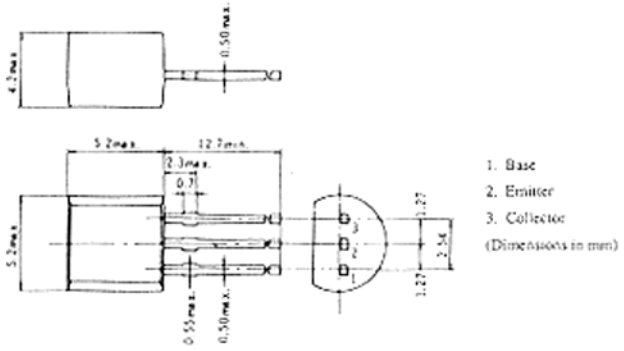
HITACHI

2SC2512

SILICON NPN EPITAXIAL

VHF AMPLIFIER
VHF TV TUNER MIXER

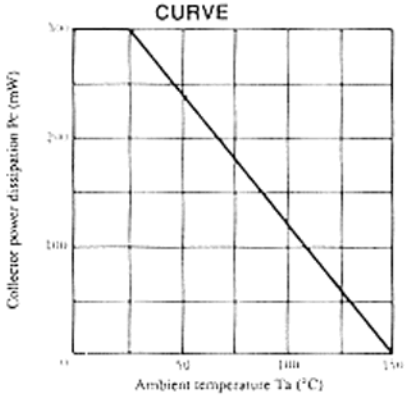


(JEDEC TO-92)

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Item	Symbol	2SC2512	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	20	V
Emitter to base voltage	V_{EBO}	3	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	300	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

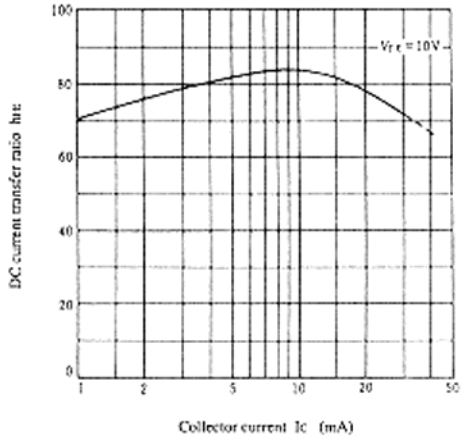
MAXIMUM COLLECTOR DISSIPATION CURVE



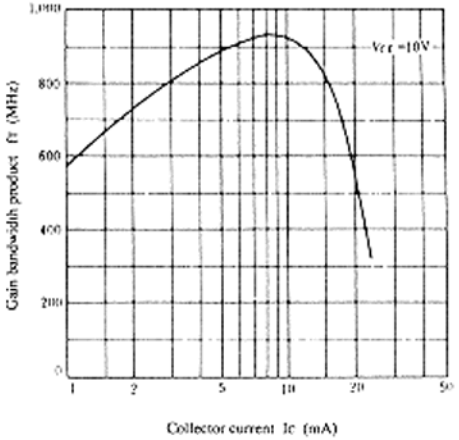
■ ELECTRICAL CHARACTERISTICS (Ta=25°C)

Item	Symbol	Test Condition	min.	typ.	max.	Unit
Collector to base breakdown voltage	$V_{(BR)CBO}$	I_C = 10μA, I_E = 0	30	—	—	V
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	I_C = 1mA, R_{BE} = ∞	20	—	—	V
Emitter to base breakdown voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0	3	—	—	V
Collector cutoff current	I_{CBO}	V_{CB} =10V, I_E = 0	—	—	0.5	μA
Collector to emitter saturation voltage	$V_{CE(sat)}$	I_C = 20mA, I_B = 4mA	—	—	1	V
DC current transfer ratio	h_{FE}	V_{CE} = 10V, I_C = 10mA	30	—	—	
Reverse transfer capacitance	C_{re}	V_{CB} = 10V, Emitter common, f = 1MHz	—	0.35	0.45	pF
Gain bandwidth product	fr	V_{CE} = 10V, I_C = 10mA	600	900	—	MHz
Base time constant	$r_{bb'}$·Cc	V_{CB} = 10V, I_C = 5mA , f = 31.8MHz	—	—	20	ps
Conversion gain	CG	V_{CC} = 12V, I_C = 2mA, f_{in} = 200MHz f_{osc} = 260MHz, f_{out} = 60MHz	16	20	—	dB
Noise figure	NF	V_{CC} = 12V, I_C = 2mA, f_{osc} = 260MHz R_g = 50Ω, f_{in} = 200MHz	—	3.8	5.5	dB

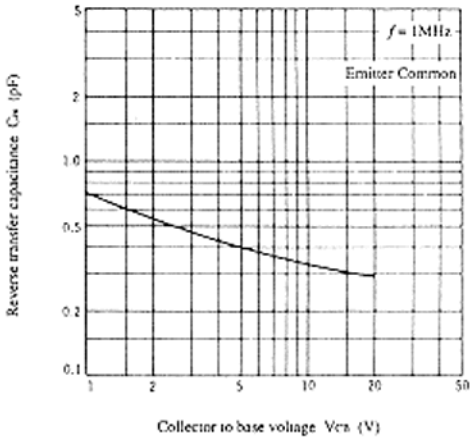
DC CURRENT TRANSFER RATIO VS. COLLECTOR CURRENT



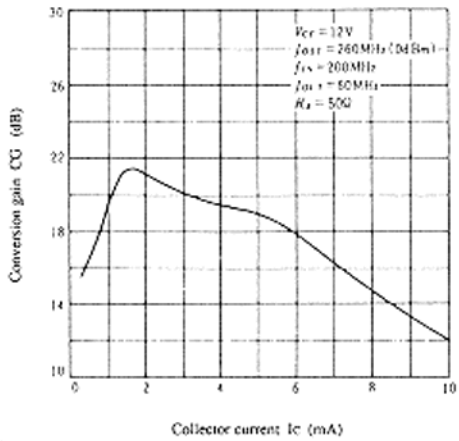
GAIN BANDWIDTH PRODUCT VS. COLLECTOR CURRENT



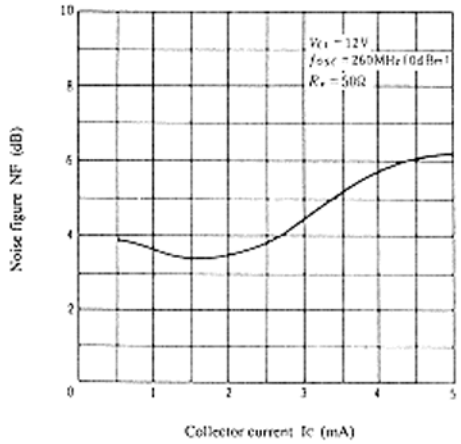
REVERSE TRANSFER CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



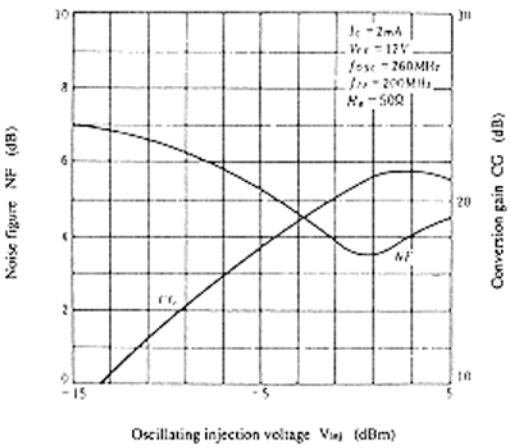
CONVERSION GAIN VS. COLLECTOR CURRENT



NOISE FIGURE VS. COLLECTOR CURRENT

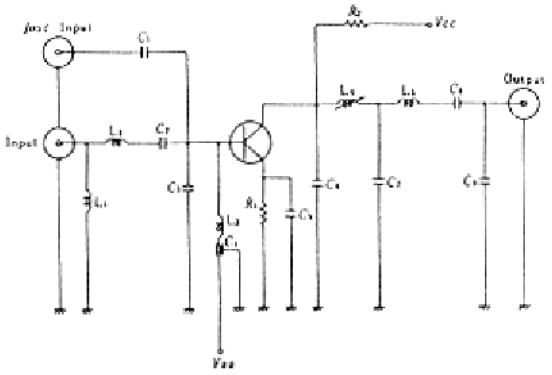


NOISE FIGURE, CONVERSION GAIN VS. OSCILLATING INJECTION VOLTAGE



2SC2512

CONVERSION GAIN, NOISE FIGURE TEST CIRCUIT



R1 : 330Ω (1/4W)
R2 : 560Ω (1/4W)
L1 : ϕ0.8mm Copper wire with Enamel 8 Turns inside dia ϕ3mm
L2 : ϕ0.8mm Copper wire with Enamel 5 Turns inside dia ϕ3mm
L3 : ϕ0.5mm Copper wire with Enamel 3.5 Turns inside dia ϕ3mm
L4 : Outside dia ϕ5mm used Ferrite Core, ϕ0.2mm Copper wire with Enamel 6.5 Turns
L5 : ϕ0.2mm Copper wire with Enamel 13 Turns inside dia ϕ5mm

Parts Specification

C1 : 1.5pF
C2 : 57pF
C3 : 17pF
C4 : 1000pF
C5 : 2200pF
C6 : 22pF
C7 : 80pF
C8 : 18pF
C9 : 20pF