

## Small Signal Product

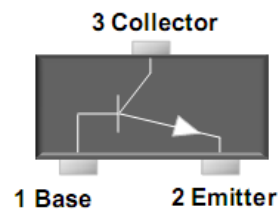
**NPN Transistor**
**FEATURES**

- Low reverse current, high reliability
- Surface device type mounting
- Moisture sensitivity level 1
- Matte Tin(Sn) lead finish with Nickel(Ni) underplate
- Pb free version and RoHS compliant
- Packing code with suffix "G" means green compound (halogen-free)


**SOT-323**

**MECHANICAL DATA**

- Case: SOT-323 small outline plastic package
- Terminal: Matte tin plated, lead free., solderable per MIL-STD-202, Method 208 guaranteed
- High temperature soldering guaranteed : 260°C/10s
- Weight: 5 ± 0.5 mg



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Power Dissipation	P <sub>D</sub>	200	mW
Collector-Base Voltage	V <sub>CBO</sub>	BC846AW/BW/CW	80
		BC847AW/BW/CW	50
		BC848AW/BW/CW	30
		BC849AW/BW/CW	30
		BC850AW/BW/CW	50
Collector-Emitter Voltage	V <sub>CEO</sub>	BC846AW/BW/CW	65
		BC847AW/BW/CW	45
		BC848AW/BW/CW	30
		BC849AW/BW/CW	30
		BC850AW/BW/CW	45
Emitter-Base Voltage	V <sub>EBO</sub>	BC846AW/BW/CW	6
		BC847AW/BW/CW	6
		BC848AW/BW/CW	5
		BC849AW/BW/CW	5
		BC850AW/BW/CW	5
Collector Current	I <sub>C</sub>	0.1	A
Peak Collector Current	I <sub>CM</sub>	0.2	A
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to + 150	°C

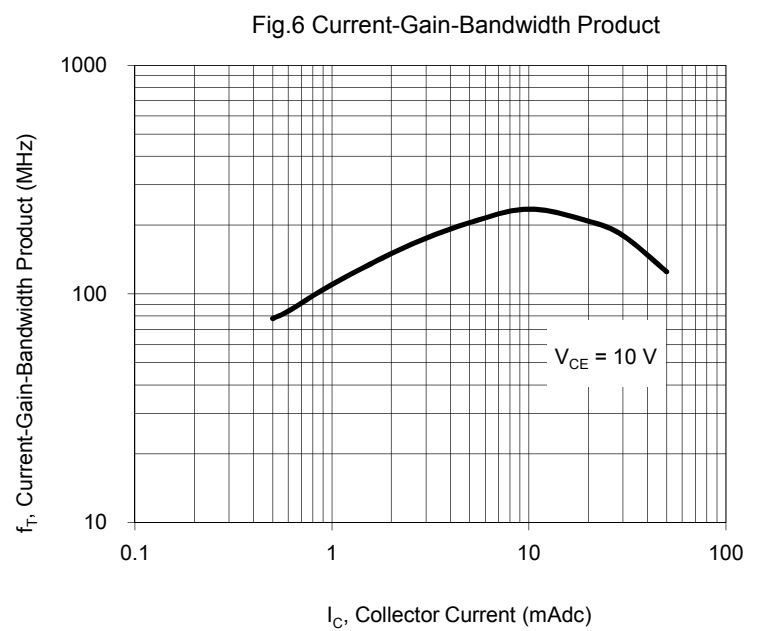
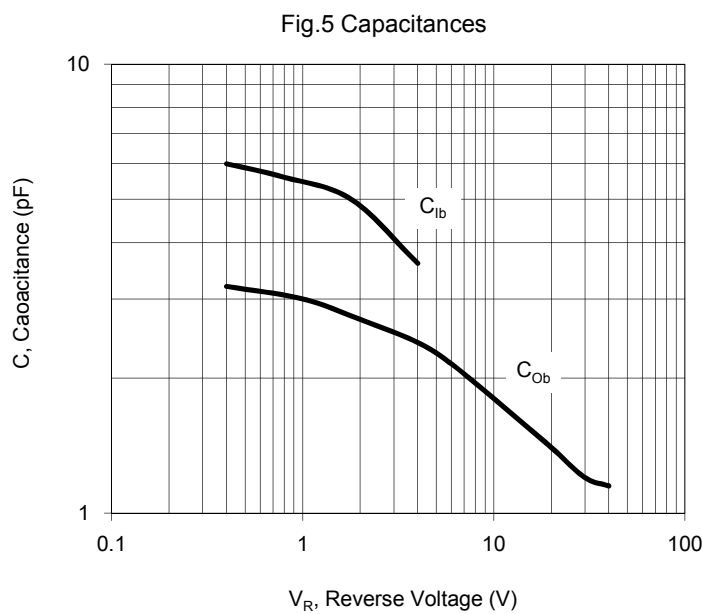
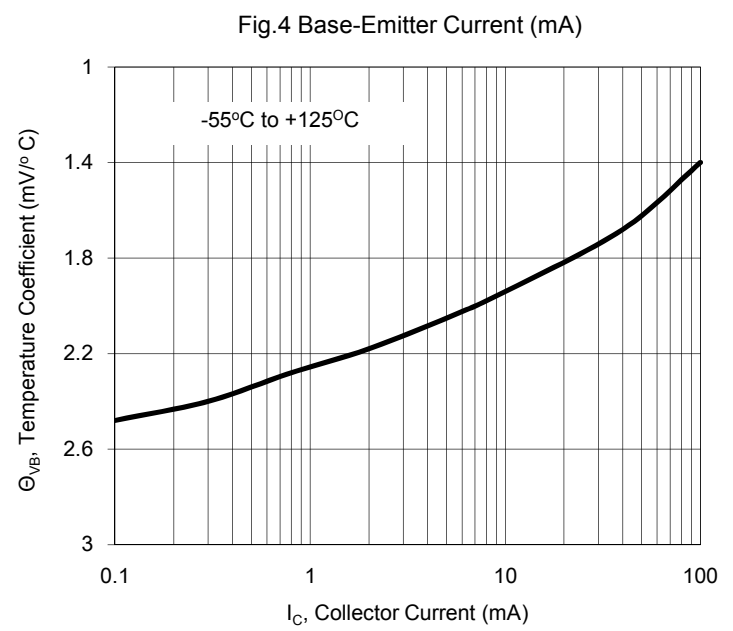
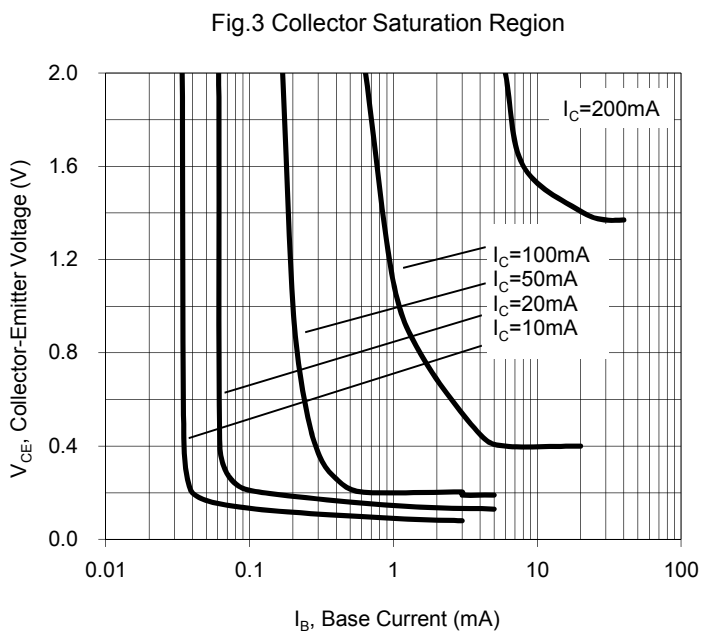
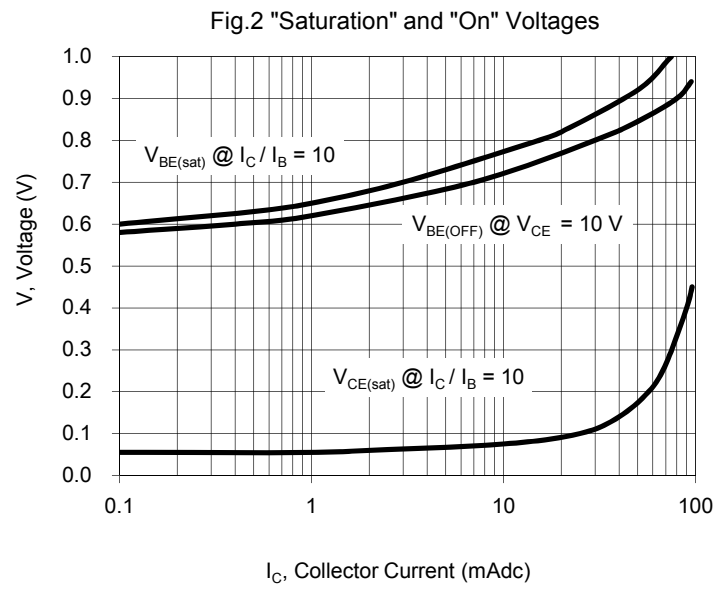
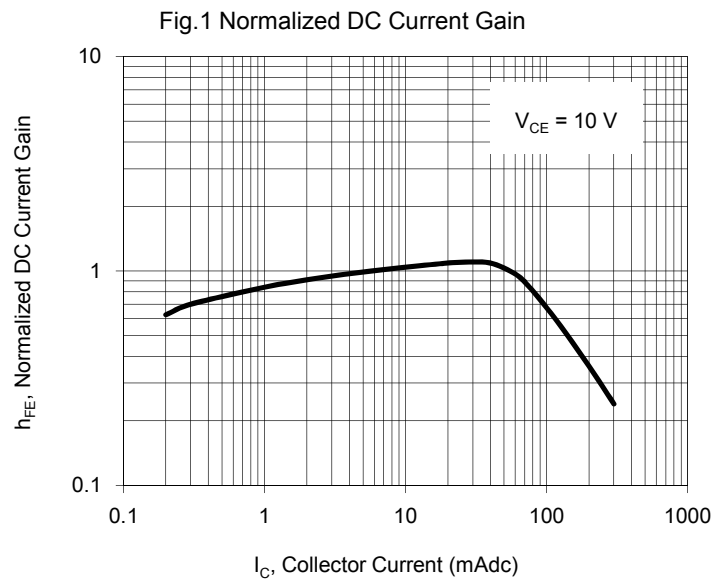
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PARAMETER	SYMBOL	MIN	MAX	UNIT	
Collector-Base Breakdown Voltage at $I_C = 10 \mu\text{A}$	BC846AW/BW/CW	80	-	V	
	BC847AW/BW/CW	50	-		
	BC848AW/BW/CW	30	-		
	BC849AW/BW/CW	30	-		
	BC850AW/BW/CW	50	-		
Collector-Emitter Breakdown Voltage at $I_C = 10 \text{mA}$	BC846AW/BW/CW	65	-	V	
	BC847AW/BW/CW	45	-		
	BC848AW/BW/CW	30	-		
	BC849AW/BW/CW	30	-		
	BC850AW/BW/CW	45	-		
Emitter-Base Breakdown Voltage at $I_E = 1 \mu\text{A}$	BC846AW/BW/CW	6	-	V	
	BC847AW/BW/CW	6	-		
	BC848AW/BW/CW	5	-		
	BC849AW/BW/CW	5	-		
	BC850AW/BW/CW	5	-		
Collector Cut-off Current at $V_{CB} = 30 \text{V}$	$I_{CBO}$	-	15	nA	
Emitter Cut-off Current at $V_{EB} = 5 \text{V}$	$I_{EBO}$	-	100	nA	
DC Current Gain at $V_{CE} = 5 \text{V}$ , $I_C = 2 \text{mA}$	BC846AW - BC850AW	110	220	-	
	BC846BW - BC850BW	200	450	-	
	BC846CW - BC850CW	420	800	-	
Collector-Emitter Saturation Voltage	$I_C = 10 \text{mA}$ , $I_B = 0.5 \text{mA}$ $I_C = 100 \text{mA}$ , $I_B = 5 \text{mA}$	$V_{CE(sat)}$	-	0.25	V
			-	0.60	
Transition Frequency	$V_{CE} = 5 \text{V}$ , $I_C = 10 \text{mA}$ , $f = 100 \text{MHz}$	$f_T$	100	-	MHz
Base Emitter Voltage	$V_{CE} = 5 \text{V}$ , $I_C = 2 \text{mA}$ $V_{CE} = 5 \text{V}$ , $I_C = 10 \text{mA}$	$V_{BE}$	0.58	0.70	V
			-	0.77	
Collector Output Capacitance	$V_{CB} = 10 \text{V}$ , $I_E = 0$ , $f = 1 \text{MHz}$	$C_{ob}$	-	4.50	pF

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RATINGS AND CHARACTERISTICS CURVES

( $T_A=25^\circ\text{C}$  unless otherwise noted)



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Fig.7 DC Collector Current (mA)

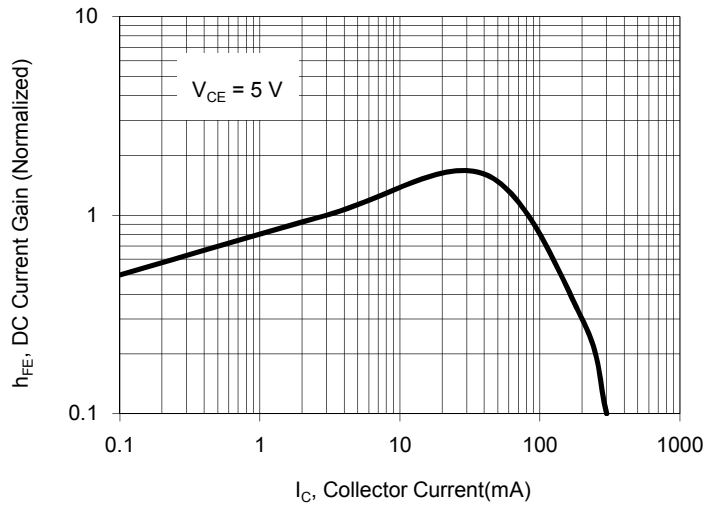


Fig. 8 "On" Voltage

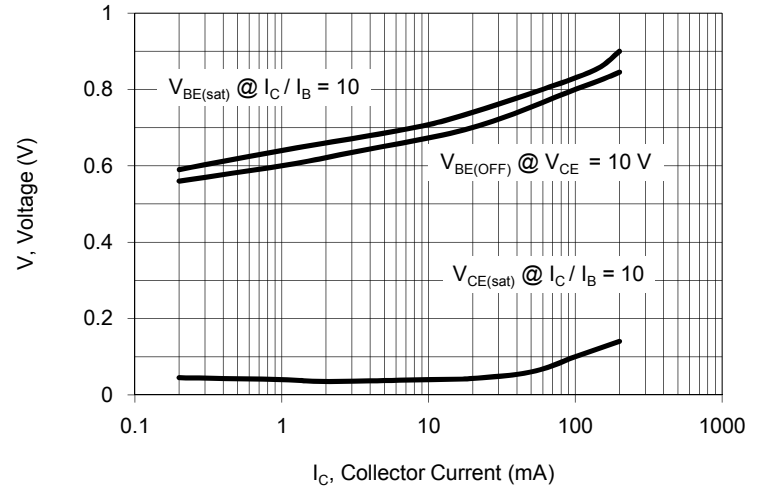


Fig.9 Collector Saturation Region

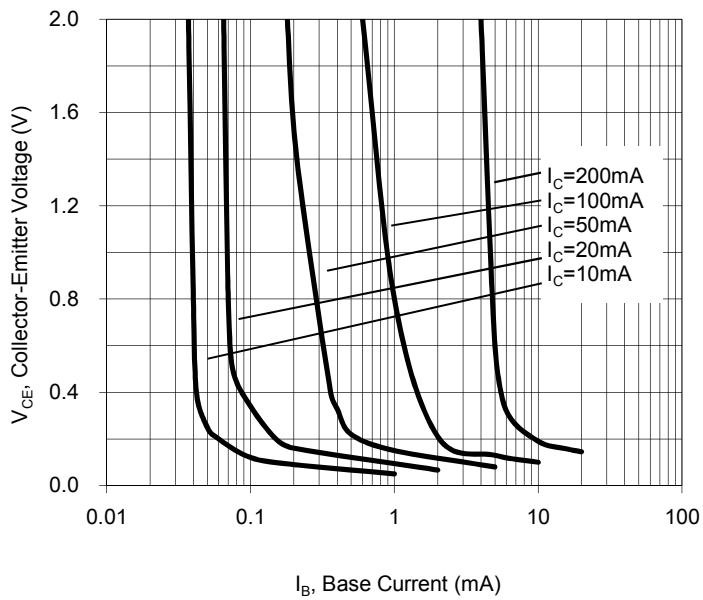


Fig.4 Base-Emitter Temperature Coefficient

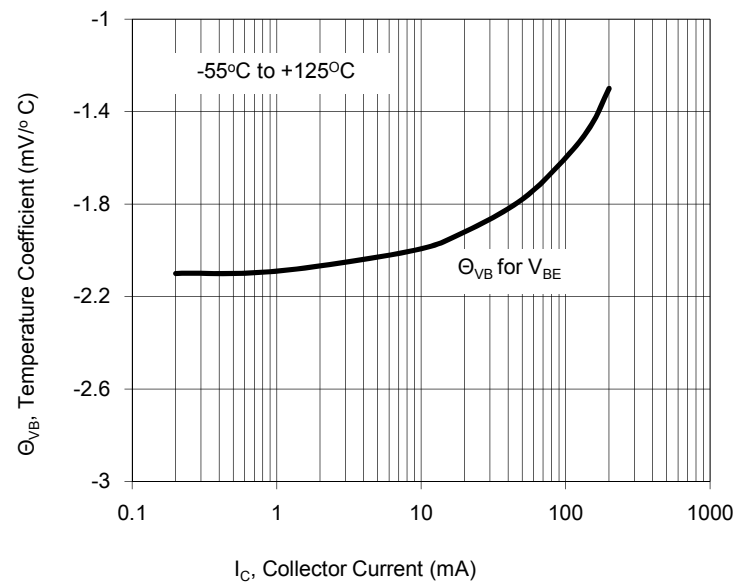


Fig.11 Capacitance

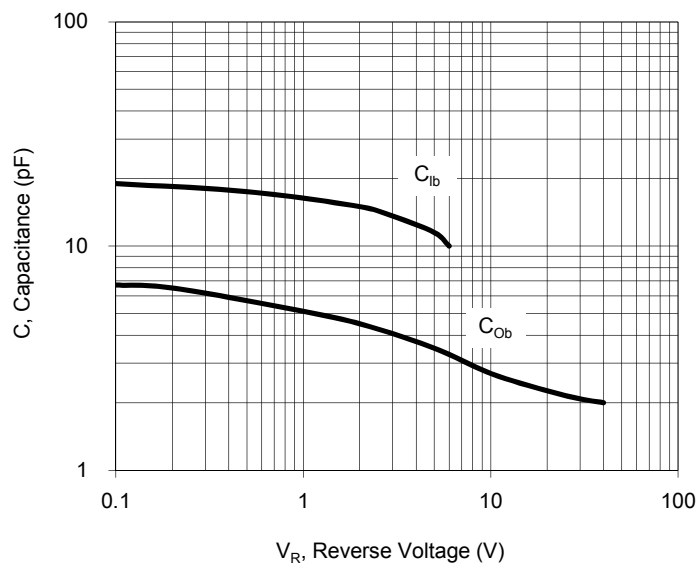
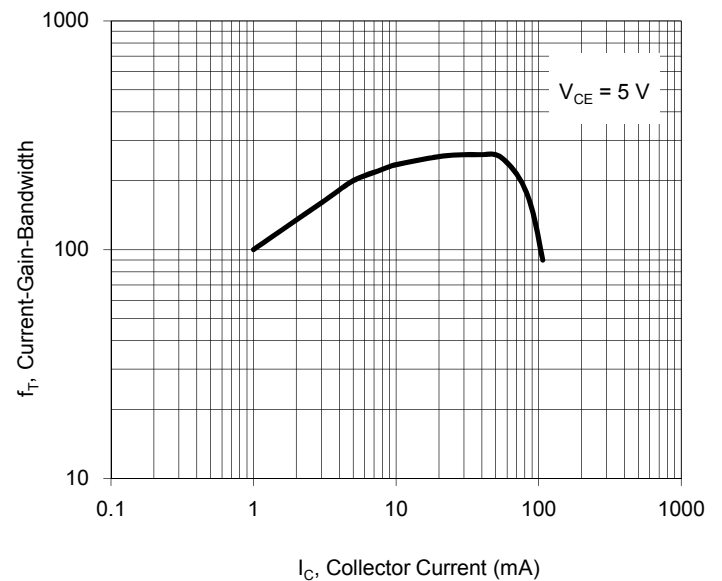


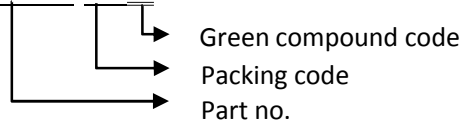
Fig.12 Current-Gain-Bandwidth Product



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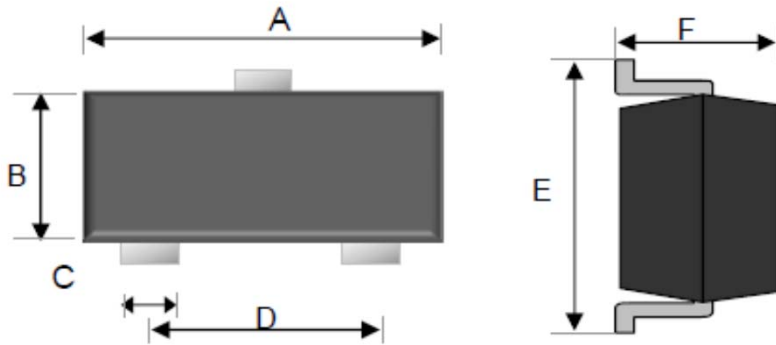
ORDER INFORMATION (EXAMPLE)

**BC846AW RFG**



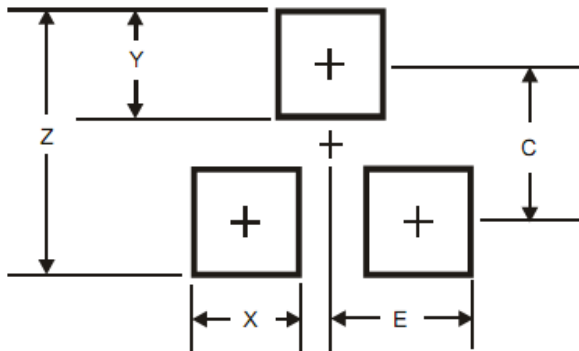
PACKAGE OUTLINE DIMENSIONS

**SOT-323**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.80	2.20	0.071	0.087
B	1.15	1.35	0.045	0.053
C	0.15	0.40	0.006	0.016
D	1.20	1.40	0.047	0.055
E	2.00	2.45	0.079	0.096
F	0.80	1.10	0.031	0.043

SUGGEST PAD LAYOUT



DIM.	Unit (mm)	Unit (inch)
	Typ.	Typ.
Z	2.80	0.110
X	0.70	0.028
Y	0.90	0.035
C	1.90	0.075
E	1.00	0.039

MARKING

Part No.	Marking
BC846AW	1A
BC847AW	1E
BC848AW	1E
BC849AW	1E
BC850AW	1E

Part No.	Marking
BC846BW	1B
BC847BW	1F
BC848BW	1F
BC849BW	1F
BC850BW	1F

Part No.	Marking
BC846CW	1C
BC847CW	1G
BC848CW	1G
BC849CW	1G
BC850CW	1G

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