
2SC2734

Silicon NPN Epitaxial

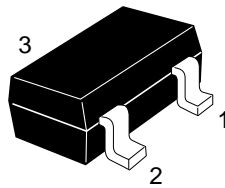
HITACHI

Application

- UHF frequency converter
- Local oscillator, wide band amplifier

Outline

MPAK



1. Emitter
2. Base
3. Collector

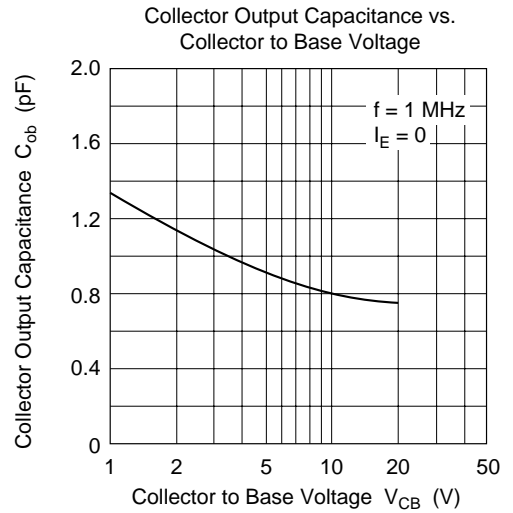
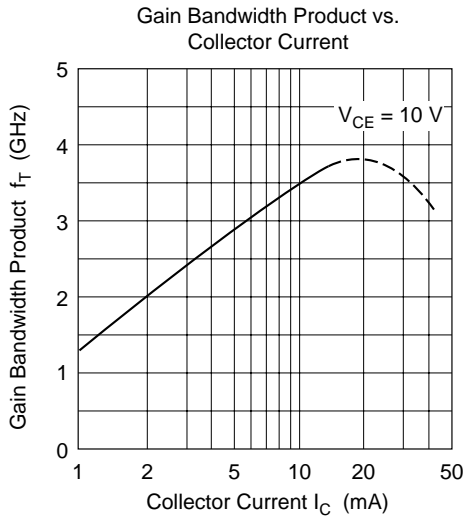
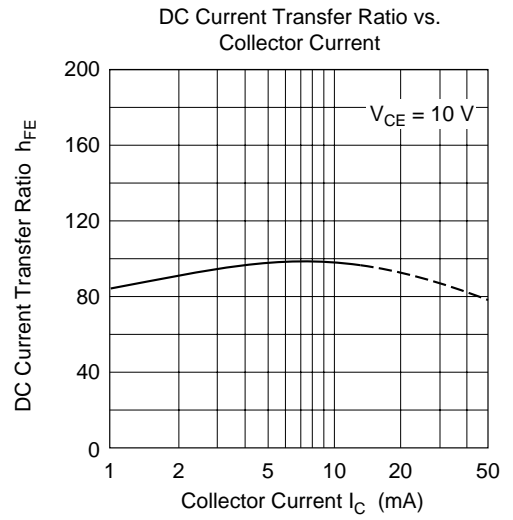
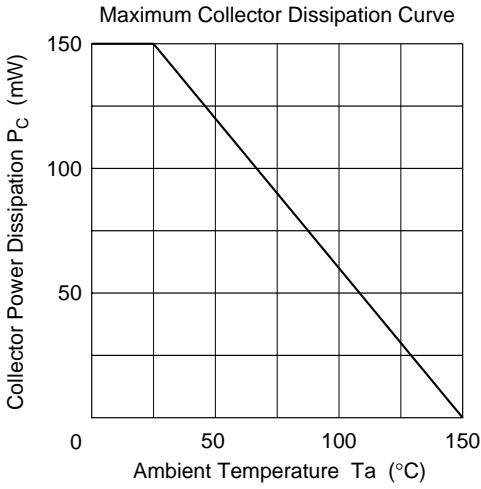
Absolute Maximum Ratings (Ta = 25°C)

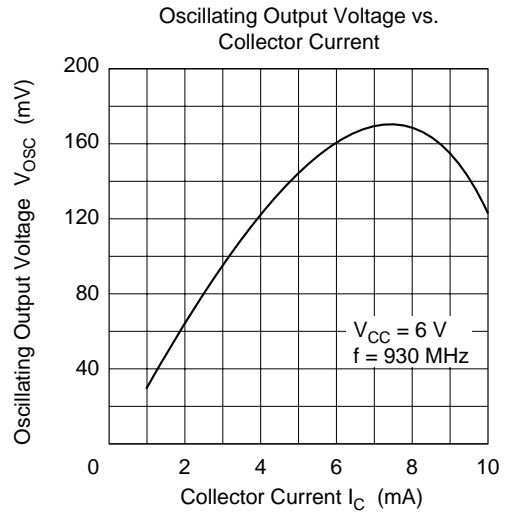
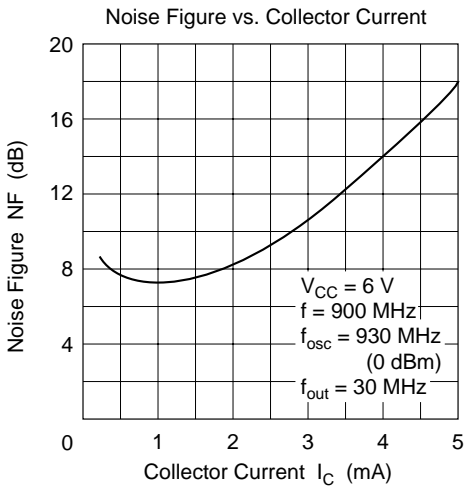
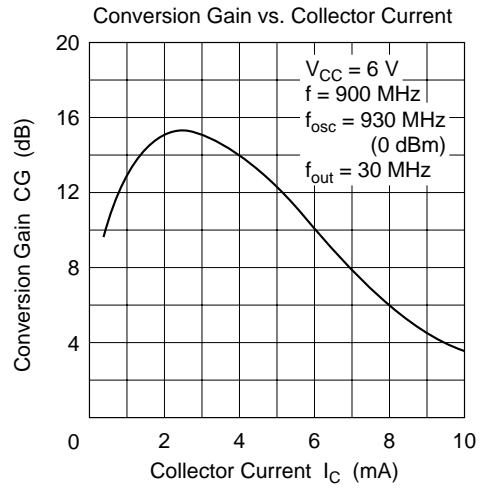
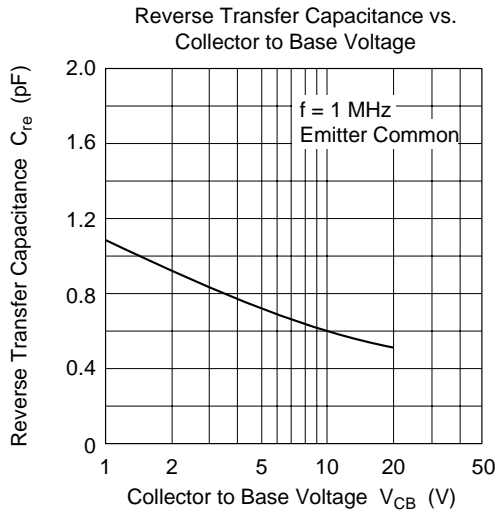
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	20	V
Collector to emitter voltage	V_{CEO}	11	V
Emitter to base voltage	V_{EBO}	3	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	150	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

Electrical Characteristics (Ta = 25°C)

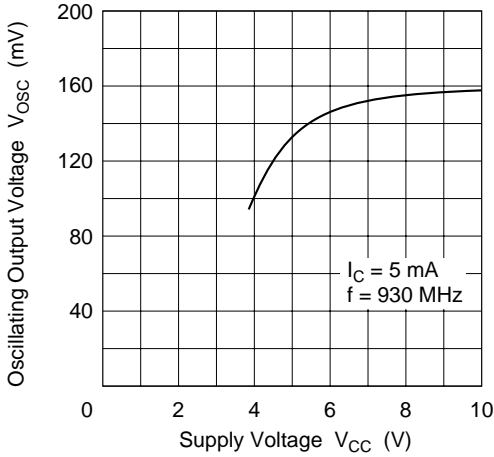
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	20	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	11	—	—	V	$I_C = 1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	3	—	—	V	$I_E = 10 \mu A, I_C = 0$
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	$V_{CC} = 6 \text{ V}, I_C = 5 \text{ mA},$ $f = 930 \text{ MHz}$

Note: Marking is "GC".

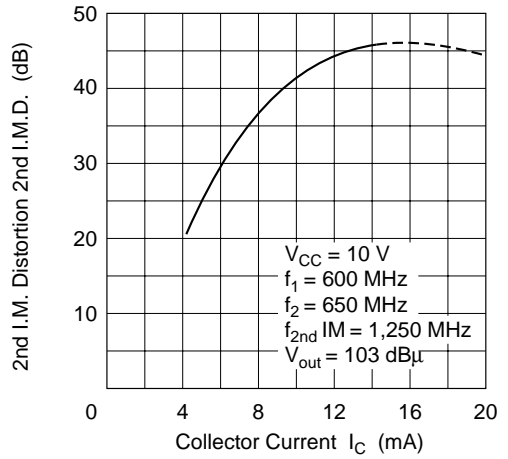




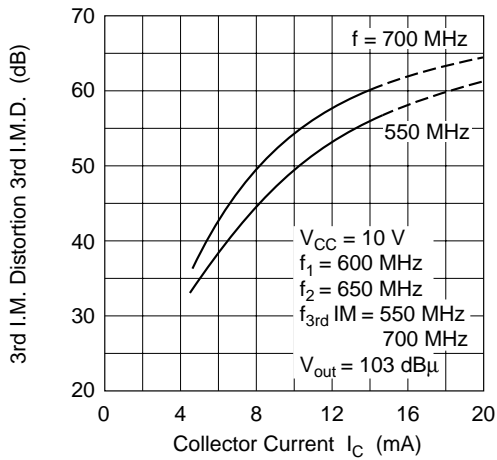
Oscillating Output Voltage vs. Supply Voltage



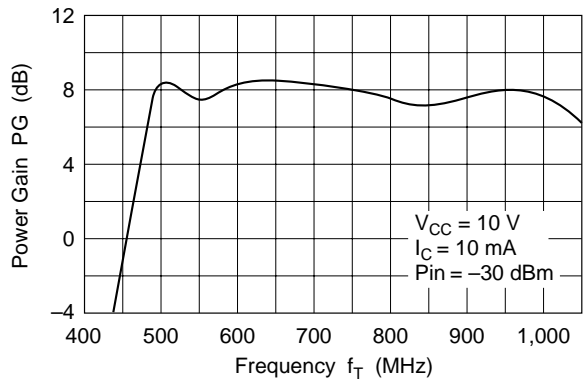
2nd I.M. Distortion vs. Collector Current



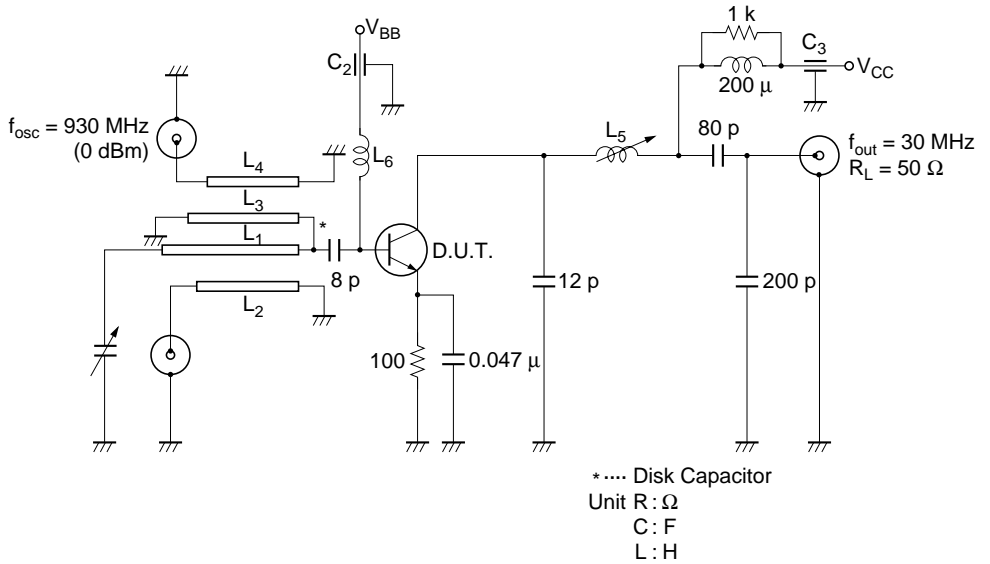
3rd I.M. Distortion vs. Collector Current



Power Gain vs. Frequency



Conversion Gain, Noise Figure Test Circuit

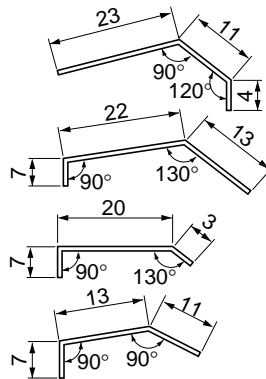


L₁ : ϕ 1 mm Enameled Copper wire

L₂ : ϕ 1 mm Enameled Copper wire

L₃ : ϕ 1 mm Enameled Copper wire

L₄ : ϕ 1 mm Enameled Copper wire



Unit : mm

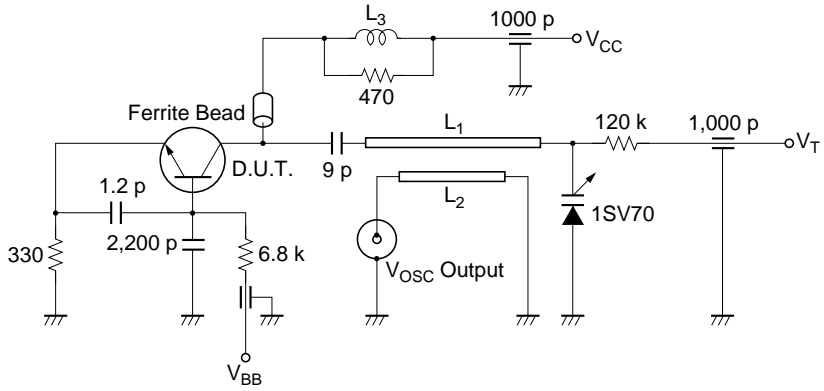
L₅ : Bobbin ϕ 5 mm inside dia, ϕ 0.2 mm 20 Turns Enameled Copper wire

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

C₁ : 20 pF max. Air Trimmer Condenser

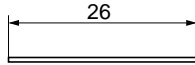
C₂, C₃ : 1000 pF Air Core Capacitor

V_{OSC} Test Circuit

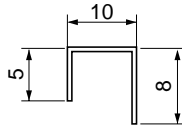


Unit C : F
R : Ω

L₁ : φ1 mm Enameled Copper wire

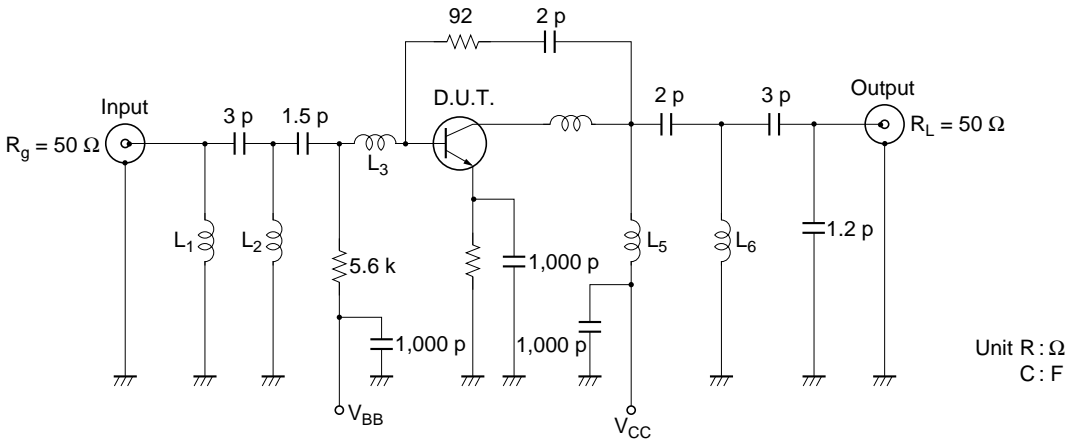


L₂ : φ0.8 mm Enameled Copper wire

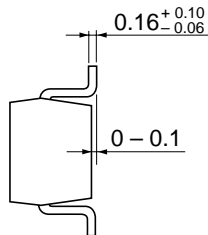
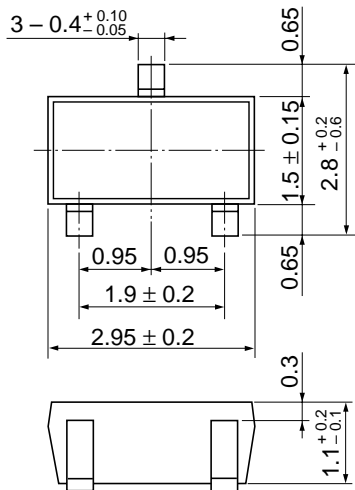


L₃ : φ0.3 mm Enameled Copper wire, 10 Turns with 470 Ω Resistor

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



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

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