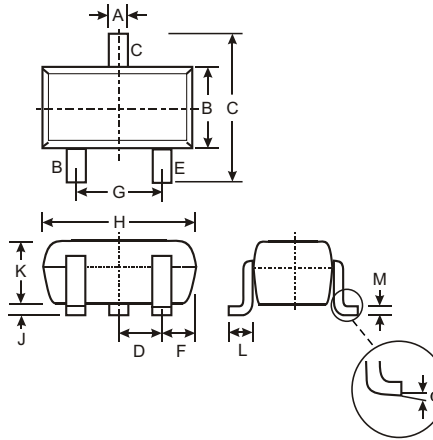


Features

- Ideally Suited for Automatic Insertion
- Complementary NPN Types Available (BC846W-BC848W)
- For Switching and AF Amplifier Applications
- **Available in Lead Free/RoHS Compliant Version (Note 3)**

Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Also Available in Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe). Please see Ordering Information, Note 6, on Page 2
- Pin Connections: See Diagram
- Marking Code: See Table Below & Diagram on Page 2
- Ordering & Date Code Information: See Page 2
- Weight: 0.006 grams (approximate)



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	V _{CBO}	BC856 -80	V
		BC857 -50	
		BC858 -30	
Collector-Emitter Voltage	V _{CEO}	BC856 -65	V
		BC857 -45	
		BC858 -30	
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 _{θJA}	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.
 3. No purposefully added lead.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage (Note 4)	BC856 BC857 BC858 V _{(BR)CBO}	-80 -50 -30	— — —	— — —	V	I _C = 10μA, I _B = 0
Collector-Emitter Breakdown Voltage (Note 4)	BC856 BC857 BC858 V _{(BR)CEO}	-65 -45 -30	— — —	— — —	V	I _C = 10mA, I _B = 0
Emitter-Base Breakdown Voltage (Note 4)	V _{(BR)EBO}	-5	—	—	V	I _E = 1μA, I _C = 0
DC Current Gain (Note 4)	Current Gain Group A B C h _{FE}	125 220 420	180 290 520	250 475 800	—	V _{CE} = -5.0V, I _C = -2.0mA
Collector-Emitter Saturation Voltage (Note 4)	V _{CE(SAT)}	—	-75 -250	-300 -650	mV	I _C = -10mA, I _B = -0.5mA I _C = -100mA, I _B = -5.0mA
Base-Emitter Saturation Voltage (Note 4)	V _{BE(SAT)}	—	-700 -850	— -950	mV	I _C = -10mA, I _B = -0.5mA I _C = -100mA, I _B = -5.0mA
Base-Emitter Voltage (Note 4)	V _{BE(ON)}	-600 —	-650 —	-750 -820	mV	V _{CE} = -5.0V, I _C = -2.0mA V _{CE} = -5.0V, I _C = -10mA
Collector-Cutoff Current (Note 4)	I _{CBO} I _{CBO}	— —	— —	-15 -4.0	nA μA	V _{CB} = -30V V _{CB} = -30V, T _A = 150°C
Gain Bandwidth Product	f _T	100	200	—	MHz	V _{CE} = -5.0V, I _C = -10mA, f = 100MHz
Collector-Base Capacitance	C _{CBO}	—	3	4.5	pF	V _{CB} = -10V, f = 1.0MHz
Noise Figure	NF	—	—	10	dB	V _{CE} = -5.0V, I _C = 200μA, R _S = 2kΩ, f = 1kHz, Δf = 200Hz

Notes: 4. Short duration pulse test to minimize self-heating effect.

Ordering Information (Note 5)

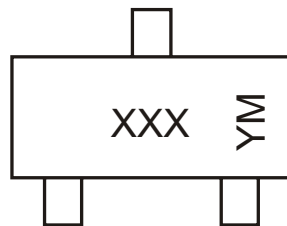
Device	Packaging	Shipping
BC85xxW-7*	SOT-323	3000/Tape & Reel

Notes: 5. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

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

6. For Lead Free/RoHS Compliant version part number, please add "-F" suffix to the 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

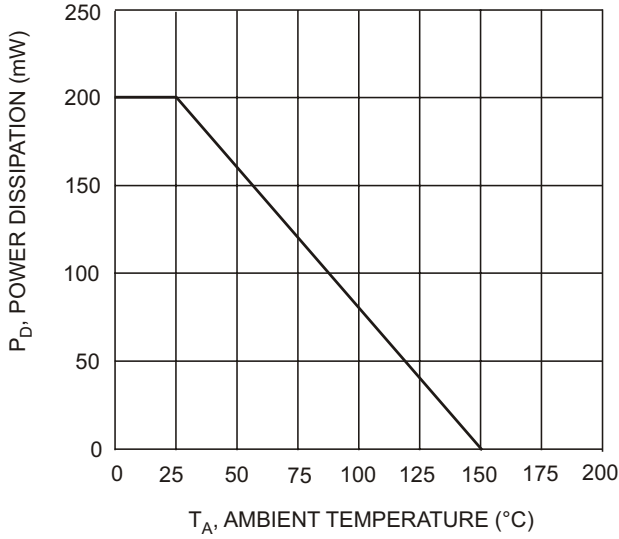
Y = Year ex: N = 2002

M = Month ex: 9 = September

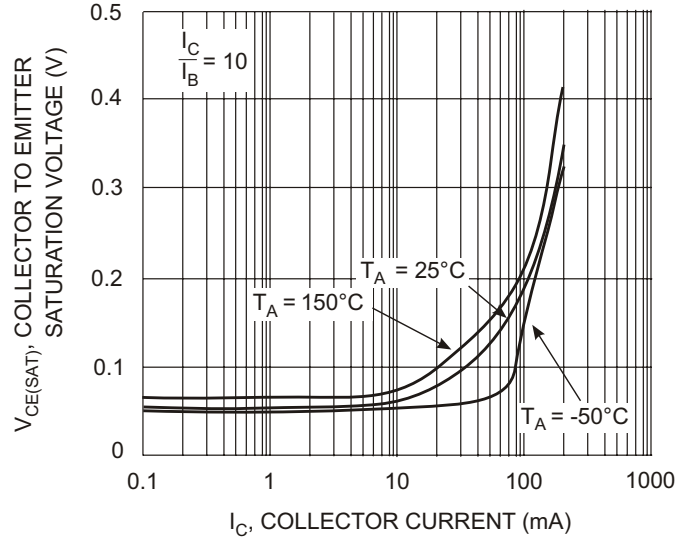
Date Code Key

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

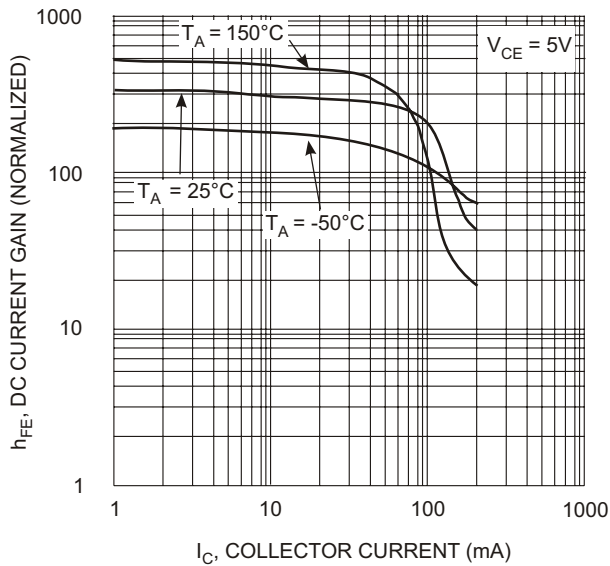
Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D



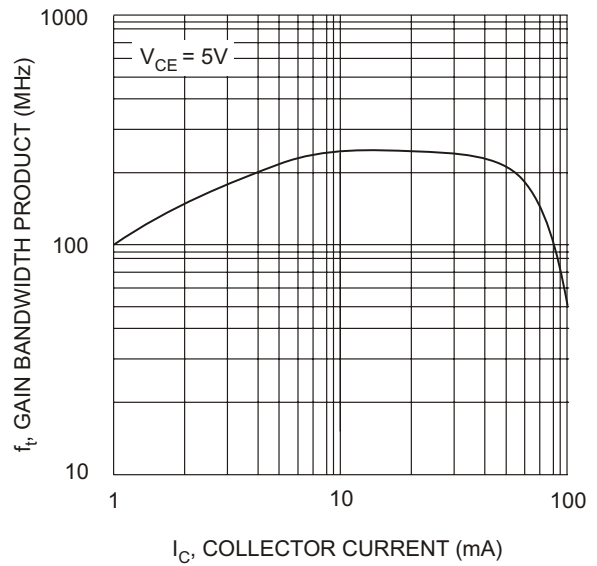
T_A, AMBIENT TEMPERATURE (°C)
Fig. 1, Max Power Dissipation vs Ambient Temperature



I_C, COLLECTOR CURRENT (mA)
Fig. 2 Collector Emitter Saturation Voltage vs. Collector Current



I_C, COLLECTOR CURRENT (mA)
Fig. 3, DC Current Gain (Group B) vs. Collector Current



I_C, COLLECTOR CURRENT (mA)
Fig. 4, Gain Bandwidth Product vs Collector Current