



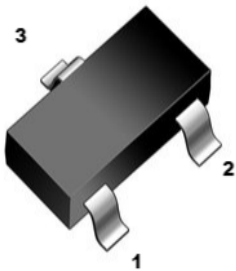
BC846AW THRU BC850CW

NPN TRANSISTOR

1. Features

- for general purpose and switching applications

SOT-323



2. Mechanical Data

- Case:Molded Plastic,SOT-323 .
- Epoxy:UL 94V-0 rate flame retardant.
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Mounting Position : Any.

1 base
2 emitter
3 collector

3. Maximum Ratings

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

Characteristic		Symbol	Value	Unit
Collector-Base Voltage	BC846XW	V_{CBO}	80	V
	BC847XW		50	
	BC848XW		30	
	BC849XW		30	
	BC850XW		50	
Collector-Emitter Voltage	BC846XW	V_{CEO}	65	V
	BC847XW		45	
	BC848XW		30	
	BC849XW		30	
	BC850XW		45	
Emitter-Base Voltage	BC846XW	V_{EBO}	6	V
	BC847XW		6	
	BC848XW		5	
	BC849XW		5	
	BC850XW		5	
Collector Current		I_C	100	mA
Peak Collector Current		I_{CM}	200	mA
Total Power Dissipation		P_{tot}	200	mW
Junction Temperature		T_J	-55~+150	℃
Storage Temperature		T_{stg}	-55~+150	℃



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

Characteristics		Symbol	Condition	Min	TYP	Max	Unit
Collector-base breakdown voltage	BC846XW	$V_{(BR)CBO}$	$I_C=10\mu\text{A}$	80	-	-	V
	BC847XW			50	-	-	V
	BC848XW			30	-	-	V
	BC849XW			30	-	-	V
	BC850XW			50	-	-	V
Collector-emitter breakdown voltage	BC846XW	$V_{(BR)CEO}$	$I_C=10\text{mA}$	65	-	-	V
	BC847XW			45	-	-	V
	BC848XW			30	-	-	V
	BC849XW			30	-	-	V
	BC850XW			45	-	-	V
Emitter-base breakdown voltage	BC846XW	$V_{(BR)EBO}$	$I_E=1\mu\text{A}$	6	-	-	V
	BC847XW			6	-	-	V
	BC848XW			5	-	-	V
	BC849XW			5	-	-	V
	BC850XW			5	-	-	V
Collector cut-off current		I_{CBO}	$V_{CB}=30\text{V}$	-	-	15	nA
Emitter cut-off current		I_{EBO}	$V_{EB}=5\text{V}$	-	-	100	nA
DC current gain	BC846AW~BC850AW	h_{FE}	$V_{CE}=5\text{V}, I_C=2\text{mA}$	110	-	220	-
	BC846BW~BC850BW			200	-	450	-
	BC846CW~BC850CW			420	-	800	-
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C=10\text{mA}, I_B=0.5\text{mA}$	-	-	0.25	V
			$I_C=100\text{mA}, I_B=5\text{mA}$	-	-	0.6	V
Base -emitter voltage		V_{BE}	$V_{CE}=5\text{V}, I_C=2\text{mA}$	0.58	-	0.7	V
			$V_{CE}=5\text{V}, I_C=10\text{mA}$	-	-	0.77	V
Transition frequency		f_T	$V_{CE}=5\text{V}, I_C=10\text{mA}, f=100\text{MHz}$	100	-	-	MHz
Collector Output Capacitance		C_{ob}	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$	-	-	4.5	pF

hFE Classification

Type	BC846AW	BC847AW	BC848AW	BC849AW	BC850AW
Range	110-220	110-220	110-220	110-220	110-220
Marking	1A	1E	1J	2A	2E
Type	BC846BW	BC847BW	BC848BW	BC849BW	BC850BW
Range	200-450	200-450	200-450	200-450	200-450
Marking	1B	1F	1K	2B	2F
Type	BC846CW	BC847CW	BC848CW	BC849CW	BC850CW
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

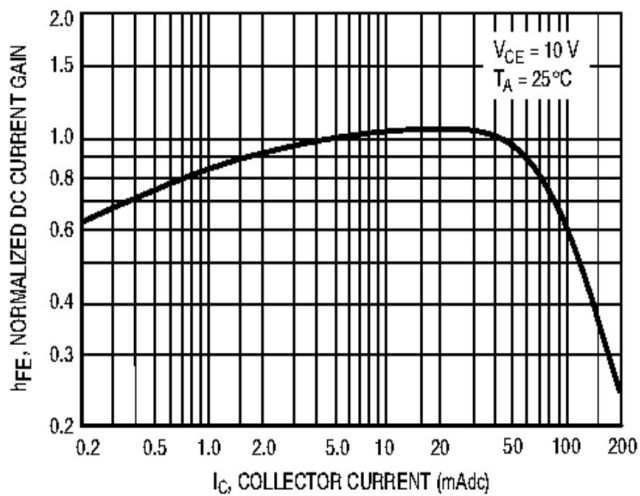


Fig.2 "Saturation" and "On" Voltages

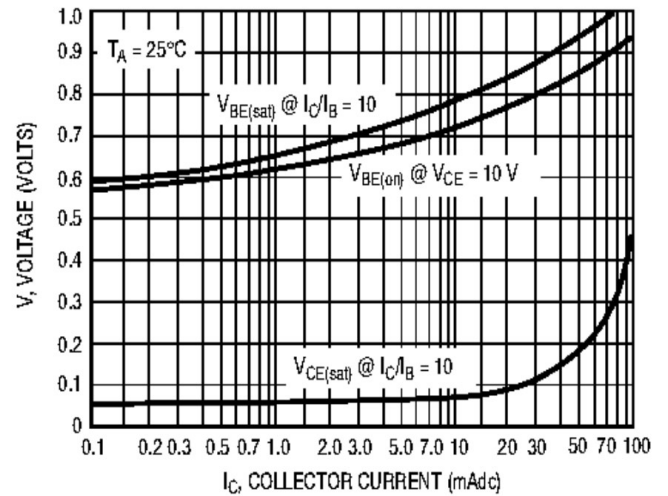


Fig.3 Collector Saturation Region

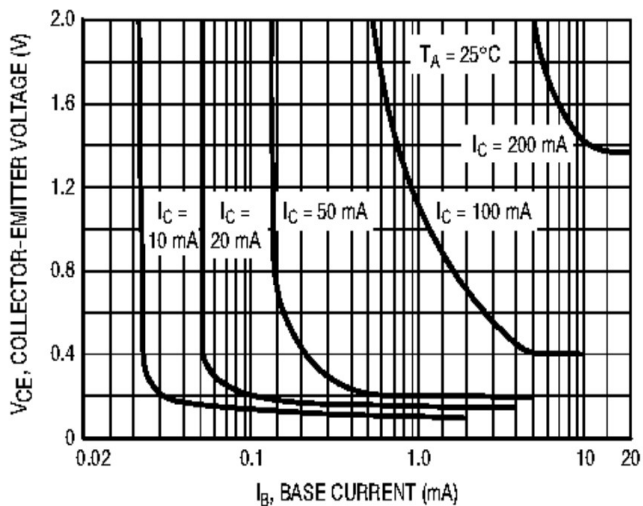


Fig.4 Base-Emitter Temperature Coefficient

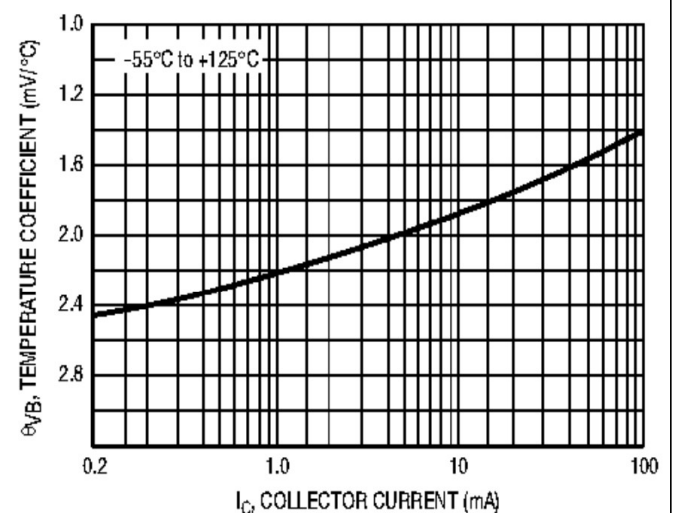


Fig.5 Capacitances

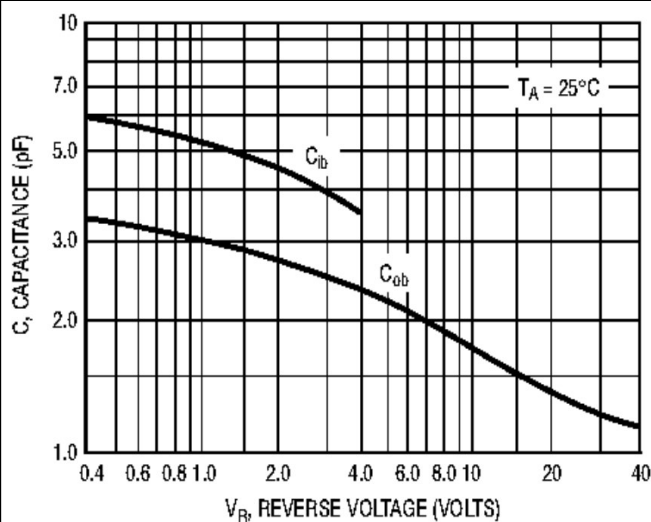


Fig.6 Current-Gain - Bandwidth Product

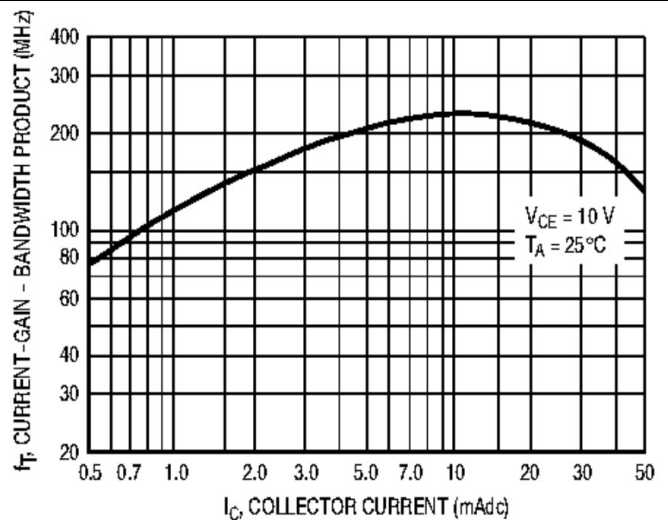




Fig.7 DC Current Gain

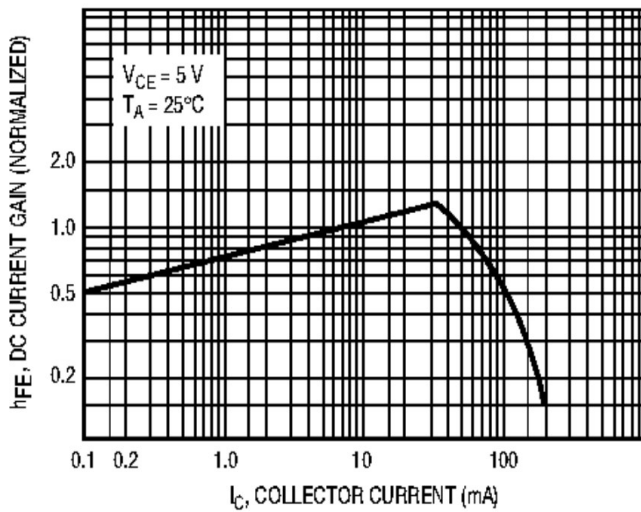


Fig.8 "On" Voltage

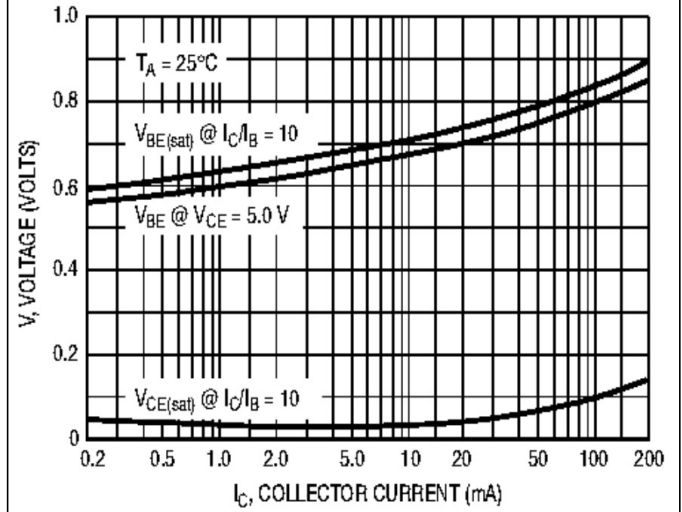


Fig.9 Collector Saturation Region

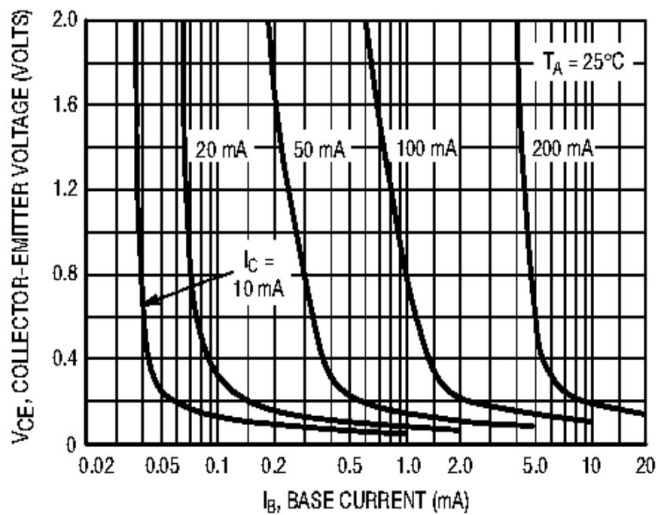


Fig.10 Base-Emitter Temperature Coefficient

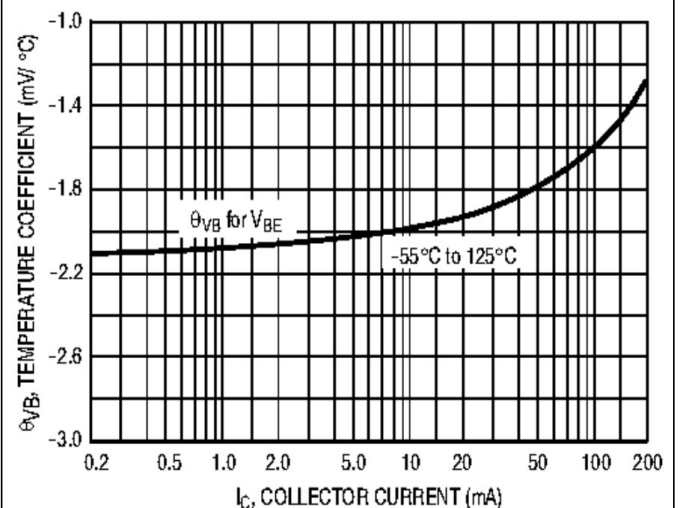


Fig.11 Capacitance

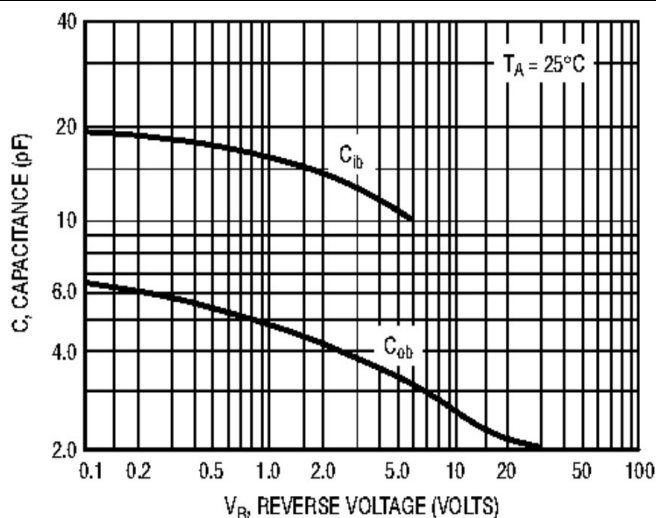
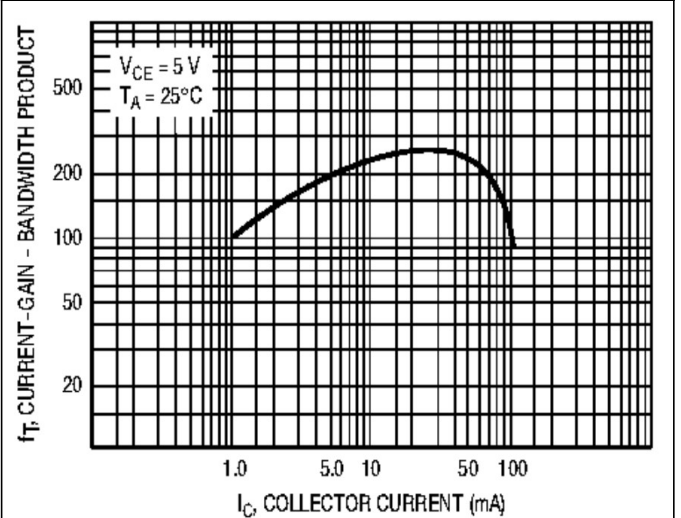


Fig.12 Current-Gain - Bandwidth Product

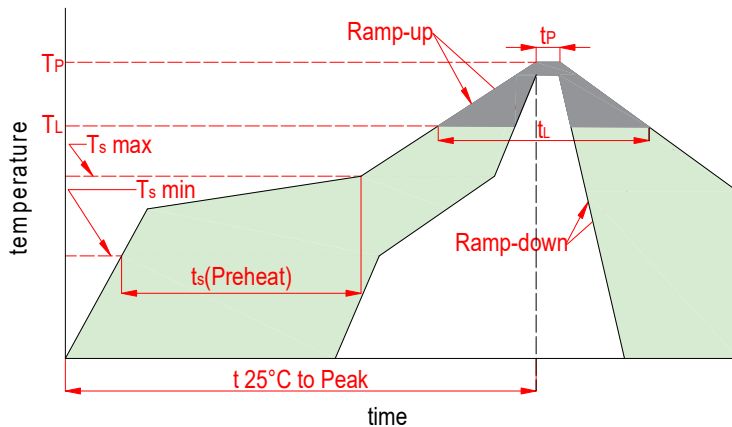




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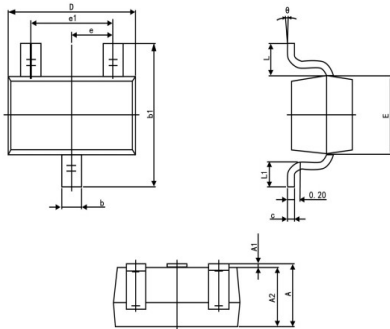
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6. Soldering Parameters



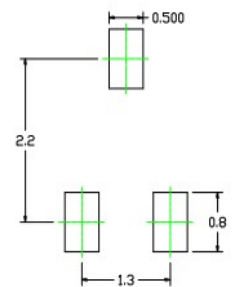
Reflow Condition		Lead-free
Pre Heat	Temp. min(T_s (min))	150°C
	Temp. max(T_s (min))	200°C
	Time(min to max)(t_s)	60~120s
Aver. ramp up rate(Liquidus Temp.)(T_L)to peak		3°C/s max
T_s (max) to T_L -Ramp-up Rate		3°C/s max
Reflow	Temp.(T_L)(Liquidus)	217°C
	Temp.(t_L)(Liquidus)	60~150s
Peak Temp.(T_P)		260 ^{+0/-5} °C
Time within actual peak Temp.(t_p)		30s max
Ramp-down Rate		6°C/s max
Time 25°C to peak Tempe.(T_p)		8 minutes max
Do not exceed		260°C

7. Dimensions

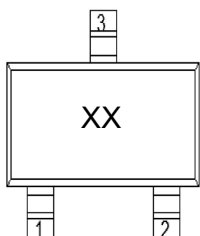


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.035	0.043	0.900	1.100
A1	0.000	0.004	0.000	0.100
A2	0.035	0.039	0.900	1.000
b	0.008	0.016	0.200	0.400
c	0.003	0.006	0.080	0.150
D	0.079	0.087	2.000	2.200
E	0.045	0.053	1.150	1.350
E1	0.085	0.096	2.150	2.450
e1	0.047	0.055	1.200	1.400
L1	0.010	0.018	0.260	0.460

Mounting PAD Layout



8. Part Marking System



9. Package Information

Package	Part Number	Tape Width(mm)	Quantity(pcs)
SOT-323	BC846AW THRU BC850CW	8	3000



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