

## Small Signal Product

## SOT-23

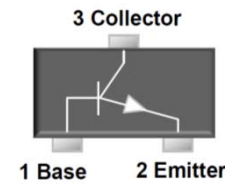
### Features

- ◇ 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



### 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	-80	V
	BC857	-50	
	BC858	-30	
Collector-Emitter Voltage	BC856	-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

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Electrical Characteristics (  $T_A = 25^\circ\text{C}$  unless otherwise noted )

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

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**RATINGS AND CHARACTERISTIC CURVES**

Fig. 1 Static Characteristic

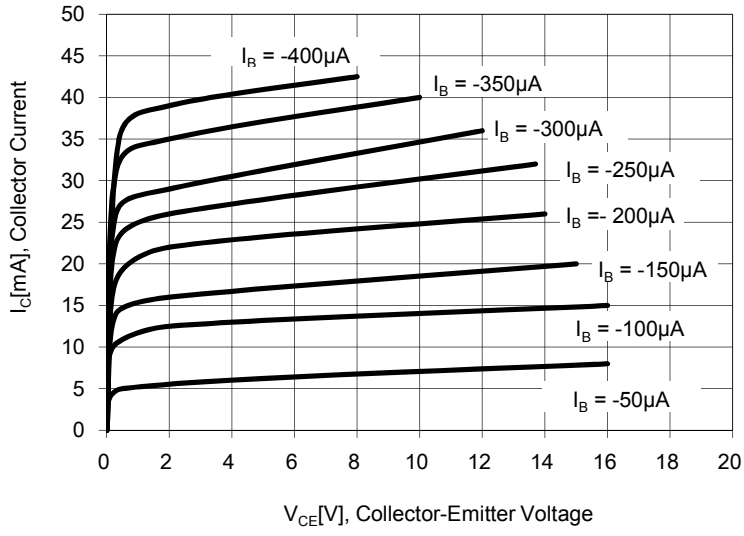


Fig. 2 DC Current Gain

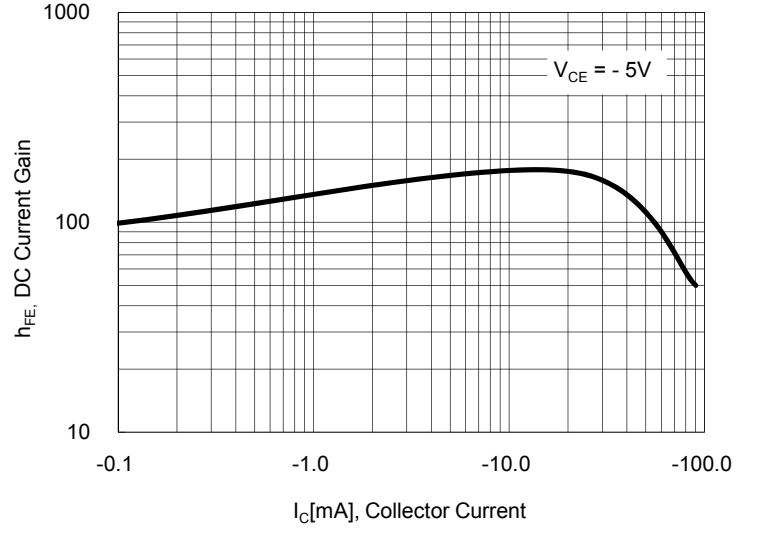


Fig.3 Base-Emitter Saturation Voltage VS. Collector-Emitter Saturation

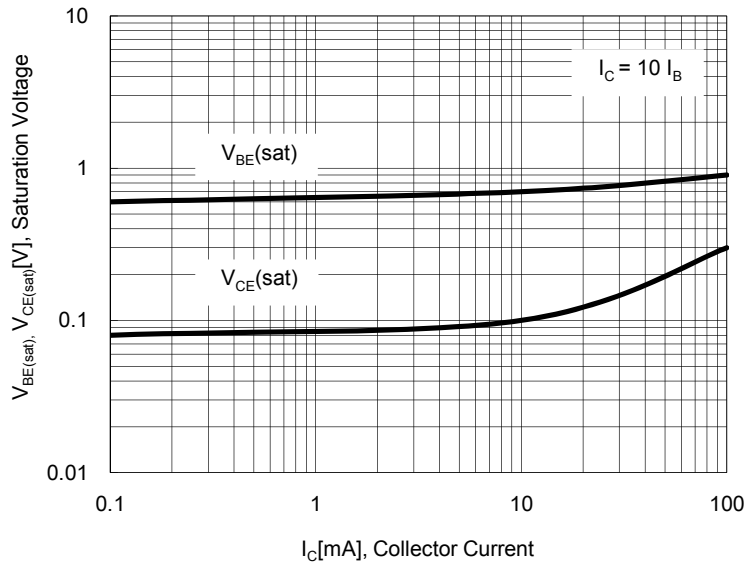


Fig. 4 Base-Emitter On Voltage

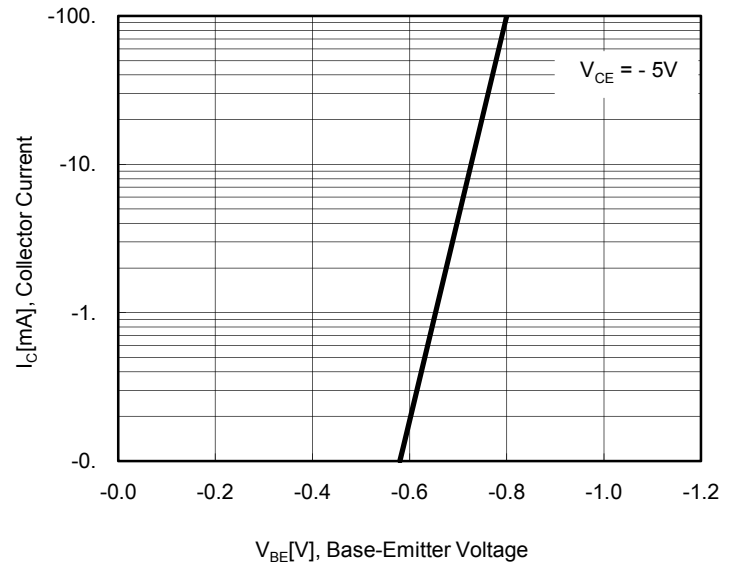


Fig.5 Collector Output Capacitance

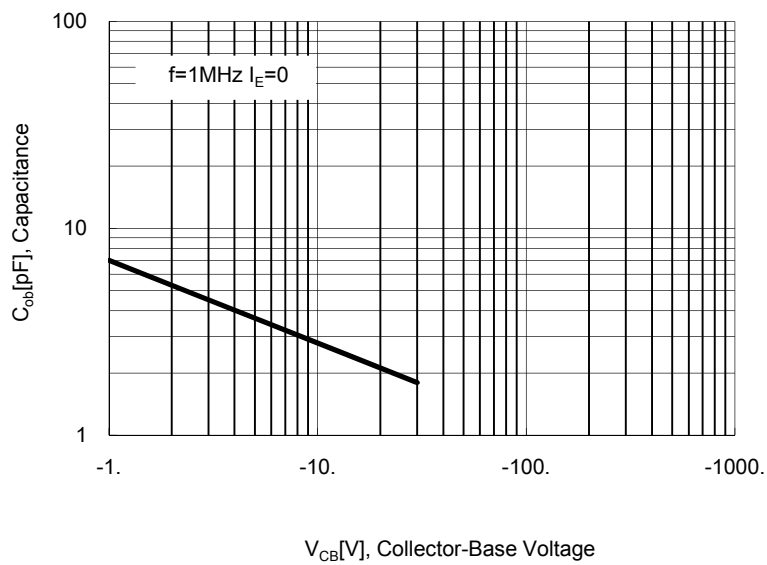
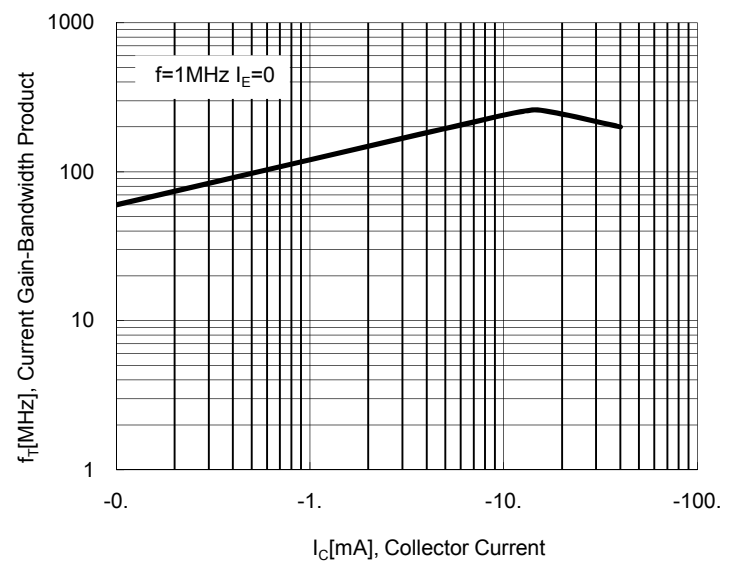


Fig. 6 Current Gain Bandwidth Product



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**RATINGS AND CHARACTERISTIC CURVES**

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

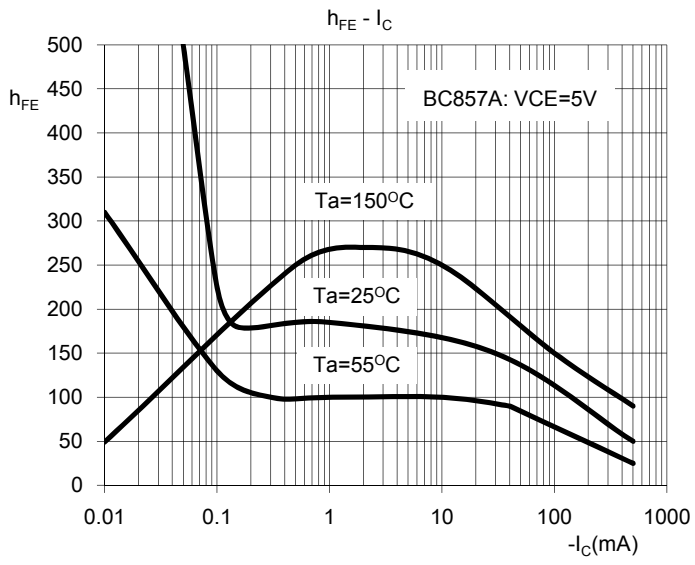
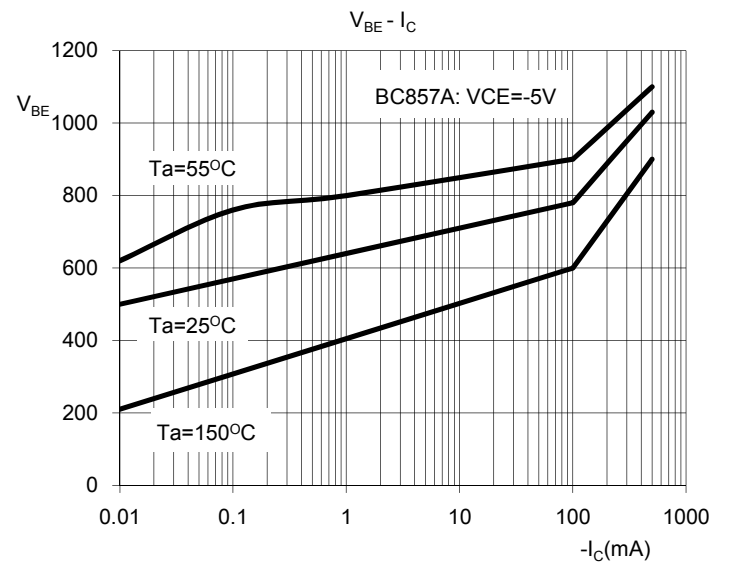


Fig. 8 Base-Emitter Voltage as a Function of Collector Current; Typical Values



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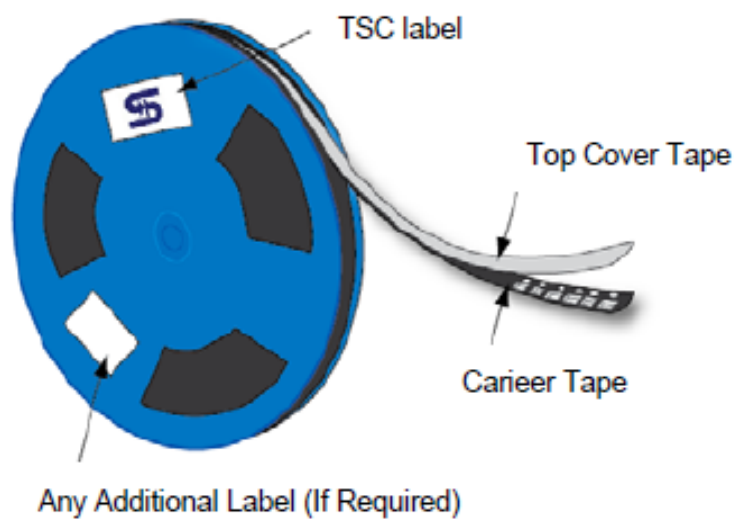
### Ordering information (Detail, example)

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	

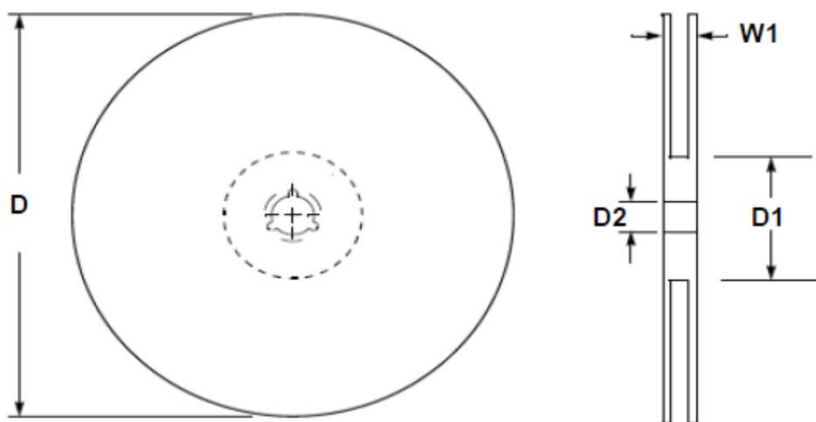
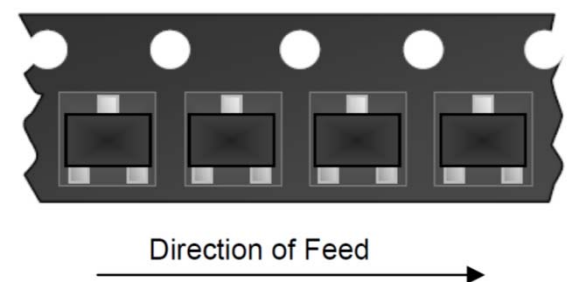
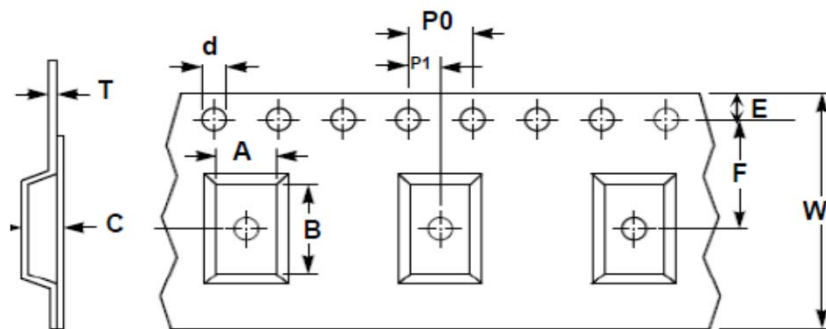
Note 1 : "xx" is Device Code from "6A" thru "8C".

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

### Tape & Reel specification

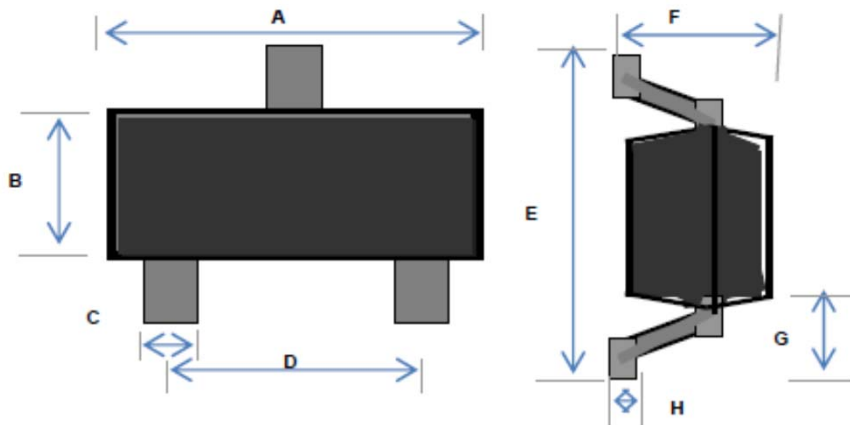


Item	Symbol	Dimension
Carrier width	A	3.15 ±0.10
Carrier length	B	2.77 ±0.10
Carrier depth	C	1.22 ±0.10
Sprocket hole	d	1.50 ± 0.10
Reel outside diameter	D	178 ± 1
Reel inner diameter	D1	55 Min
Feed hole width	D2	13.0 ± 0.20
Sprocket hole position	E	1.75 ±0.10
Punch hole position	F	3.50 ±0.05
Sprocket 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



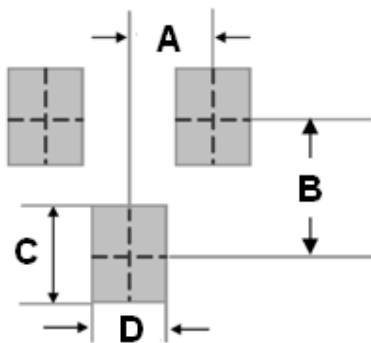
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### Dimensions



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