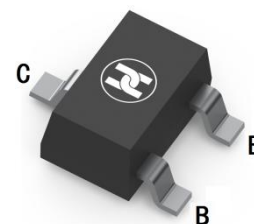
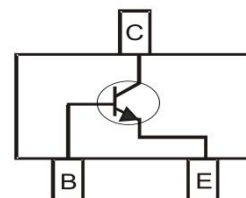


**BIPOLAR TRANSISTOR (NPN)**
**FEATURES**

- Complementary to BC856
- Excellent  $h_{FE}$  Linearity
- High Collector Current
- Surface Mount device


**SOT-323**
**MECHANICAL DATA**

- Case: SOT-323
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.008 grams (approximate)


**MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$  unless otherwise noted)**

Parameter	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	80	V
Collector-Emitter Voltage	$V_{CEO}$	65	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	100	mA
Collector Power Dissipation	$P_C$	450	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	833	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~+150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$  unless otherwise specified)**

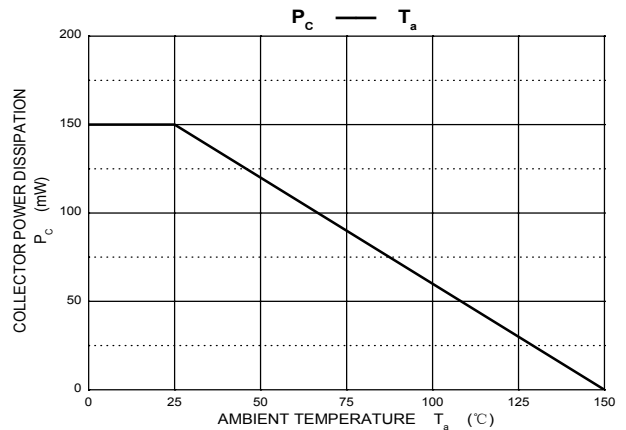
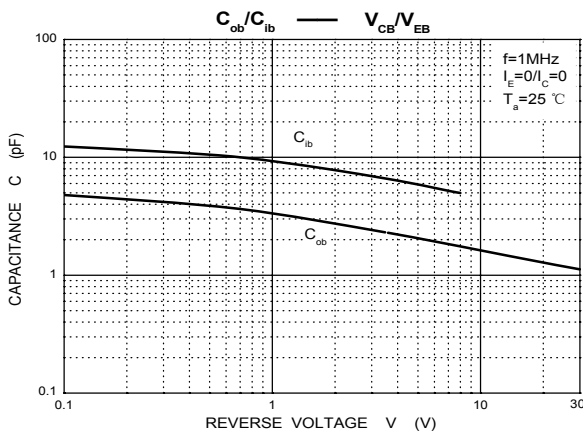
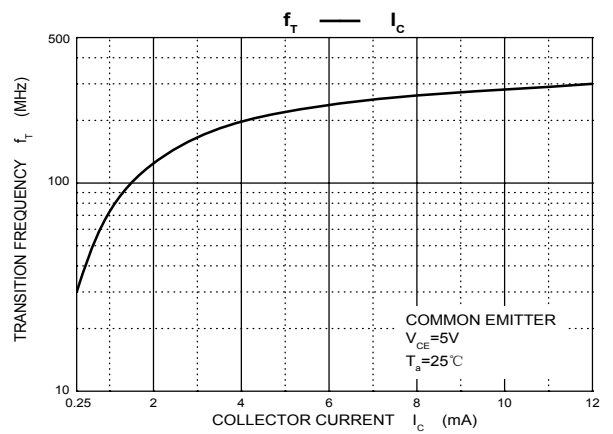
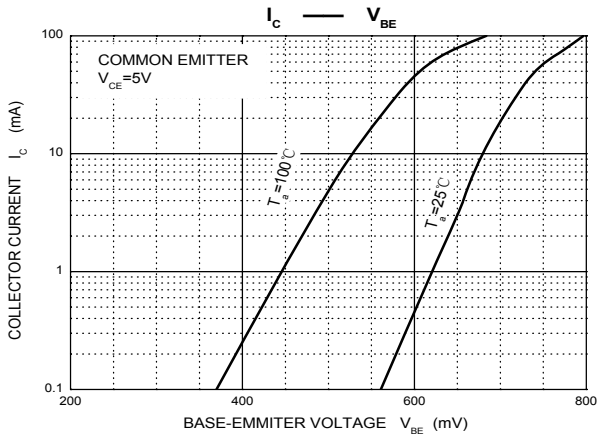
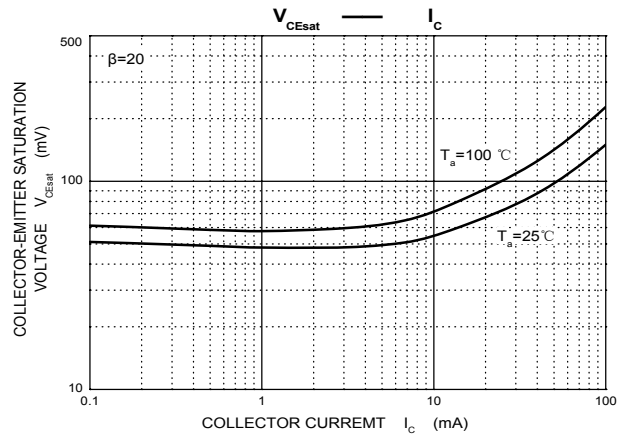
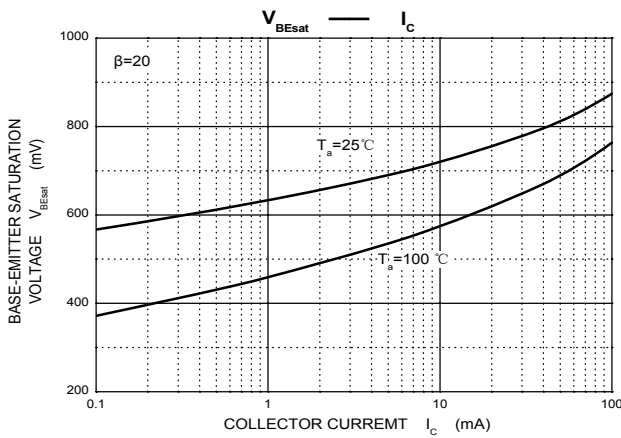
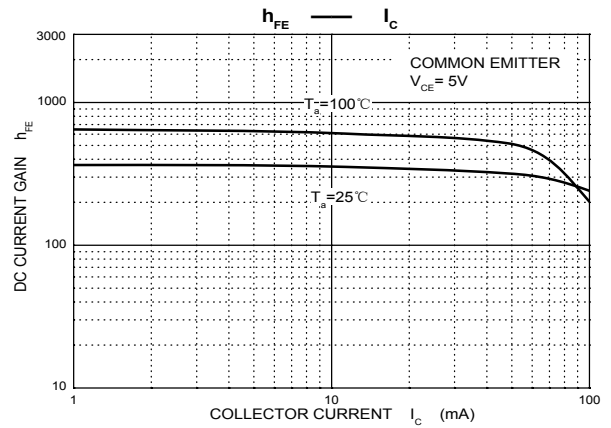
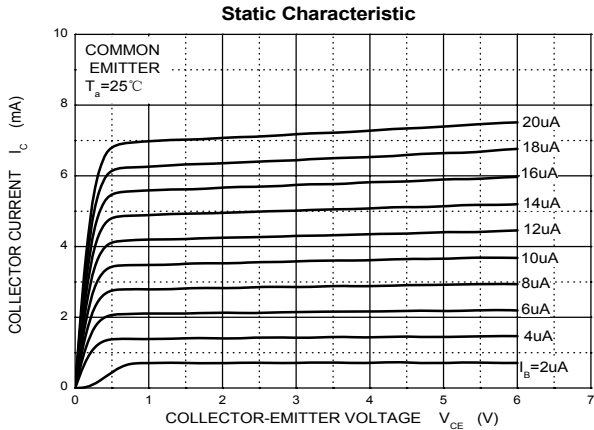
Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}$	80			V	$I_C=50\mu\text{A}$ , $I_E=0$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	65			V	$I_C=1\text{mA}$ , $I_B=0$
Emitter-base breakdown voltage	$V_{(BR)EBO}$	6			V	$I_E=50\mu\text{A}$ , $I_C=0$
Collector cut-off current	$I_{CBO}$			0.1	$\mu\text{A}$	$V_{CB}=80\text{V}$ , $I_E=0$
DC current gain	$h_{FE}$		90			$V_{CE}=5\text{V}$ , $I_C=10\mu\text{A}$
		120		450		$V_{CE}=5\text{V}$ , $I_C=1\text{mA}$
Collector-emitter saturation voltage	$V_{CE(sat)}$			0.2	V	$I_C=10\text{mA}$ , $I_B=0.5\text{mA}$
				0.3	V	$I_C=100\text{mA}$ , $I_B=5\text{mA}$
Base-emitter saturation voltage	$V_{BE(sat)}$			0.6	V	$I_C=10\text{mA}$ , $I_B=0.5\text{mA}$
				1.0	V	$I_C=100\text{mA}$ , $I_B=5\text{mA}$
Base-emitter voltage	$V_{BE(ON)}$	0.58	0.66	0.7	V	$V_{CE}=5\text{V}$ , $I_C=2\text{mA}$
				0.77	V	$V_{CE}=5\text{V}$ , $I_C=10\text{mA}$
Transition frequency	$f_T$	150			MHz	$V_{CE}=5\text{V}$ , $I_C=10\text{mA}$ , $f=30\text{MHz}$
Collector output capacitance	$C_{ob}$			8	pF	$V_{CB}=10\text{V}$ , $f=1\text{MHz}$
Noise figure	NF			10	dB	$V_{CE}=5\text{V}$ , $I_C=0.2\text{mA}$ , $R_S=2\text{k}\Omega$ $f=1\text{KHz}$ , $BW=200\text{Hz}$

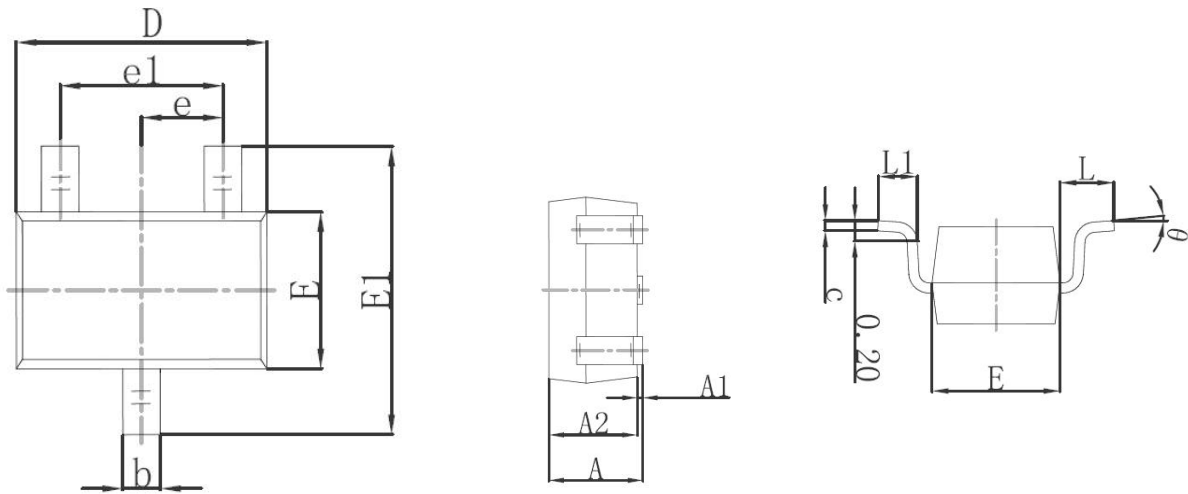
**CLASSIFICATION OF  $h_{FE}$** 

Rank	BC846AW	BC846BW
Range	120-200	200-450
Marking	1A	1B

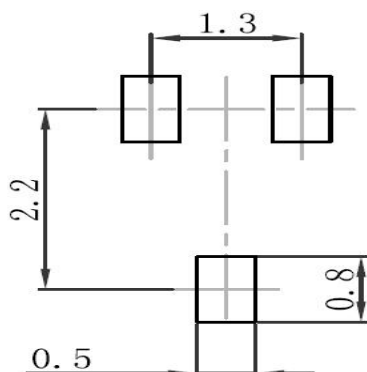
**BIPOLAR TRANSISTOR (NPN)**

**Typical Characteristics**

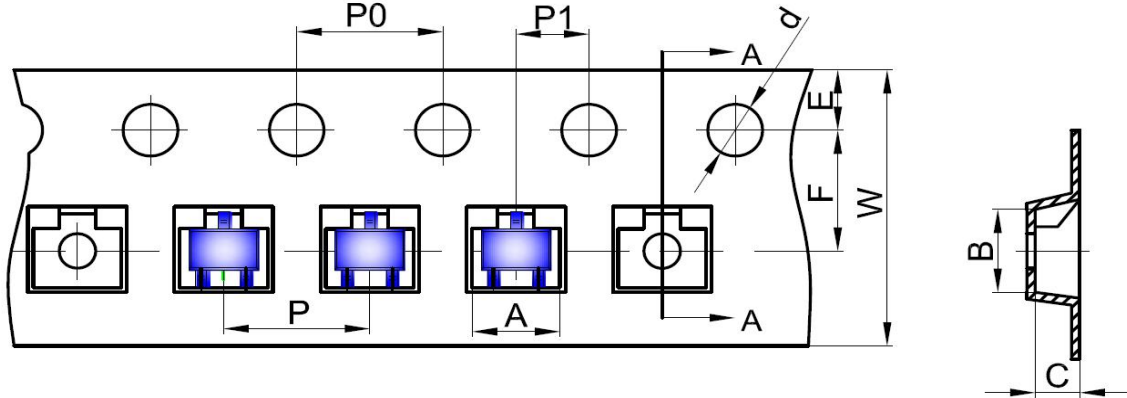


**BIPOLAR TRANSISTOR (NPN)**
**SOT-323 Package Outline Dimensions**


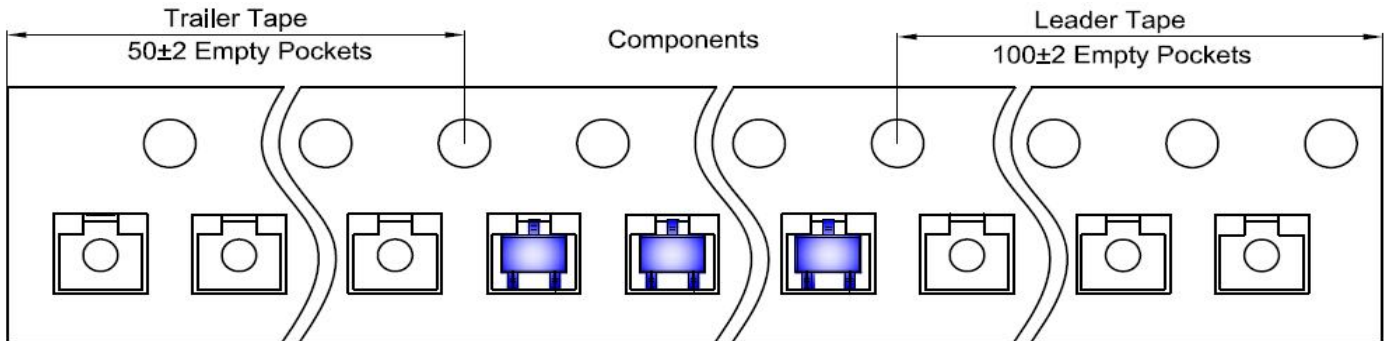
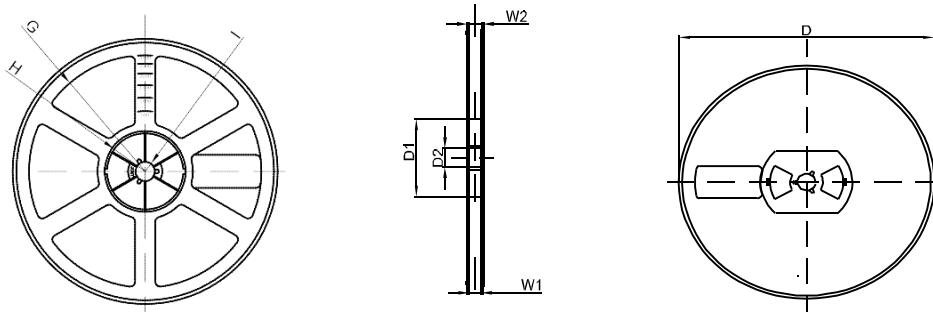
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.525REF		0.021REF	
L1	0.260	0.460	0.010	0.018
$\theta$	0°	8°	0°	8°

**SOT-323 Suggested Pad Layout**

**Note:**

1. Controlling dimension: in millimeters
2. General tolerance:  $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

**BIPOLAR TRANSISTOR (NPN)**
**SOT-323 Tape and Reel**
**SOT-323 Embossed Carrier Tape**


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-323	2.25	2.55	1.19	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

**SOT-323 Tape Leader and Trailer**

**SOT-323 Reel**


DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	Ø178	54.40	13.00	R78	R25.60	R6.50	9.50	12.30
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1