



BC846 THRU BC850

NPN TRANSISTOR

1. Features

- High current gain.
- Excellen hFE linearity .
- Low noise between 30Hz and 15kHz.
- For AF input stages and driver applications.

SOT-23



1 base
2 emitter
3 collector

2. Mechanical Data

- Case:Molded Plastic,SOT-23 .
- Epoxy:UL 94V-0 rate flame retardant.
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Mounting Position : Any.

3. Maximum Ratings

Electrical Characteristics Rating at 25℃ ambient temperature unless otherwise specified.

Characteristic		Symbol	Value	Unit
Collector-Base Voltage	BC846	V_{CBO}	80	V
	BC847		50	
	BC848		30	
	BC849		30	
	BC850		50	
Collector-Emitter Voltage	BC846	V_{CEO}	65	V
	BC847		45	
	BC848		30	
	BC849		30	
	BC850		45	
Emitter-Base Voltage	BC846	V_{EBO}	6	V
	BC847		6	
	BC848		5	
	BC849		5	
	BC850		5	
Collector Current		I_C	100	mA
Peak Collector Current		I_{CM}	200	mA
Total Power Dissipation		P_{tot}	300	mW
Junction Temperature		T_J	-55~+150	℃
Storage Temperature		T_{stg}	-55~+150	℃



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

Characteristics		Symbol	Condition	Min	TYP	Max	Unit
Collector-base breakdown voltage	BC846	$V_{(BR)CBO}$	$I_C=10\mu A$	80	-	-	V
	BC847			50	-	-	V
	BC848			30	-	-	V
	BC849			30	-	-	V
	BC850			50	-	-	V
Collector-emitter breakdown voltage	BC846	$V_{(BR)CEO}$	$I_C=10mA$	65	-	-	V
	BC847			45	-	-	V
	BC848			30	-	-	V
	BC849			30	-	-	V
	BC850			45	-	-	V
Emitter-base breakdown voltage	BC846	$V_{(BR)EBO}$	$I_E=1\mu A$	6	-	-	V
	BC847			6	-	-	V
	BC848			5	-	-	V
	BC849			5	-	-	V
	BC850			5	-	-	V
Collector cut-off current		I_{CBO}	$V_{CB}=30V$	-	-	15	nA
Emitter cut-off current		I_{EBO}	$V_{EB}=5V$	-	-	100	nA
DC current gain	BC846A~BC850A	h_{FE}	$V_{CE}=5V, I_C=2mA$	110	-	220	-
	BC846B~BC850B			200	-	450	-
	BC846C~BC850C			420	-	800	-
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=10mA, I_B=0.5mA$	-	-	0.25	V	
		$I_C=100mA, I_B=5mA$	-	-	0.6	V	
Base -emitter voltage	V_{BE}	$V_{CE}=5V, I_C=2mA$	0.58	-	0.7	V	
		$V_{CE}=5V, I_C=10mA$	-	-	0.77	V	
Transition frequency		f_T	$V_{CE}=5V, I_C=10mA, f=100MHz$	100	-	-	MHz
Collector Output Capacitance		C_{ob}	$V_{CB}=10V, I_E=0, f=1MHz$	-	-	4.5	pF

hFE Classification

Type	BC846A	BC847A	BC848A	BC849A	BC850A
Range	110-220	110-220	110-220	110-220	110-220
Marking	1A	1E	1J	2A	2E
Type	BC846B	BC847B	BC848B	BC849B	BC850B
Range	200-450	200-450	200-450	200-450	200-450
Marking	1B	1F	1K	2B	2F
Type	BC846C	BC847C	BC848C	BC849C	BC850C
Range	420-800	420-800	420-800	420-800	420-800
Marking	1C	1G	1L	2C	2G



5. Rating And Characteristic Curves

Fig.1 Normalized DC Current Gain

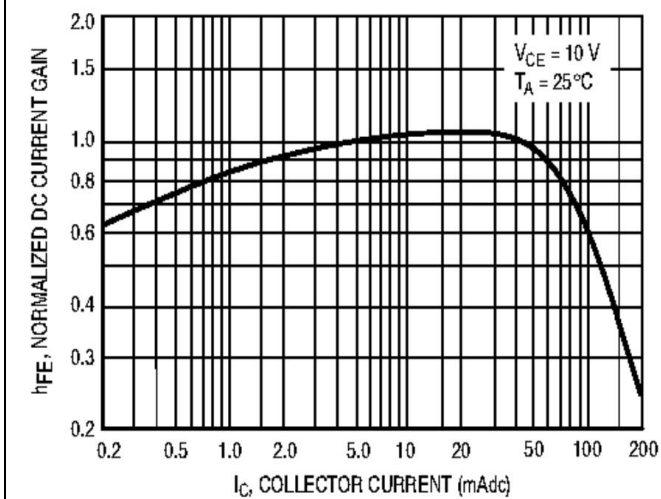


Fig.2 "Saturation" and "On" Voltages

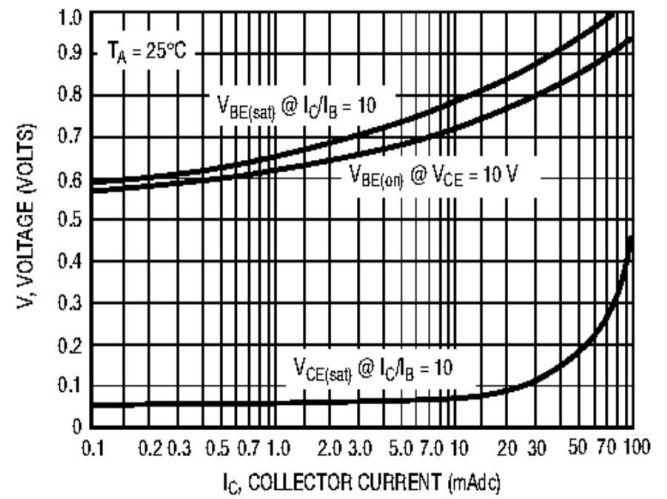


Fig.3 Collector Saturation Region

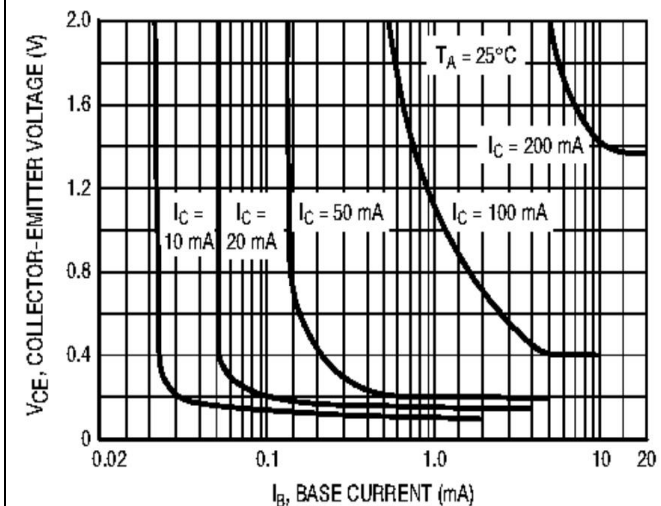


Fig.4 Base-Emitter Temperature Coefficient

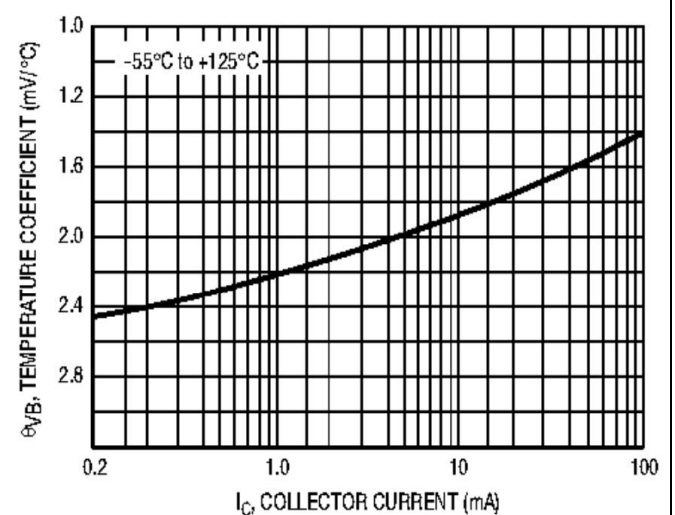


Fig.5 Capacitances

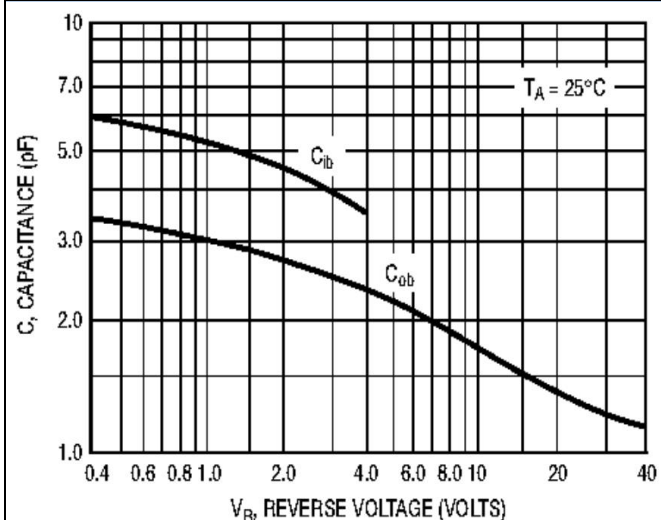


Fig.6 Current-Gain - Bandwidth Product





Fig.7 DC Current Gain

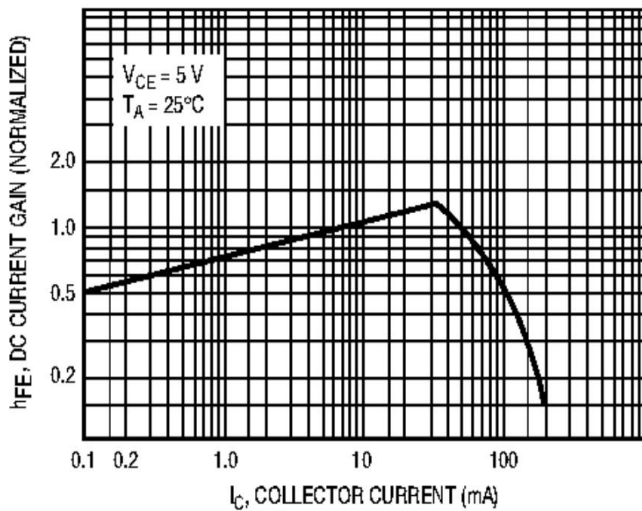


Fig.8 "On" Voltage

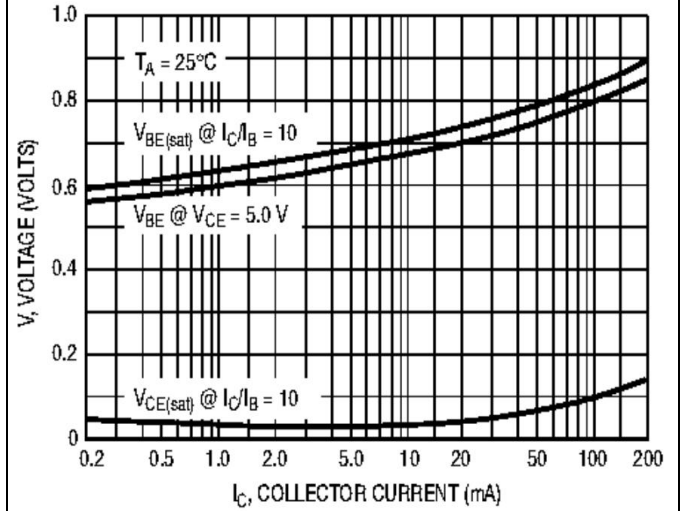


Fig.9 Collector Saturation Region

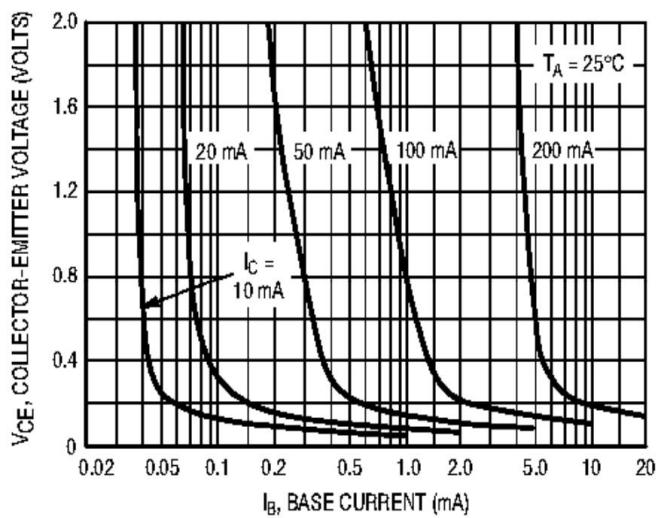


Fig.10 Base-Emitter Temperature Coefficient

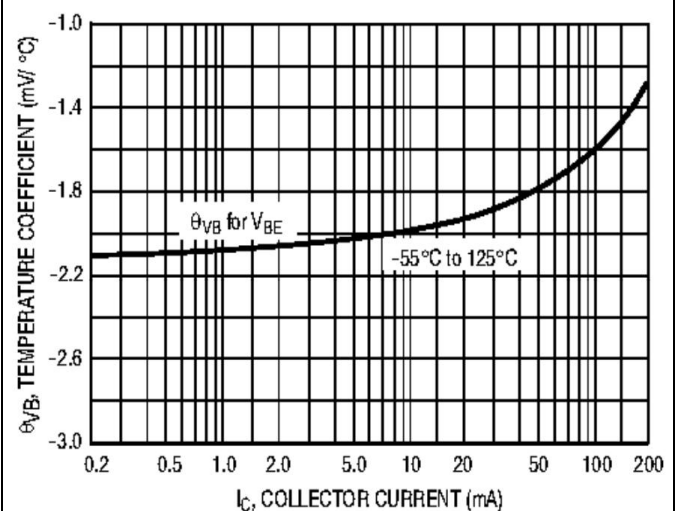


Fig.11 Capacitance

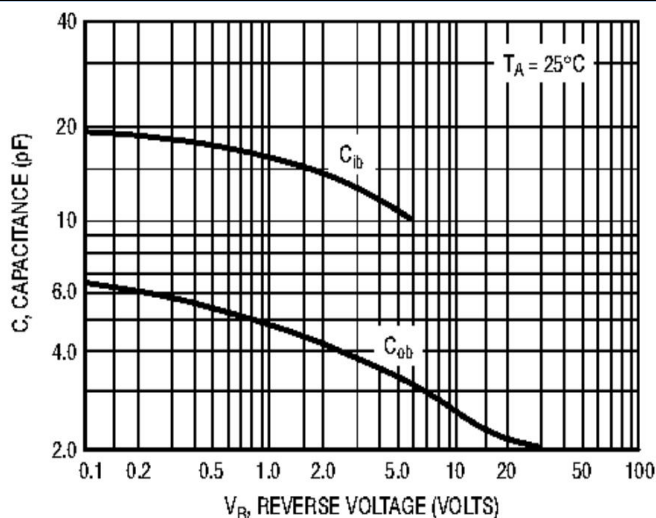
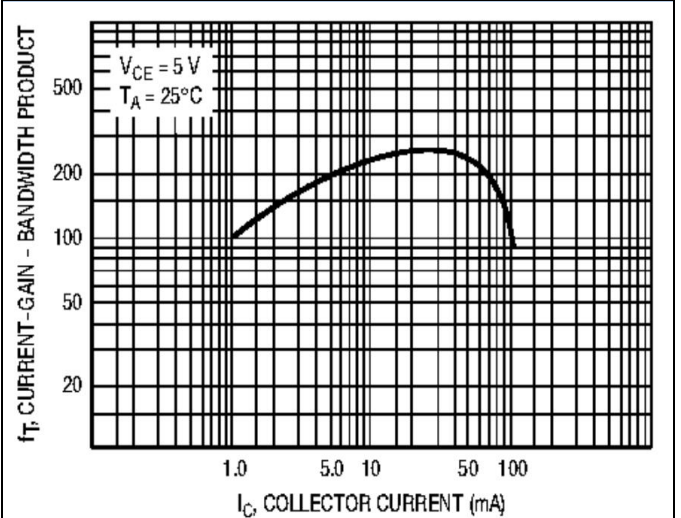
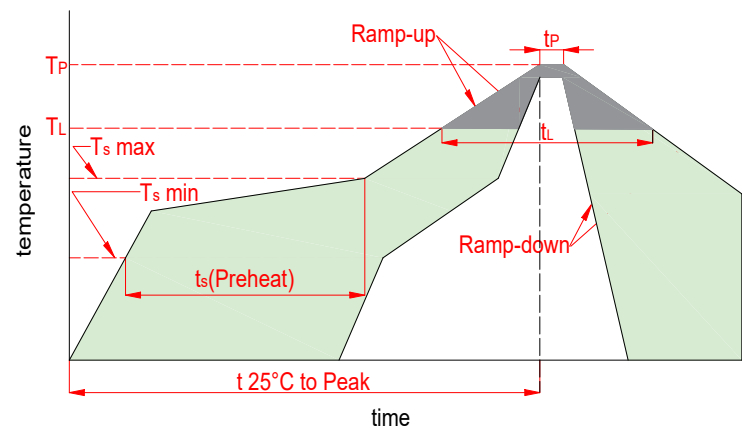


Fig.12 Current-Gain - Bandwidth Product



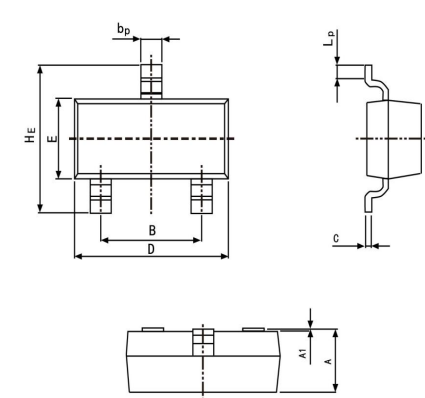


6. Soldering Parameters



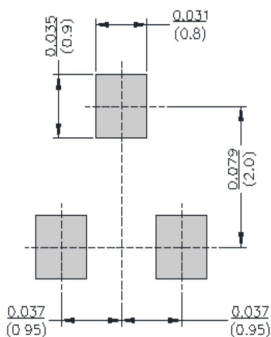
Reflow Condition		Lead-free
Pre Heat	Temp. min(T _s (min))	150℃
	Temp. max(T _s (min))	200℃
	Time(min to max)(t _s)	60~120s
Aver. ramp up rate(Liquidus Temp.)(T _L)to peak		3℃/s max
T _s (max) to T _L -Ramp-up Rate		3℃/s max
Reflow	Temp.(T _L)(Liquidus)	217℃
	Temp.(t _L)(Liquidus)	60~150s
Peak Temp.(T _P)		260 ^{+0/-5} ℃
Time within actual peak Temp.(t _p)		30s max
Ramp-down Rate		6℃/s max
Time 25℃ to peak Tempe.(T _P)		8 minutes max
Do not exceed		260℃

7. Dimensions

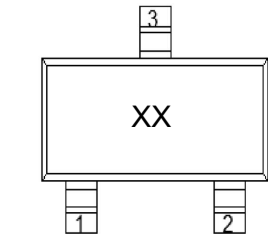


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.035	0.045	0.90	1.15
B	0.070	0.081	1.78	2.05
bp	0.012	0.020	0.30	0.51
C	0.003	0.007	0.08	0.18
D	0.110	0.118	2.80	3.00
E	0.047	0.055	1.20	1.40
HE	0.087	0.110	2.20	2.80
A1	0.000	0.004	0.00	0.10
LP	0.008	0.020	0.20	0.50

Mounting PAD Layout



8. Part Marking System



9. Package Information

Package	Type	Tape Width(mm)	Quantity(pcs)
SOT-23	BC846 THRU BC850	8	3000



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