BC856AW - BC858CW

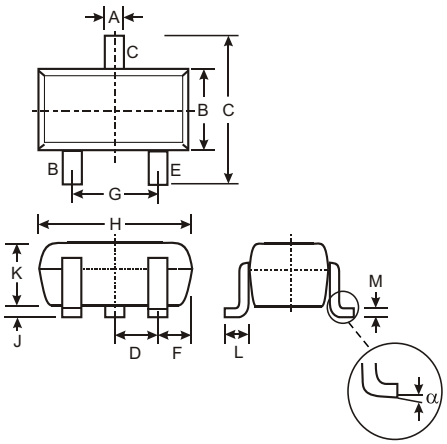
PNP SURFACE MOUNT SMALL SIGNAL TRANSISTOR

Features

- Ideally Suited for Automatic Insertion
- Complementary NPN Types Available (BC846W-BC848W)
- For Switching and AF Amplifier Applications
- **Lead Free/RoHS Compliant (Note 3)**
- **"Green" Device (Note 4 and 5)**

Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 5. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- 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
	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_{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.
3. No purposefully added lead.
4. Diodes Inc.'s "Green" Policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
5. Product manufactured with date code 0609 (week 9, 2006) and newer are built with Green Molding Compound. Product manufactured prior to date code 0609 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

Electrical Characteristics @ T_A =25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage (Note 6)	BC856 BC857 BC858	$V_{(BR)CBO}$	-80 -50 -30	— — —	— — —	V	I_C = 10 A, I_B = 0
Collector-Emitter Breakdown Voltage (Note 6)	BC856 BC857 BC858	$V_{(BR)CEO}$	-65 -45 -30	— — —	— — —	V	I_C = 10mA, I_B = 0
Emitter-Base Breakdown Voltage (Note 6)		$V_{(BR)EBO}$	-5	—	—	V	I_E = 1 A, 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 6)		$V_{CE(SAT)}$	—	-75 -250	-300 -650	mV	I_C = -10mA, I_B = -0.5mA I_C = -100mA, I_B = -5.0mA
Base-Emitter Saturation Voltage (Note 6)		$V_{BE(SAT)}$	— —	-700 -850	— -950	mV	I_C = -10mA, I_B = -0.5mA I_C = -100mA, I_B = -5.0mA
Base-Emitter Voltage (Note 6)		$V_{BE(ON)}$	-600 —	-650 —	-750 -820	mV	V_{CE} = -5.0V, I_C = -2.0mA V_{CE} = -5.0V, I_C = -10mA
Collector-Cutoff Current (Note 6)		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 = 2k f = 1kHz, f = 200Hz

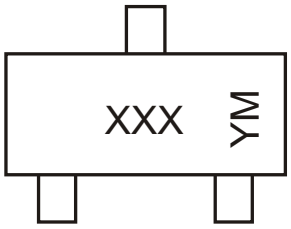
Ordering Information (Note 5 & 7)

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

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

Notes:
5. Product manufactured with date code 0609 (week 9, 2006) and newer are built with Green Molding Compound. Product manufactured prior to date code 0609 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.
6. Short duration pulse test to minimize self-heating effect.
7. For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

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	2010	2011	2012
Code	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z

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

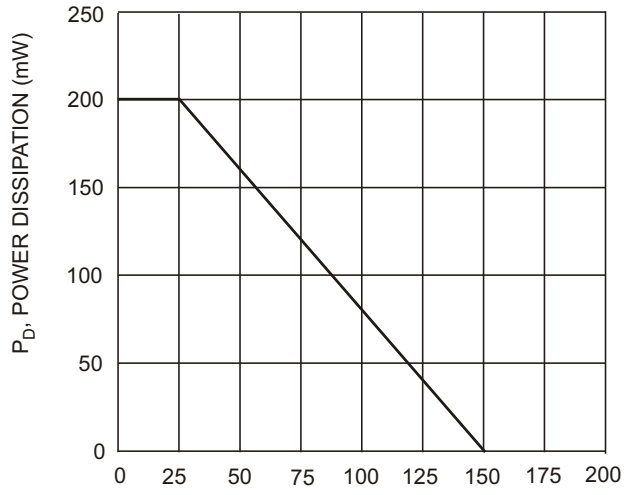


Fig. 1, Max Power Dissipation vs Ambient Temperature

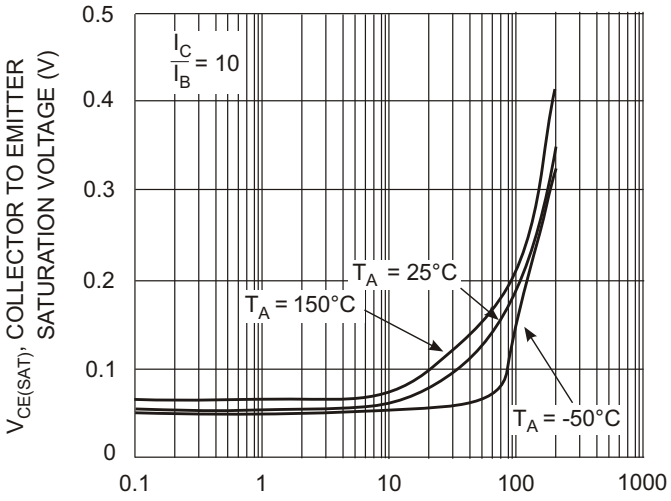


Fig. 2 Collector Emitter Saturation Voltage vs. Collector Current

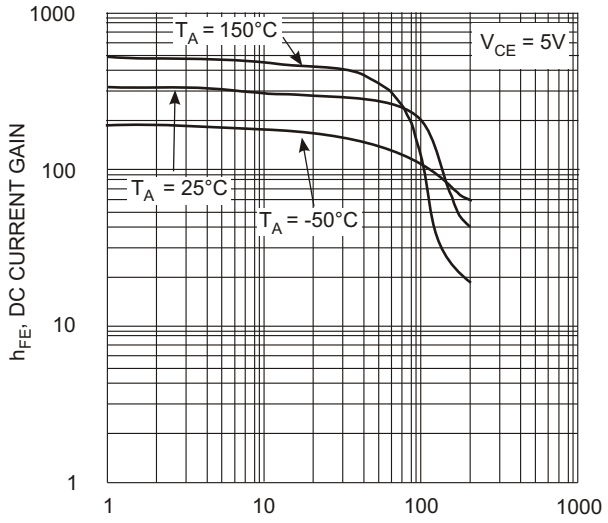


Fig. 3, DC Current Gain (Group B) vs. Collector Current

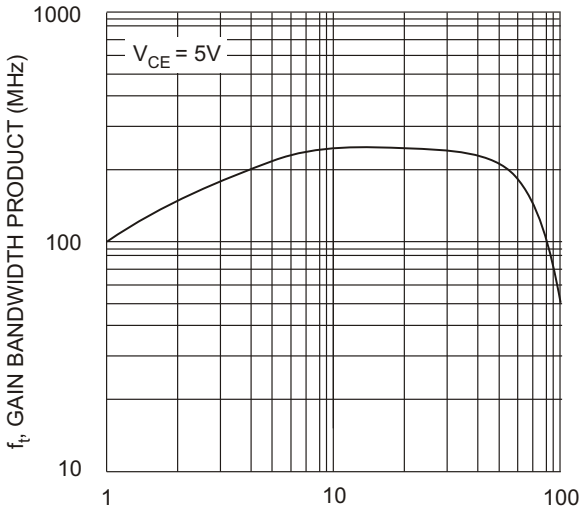


Fig. 4, Gain Bandwidth Product vs Collector Current