

**Features**

- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

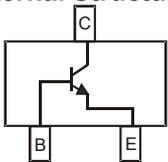
**Maximum Ratings @ 25°C Unless Otherwise Specified**

- Operating Junction Temperature Range: -65°C to +150°C
- Storage Temperature Range: -65°C to +150°C
- Maximum Thermal Resistance: 625°C/W Junction to Ambient (Note2)

Parameter	Symbol	Rating	Unit
Collector-Base Voltage BC846AW, BC846BW BC847AW, BC847BW, BC847CW BC848AW, BC848BW, BC848CW	$V_{CBO}$	80 50 30	V
Collector-Emitter Voltage BC846AW, BC846BW BC847AW, BC847BW, BC847CW BC848AW, BC848BW, BC848CW	$V_{CEO}$	65 45 30	V
Emitter-Base Voltage BC846AW, BC846BW BC847AW, BC847BW, BC847CW BC848AW, BC848BW, BC848CW	$V_{EBO}$	6 6 5	V
Collector Current	$I_C$	100	mA
Peak Collector Current	$I_{CM}$	200	mA
Peak Base Current	$I_{BM}$	200	mA
Power Dissipation	$P_D$	200	mW

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

**Internal Structure**

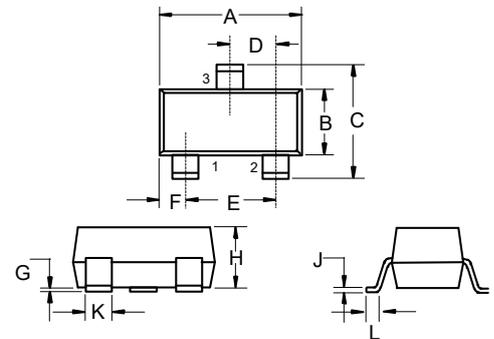


**Marking:**

BC846AW:1A; BC846BW:1B  
BC847AW:1E; BC847BW:1F; BC847CW:1G  
BC848AW:1J; BC848BW:1K; BC848C:1L

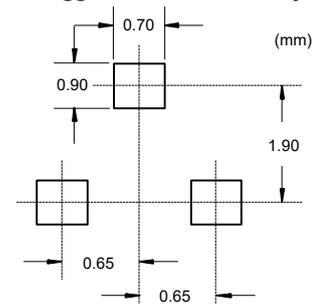
**NPN  
General Purpose  
Transistors**

**SOT-323**



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.071	0.087	1.80	2.20	
B	0.045	0.053	1.15	1.35	
C	0.083	0.096	2.10	2.45	
D	0.026		0.65		TYP.
E	0.047	0.055	1.20	1.40	
F	0.012	0.016	0.30	0.40	
G	0.000	0.004	0.00	0.10	
H	0.035	0.044	0.90	1.10	
J	0.002	0.010	0.05	0.25	
K	0.006	0.016	0.15	0.40	
L	0.010	0.018	0.26	0.46	

**Suggested Solder Pad Layout**



## Electrical Characteristics @ 25°C Unless Otherwise Specified

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage BC846AW,BC846BW BC847AW,BC847BW,BC847CW BC848AW,BC848BW,BC848CW	$V_{(BR)CBO}$	80 50 30			V	$I_C=10\mu A, I_E=0$
Collector-Emitter Breakdown Voltage BC846AW,BC846BW BC847AW,BC847BW,BC847CW BC848AW,BC848BW,BC848CW	$V_{(BR)CEO}$	65 45 30			V	$I_C=10mA, I_B=0$
Emitter-Base Breakdown Voltage BC846AW,BC846BW BC847AW,BC847BW,BC847CW BC848AW,BC848BW,BC848CW	$V_{(BR)EBO}$	6 6 5			V	$I_E=1\mu A, I_C=0$
Collector-Base Cutoff Current	$I_{CBO}$			15	nA	$V_{CB}=30V, I_E=0$
				5	$\mu A$	$V_{CB}=30V, I_E=0, T_J=150^\circ C$
Emitter-Base Cutoff Current	$I_{EBO}$			100	nA	$V_{EB}=5V, I_C=0$
DC Current Gain BC846AW,BC847AW,BC848AW BC846BW,BC847BW,BC848CW BC847CW,BC848CW	$h_{FE(1)}$		90 150 270			$V_{CE}=5V, I_C=10\mu A$
		BC846AW,BC847AW,BC848AW BC846BW,BC847BW,BC848BW BC847CW,BC848CW	$h_{FE(2)}$	110 200 420	180 290 520	220 450 800
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		90	250	mV	$I_C=10mA, I_B=0.5mA$
			200	600	mV	$I_C=100mA, I_B=5mA$ (Note3)
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		700		mV	$I_C=10mA, I_B=0.5mA$
			900		mV	$I_C=100mA, I_B=5mA$ (Note3)
Base-Emitter Voltage	$V_{BE}$	580	660	700	mV	$V_{CE}=5V, I_C=2mA$
				770	mV	$V_{CE}=5V, I_C=10mA$
Transition Frequency	$f_T$	100			MHz	$V_{CE}=5V, I_C=10mA, f=100MHz$
Collector Capacitance	$C_C$			4.5	pF	$V_{CB}=10V, I_E=I_e=0, f=1MHz$
Noise Figure	NF			10	dB	$V_{CE}=5V, I_C=200\mu A$ $R_S=2K\Omega, f=1KHz, BW=200Hz$

Notes: 2. Device Mounted on an FR4 Printed Circuit Board.

 3. Pluse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2.0\%$

**Curve Characteristics**

Fig. 1 - Static Characteristics

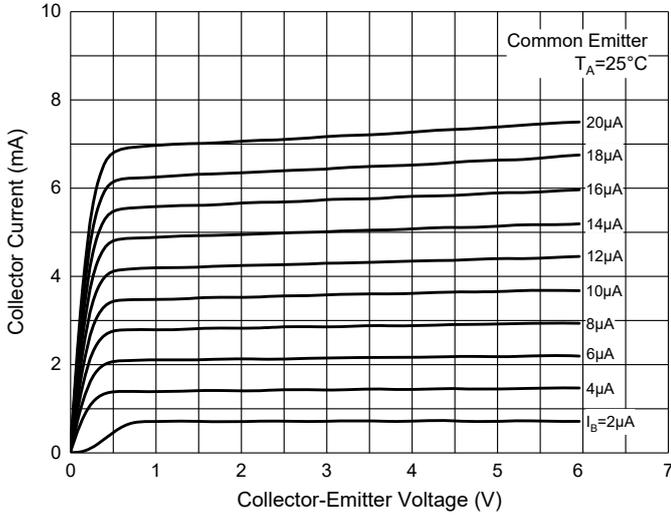


Fig. 2 - DC Current Gain Characteristics

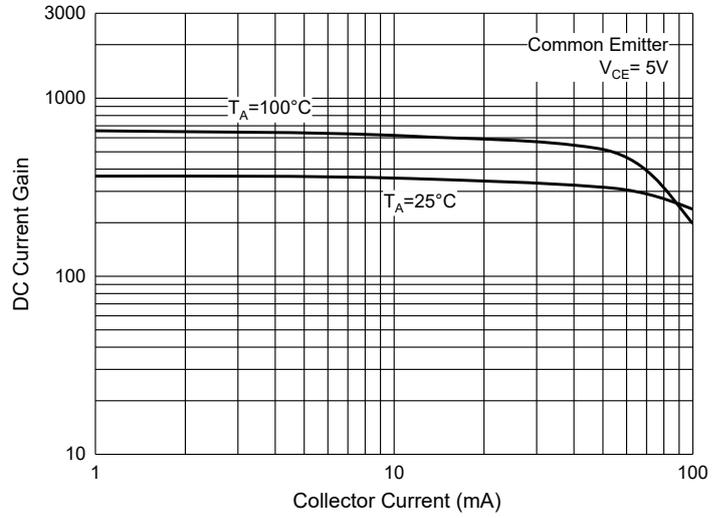


Fig. 3 - Base-Emitter Saturation Voltage Characteristics

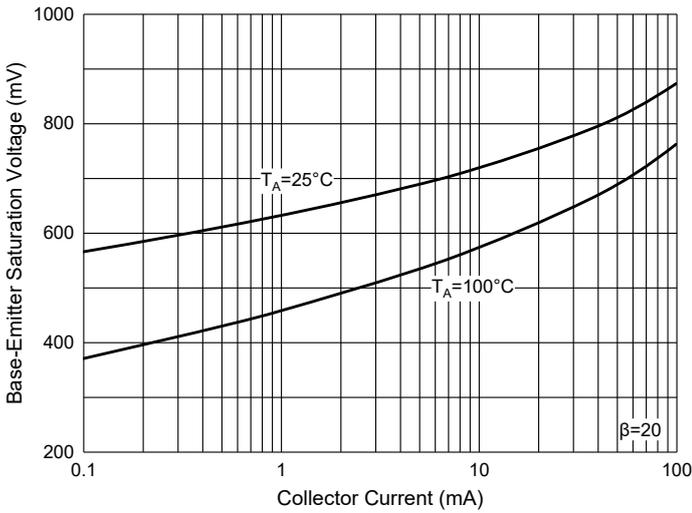


Fig. 4 - Collector-Emitter Saturation Voltage Characteristics

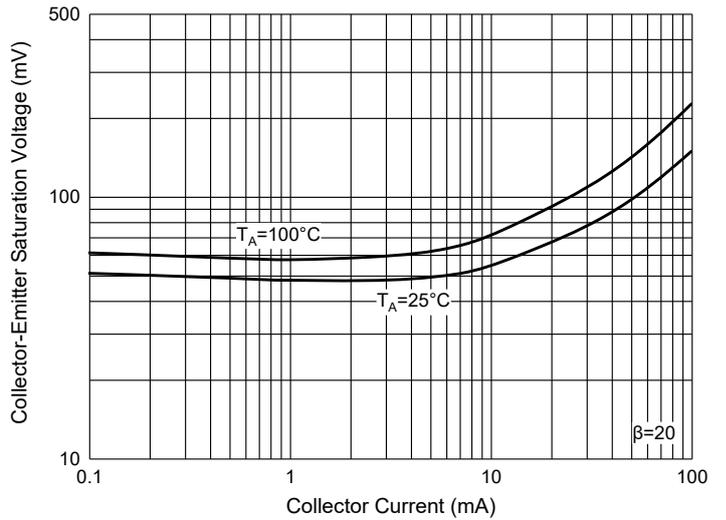


Fig. 5 - Base-Emitter Voltage Characteristics

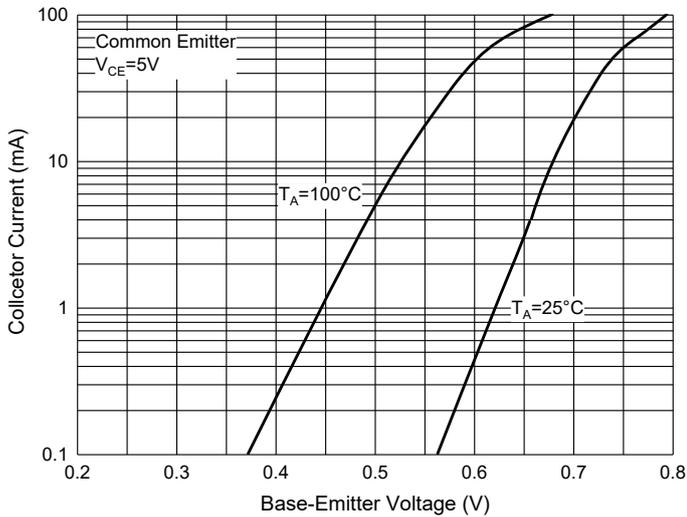
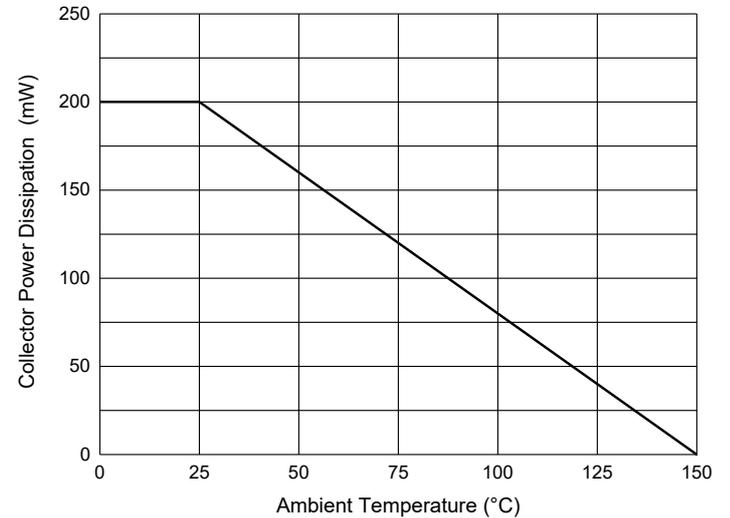


Fig. 6 - Collector Power Derating Curve



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel
Part Number-13P	Tape&Reel: 10Kpcs/Reel

For packaging details, go to our website at <https://www.mccsemi.com/pdf/productpackaging/SOT-323%20Package.pdf>

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