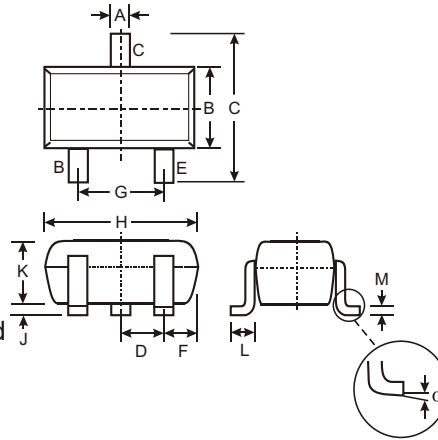


Features

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

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
- Also Available in Lead Free Plating (Matte Tin Finish). Please see Ordering Information, Note 5, on Page 2
- 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_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	BC856 BC857 BC858 V_{CBO}	-80 -50 -30	V
Collector-Emitter Voltage	BC856 BC857 BC858 V_{CEO}	-65 -45 -30	V
Emitter-Base Voltage	V_{EBO}	-5.0	V
Collector Current	I_C	-100	mA
Peak Collector Current	I_{CM}	-200	mA
Peak Emitter Current	I_{EM}	-200	mA
Power Dissipation (Note 1)	P_d	200	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-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 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage (Note 3)	BC856 BC857 BC858 $V_{(BR)CBO}$	-80 -50 -30	— — —	— — —	V	$I_C = 10\mu\text{A}$, $I_B = 0$
Collector-Emitter Breakdown Voltage (Note 3)	BC856 BC857 BC858 $V_{(BR)CEO}$	-65 -45 -30	— — —	— — —	V	$I_C = 10\text{mA}$, $I_B = 0$
Emitter-Base Breakdown Voltage (Note 3)	$V_{(BR)EBO}$	-5	—	—	V	$I_E = 1\mu\text{A}$, $I_C = 0$
DC Current Gain (Note 3) Current Gain Group A B C	h_{FE}	125 220 420	180 290 520	250 475 800	—	$V_{CE} = -5.0\text{V}$, $I_C = -2.0\text{mA}$
Collector-Emitter Saturation Voltage (Note 3)	$V_{CE(SAT)}$	—	-75 -250	-300 -650	mV	$I_C = -10\text{mA}$, $I_B = -0.5\text{mA}$ $I_C = -100\text{mA}$, $I_B = -5.0\text{mA}$
Base-Emitter Saturation Voltage (Note 3)	$V_{BE(SAT)}$	—	-700 -850	— -950	mV	$I_C = -10\text{mA}$, $I_B = -0.5\text{mA}$ $I_C = -100\text{mA}$, $I_B = -5.0\text{mA}$
Base-Emitter Voltage (Note 3)	$V_{BE(ON)}$	-600 —	-650 —	-750 -820	mV	$V_{CE} = -5.0\text{V}$, $I_C = -2.0\text{mA}$ $V_{CE} = -5.0\text{V}$, $I_C = -10\text{mA}$
Collector-Cutoff Current (Note 3)	I_{CBO} I_{CBO}	— —	— —	-15 -4.0	nA μA	$V_{CB} = -30\text{V}$ $V_{CB} = -30\text{V}$, $T_A = 150^\circ\text{C}$
Gain Bandwidth Product	f_T	100	200	—	MHz	$V_{CE} = -5.0\text{V}$, $I_C = -10\text{mA}$, $f = 100\text{MHz}$
Collector-Base Capacitance	C_{CBO}	—	3	4.5	pF	$V_{CB} = -10\text{V}$, $f = 1.0\text{MHz}$
Noise Figure	NF	—	—	10	dB	$V_{CE} = -5.0\text{V}$, $I_C = 200\mu\text{A}$, $R_S = 2\text{k}\Omega$, $f = 1\text{kHz}$, $\Delta f = 200\text{Hz}$

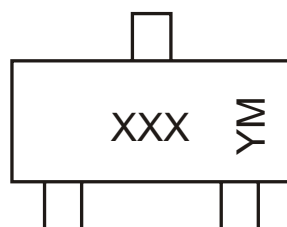
Notes: 3. Short duration pulse test to minimize self-heating effect.

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.
 5. For Lead Free version (with Lead Free terminal finish) part number, please add "-F" suffix to part number above.
 Example: BC856AW-7-F.

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	2005	2006	2007	2008	2009
Code	J	K	L	M	N	P	R	S	T	U	V	W

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

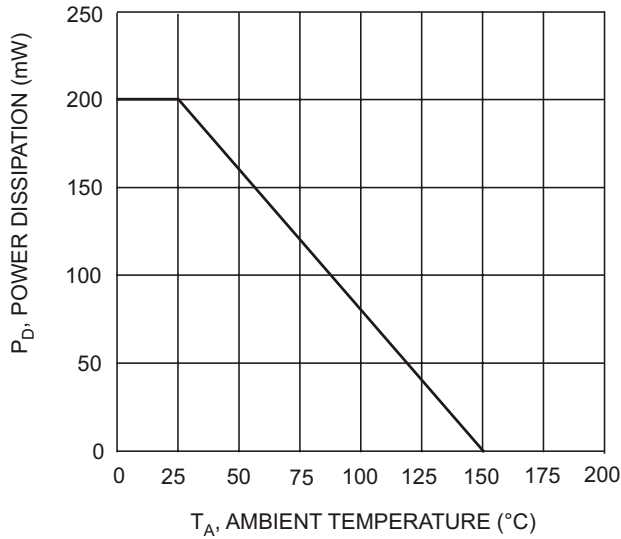


Fig. 1, Max Power Dissipation vs Ambient Temperature

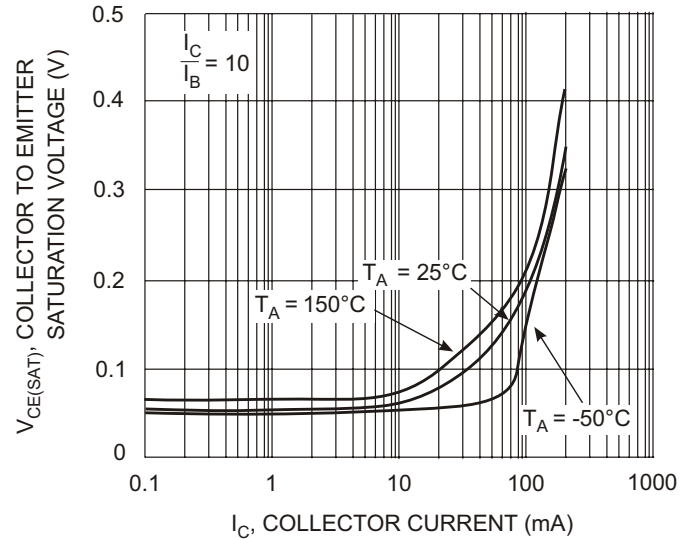


Fig. 2 Collector Emitter Saturation Voltage vs. Collector Current

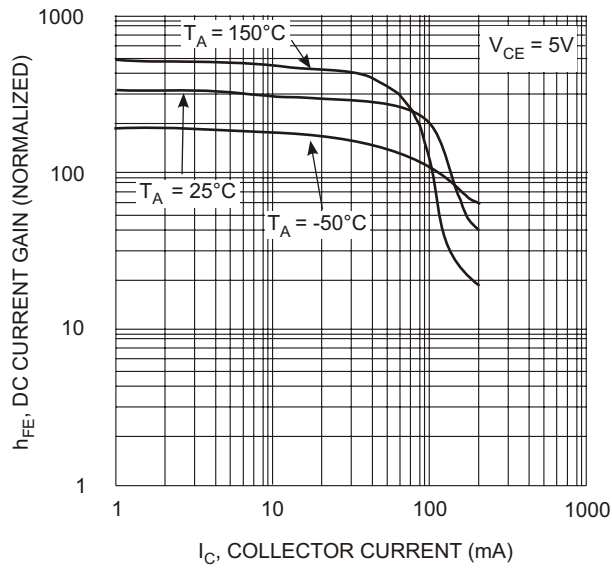


Fig. 3, DC Current Gain (Group B) vs. Collector Current

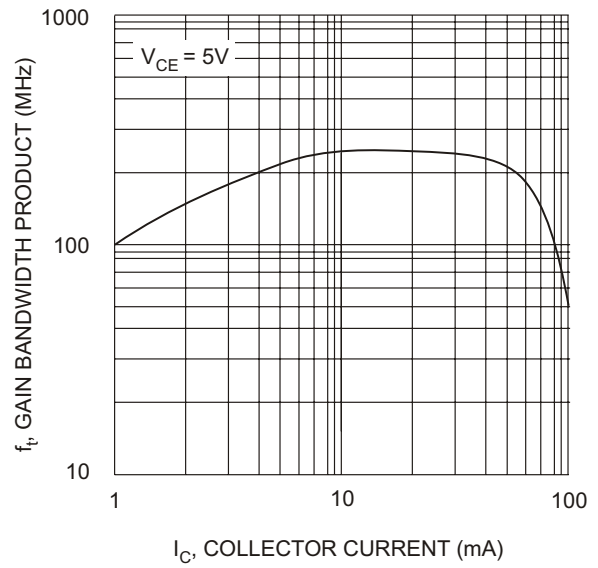


Fig. 4, Gain Bandwidth Product vs Collector Current