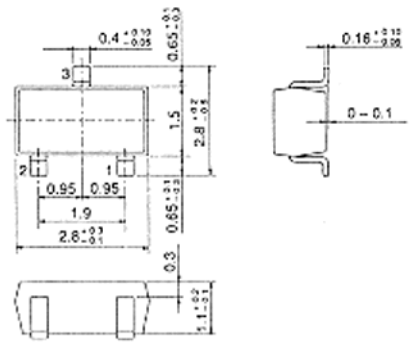
HITACHI

2SC2734

SILICON NPN EPITAXIAL

UHF FREQUENCY CONVERTER,
LOCAL OSCILLATOR, WIDE BAND AMPLIFIER



1. Emitter
2. Base
3. Collector

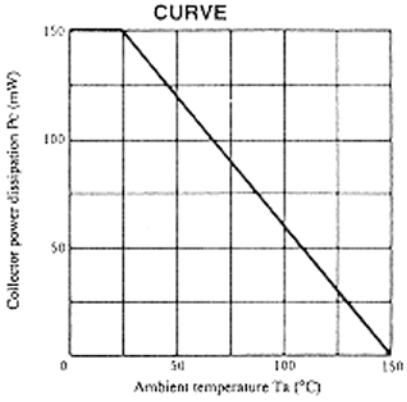
(Dimensions in mm)

(MPAK)

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Item	Symbol	2SC2734	Unit
Collector to base voltage	V_{CBO}	20	V
Collector to emitter voltage	V_{CEO}	11	V
Emitter to base voltage	V_{EBO}	3	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	150	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

MAXIMUM COLLECTOR DISSIPATION CURVE



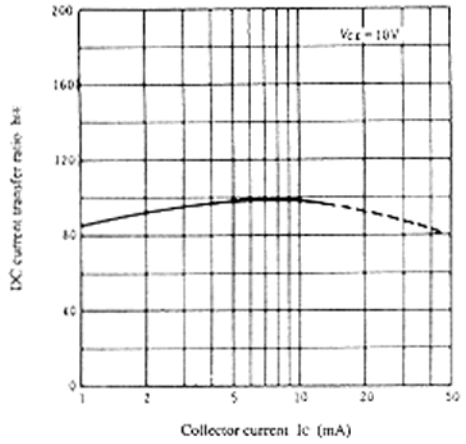
■ ELECTRICAL CHARACTERISTICS (Ta=25°C)

Item	Symbol	Test Condition	min.	typ.	max.	Unit
Collector to base breakdown voltage	$V_{(BR)CBO}$	I_C = 10μA, I_E = 0	20	—	—	V
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	I_C = 1mA, R_{BE} = ∞	11	—	—	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 = 10mA, I_B = 5mA	—	—	0.7	V
DC current transfer ratio	h_{FE}	V_{CE} = 10V, I_C = 5mA	20	90	200	
Gain bandwidth product	f_T	V_{CE} = 10V, I_C = 10mA	1.4	3.5	—	GHz
Collector output capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz	—	0.9	1.5	pF
Conversion gain	CG	V_{CC} = 6V, I_C = 2mA, f = 900MHz	—	15	—	dB
Noise figure	NF	f_{osc} = 930MHz (0dBm), f_{out} = 30MHz	—	9	—	dB
Oscillating output voltage	V_{osc}	V_{CC} = 6V, I_C = 5mA, f = 930MHz	—	140	—	mV

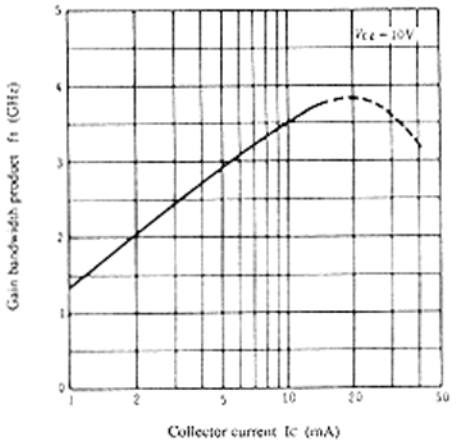
* Marking is "GC".

2SC2734

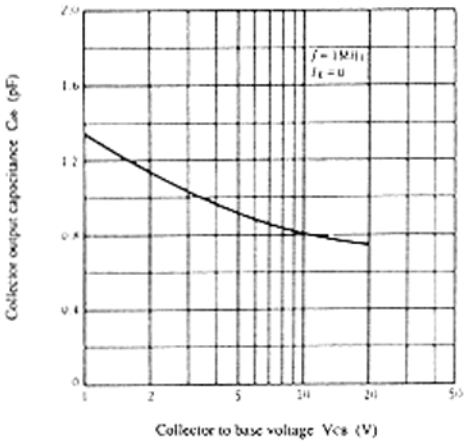
DC CURRENT TRANSFER RATIO VS. COLLECTOR CURRENT



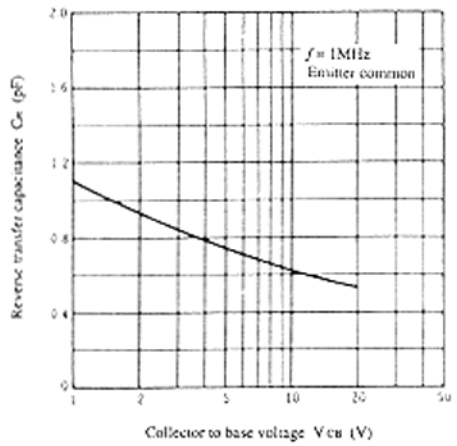
GAIN BANDWIDTH PRODUCT VS. COLLECTOR CURRENT



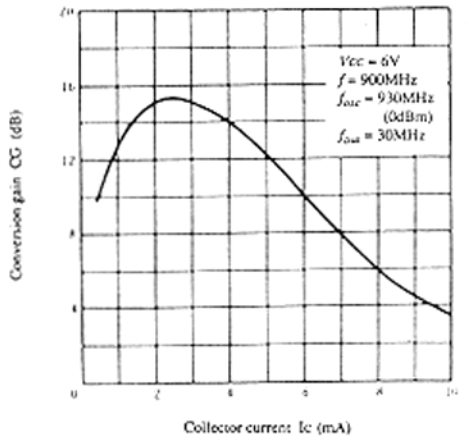
COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



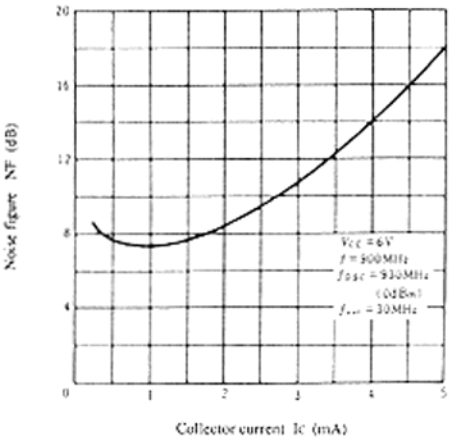
REVERSE TRANSFER CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



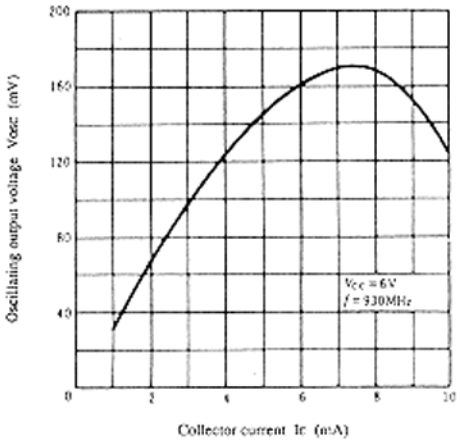
CONVERSION GAIN VS. COLLECTOR CURRENT



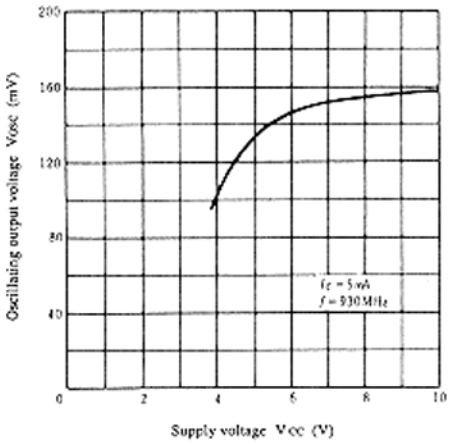
NOISE FIGURE VS. COLLECTOR CURRENT



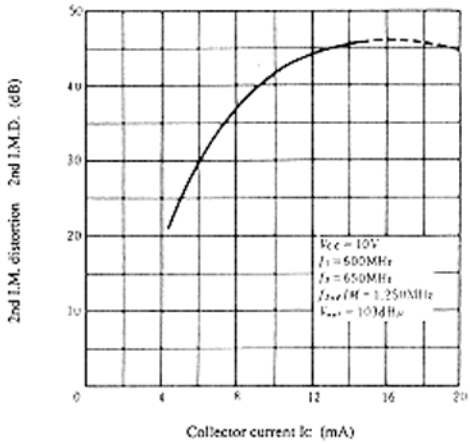
OSCILLATING OUTPUT VOLTAGE VS. COLLECTOR CURRENT



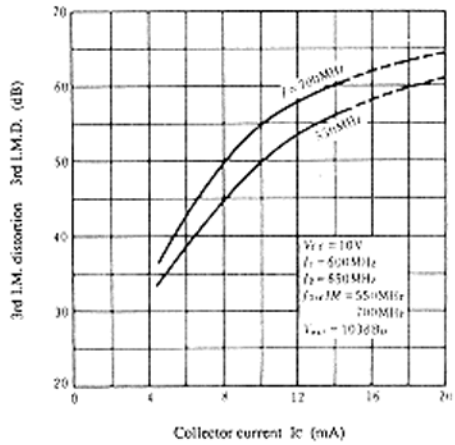
OSCILLATING OUTPUT VOLTAGE VS. SUPPLY VOLTAGE



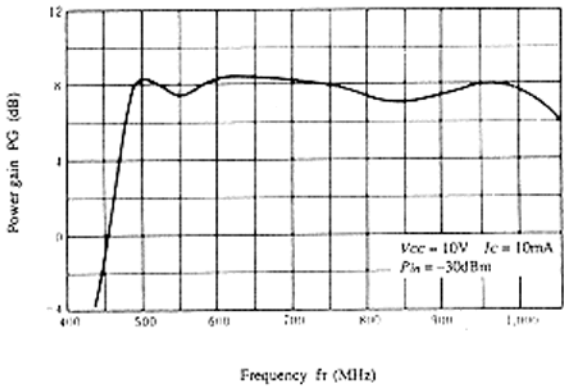
2ND I.M. DISTORTION VS. COLLECTOR CURRENT



3RD I.M. DISTORTION VS. COLLECTOR CURRENT

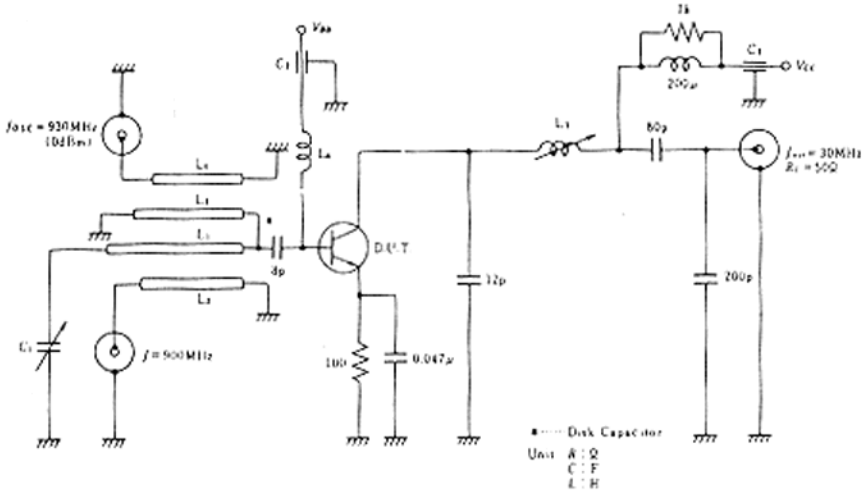


POWER GAIN VS. FREQUENCY



2SC2734

CONVERSION GAIN, NOISE FIGURE TEST CIRCUIT

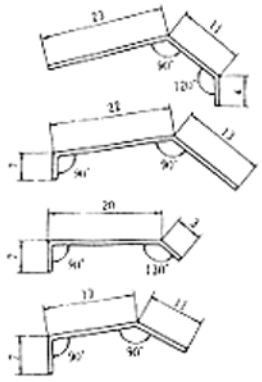


L1 : φ1mm Enameled Copper wire

L2 : φ1mm Enameled Copper wire

L3 : φ1mm Enameled Copper wire

L4 : φ1mm Enameled Copper wire



Unit : mm

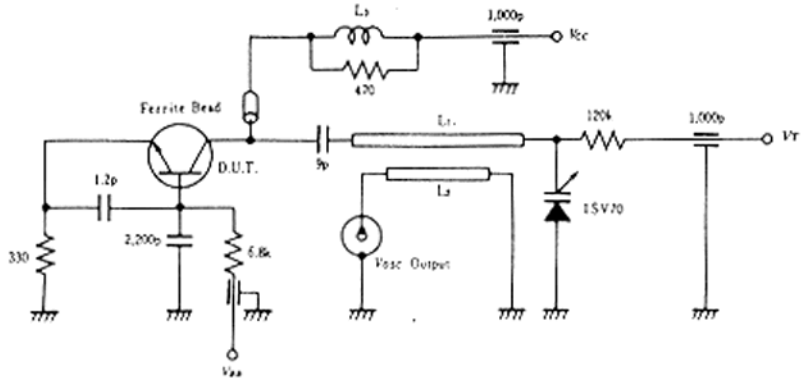
L5 : Bobbin φ5mm inside dia, φ0.2mm 20 Turns Enameled Copper wire

L6 : φ0.5mm Enameled Copper wire 1 Turn inside dia φ6mm

C1 : 20pF max. Air Trimmer Condenser

C2.C3 : 1000pF Air Core Capacitor

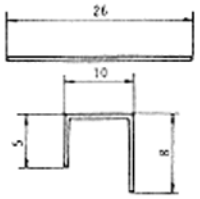
Vosc TEST CIRCUIT



Unit C : F
R : Ω

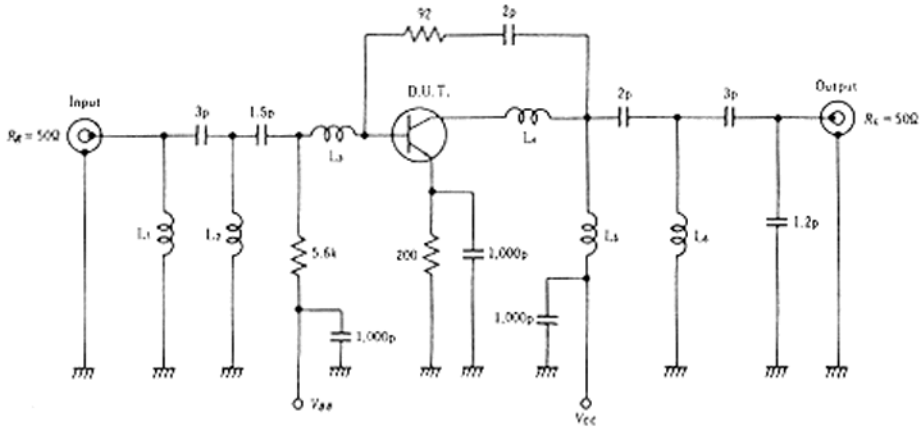
L1 : ϕ1mm Enameled Copper wire

L2 : ϕ0.8mm Enameled Copper wire



L3 : ϕ0.3mm Enameled Copper wire, 10 Turns with 470 Ω Resistor

CIRCUIT EXAMPLE-UHF WIDE BANDWIDTH AMPLIFIER (f = 500 MHz to 950 MHz)



Unit : R : Ω
C : F

L1 : ϕ0.5mm Copper wire 5 Turns inside dia ϕ3mm

L2 : ϕ0.5mm Copper wire 2 Turns inside dia ϕ2mm

L3 : ϕ0.5mm Copper wire 2 Turns inside dia ϕ2mm

L4 : ϕ0.5mm Copper wire 1.5 Turns inside dia ϕ2mm

L5 : ϕ0.5mm Copper wire 4 Turns inside dia ϕ2mm

L6 : ϕ0.5mm Copper wire 3 Turns inside dia ϕ2mm