
2SC2734

Silicon NPN Epitaxial

HITACHI

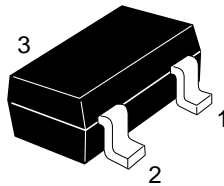
ADE-208-1074 (Z)
1st. Edition
Mar. 2001

Application

- UHF frequency converter
- Local oscillator, wide band amplifier

Outline

MPAK



1. Emitter
2. Base
3. Collector

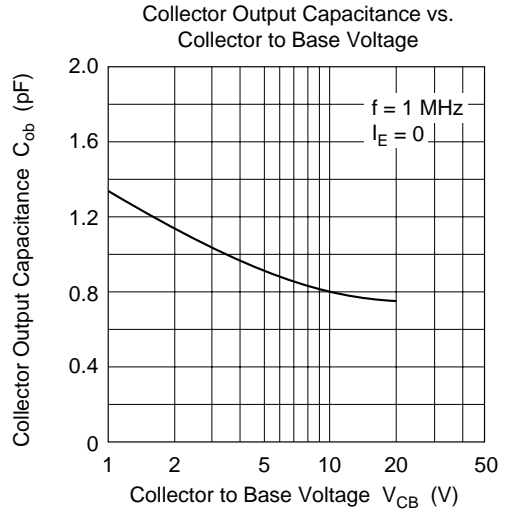
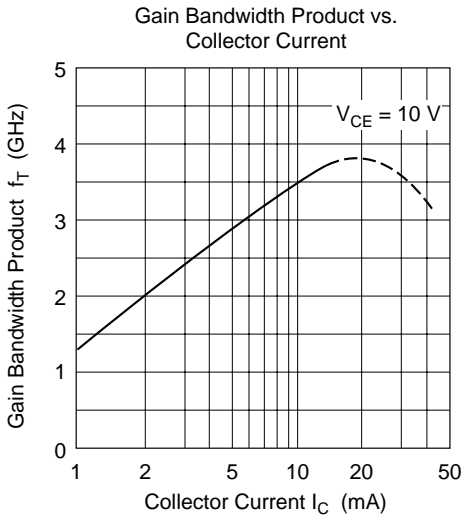
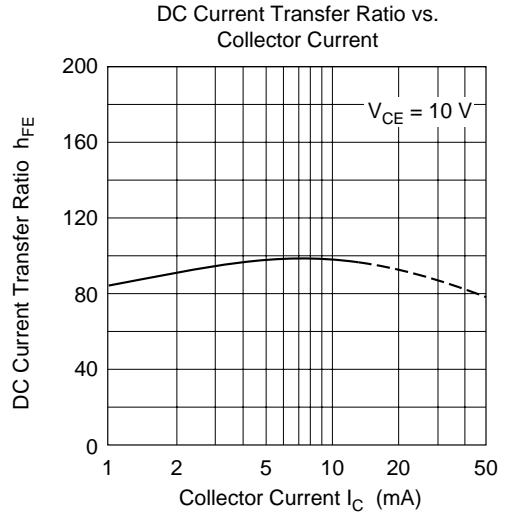
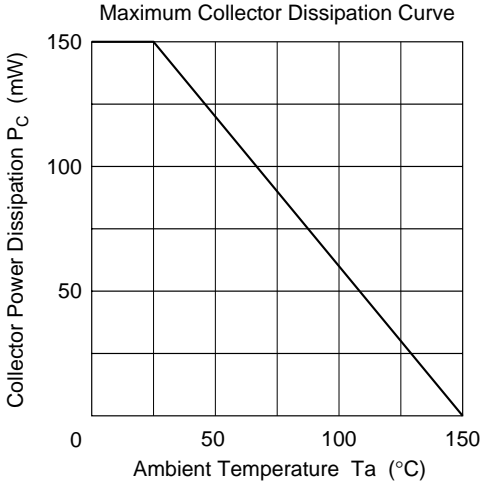
Note: Marking is "GC".

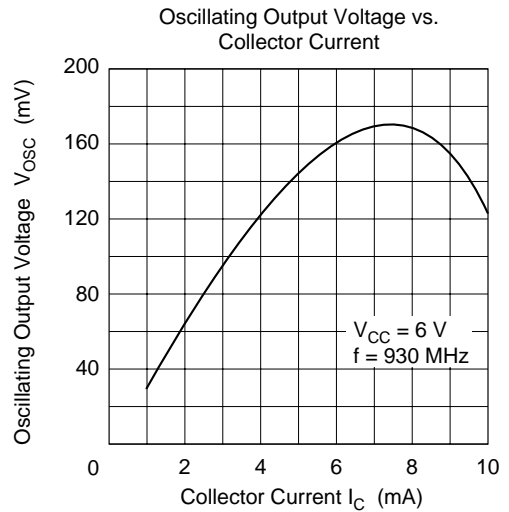
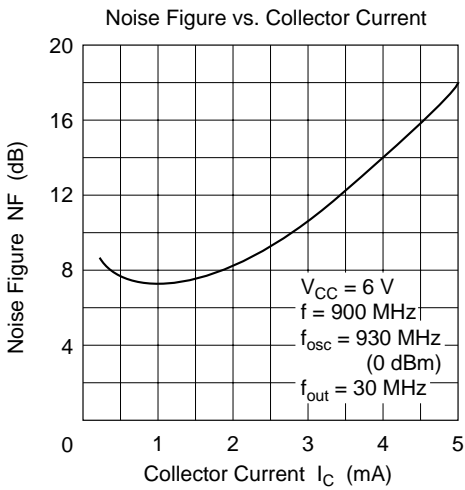
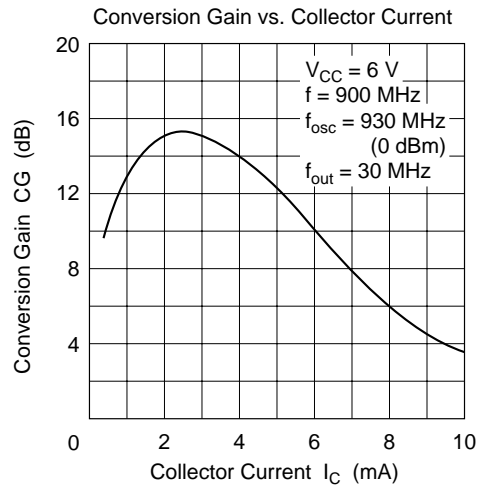
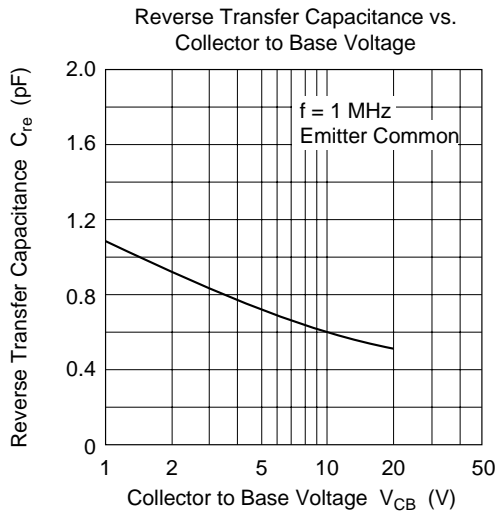
Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	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

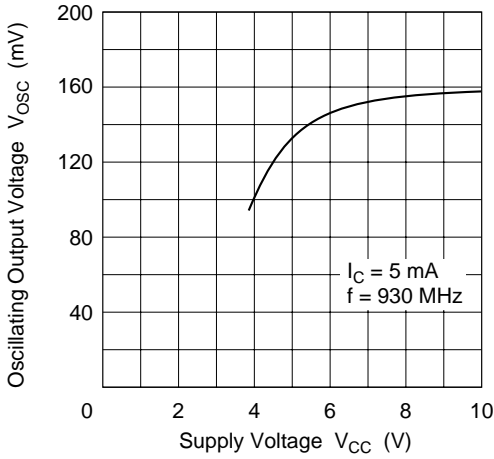
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	20	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	11	—	—	V	$I_C = 1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	3	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	I_{CBO}	—	—	0.5	μA	$V_{CB} = 10 \text{ V}, I_E = 0$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	0.7	V	$I_C = 10 \text{ mA}, I_B = 5 \text{ mA}$
DC current transfer ratio	h_{FE}	20	90	200		$V_{CE} = 10 \text{ V}, I_C = 5 \text{ mA}$
Gain bandwidth product	f_T	1.4	3.5	—	GHz	$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$
Collector output capacitance	C_{ob}	—	0.9	1.5	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$
Conversion gain	CG	—	15	—	dB	$V_{CC} = 6 \text{ V}, I_C = 2 \text{ mA},$ $f = 900 \text{ MHz},$ $f_{OSC} = 930 \text{ MHz (0dBm)},$ $f_{out} = 30 \text{ MHz}$
Noise figure	NF	—	9	—	dB	$V_{CC} = 6 \text{ V}, I_C = 2 \text{ mA},$ $f = 900 \text{ MHz},$ $f_{OSC} = 930 \text{ MHz (0dBm)},$ $f_{out} = 30 \text{ MHz}$
Oscillating output voltage	V_{OSC}	—	140	—	mV	$V_{CC} = 6 \text{ V}, I_C = 5 \text{ mA},$ $f = 930 \text{ MHz}$

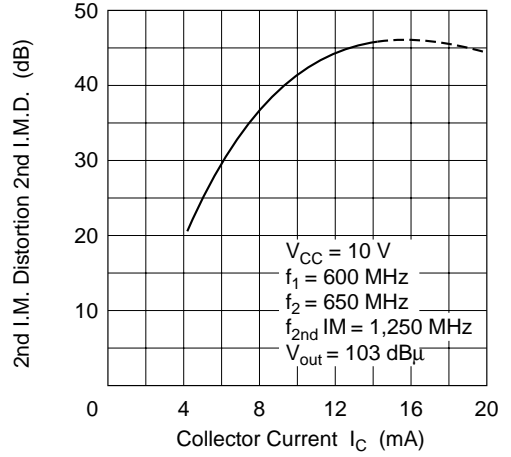




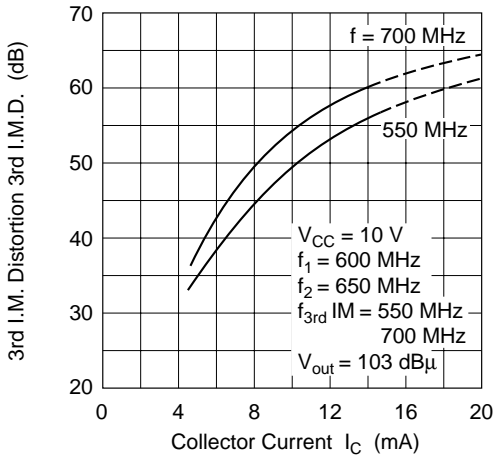
Oscillating Output Voltage vs. Supply Voltage



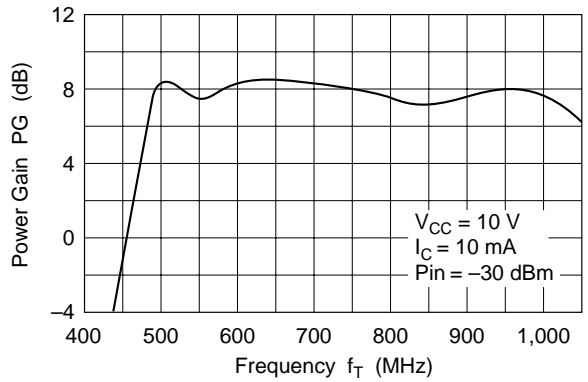
2nd I.M. Distortion vs. Collector Current



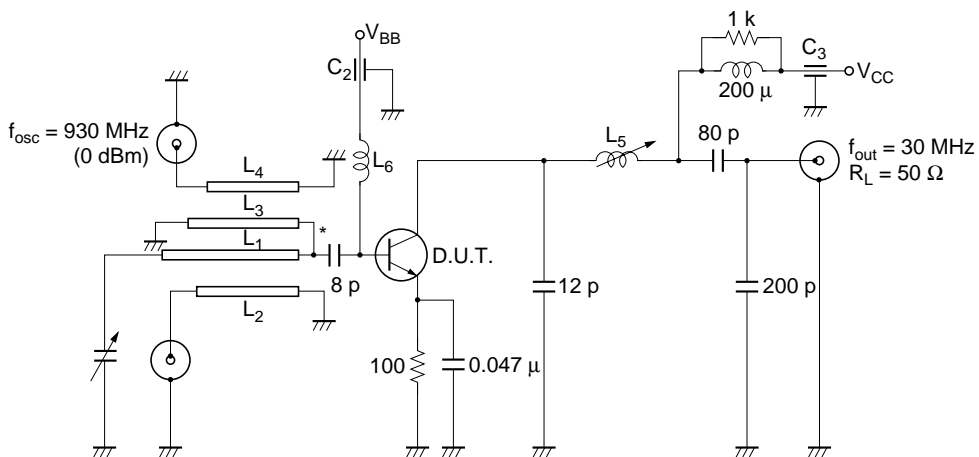
3rd I.M. Distortion vs. Collector Current



Power Gain vs. Frequency



Conversion Gain, Noise Figure Test Circuit



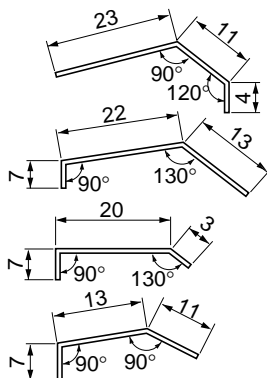
* Disk Capacitor
 Unit R : Ω
 C : F
 L : H

L₁ : ϕ 1 mm Enameled Copper wire

L₂ : ϕ 1 mm Enameled Copper wire

L₃ : ϕ 1 mm Enameled Copper wire

L₄ : ϕ 1 mm Enameled Copper wire



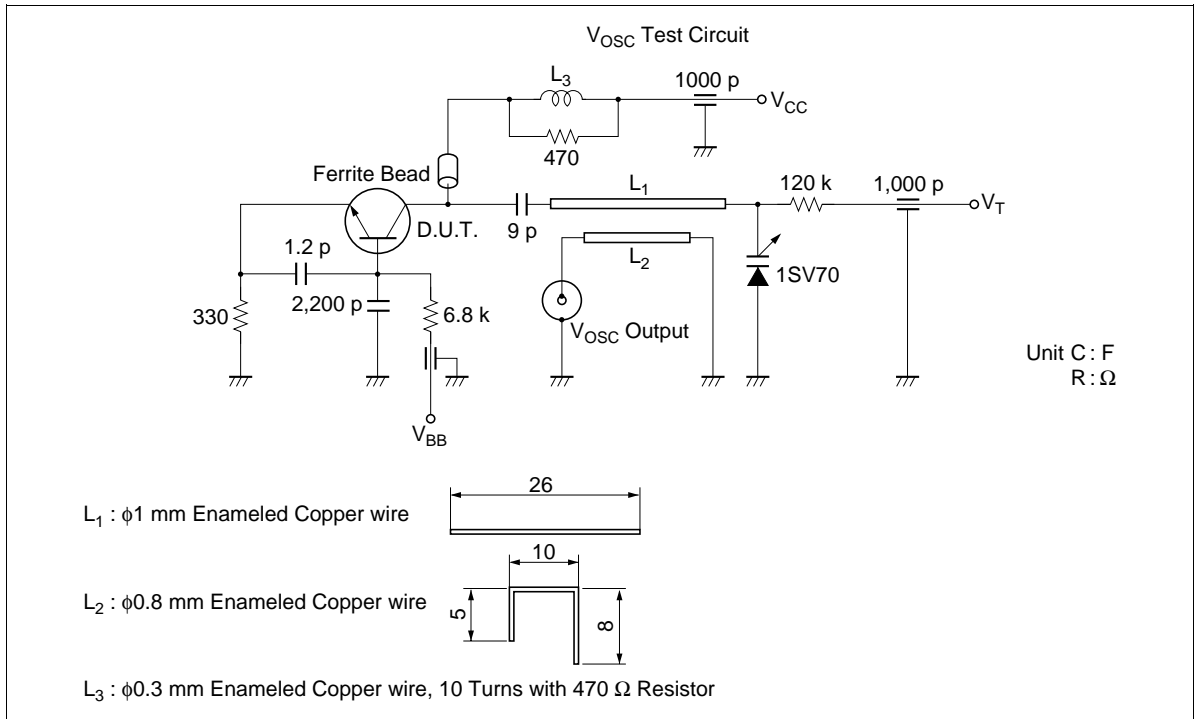
Unit : mm

L₅ : Bobbin ϕ 5 mm inside dia, ϕ 0.2 mm 20 Turns Enameled Copper wire

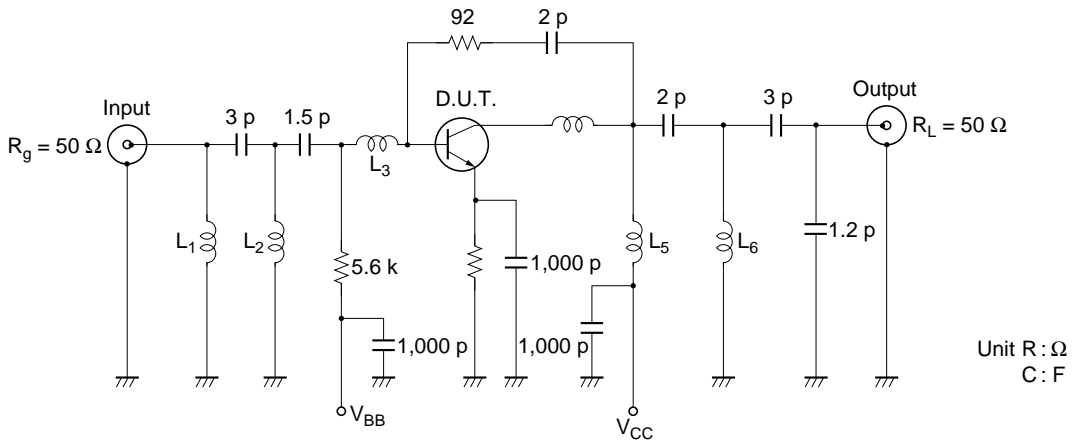
L₆ : ϕ 0.5 mm Enameled Copper wire 1 Turn inside dia ϕ 6 mm

C₁ : 20 pF max. Air Trimmer Condenser

C₂, C₃ : 1000 pF Air Core Capacitor



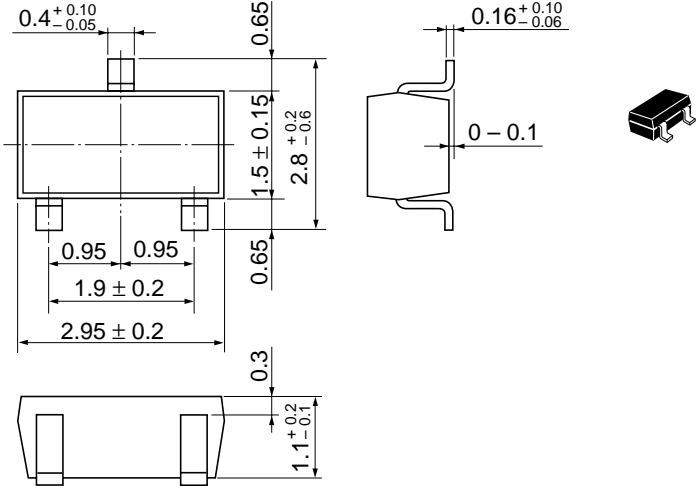
Circuit Example-UHF Wide Bandwidth Amplifier (f = 500 MHz to 950 MHz)



- L₁ : ϕ 0.5 mm Copper wire 5 Turns inside dia ϕ 3 mm
- L₂ : ϕ 0.5 mm Copper wire 2 Turns inside dia ϕ 2 mm
- L₃ : ϕ 0.5 mm Copper wire 2 Turns inside dia ϕ 2 mm
- L₄ : ϕ 0.5 mm Copper wire 1.5 Turns inside dia ϕ 2 mm
- L₅ : ϕ 0.5 mm Copper wire 4 Turns inside dia ϕ 2 mm
- L₆ : ϕ 0.5 mm Copper wire 3 Turns inside dia ϕ 2 mm

Package Dimensions

As of January, 2001
Unit: mm



Hitachi Code	MPAK
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.011 g

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