TAIWAN SEMICONDUCTOR

BC856A/B, BC857A/B/C, BC858A/B/C

200mW, PNP Small Signal Transistor

Small Signal Product

SOT-23

Features

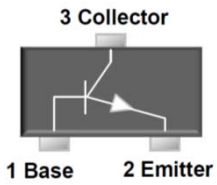
- ◇ Epitaxial planar die construction
- ◇ Surface device type mounting
- ◇ Moisture sensitivity level 1
- ◇ Matte Tin(Sn) lead finish with Nickel(Ni) underplate
- ◇ Pb free version and RoHS compliant
- ◇ Green compound (Halogen free) with suffix "G" on packing code and prefix "G" on date code

Pb-Free

RoHS COMPLIANT

Mechanical Data

- ◇ Case : SOT- 23 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 : 0.008 grams (approximately)



Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Maximum Ratings

Parameter		Symbol	Value	Units
Power Dissipation		P_D	200	mW
Collector-Base Voltage	BC856	V_{CBO}	-80	V
	BC857		-50	
	BC858		-30	
Collector-Emitter Voltage	BC856	V_{CEO}	-65	V
	BC857		-45	
	BC858		-30	
Emitter-Base Voltage		V_{EBO}	-5	V
Collector Current		I_C	-0.1	A
Junction and Storage Temperature Range		T_J , T_{STG}	-55 to + 150	°C

Notes : 1. Valid provided that electrodes are kept at ambient temperature

Small Signal Product

Electrical Characteristics (T_A= 25°C unless otherwise noted)

Parameter				Symbol	Min	Max	Units
Collector-Base Breakdown Voltage	BC856	I_C= -10μA	I_E= 0	$V_{(BR)CBO}$	-80	-	V
	BC857				-50		
	BC858				-30		
Collector-Emitter Breakdown Voltage	BC856	I_C= -10mA	I_B= 0	$V_{(BR)CEO}$	-65	-	V
	BC857				-45		
	BC858				-30		
Emitter-Base Breakdown Voltage		I_E= -1μA	I_C= 0	$V_{(BR)EBO}$	-5	-	V
Collector Cut-off Current	BC856	V_{CB}= -70V	I_E= 0	I_{CBO}	-	-100	nA
	BC857	V_{CB}= -45V			-	-100	
	BC858	V_{CB}= -25V			-	-100	
Emitter Cut-off Current		V_{EB}= -5V	I_C=0	I_{EBO}	-	-0.1	μA
DC Current Gain	BC856A, BC857A, BC858A	V_{CE}= -5V	I_C= -2mA	h_{FE}	125	250	
	BC856B, BC857B, BC858B				220	475	
	BC857C, BC858C				420	800	
Collector-Emitter Saturation Voltage		I_C= -100mA	I_B= -5mA	$V_{CE(sat)}$	-	-0.65	V
Base-Emitter Saturation Voltage		I_C= -100mA	I_B= -5mA	$V_{BE(sat)}$	-	-1.1	V
Transition Frequency	V_{CE}= -5V	I_C= -10mA	f= 100MHz	f_T	100	-	MHz

Small Signal Product

RATINGS AND CHARACTERISTIC CURVES

Fig. 1 Static Characteristic

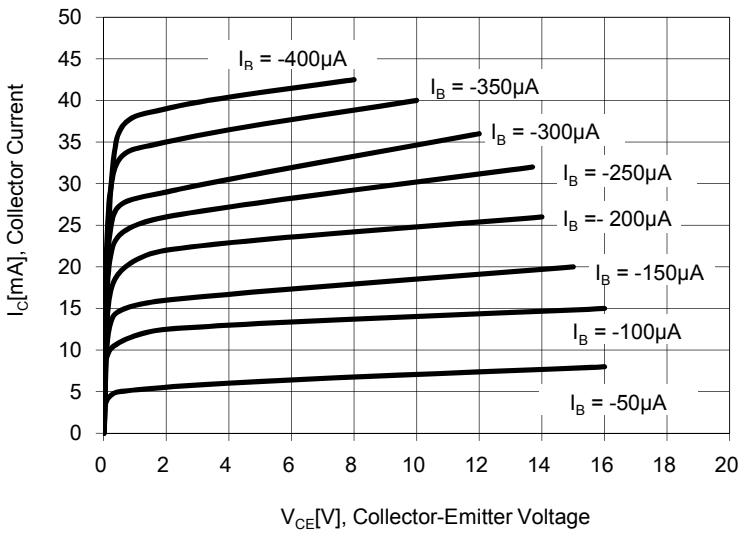


Fig. 2 DC Current Gain

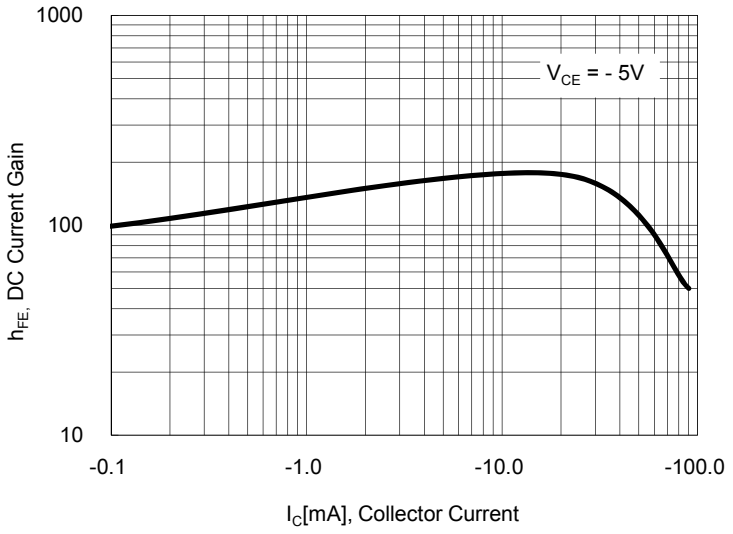


Fig.3 Base-Emitter Saturation Voltage
VS.Collector-Emitter Saturation

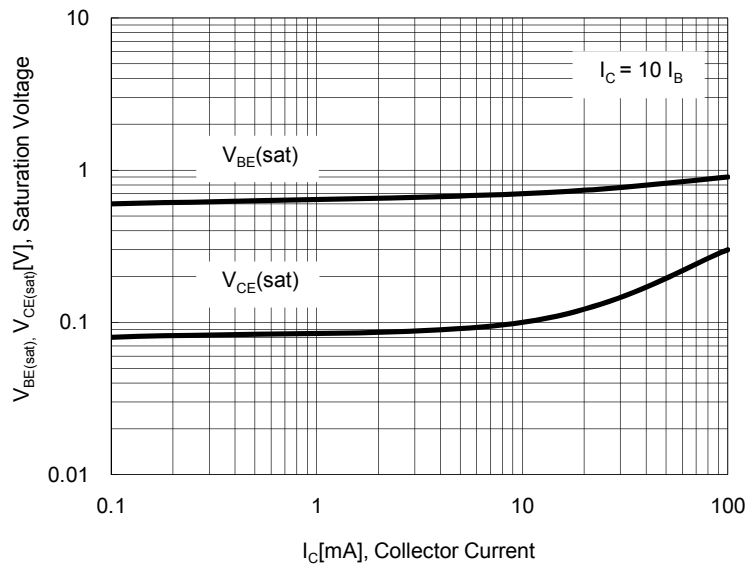


Fig. 4 Base-Emitter On Voltage

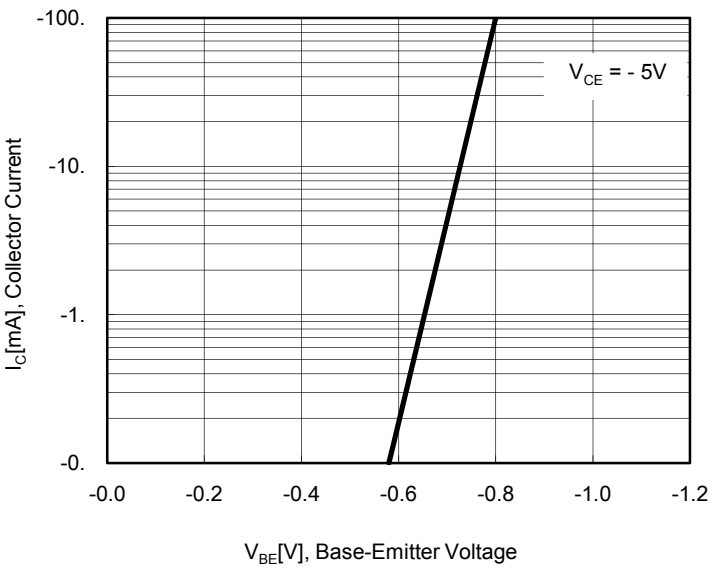


Fig.5 Collector Output Capacitance

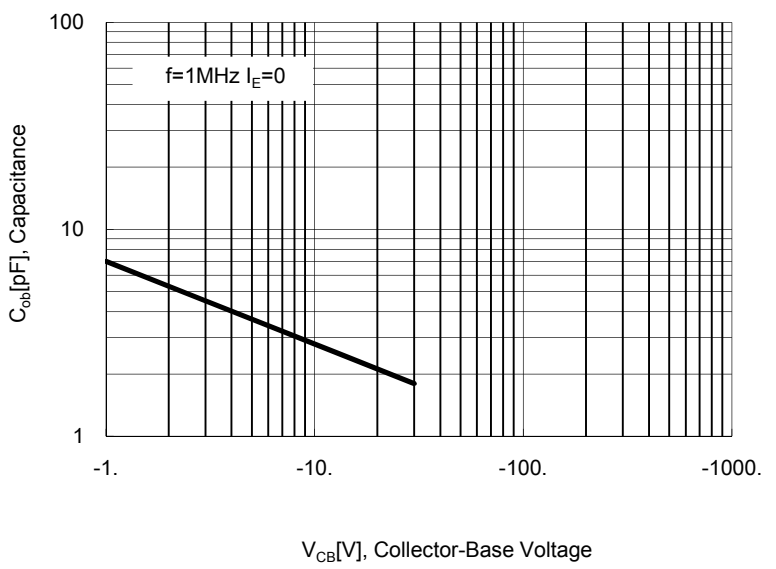
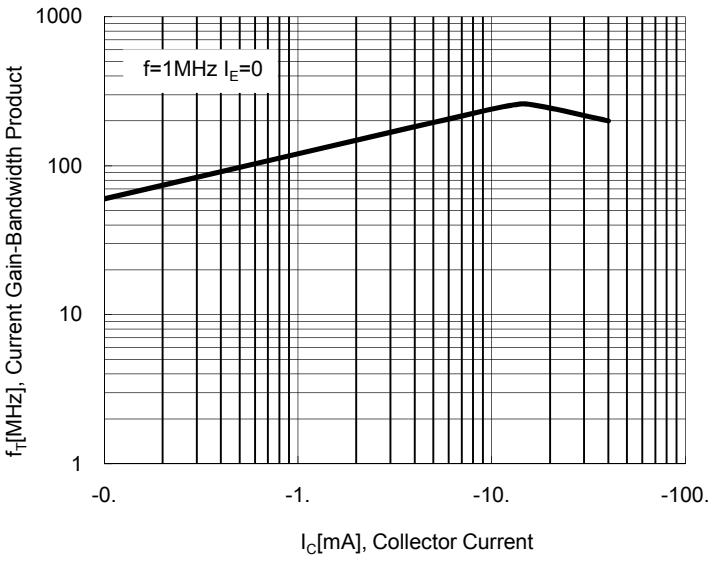


Fig. 6 Current Gain Bandwidth Product



RATINGS AND CHARACTERISTIC CURVES

Fig. 7 DC Current Gain as a Function of Collector Current; Typical Values

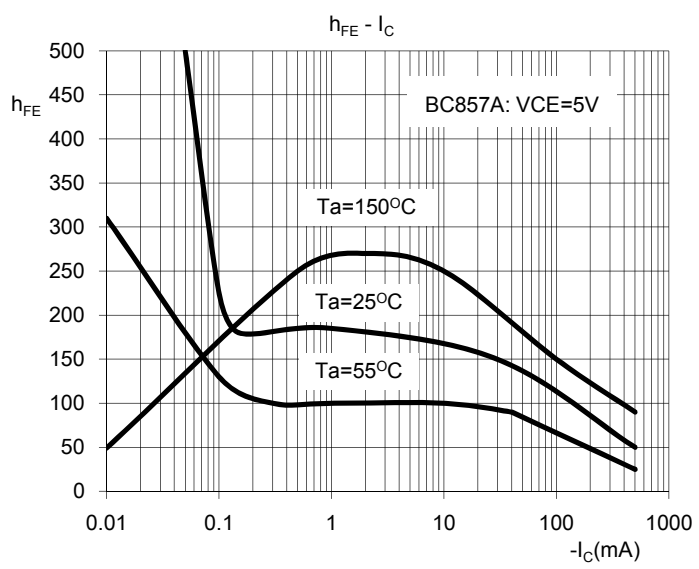
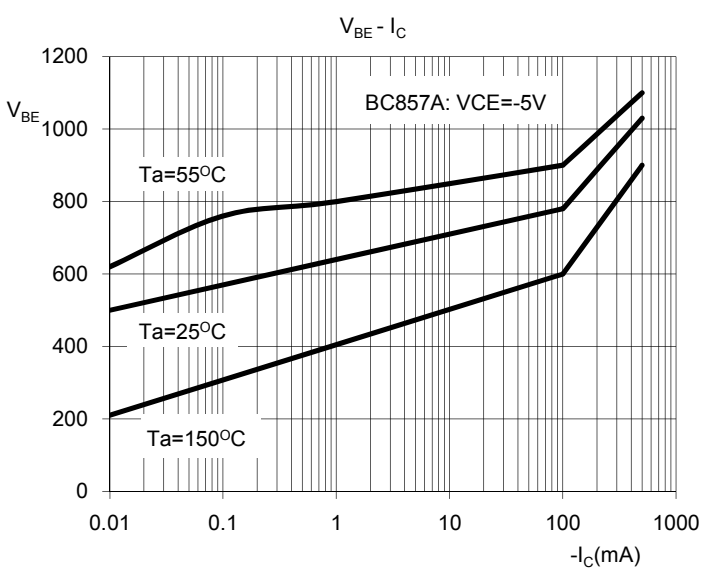


Fig. 8 Base-Emitter Voltage as a Function of Collector Current; Typical Values



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Small Signal Product

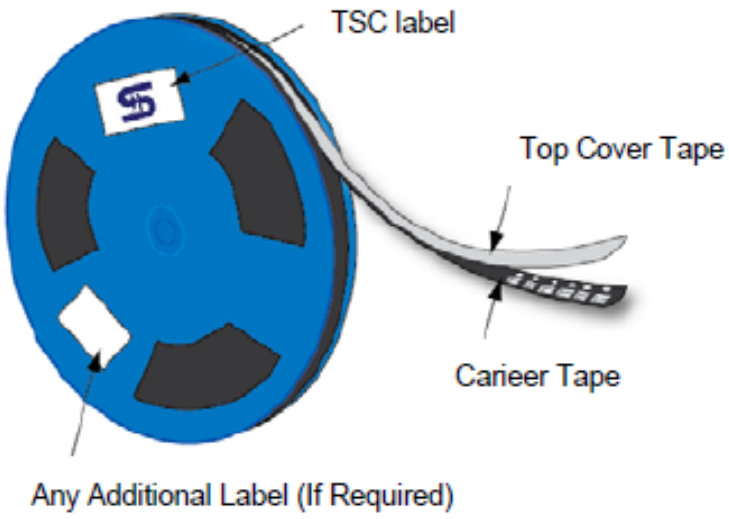
Ordering information (Detail, example)

Part No.	Package	Packing	Packing code	Packing code (Green)	Manufacture code
BC85xx (Note 1)	SOT-23	3K / 7 " Reel	RF	RFG	(Note 2)
BC856A	SOT-23	3K / 7 " Reel	RF	RFG	

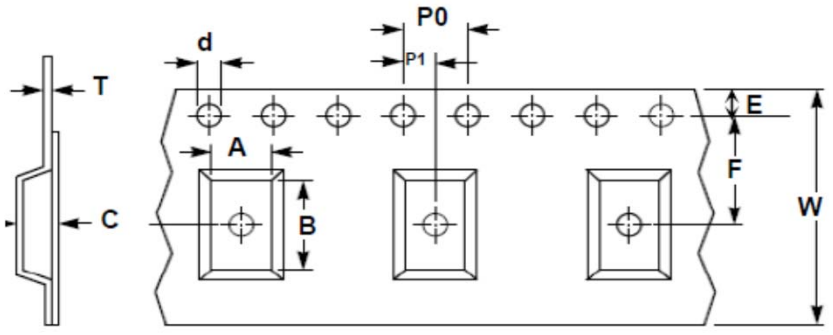
Note 1 : "xx" is Device Code from "6A" thru "8C".

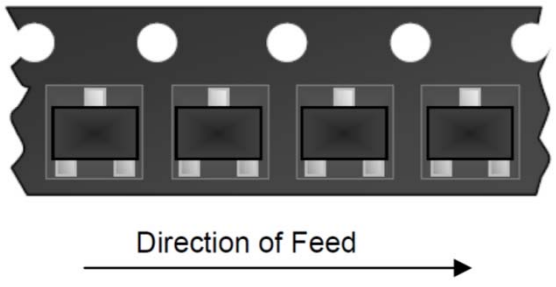
Note 2 : Manufacture special control, if empty means no special control requirement.

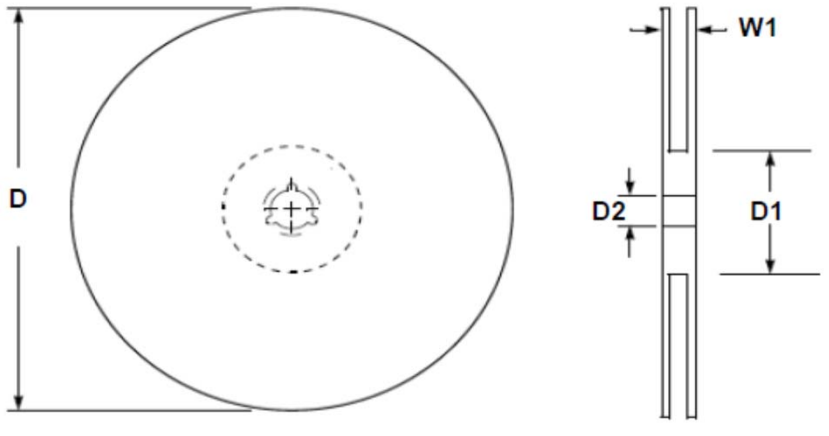
Tape & Reel specification



Item	Symbol	Dimension
Carrier width	A	3.15 ±0.10
Carrier length	B	2.77 ±0.10
Carrier depth	C	1.22 ±0.10
Sprocket hole	d	1.50 ± 0.10
Reel outside diameter	D	178 ± 1
Reel inner diameter	D1	55 Min
Feed hole width	D2	13.0 ± 0.20
Sprocket hole position	E	1.75 ±0.10
Punch hole position	F	3.50 ±0.05
Sprocket hole pitch	P0	4.00 ±0.10
Embossment center	P1	2.00 ±0.05
Overall tape thickness	T	0.229 ±0.013
Tape width	W	8.10 ±0.20
Reel width	W1	12.30 ±0.20







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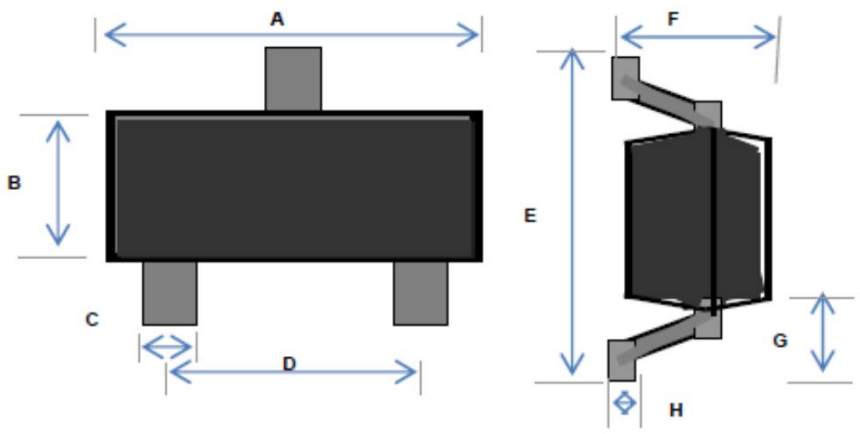
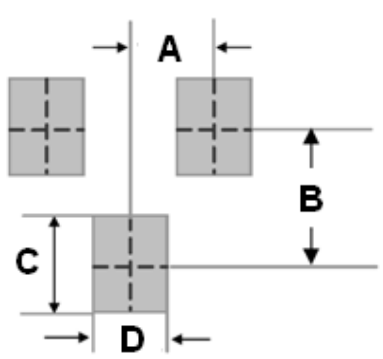
Small Signal Product

Dimensions



DIM.	Unit(mm)		Unit(inch)	
	Min	Max	Min	Max
A	2.70	3.10	0.106	0.122
B	1.10	1.50	0.043	0.059
C	0.30	0.51	0.012	0.020
D	1.78	2.04	0.070	0.080
E	2.20	2.60	0.087	0.102
F	0.90	1.30	0.035	0.051
G	0.550 REF		0.022 REF	
H	0.1 REF		0.004 REF	

Suggested PAD Layout



DIM.	Unit(mm)	Unit(inch)
	Typ.	Typ.
A	0.95	0.037
B	2.0	0.079
C	0.9	0.035
D	0.8	0.031

Marking

Part No.	Marking
BC856A	3A
BC856B	3B
BC857A	3E
BC857B	3F
BC857C	3G
BC858A	3J
BC858B	3K
BC858C	3L