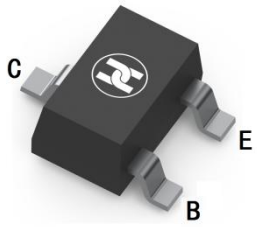
BIPOLAR TRANSISTOR (NPN)

FEATURES

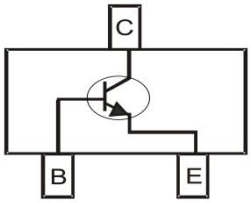
- High power gain
- Low Noise
- For Low Noise Amplifier at UHF/VHF/CATV Band
- Surface Mount device



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°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	20	V
Collector-Emitter Voltage	V_{CEO}	12	V
Emitter-Base Voltage	V_{EBO}	3	V
Collector Current	I_C	100	mA
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 ~+150	°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}$	20			V	I_C=10uA，I_E=0
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	12			V	I_C=1mA，I_B=0
Emitter-base breakdown voltage	$V_{(BR)EBO}$	3			V	I_E=10uA，I_C=0
Collector cut-off current	I_{CBO}			1	uA	V_{CB}=10V, I_E=0
Emitter cut-off current	I_{EBO}			1	uA	V_{EB}=1V, I_C=0
DC current gain	h_{FE}	50	120	300		V_{CE}=10V, I_C=20mA
Insertion Power Gain	$\|S_{21e}\|^2$		11.5		dB	V_{CE}=10V, I_C=20mA, f=1GHz
Transition frequency	f_T		7		GHz	V_{CE}=10V, I_C=20mA
Collector output capacitance	C_{ob}		0.55	1.0	pF	V_{CB}=10V, I_E=0, f=1MHz
Noise figure	NF		1	2	dB	V_{CE}=10V, I_C=7mA, f=1GHz

CLASSIFICATION OF h_{FE}

Rank	Q	R	S	T
Range	50-100	80-160	125-250	200-330
Marking	R23	R24	R25	R26

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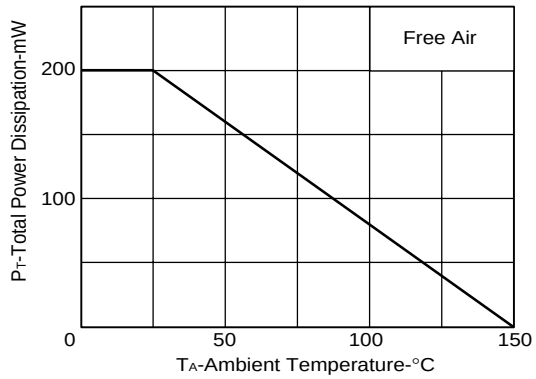
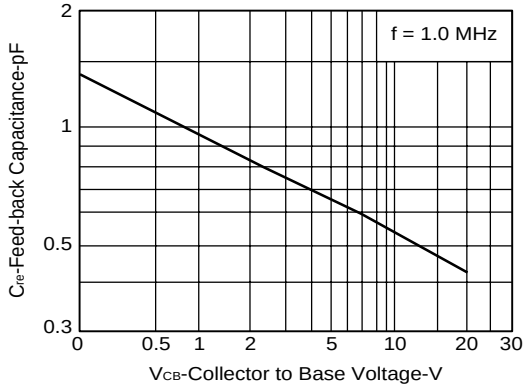
Typical Characteristics

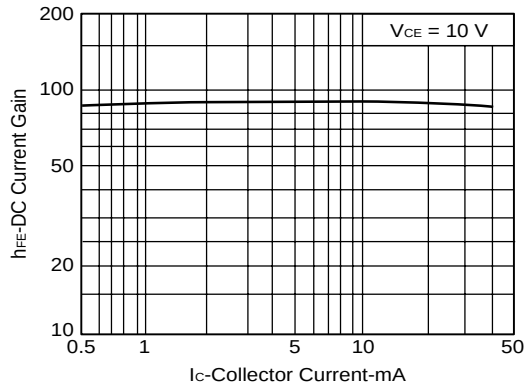
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



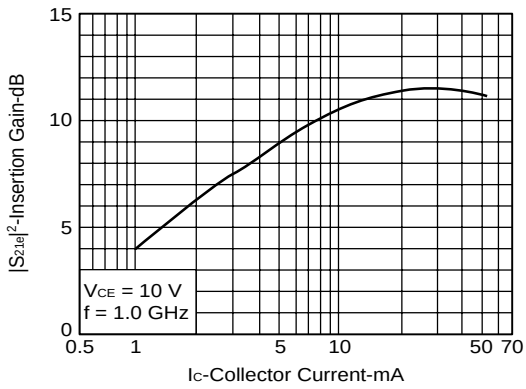
FEED-BACK CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



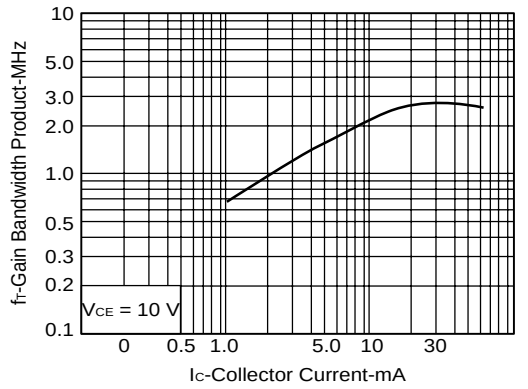
DC CURRENT GAIN vs. COLLECTOR CURRENT



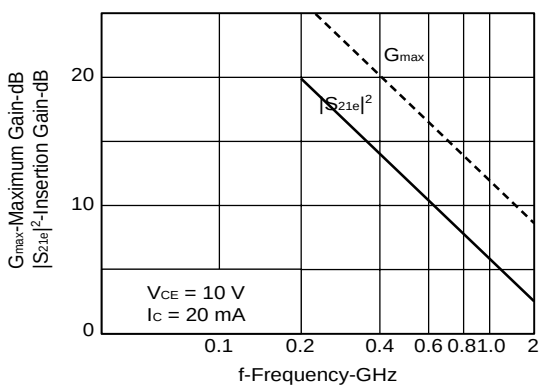
INSERTION GAIN vs. COLLECTOR CURRENT



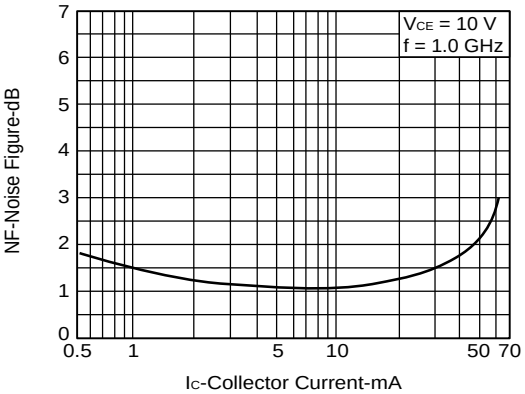
GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



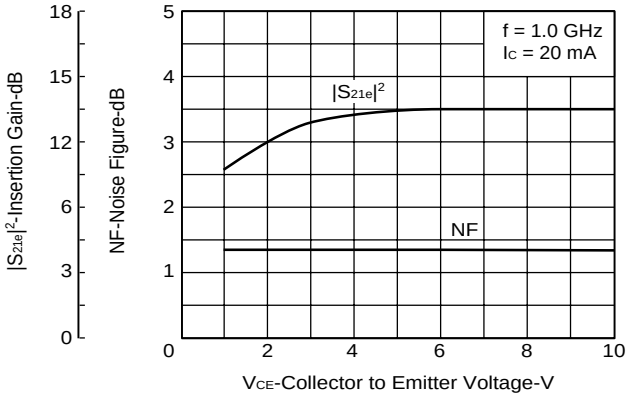
INSERTION GAIN, MAXIMUM GAIN vs. FREQUENCY



NOISE FIGURE vs. COLLECTOR CURRENT

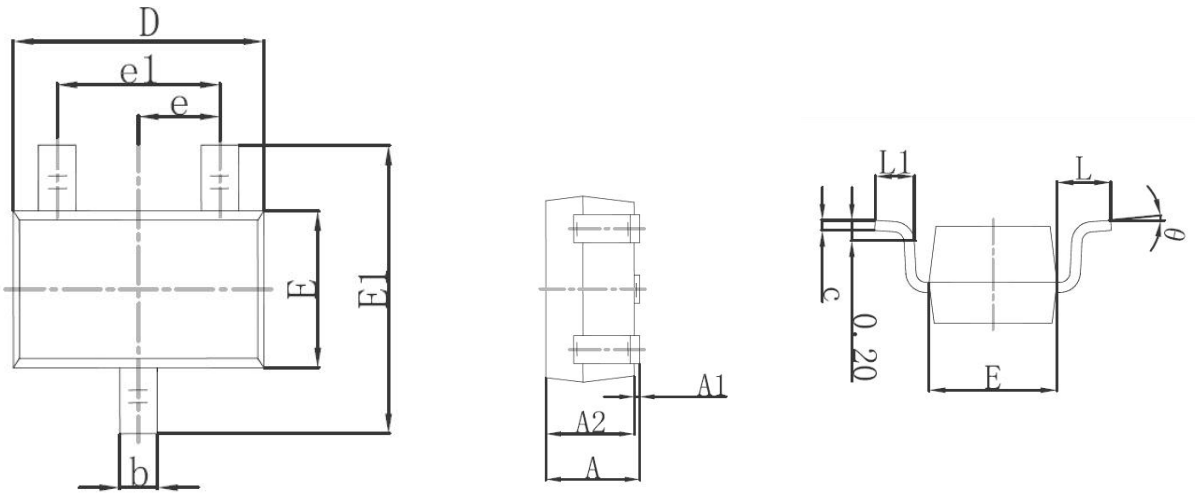


NOISE FIGURE, FORWARD INSERTION GAIN vs. COLLECTOR TO EMITTER VOLTAGE



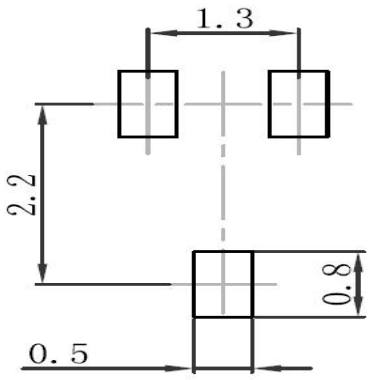
BIPOLAR TRANSISTOR (NPN)

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
θ	0°	8°	0°	8°

SOT-323 Suggested Pad Layout



Note:

1.Controlling dimension: in millimeters

2.General tolerance: ±0.05mm

3.The pad layout is for reference purposes only

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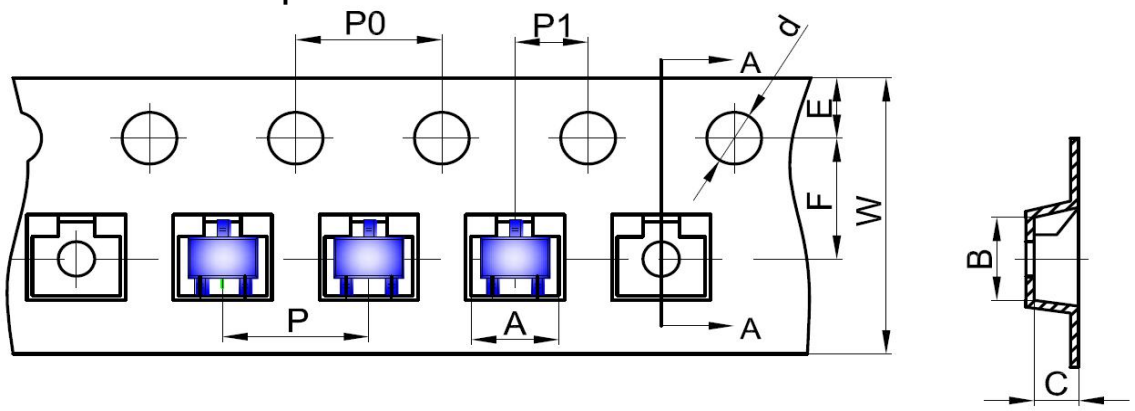
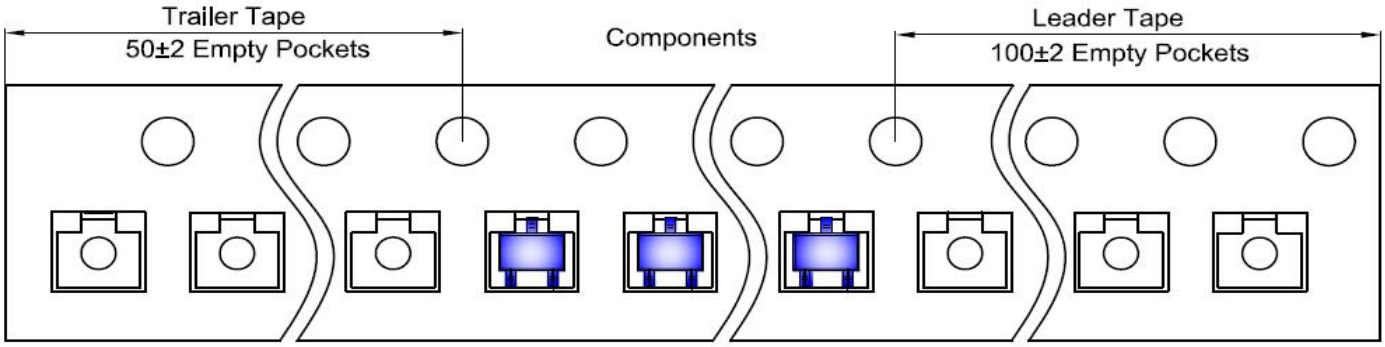
SOT-323 Tape and Reel

SOT-323 Embossed Carrier Tape

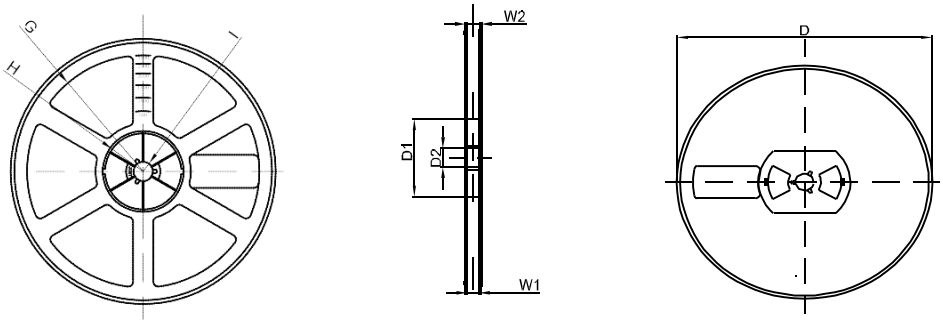


	DIMENSIONS ARE IN MILLIMETER									
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-323	2.25	2.55	1.19	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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