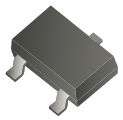
Small Signal Transistor

BC846W-HF Thru. BC848W-HF (NPN)

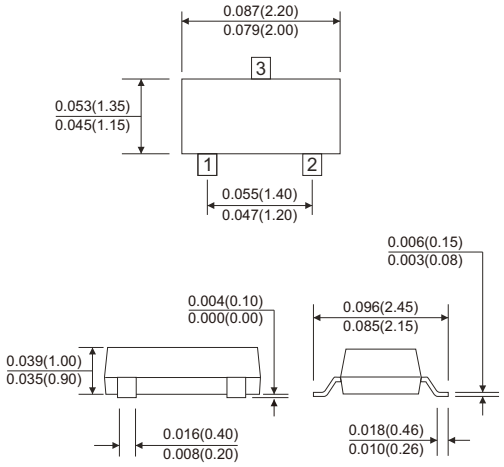
RoHS Device
Halogen Free



Features

- Ideally suited for automatic insertion.
- For switching and AF amplifier applications.

SOT-323



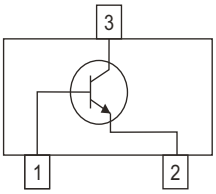
Dimensions in inches and (millimeter)

Mechanical data

- Case: SOT-323, molded plastic.
- Mounting position: Any.

Circuit Diagram

- 1.BASE
- 2.EMITTER
- 3.COLLECTOR



Maximum Ratings (at TA=25°C unless otherwise noted)

Parameter		Symbol	Value	Units
Collector-base voltage	BC846W-HF BC847W-HF BC848W-HF	V_{CBO}	80 50 30	V
Collector-emitter voltage	BC846W-HF BC847W-HF BC848W-HF	V_{CEO}	65 45 30	V
Emitter-base voltage	BC846W-HF / BC847W-HF BC848W-HF	V_{EBO}	6 5	V
Collector current-continuous		I_C	0.1	A
Collector power dissipation		P_C	150	mW
Thermal resistance from junction to ambient		$R_{\theta JA}$	833	°C/W
Operation junction and storage temperature range		T_{STG}	-55 to +150	°C

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

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	BC846W-HF BC847W-HF BC848W-HF	V_{CBO}	I_C = 10μA, I_E = 0	80 50 30			V
Collector-emitter breakdown voltage	BC846W-HF BC847W-HF BC848W-HF	V_{CEO}	I_C = 10mA, I_B = 0	65 45 30			V
Emitter-base breakdown voltage	BC846W-HF BC847W-HF BC848W-HF	V_{EBO}	I_E = 1μA, I_C = 0	6 6 5			V
Collector cut-off current		I_{CBO}	V_{CB} = 30V			15	nA
DC current gain	BC846AW-HF, 847AW-HF, 848AW-HF BC846BW-HF, 847BW-HF, 848BW-HF BC847CW-HF, 848CW-HF	h_{FE}	V_{CE} = 5V, I_C = 10μA		90 150 270		
	BC846AW-HF, 847AW-HF, 848AW-HF BC846BW-HF, 847BW-HF, 848BW-HF BC847CW-HF, 848CW-HF		V_{CE} = 5V, I_C = 2mA	110 200 420		220 450 800	
Collector-emitter saturation voltage		$V_{CE(sat)}$	I_C = 10mA, I_B = 0.5mA I_C = 100mA, I_B = 5mA			0.25 0.6	V
Base-emitter saturation voltage		$V_{BE(sat)}$	I_C = 10mA, I_B = 0.5mA I_C = 100mA, I_B = 5mA		0.7 0.9		V
Base-emitter voltage		$V_{BE(on)}$	V_{CE} = 5V, I_C = 2mA V_{CE} = 5V, I_C = 10mA	580 -	660 -	700 770	mV
Transition frequency		f_T	V_{CE} = 5V, I_C = 10mA f = 100MHz	100			MHz
Collector output capacitance		Cob	V_{CB} = 10V, f = 1MHz			4.5	pF
Noise figure	BC846AW-HF, 847AW-HF, 848AW-HF BC846BW-HF, 847BW-HF, 848BW-HF BC847CW-HF, 848CW-HF	NF	V_{CE} = 5V, I_C = 0.2mA, f = 1KHz, R_S = 2KΩ, BW = 200Hz			10 10 4	dB

Rating and Characteristic Curves (BC846W-HF Thru. BC848W-HF)

Fig.1 - Static Characteristic

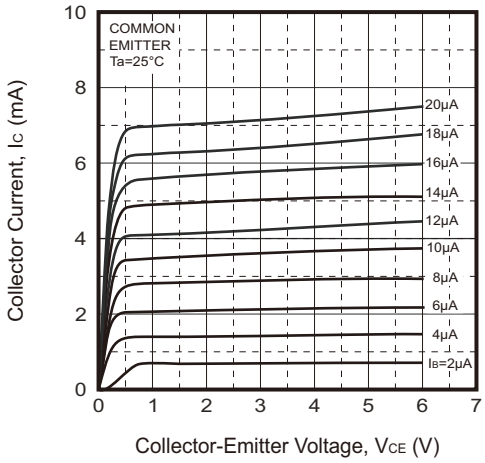


Fig.2 - h_{FE} — I_C

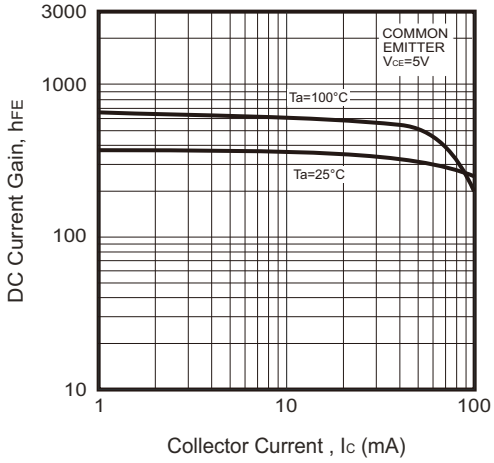


Fig.3 - V_{BEsat} — I_C

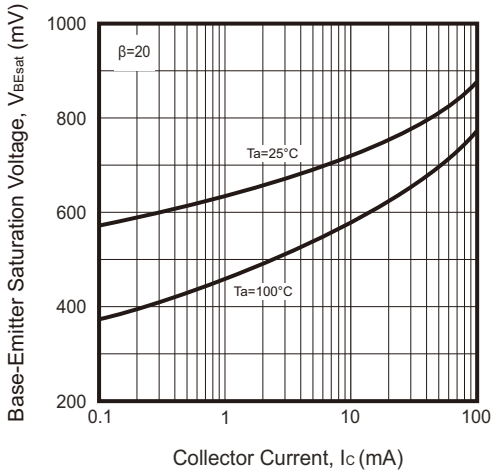


Fig.4 - V_{CEsat} — I_C

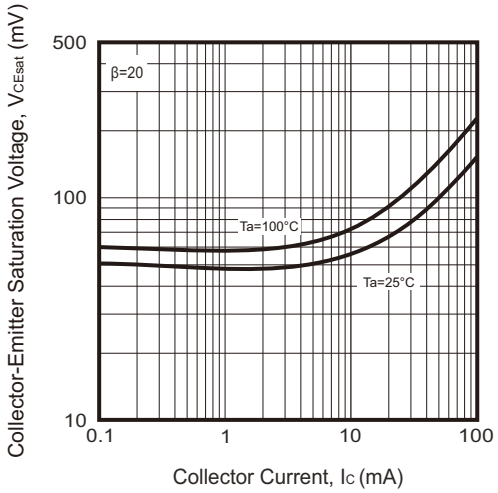


Fig.5 - I_C — V_{BE}

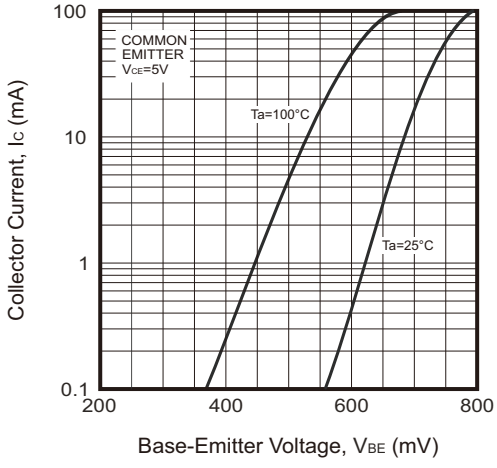
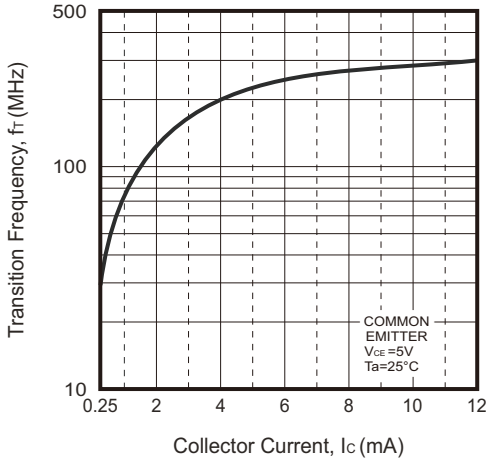


Fig.6 - f_T — I_C



Rating and Characteristic Curves (BC846W-HF Thru. BC848W-HF)

Fig.7 - Cob/Cib — V_{CB}/V_{EB}

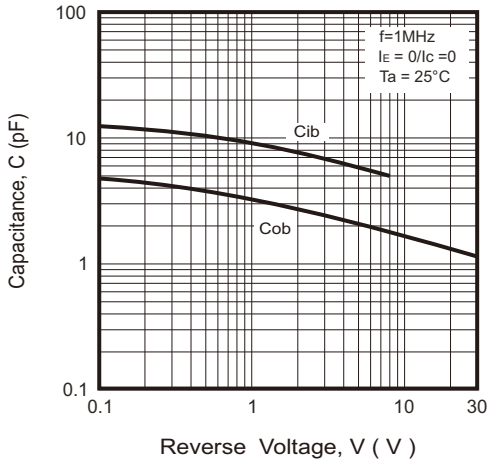
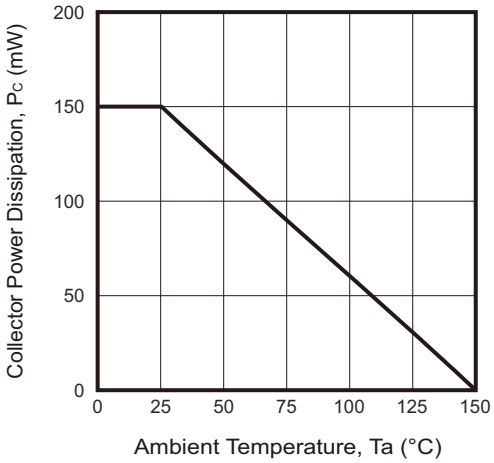
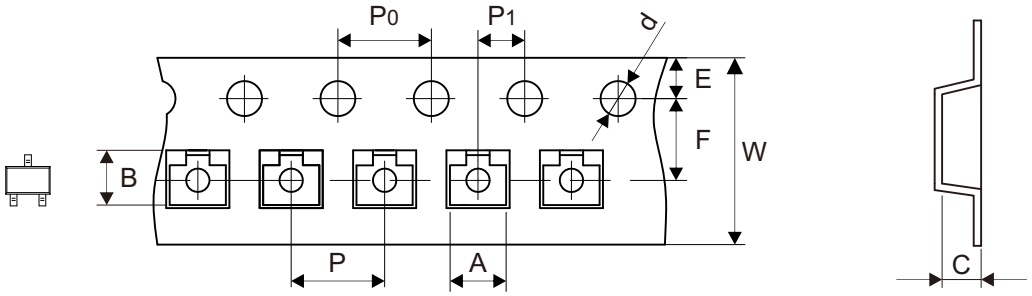
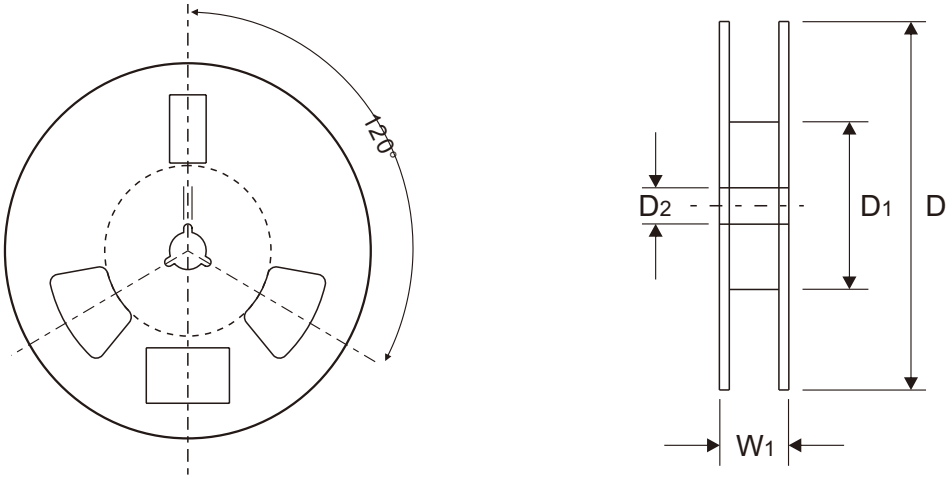


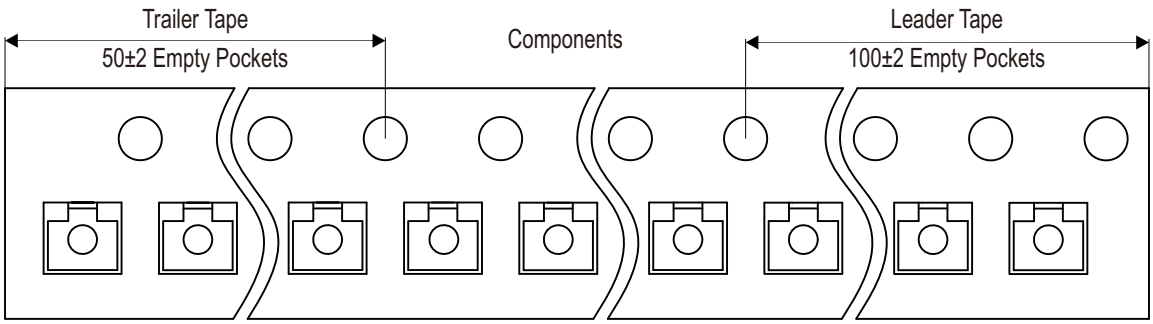
Fig.8 - P_C — Ta



Reel Taping Specification





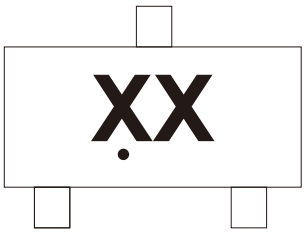


	SYMBOL	A	B	C	d	D	D1	D2
SOT-323	(mm)	2.25 ± 0.05	2.55 ± 0.05	1.19 ± 0.05	1.55 ± 0.10	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.089 ± 0.002	0.100 ± 0.002	0.047 ± 0.002	0.061 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

	SYMBOL	E	F	P	P0	P1	W	W1
SOT-323	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30 − 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 + 0.012 − 0.004	0.484 ± 0.039

Marking Code

Part Number	Marking Code
BC846AW-HF	1A
BC847AW-HF	1E
BC848AW-HF	1J
BC846BW-HF	1B
BC847BW-HF	1F
BC848BW-HF	1K
BC847CW-HF	1G
BC848CW-HF	1L

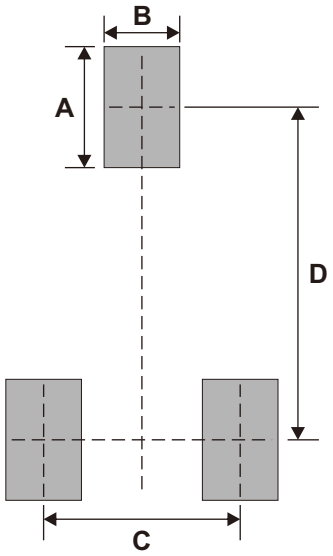


Solid dot = Control code

xx = Product type marking code

Suggested P.C.B. PAD Layout

SIZE	SOT-323	
	(mm)	(inch)
A	0.80	0.031
B	0.50	0.020
C	1.30	0.051
D	2.20	0.087



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-323	3,000	7