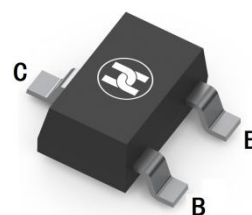
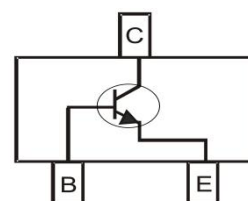


**BIPOLAR TRANSISTOR (NPN)**
**FEATURES**

- High current gain
- High Voltage
- 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<sub>A</sub> = 25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	60	V
Collector-Emitter Voltage	V <sub>CEO</sub>	50	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	V
Collector Current	I <sub>C</sub>	100	mA
Collector Power Dissipation	P <sub>C</sub>	200	mW
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~+150	°C

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise specified)**

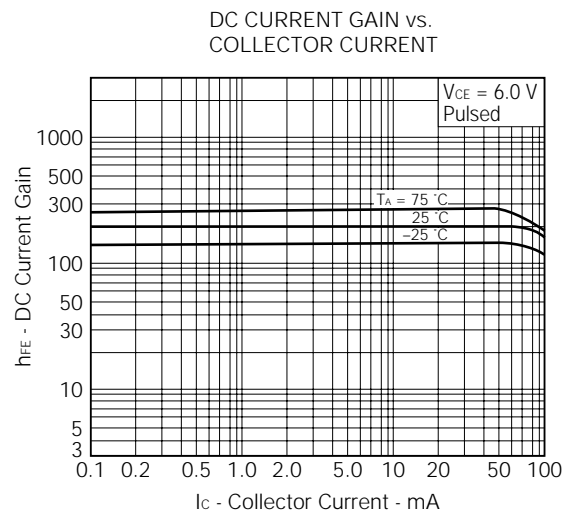
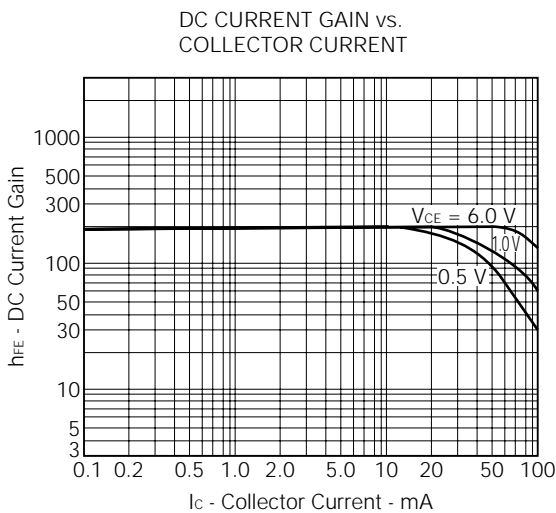
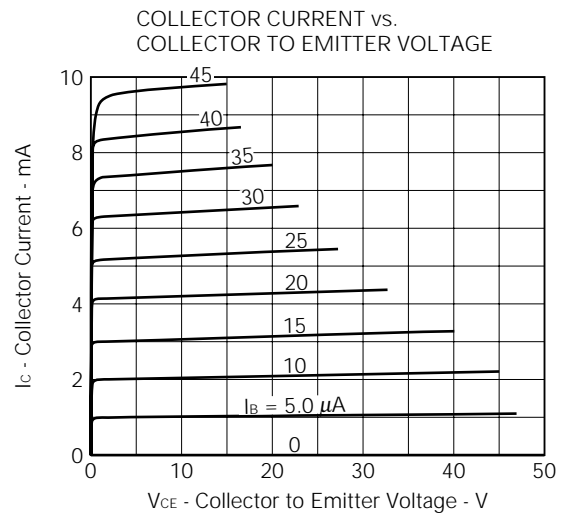
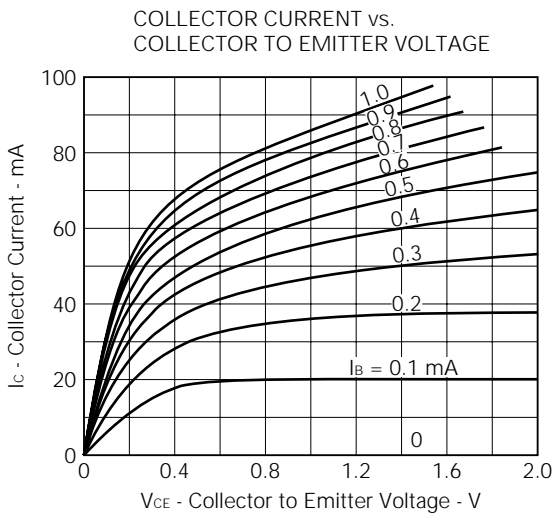
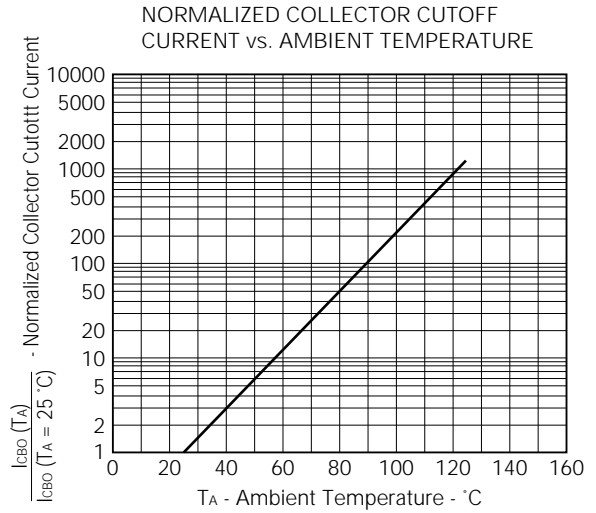
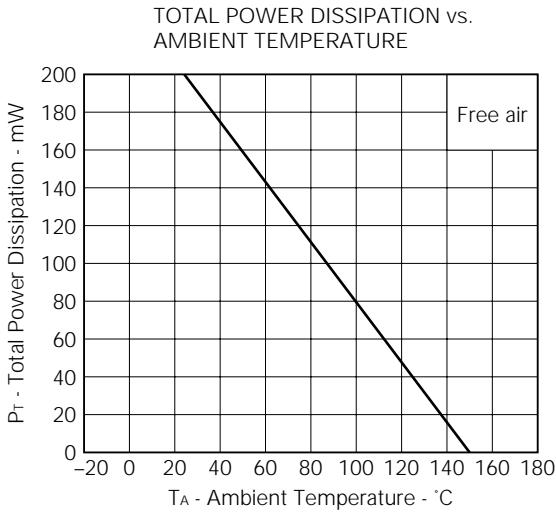
Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	60			V	I <sub>C</sub> =100uA, I <sub>E</sub> =0
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	50			V	I <sub>C</sub> =1mA, I <sub>B</sub> =0
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	5			V	I <sub>E</sub> =100uA, I <sub>C</sub> =0
Collector cut-off current	I <sub>CBO</sub>			0.1	uA	V <sub>CB</sub> =60V, I <sub>E</sub> =0
Emitter cut-off current	I <sub>EBO</sub>			0.1	uA	V <sub>EB</sub> =5V, I <sub>C</sub> =0
DC current gain	h <sub>FE</sub>	90	200	600		V <sub>CE</sub> =6V, I <sub>C</sub> =1mA
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>			0.3	V	I <sub>C</sub> =100mA, I <sub>B</sub> =10mA
Base-emitter saturation voltage	V <sub>BE(sat)</sub>			1	V	I <sub>C</sub> =100mA, I <sub>B</sub> =10mA
Transition frequency	f <sub>T</sub>		250		MHz	V <sub>CE</sub> =6V, I <sub>C</sub> =10mA

**CLASSIFICATION OF h<sub>FE</sub>**

Rank	L4	L5	L6	L7
Range	90-180	135-270	200-400	300-600
Marking	L4	L5	L6	L7

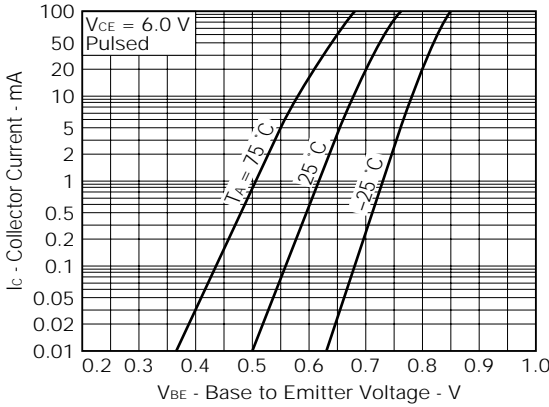
**BIPOLAR TRANSISTOR (NPN)**

**Typical Characteristics**

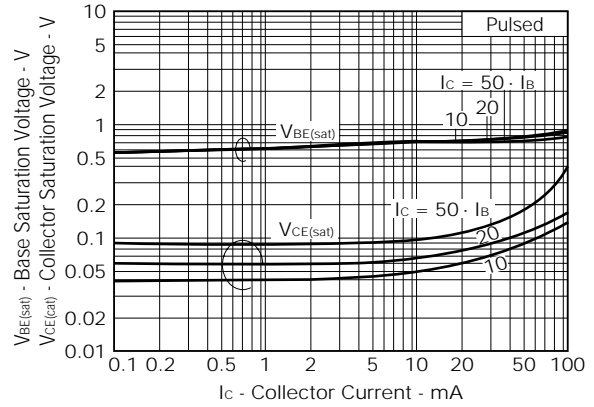


**BIPOLAR TRANSISTOR (NPN)**

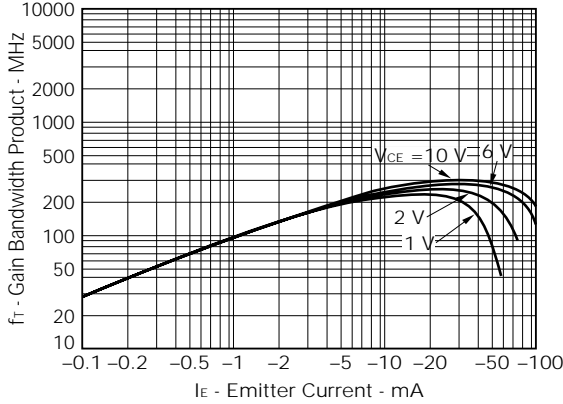
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



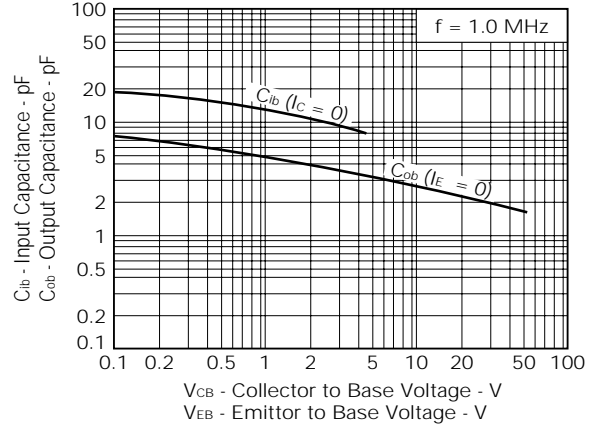
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



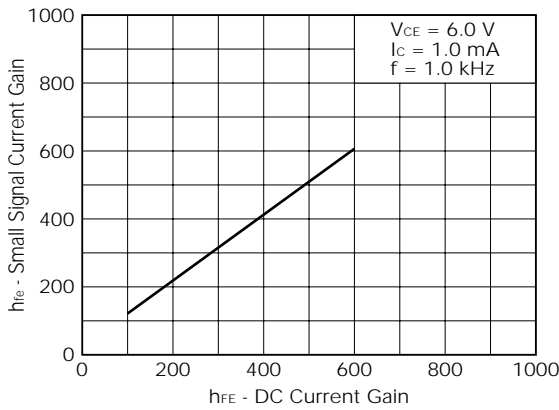
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



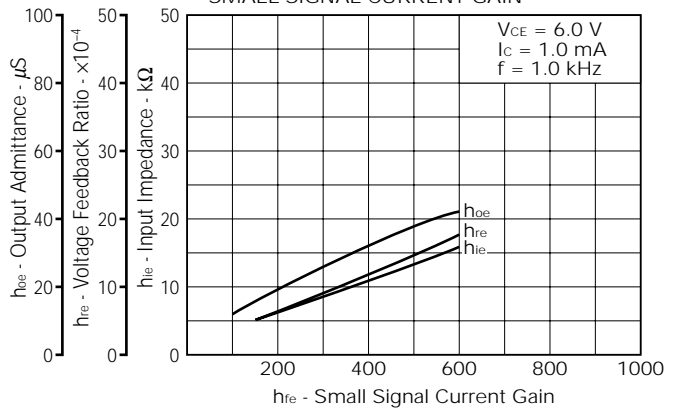
INPUT AND OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



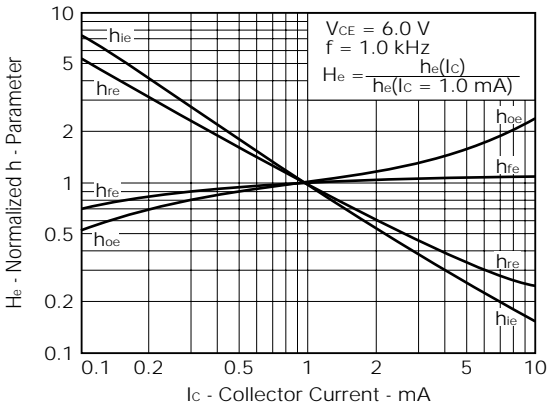
SMALL SIGNAL CURRENT GAIN vs. DC CURRENT GAIN



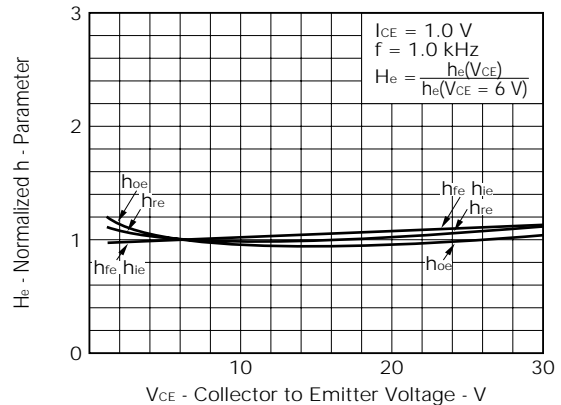
INPUT IMPEDANCE VOLTAGE FEEDBACK RATIO AND OUTPUT ADMITTANCE vs. SMALL SIGNAL CURRENT GAIN

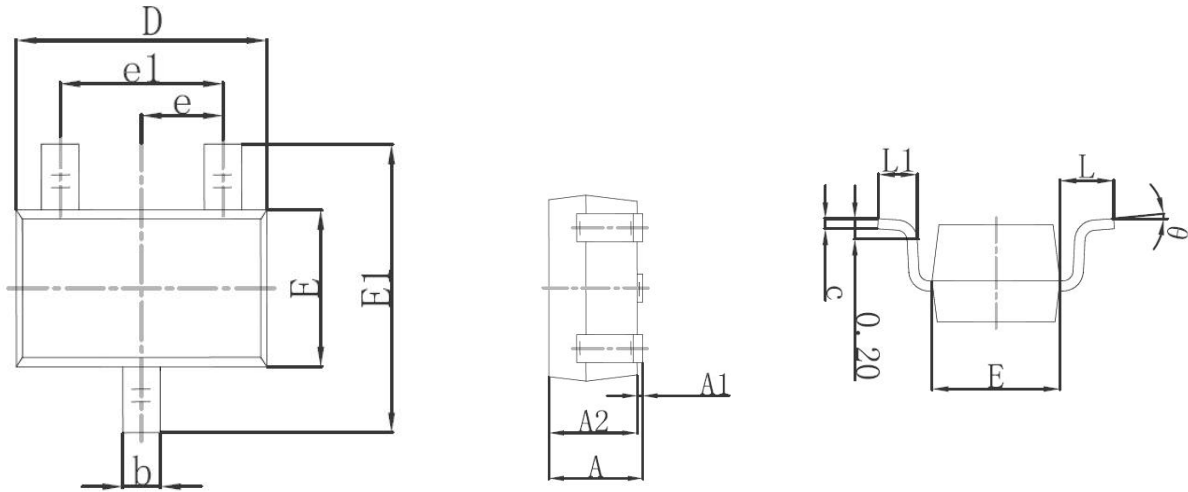


NORMALIZED h-PARAMETER vs. COLLECTOR CURRENT

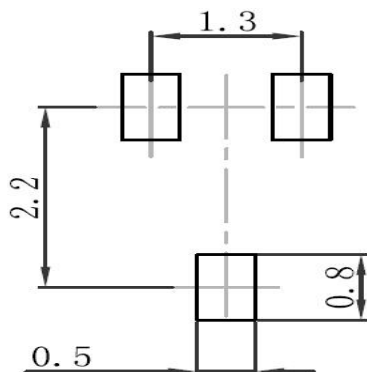


NORMALIZED h-PARAMETER vs. COLLECTOR TO EMITTER VOLTAGE



**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°

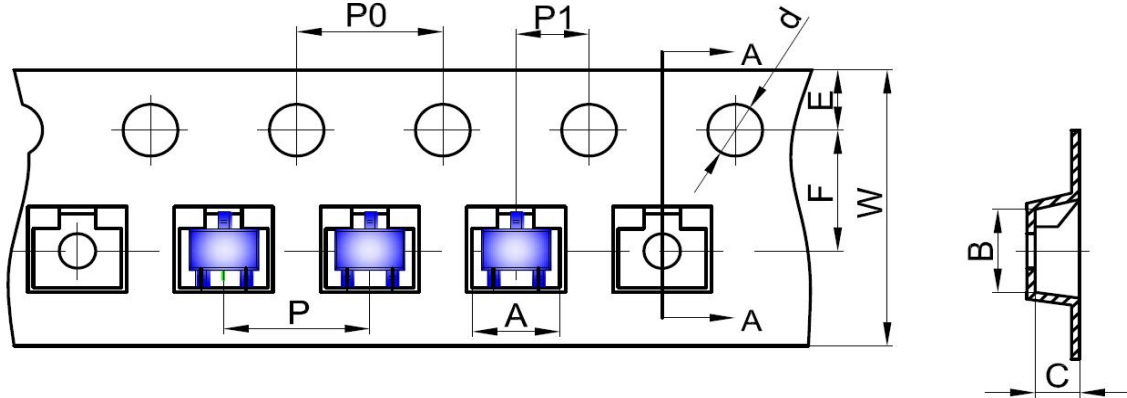
**SOT-323 Suggested Pad Layout**

**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)

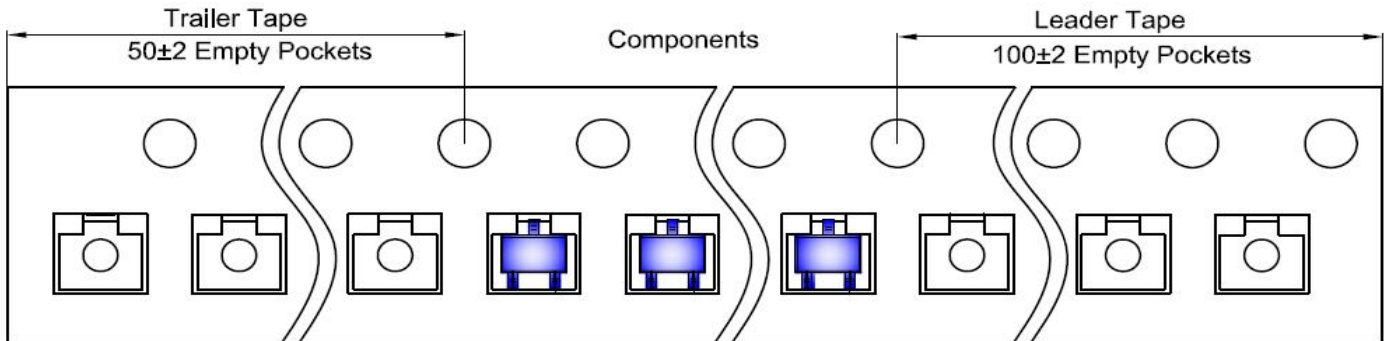
SOT-323 Tape and Reel

SOT-323 Embossed Carrier Tape

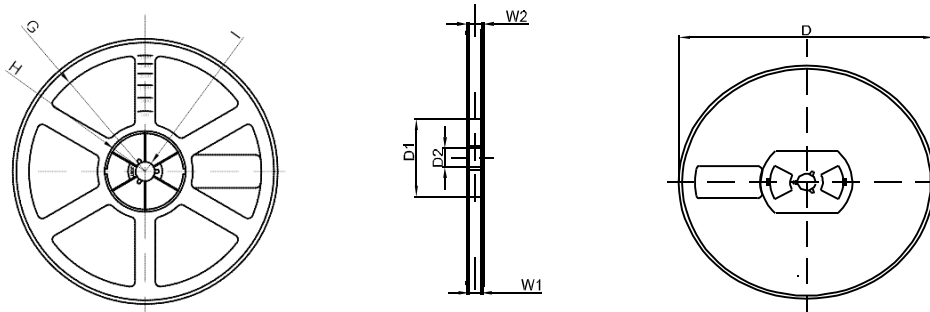


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-323	2.25	2.55	1.19	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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