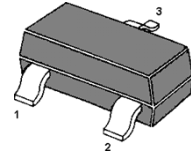


MMBTSC2223 NPN Silicon Epitaxial Planar Transistor

High frequency amplifier

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



1.Base 2.Emitter 3.Collector
SOT-23 Plastic Package

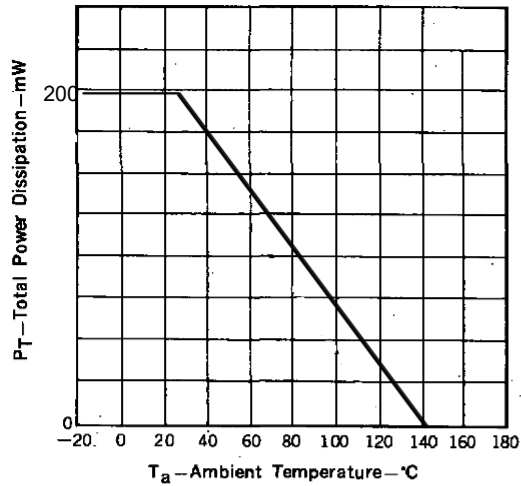
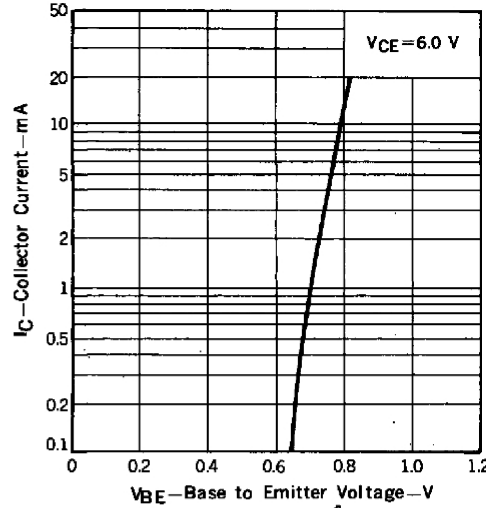
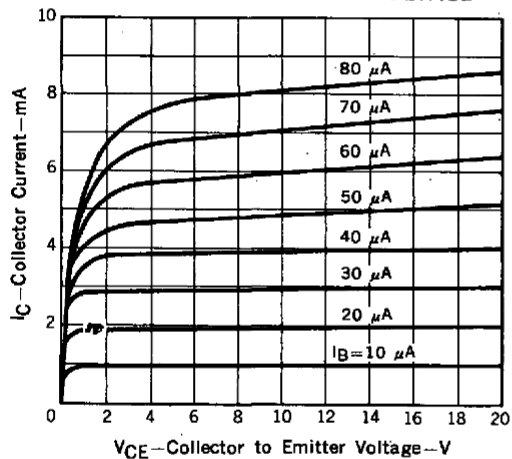
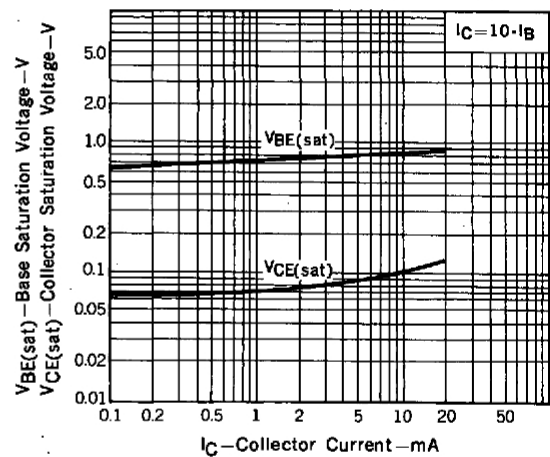
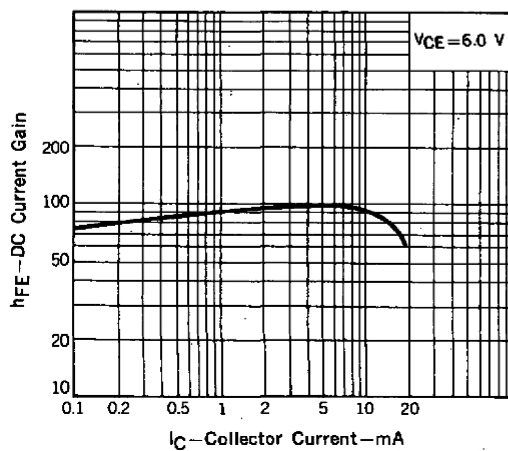
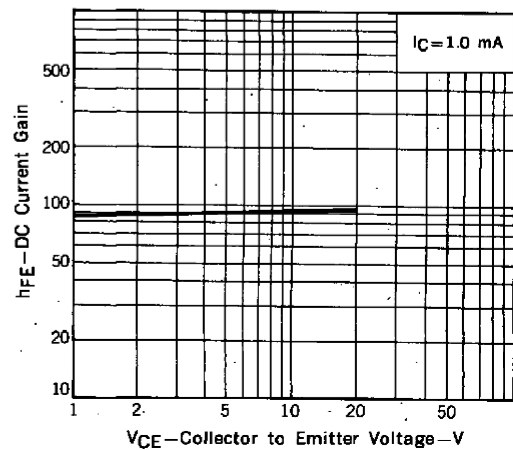
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

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	$^\circ\text{C}$
Storage Temperature Range	T_s	-55 +150	$^\circ\text{C}$

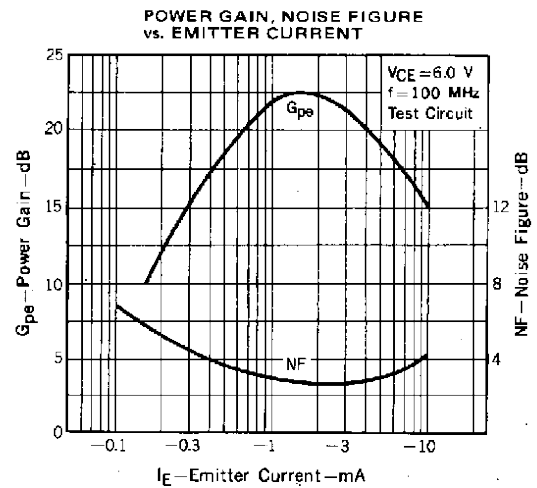
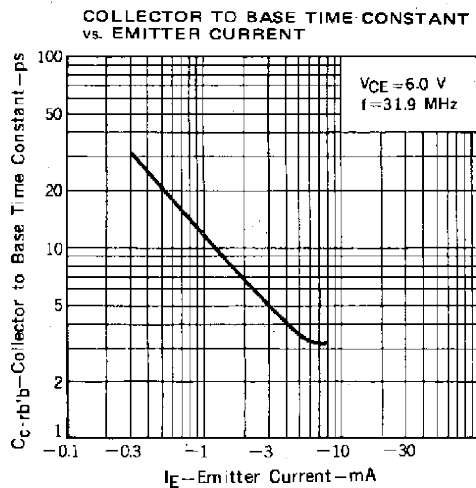
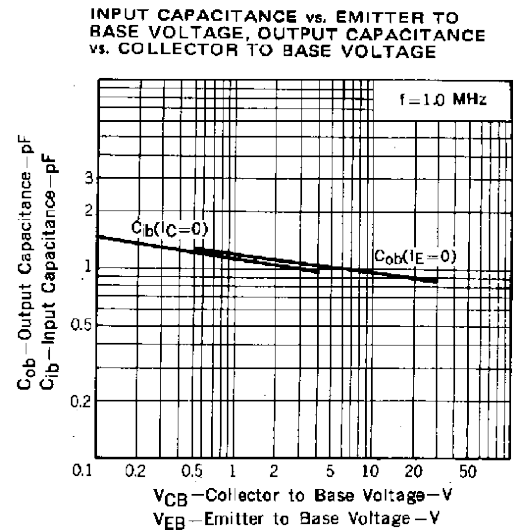
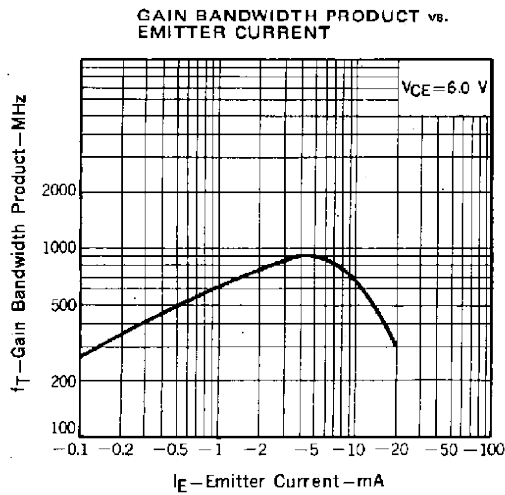
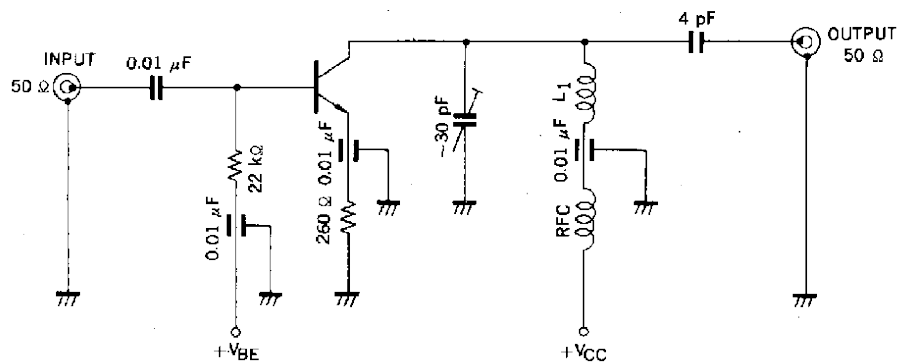
Characteristics at $T_{amb}=25^\circ\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE} = 6\text{ V}$, $I_C = 1\text{ mA}$ Current Gain Group R O Y	h_{FE}	40	-	80	-
	h_{FE}	60	-	120	-
	h_{FE}	90	-	180	-
Collector Emitter Saturation Voltage at $I_C = 10\text{ mA}$, $I_B = 1\text{ mA}$	$V_{CE(sat)}$	-	-	0.3	V
Collector Cutoff Current at $V_{CB} = 30\text{ V}$	I_{CBO}	-	-	0.1	μA
Emitter Cutoff Current at $V_{EB} = 4\text{ V}$	I_{EBO}	-	-	0.1	μA
Collector Base Breakdown Voltage at $I_C = 10\text{ }\mu\text{A}$	$V_{(BR)CBO}$	30			V
Collector Emitter Breakdown Voltage at $I_C = 1\text{ mA}$	$V_{(BR)CEO}$	20	-	-	V
Emitter Base Breakdown Voltage at $I_E = 10\text{ }\mu\text{A}$	$V_{(BR)EBO}$	4	-	-	V
Gain Bandwidth Product at $V_{CE} = 6\text{ V}$, $-I_E = 1\text{ mA}$	f_T	400	600	-	MHz
Output Capacitance at $V_{CB} = 6\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$	C_{OB}	-	1	-	pF
Collector to Base Time Constant at $V_{CE} = 6\text{ V}$, $-I_E = 1\text{ mA}$, $f = 31.9\text{ MHz}$	$C_C\text{-rb'b}$	-	12	-	ps
Noise Figure at $V_{CE} = 6\text{ V}$, $-I_E = 1\text{ mA}$, $f = 100\text{ MHz}$, $R_G = 50\text{ }\Omega$	NF	-	3	-	dB

Typical Characteristics

TOTAL POWER DISSIPATION
vs. AMBIENT TEMPERATURECOLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGECOLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGEBASE AND COLLECTOR SATURATION
VOLTAGE vs. COLLECTOR CURRENTDC CURRENT GAIN vs.
COLLECTOR CURRENTDC CURRENT GAIN vs. COLLECTOR
TO EMITTER VOLTAGE

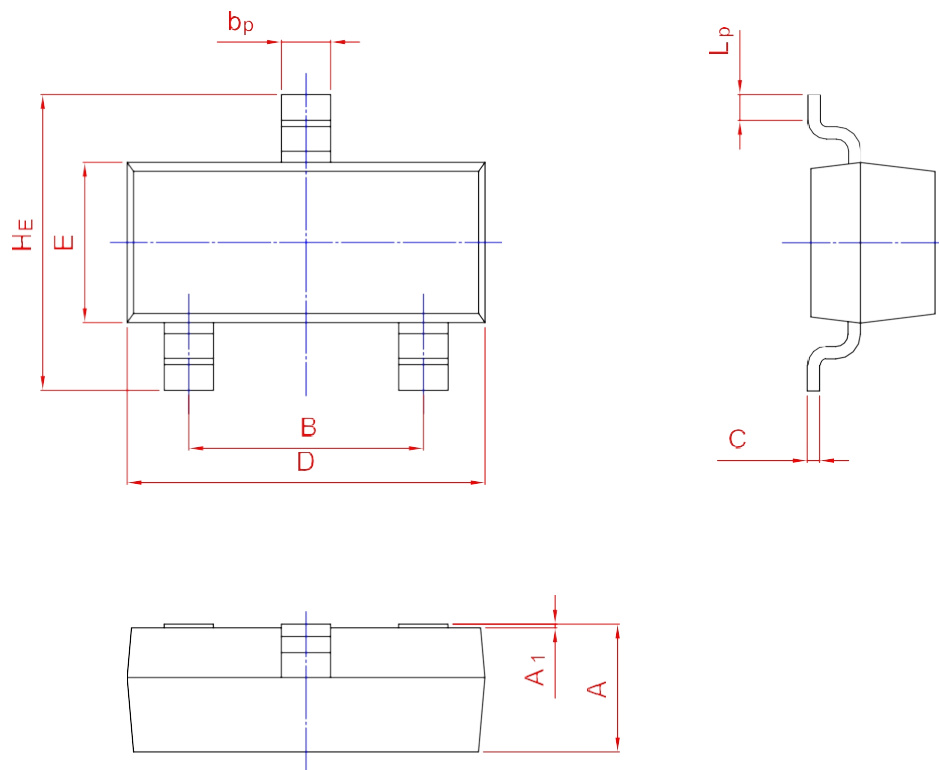
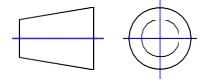
Typical Characteristics


100 MHz G_{pe} , NF TEST CIRCUIT


PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	b _p	C	D	E	H _E	A ₁	L _p
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20