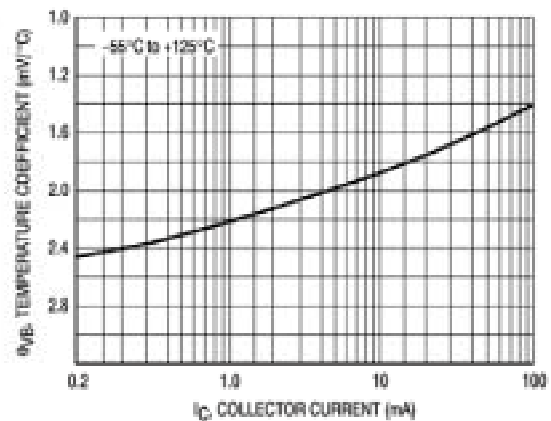


Figure 4. Base-Emitter Temperature Coefficient

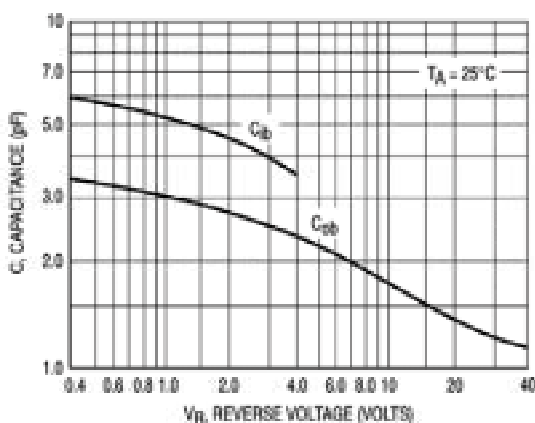


Figure 5. Capacitances

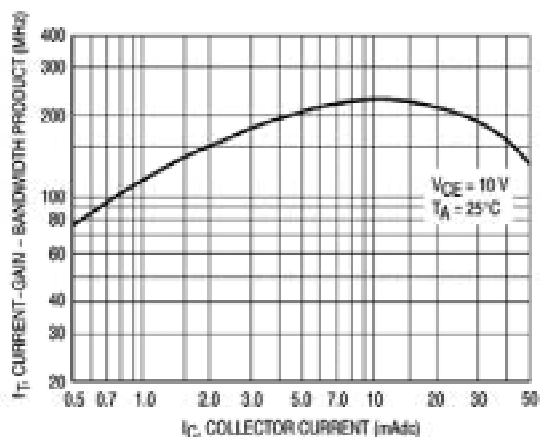


Figure 6. Current-Gain - Bandwidth Product

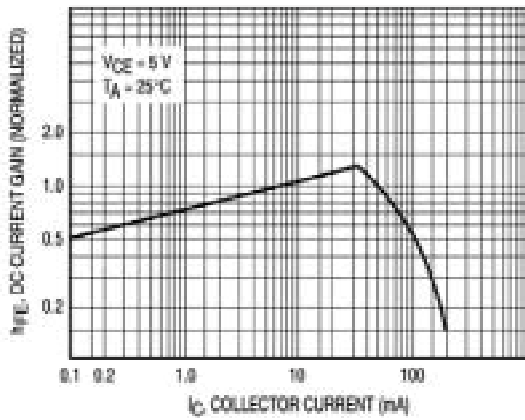


Figure 7. DC Current Gain

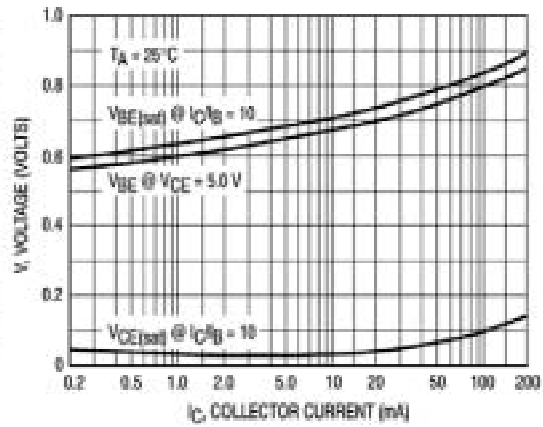


Figure 8. "On" Voltage

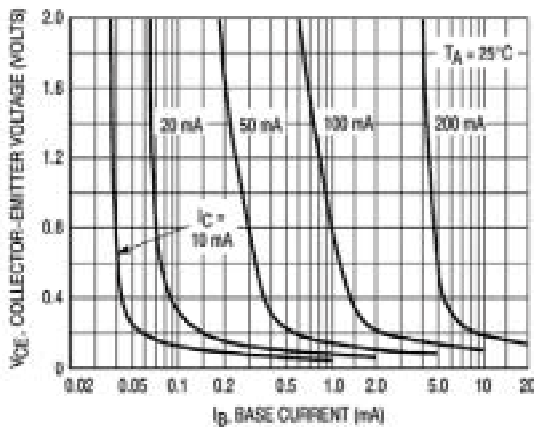


Figure 9. Collector Saturation Region

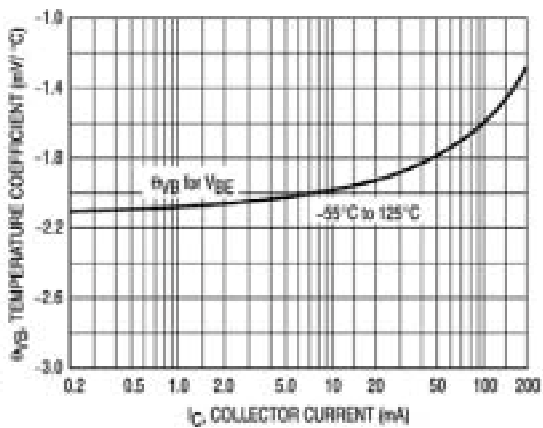


Figure 10. Base-Emitter Temperature Coefficient

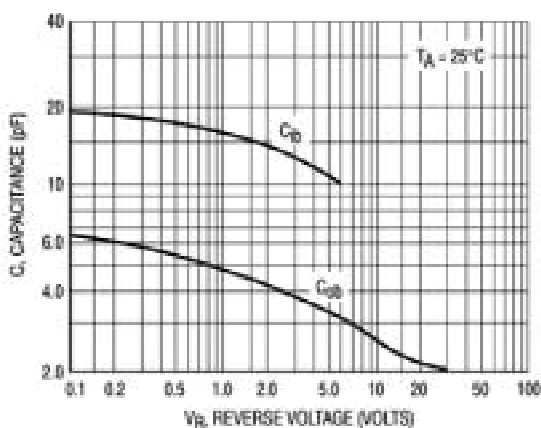


Figure 11. Capacitance

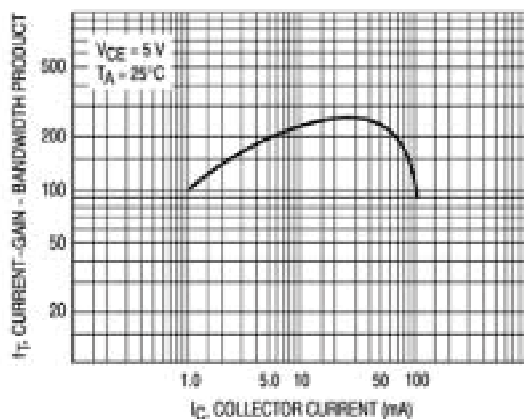


Figure 12. Current-Gain - Bandwidth Product



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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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