



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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## Small Signal Product

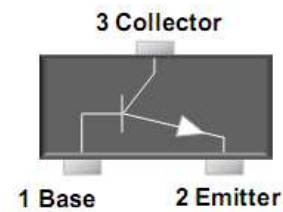
**NPN Transistor**
**FEATURES**

- 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

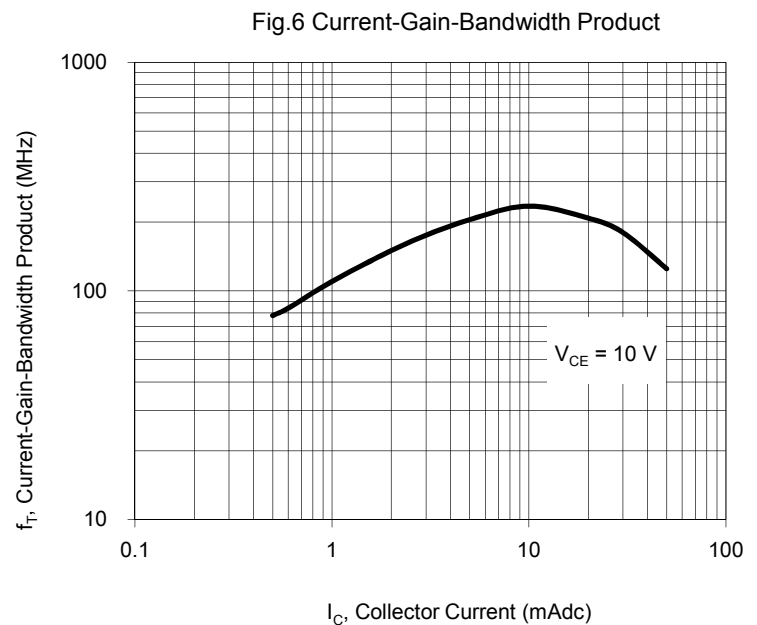
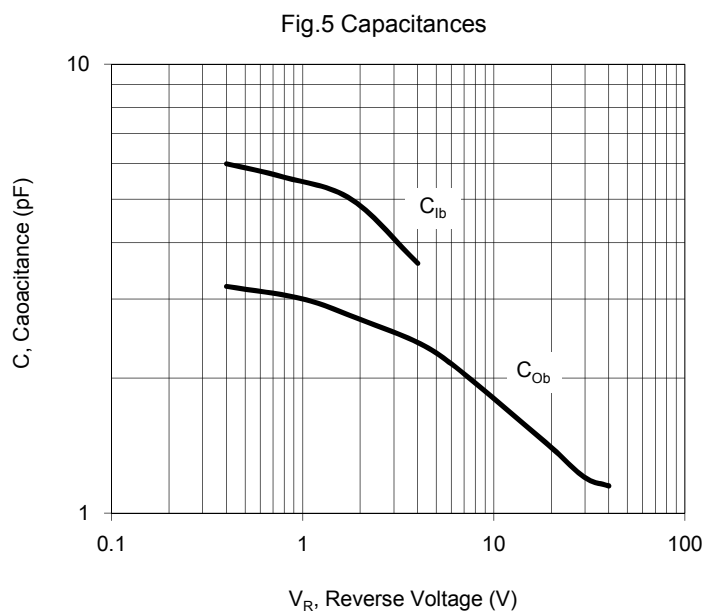
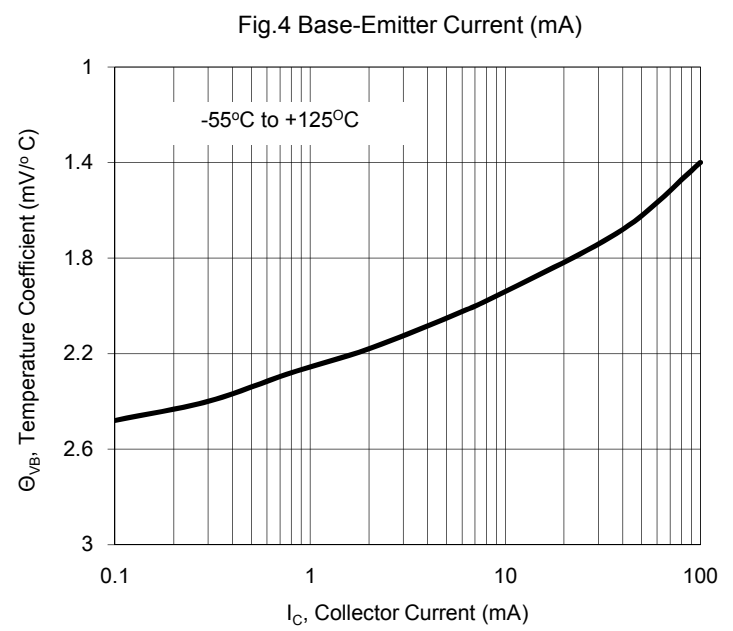
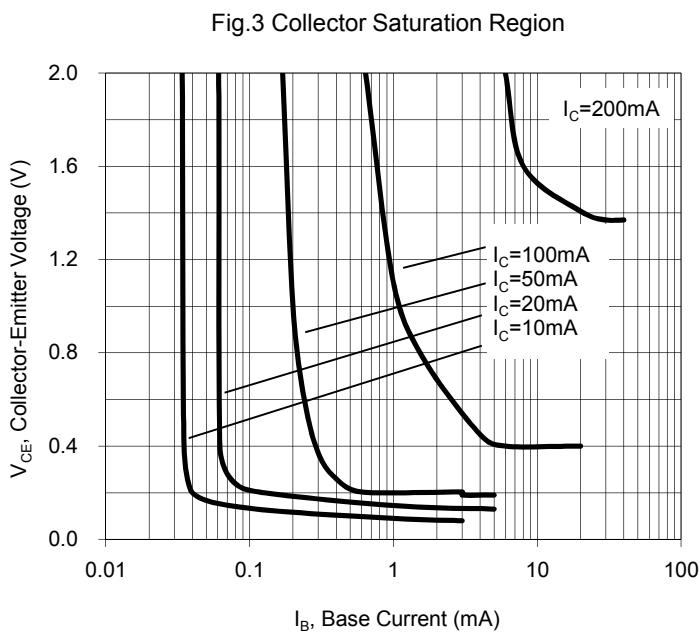
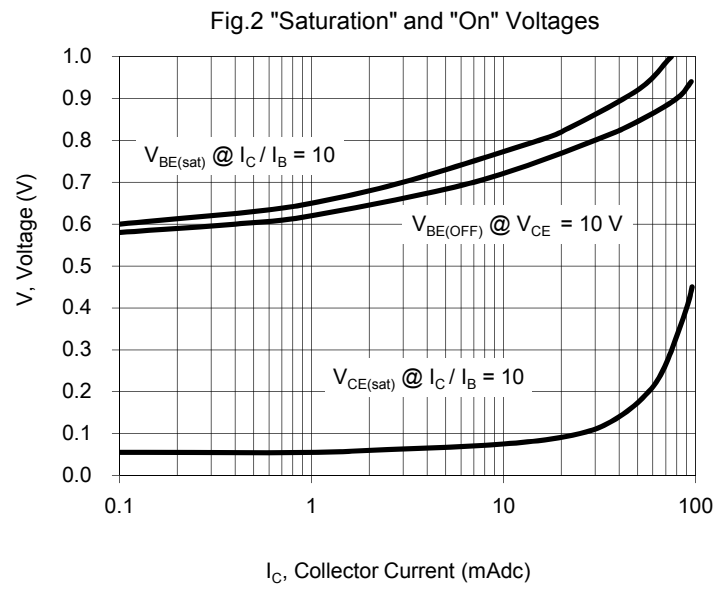
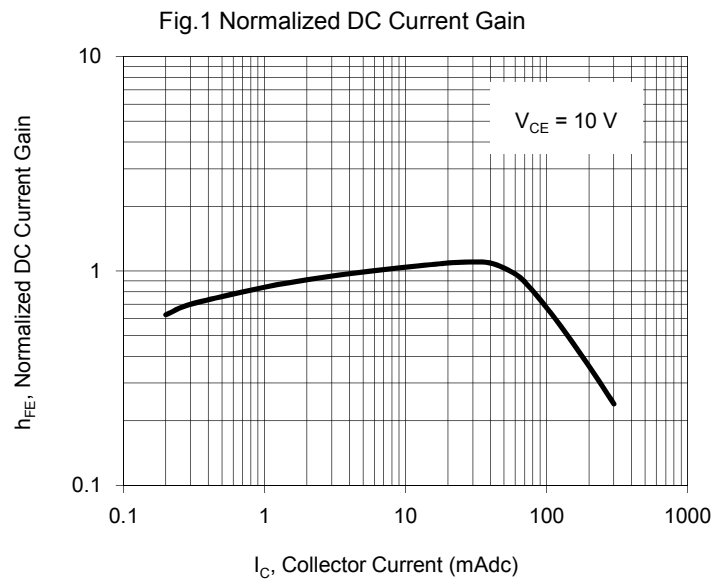
## Small Signal Product

PARAMETER		SYMBOL	MIN	MAX	UNIT
Collector-Base Breakdown Voltage at $I_C = 10 \mu\text{A}$	BC846AW/BW/CW	$V_{CBO}$	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	$V_{(BR)CEO}$	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	$V_{EBO}$	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	$h_{FE}$	110	220	-
	BC846BW - BC850BW		200	450	-
	BC846CW - BC850CW		420	800	-
Collector-Emitter Saturation Voltage	$I_C = 10 \text{mA}$ , $I_B = 0.5 \text{mA}$	$V_{CE(sat)}$	-	0.25	V
	$I_C = 100 \text{mA}$ , $I_B = 5 \text{mA}$		-	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	$V_{CE} = 5 \text{V}$ , $I_C = 2 \text{mA}$	$V_{BE}$	0.58	0.70	V
	$V_{CE} = 5 \text{V}$ , $I_C = 10 \text{mA}$		-	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)

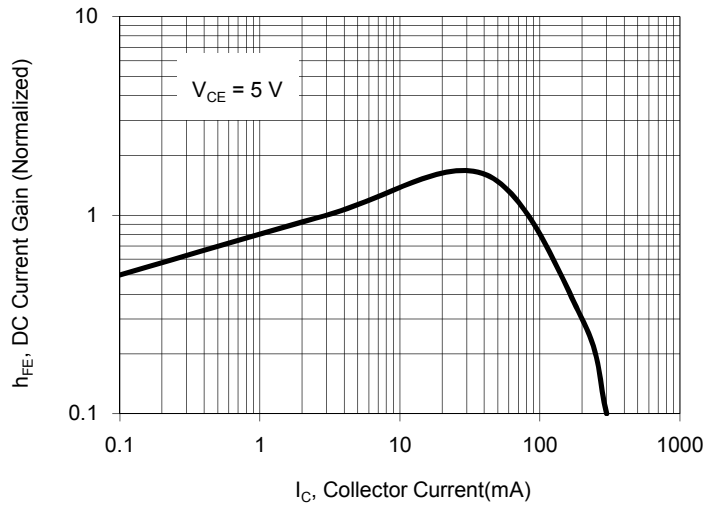


Fig. 8 "On" Voltage

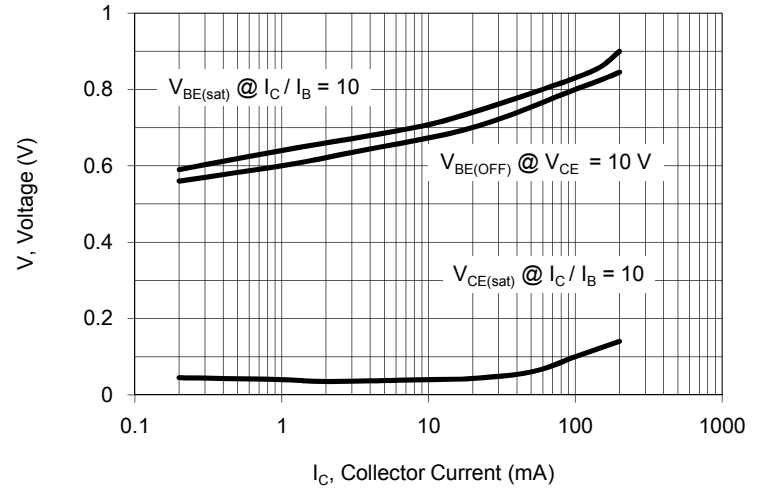


Fig.9 Collector Saturation Region

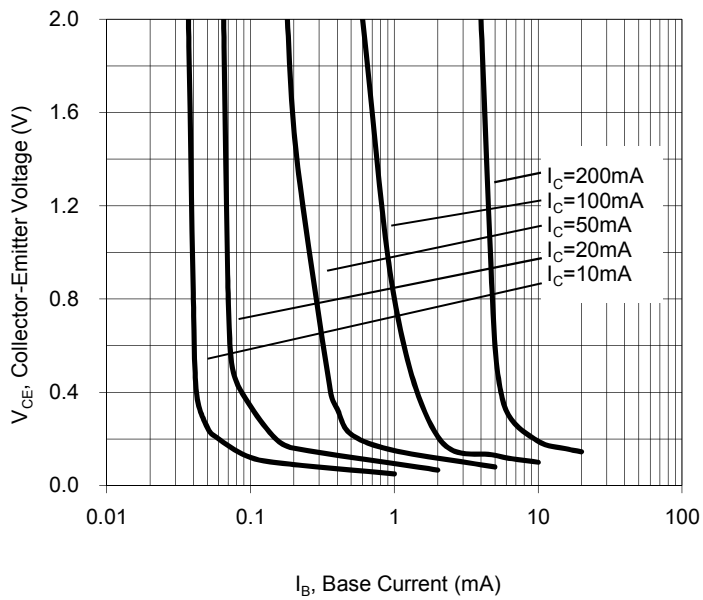


Fig.4 Base-Emitter Temperature Coefficient

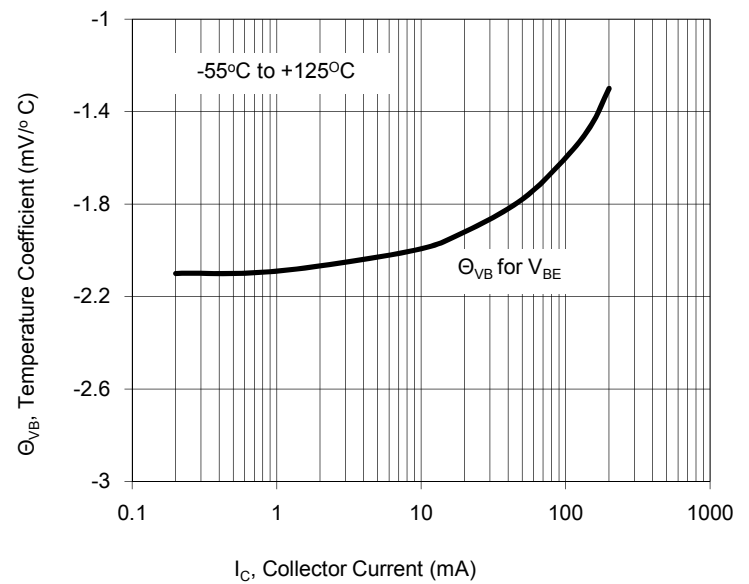


Fig.11 Capacitance

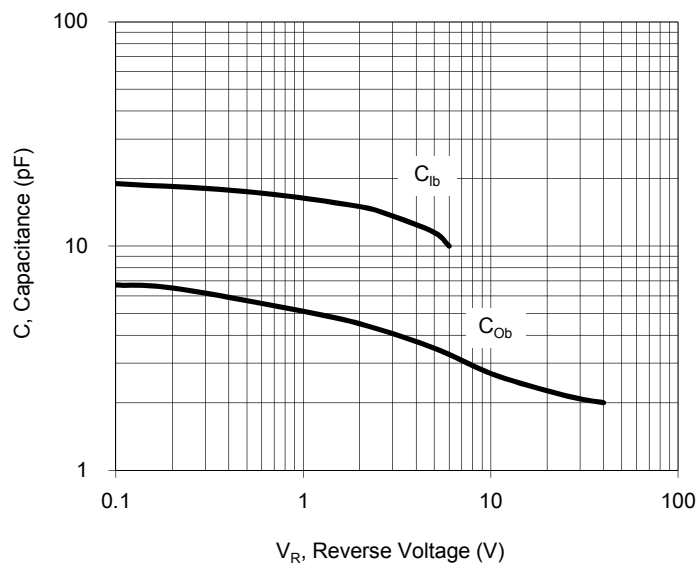
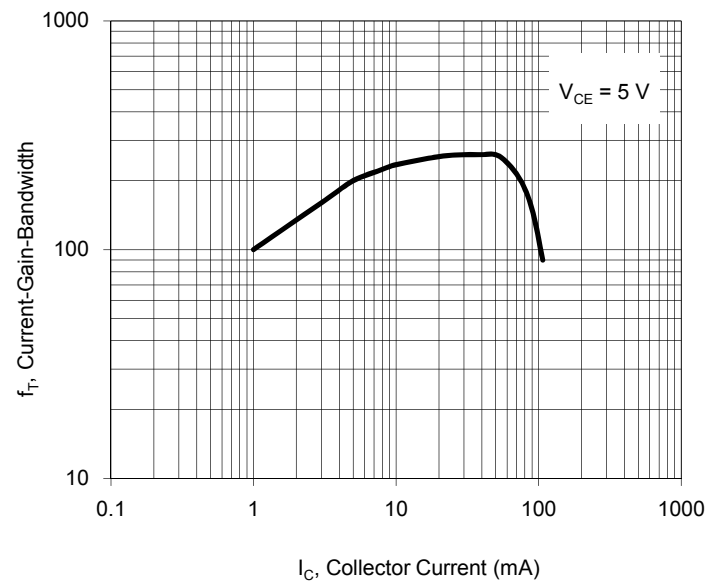


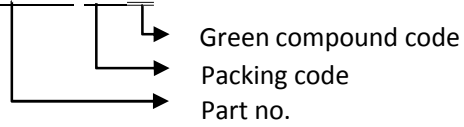
Fig.12 Current-Gain-Bandwidth Product



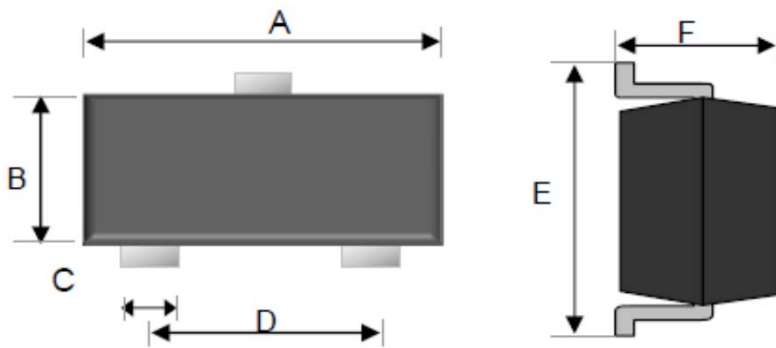
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**ORDER INFORMATION (EXAMPLE)**

BC846AW RFG

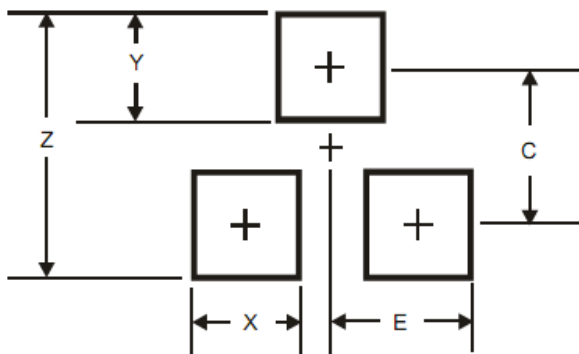


**PACKAGE OUTLINE DIMENSIONS**  
**SOT-323**



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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