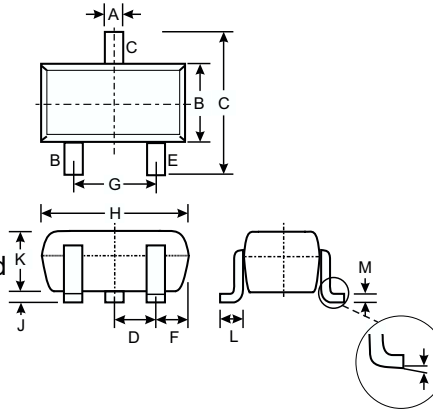


### Features

- Ideally Suited for Automatic Insertion
- Complementary NPN Types Available (BC846W-BC848W)
- For Switching and AF Amplifier Applications

### Mechanical Data

- Case: SOT-323, Molded Plastic
- Case material - UL Flammability Rating Classification 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Pin Connections: See Diagram
- Marking Code: See Table Below & Diagram on Page 2
- Ordering & Date Code Information: See Page 2
- Approx. Weight: 0.006 grams



SOT-323		
Dim	Min	Max
A	0.25	0.40
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
E	0.30	0.40
G	1.20	1.40
H	1.80	2.20
J	0.0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.18
α	0°	8°
All Dimensions in mm		

Marking Code (Note 2)			
Type	Marking	Type	Marking
BC856AW	K3A	BC857CW	K3G
BC856BW	K3B	BC858AW	K3J, K3A, K3V
BC857AW	K3V, K3A	BC858BW	K3K, K3B, K3W
BC857BW	K3W, K3B	BC858CW	K3L, K3G

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit	
Collector-Base Voltage	BC856 BC857 BC858	V <sub>CB0</sub>	-80 -50 -30	V
Collector-Emitter Voltage	BC856 BC857 BC858	V <sub>CEO</sub>	-65 -45 -30	V
Emitter-Base Voltage		V <sub>EBO</sub>	-5.0	V
Collector Current		I <sub>C</sub>	-100	mA
Peak Collector Current		I <sub>CM</sub>	-200	mA
Peak Emitter Current		I <sub>EM</sub>	-200	mA
Power Dissipation (Note 1)		P <sub>d</sub>	200	mW
Thermal Resistance, Junction to Ambient (Note 1)		R <sub>θJA</sub>	625	°C/W
Operating and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

- Notes:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. Current gain subgroup "C" is not available for BC856W.

## Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage (Note 3)	BC856 BC857 BC858 V <sub>(BR)CBO</sub>	-80 -50 -30	— — —	— — —	V	I <sub>C</sub> = 10μA, I <sub>B</sub> = 0
Collector-Emitter Breakdown Voltage (Note 3)	BC856 BC857 BC858 V <sub>(BR)CEO</sub>	-65 -45 -30	— — —	— — —	V	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage (Note 3)	V <sub>(BR)EBO</sub>	-5	—	—	V	I <sub>E</sub> = 1μA, I <sub>C</sub> = 0
DC Current Gain (Note 3)	Current Gain Group A B C h <sub>FE</sub>	125 220 420	180 290 520	250 475 800	—	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -2.0mA
Collector-Emitter Saturation Voltage (Note 3)	V <sub>CE(SAT)</sub>	—	-75 -250	-300 -650	mV	I <sub>C</sub> = -10mA, I <sub>B</sub> = -0.5mA I <sub>C</sub> = -100mA, I <sub>B</sub> = -5.0mA
Base-Emitter Saturation Voltage (Note 3)	V <sub>BE(SAT)</sub>	—	-700 -850	— -950	mV	I <sub>C</sub> = -10mA, I <sub>B</sub> = -0.5mA I <sub>C</sub> = -100mA, I <sub>B</sub> = -5.0mA
Base-Emitter Voltage (Note 3)	V <sub>BE(ON)</sub>	-600 —	-650 —	-750 -820	mV	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -2.0mA V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -10mA
Collector-Cutoff Current (Note 3)	I <sub>CBO</sub> I <sub>CBO</sub>	— —	— —	-15 -4.0	nA μA	V <sub>CB</sub> = -30V V <sub>CB</sub> = -30V, T <sub>A</sub> = 150°C
Gain Bandwidth Product	f <sub>T</sub>	100	200	—	MHz	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -10mA, f = 100MHz
Collector-Base Capacitance	C <sub>CBO</sub>	—	3	4.5	pF	V <sub>CB</sub> = -10V, f = 1.0MHz
Noise Figure	NF	—	—	10	dB	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = 200μA, R <sub>S</sub> = 2kΩ, f = 1kHz, Δf = 200Hz

Notes: 3. Short duration pulse test to minimize self-heating effect.

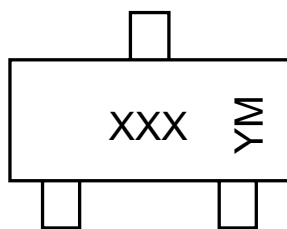
## Ordering Information (Note 4)

Device	Packaging	Shipping
BC85xxW-7*	SOT-323	3000/Tape & Reel

Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

\*xx = device type, e.g. BC856AW-7.

## Marking Information



XXX = Product Type Marking Code (See Page 1), e.g. K3A = BC856AW

YM = Date Code Marking

Y = Year ex: N = 2002

M = Month ex: 9 = September

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004
Code	J	K	L	M	N	P	R

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D