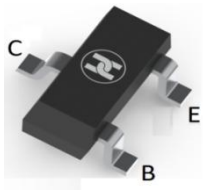
BIPOLAR TRANSISTOR (NPN)

FEATURES

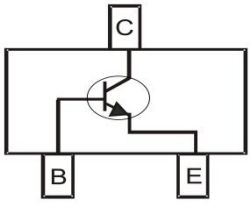
- Low on-resistance
- Surface Mount device



SOT-23

MECHANICAL DATA

- Case: SOT-23
- 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}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	1000	mA
Peak Collector Current	I_{CM}	2000	mA
Collector Power Dissipation	P_C	500	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	500	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 ~+150	°C

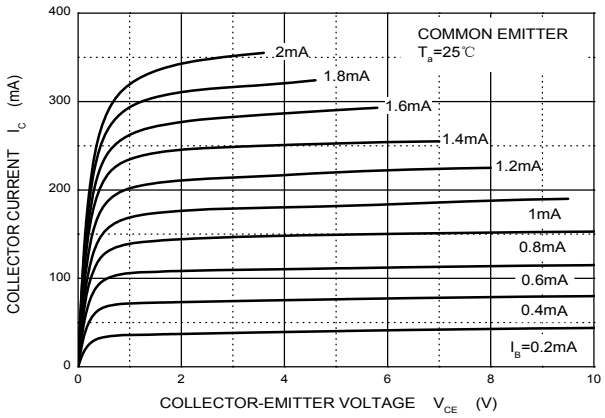
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}$	80			V	I_C=100uA, I_E=0
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	60			V	I_C=10mA, I_B=0
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5			V	I_E=100uA, I_C=0
Collector cut-off current	I_{CBO}			0.1	uA	V_{CB}=60V, I_E=0
Emitter cut-off current	I_{EBO}			0.1	uA	V_{EB}=5V, I_C=0
DC current gain	h_{FE1}	100				V_{CE}=5V, I_C=1mA
	h_{FE2}	100		300		V_{CE}=5V, I_C=500mA
	h_{FE3}	80				V_{CE}=5V, I_C=1A
	h_{FE4}	30				V_{CE}=5V, I_C=2A
Collector-emitter saturation voltage	$V_{CE(sat)}$			0.25	V	I_C=500mA, I_B=50mA
	$V_{CE(sat)}$			0.5	V	I_C=1A, I_B=100mA
Base-emitter saturation voltage	$V_{BE(sat)}$			1.1	V	I_C=1A, I_B=100mA
Base-emitter voltage	V_{BE}			1	V	V_{CE}=5V, I_C=1A
Transition frequency	f_T	150			MHz	V_{CE}=10V,I_C=50mA,f=100MHz
Collector output capacitance	C_{ob}			10	pF	V_{CB}=10V, f=1MHz

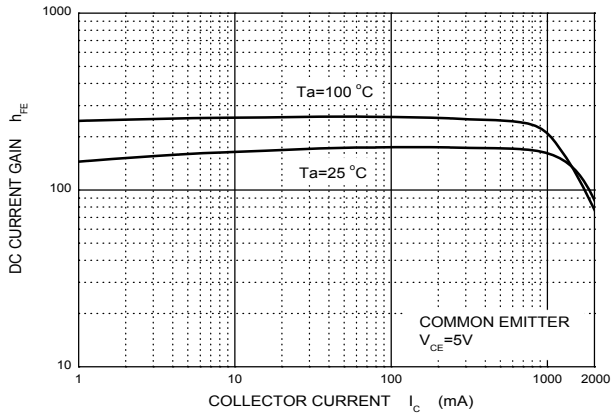
BIPOLAR TRANSISTOR (NPN)

Typical Characteristics

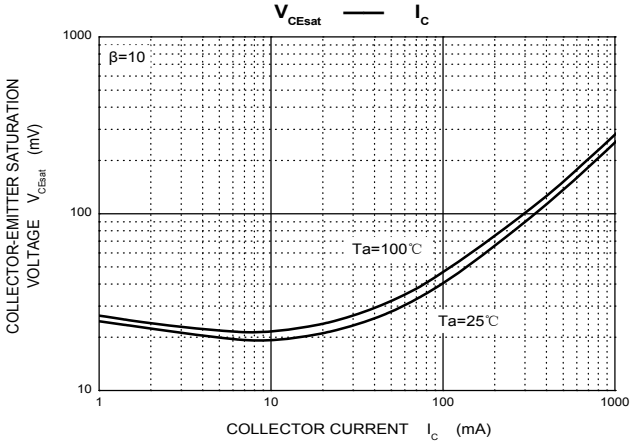
Static Characteristic



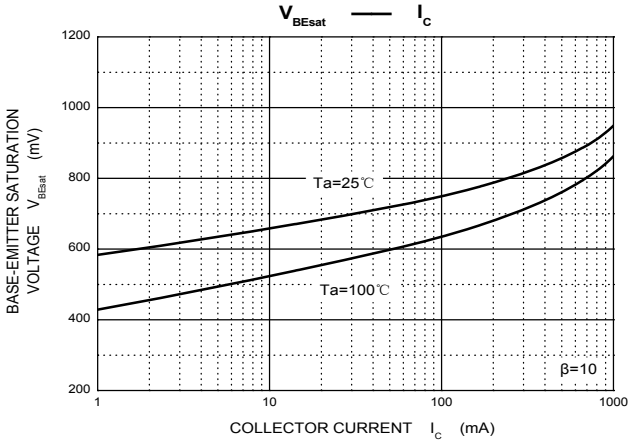
h_{FE} — I_C



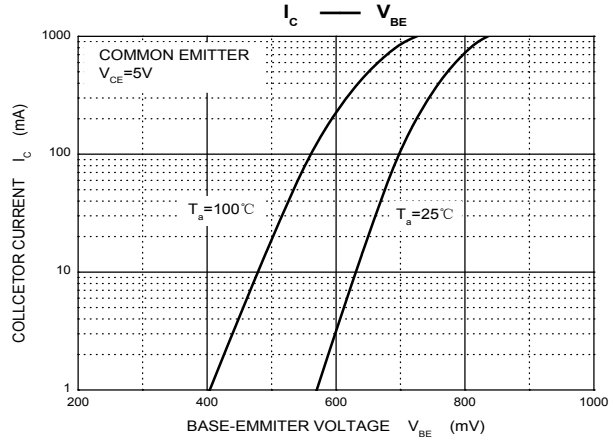
V_{CEsat} — I_C



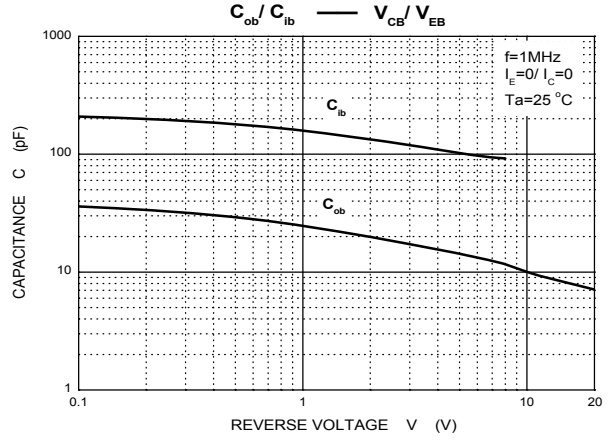
V_{BEsat} — I_C



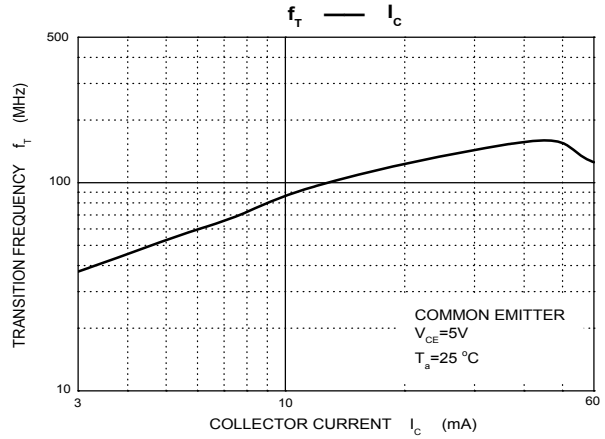
I_C — V_{BE}



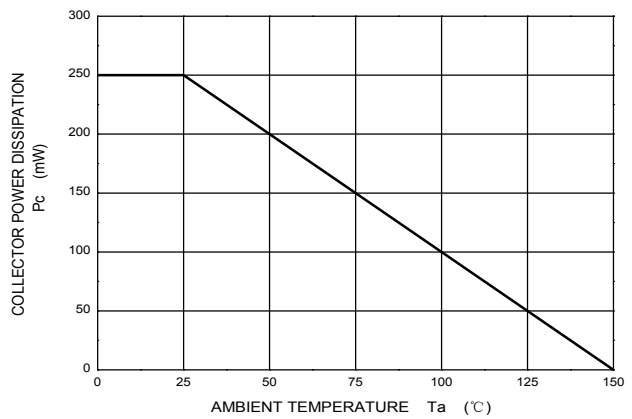
C_{ob}/ C_{ib} — V_{CB}/ V_{EB}



f_T — I_C

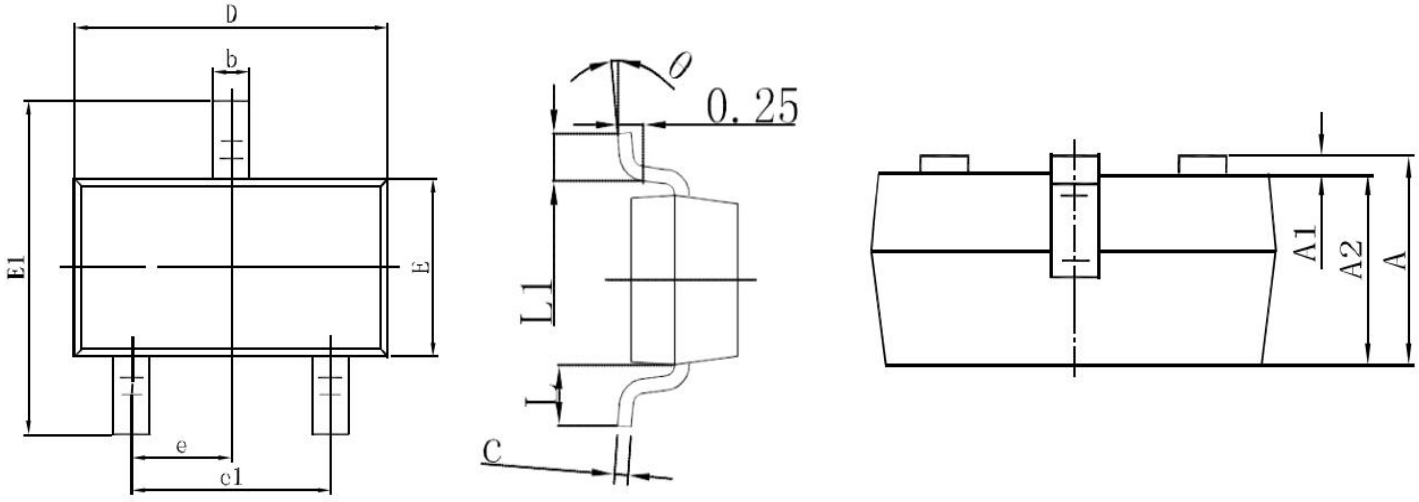


Pc — Ta



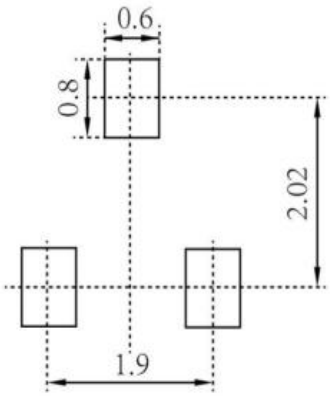
BIPOLAR TRANSISTOR (NPN)

SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.354	0.453
A1	0.000	0.100	0.000	0.039
A2	0.900	1.050	0.354	0.413
b	0.300	0.500	0.118	0.197
c	0.080	1.150	0.031	0.453
D	2.900	3.100	1.142	1.220
E	1.200	1.400	0.472	0.551
E1	2.250	2.550	0.886	1.004
e	0.95REF		0.374REF	
e1	1.800	2.000	0.709	0.787
L	0.55REF		0.215REF	
L1	0.300	0.500	0.118	0.197

SOT-23 Suggested Pad Layout



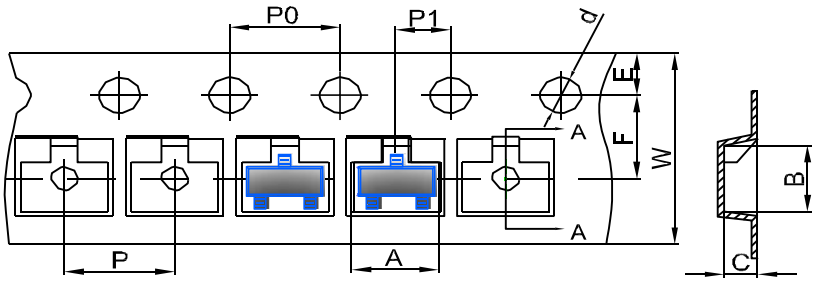
Note:

1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference purposes only

BIPOLAR TRANSISTOR (NPN)

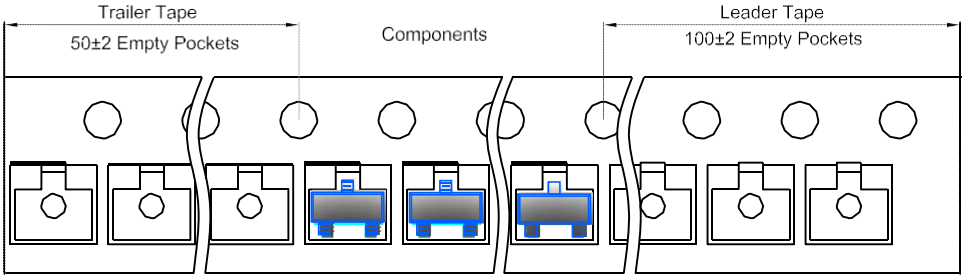
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

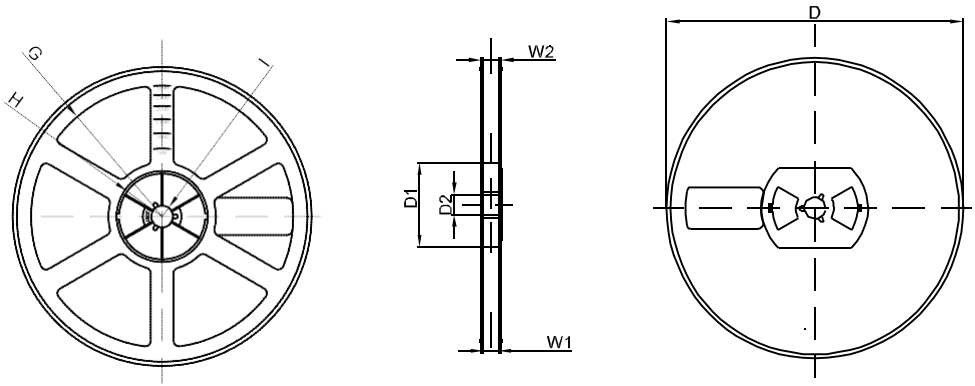


	DIMENSIONS ARE IN MILLIMETER									
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SOT-23 Tape Leader and Trailer



SOT-23 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