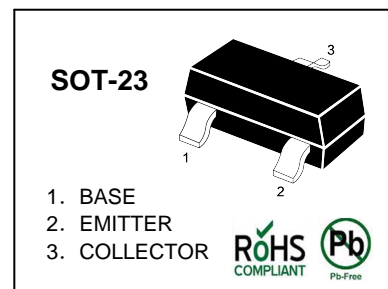


## NPN Silicon Epitaxial Planar Transistor

## High frequency amplifier

The transistor is subdivided into three groups, R, O and Y, according to its DC current gain.



### Absolute Maximum Ratings (T<sub>a</sub> = 25 °C)

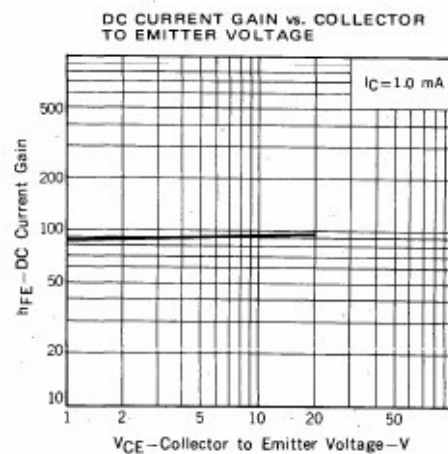
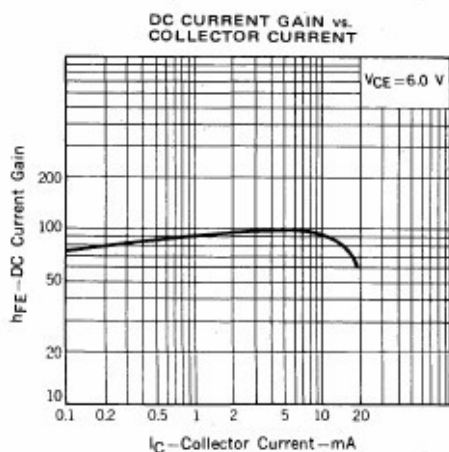
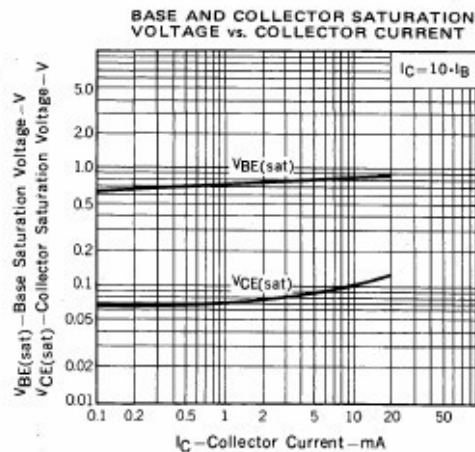
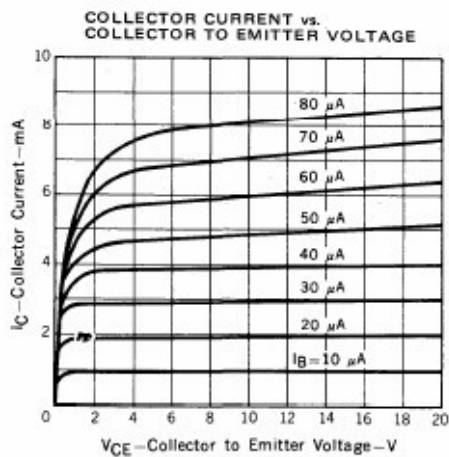
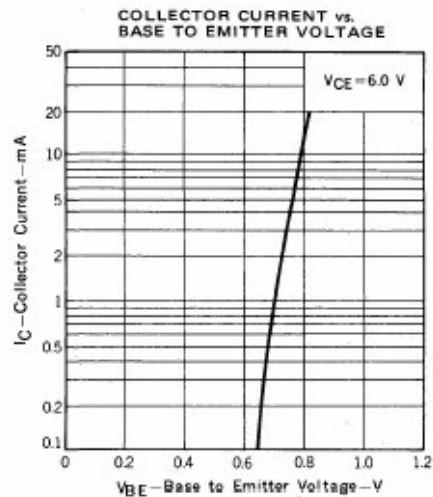
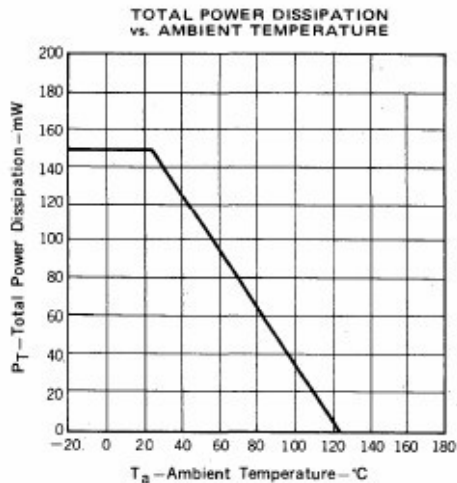
Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	30	V
Collector Emitter Voltage	$V_{CEO}$	20	V
Emitter-Base Voltage	$V_{EBO}$	4	V
Collector Current	$I_C$	20	mA
Power Dissipation	$P_{tot}$	200	mW
Junction Temperature	$T_J$	150	°C
Storage Temperature Range	$T_S$	-55 +150	°C

### Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

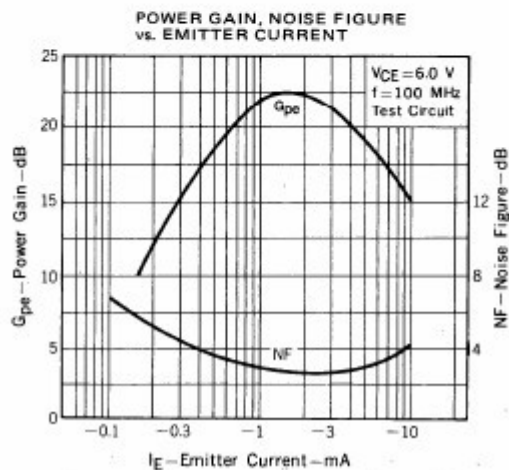
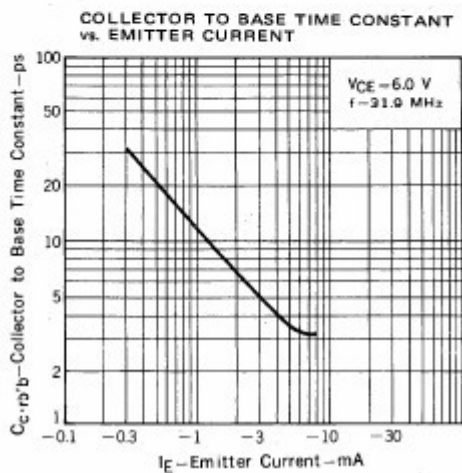
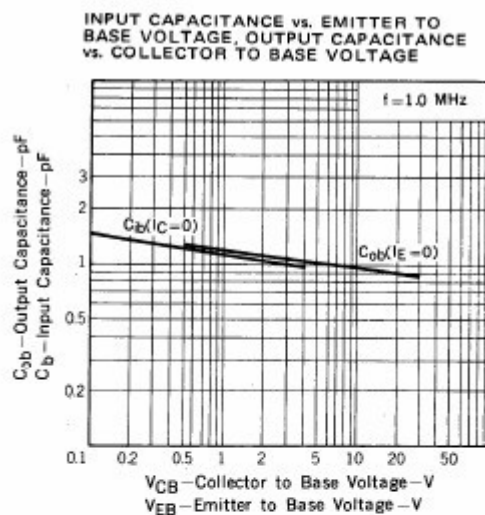
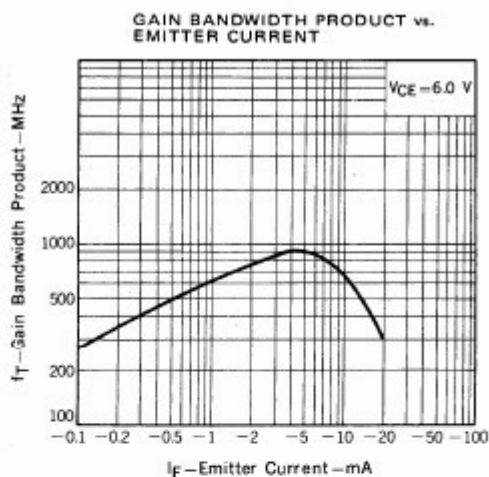
Parameter	Symbol	Min.	Typ.	Max.	Unit	
DC Current Gain at V <sub>CE</sub> = 6 V, I <sub>C</sub> = 1 mA	Current Gain Group R O Y	h <sub>FE</sub>	40	-	80	-
		h <sub>FE</sub>	60	-	120	-
		h <sub>FE</sub>	90	-	180	-
Collector Emitter Saturation Voltage at I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1 mA	V <sub>CE(sat)</sub>	-	-	0.3	V	
Collector Cutoff Current at V <sub>CB</sub> = 30 V	I <sub>CBO</sub>	-	-	0.1	μA	
Emitter Cutoff Current at V <sub>EB</sub> = 4 V	I <sub>EBO</sub>	-	-	0.1	μA	
Collector Base Breakdown Voltage at I <sub>C</sub> = 10 μA	V <sub>(BR)CBO</sub>	30			V	
Collector Emitter Breakdown Voltage at I <sub>C</sub> = 1 mA	V <sub>(BR)CEO</sub>	20	-	-	V	
Emitter Base Breakdown Voltage at I <sub>E</sub> = 10 μA	V <sub>(BR)EBO</sub>	4	-	-	V	
Gain Bandwidth Product at V <sub>CE</sub> = 6 V, -I <sub>E</sub> =1 mA	f <sub>T</sub>	400	600	-	MHz	
Output Capacitance at V <sub>CB</sub> = 6 V, I <sub>E</sub> = 0, f = 1 MHz	C <sub>OB</sub>	-	1	-	pF	
Collector to Base Time Constant at V <sub>CE</sub> = 6 V, -I <sub>E</sub> = 1 mA, f = 31.9 MHz	C <sub>C-rb'b</sub>	-	12	-	ps	
Noise Figure at V <sub>CE</sub> = 6 V, -I <sub>E</sub> = 1 mA, f = 100 MHz, R <sub>G</sub> = 50 Ω	NF	-	3	-	dB	

### Typical Characteristics

TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$  unless otherwise noted)

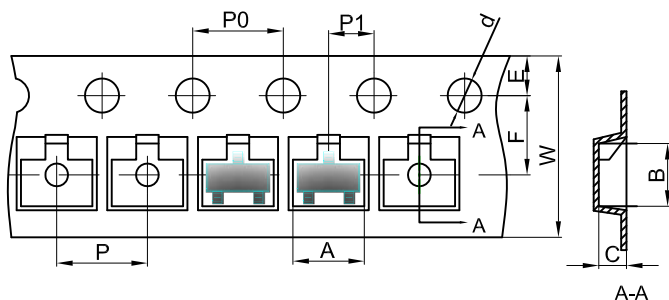


### Typical Characteristics



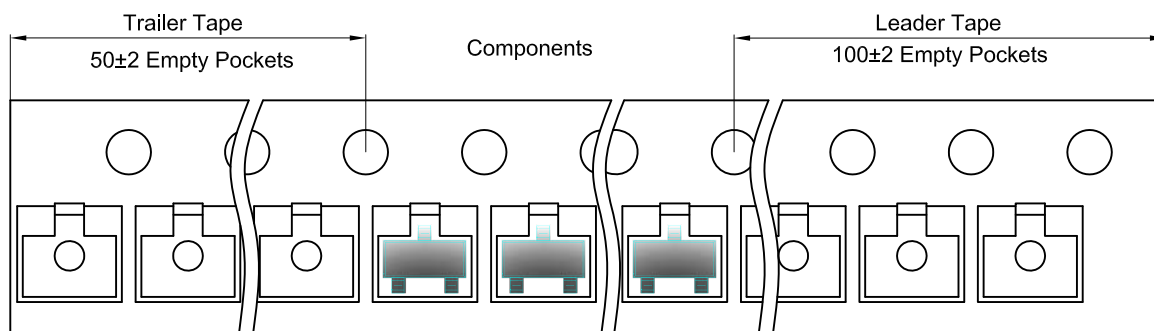
### SOT-23 Tape and Reel

#### SOT-23 Embossed Carrier Tape

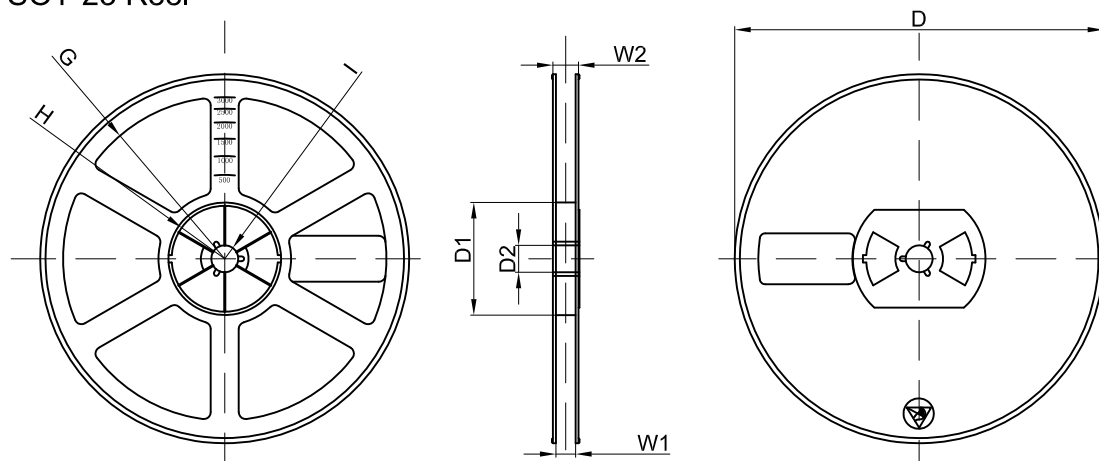


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

#### SOT-23 Tape Leader and Trailer

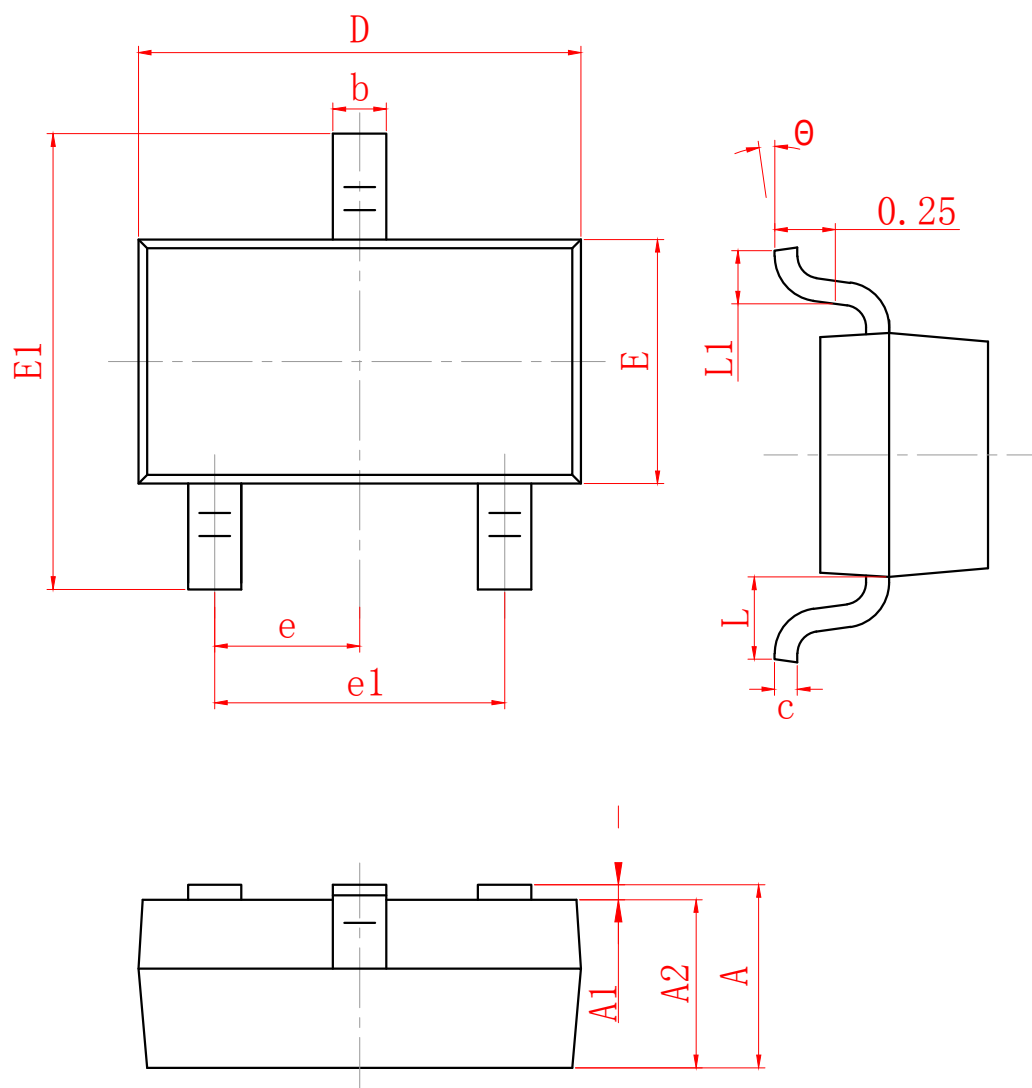


#### SOT-23 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	



SYMBOL	MILLIMETER	
	MIN	MAX
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950 TYP	
e1	1.800	2.000
L	0.550 REF	
L1	0.300	0.500
θ	0°	8°

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