
2SC2735

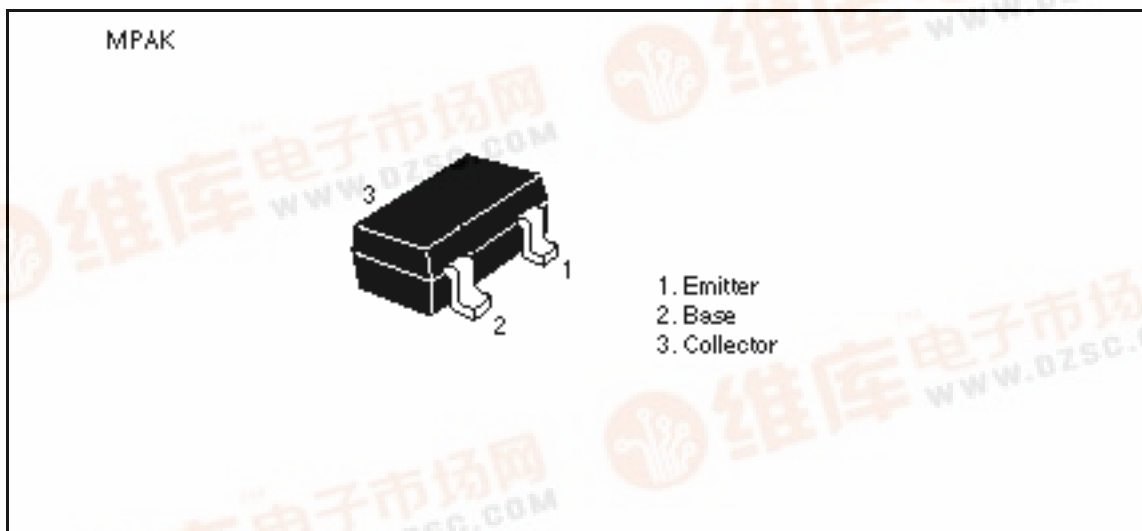
Silicon NPN Epitaxial

HITACHI

Application

UHF/VHF Local oscillator, frequency converter

Outline



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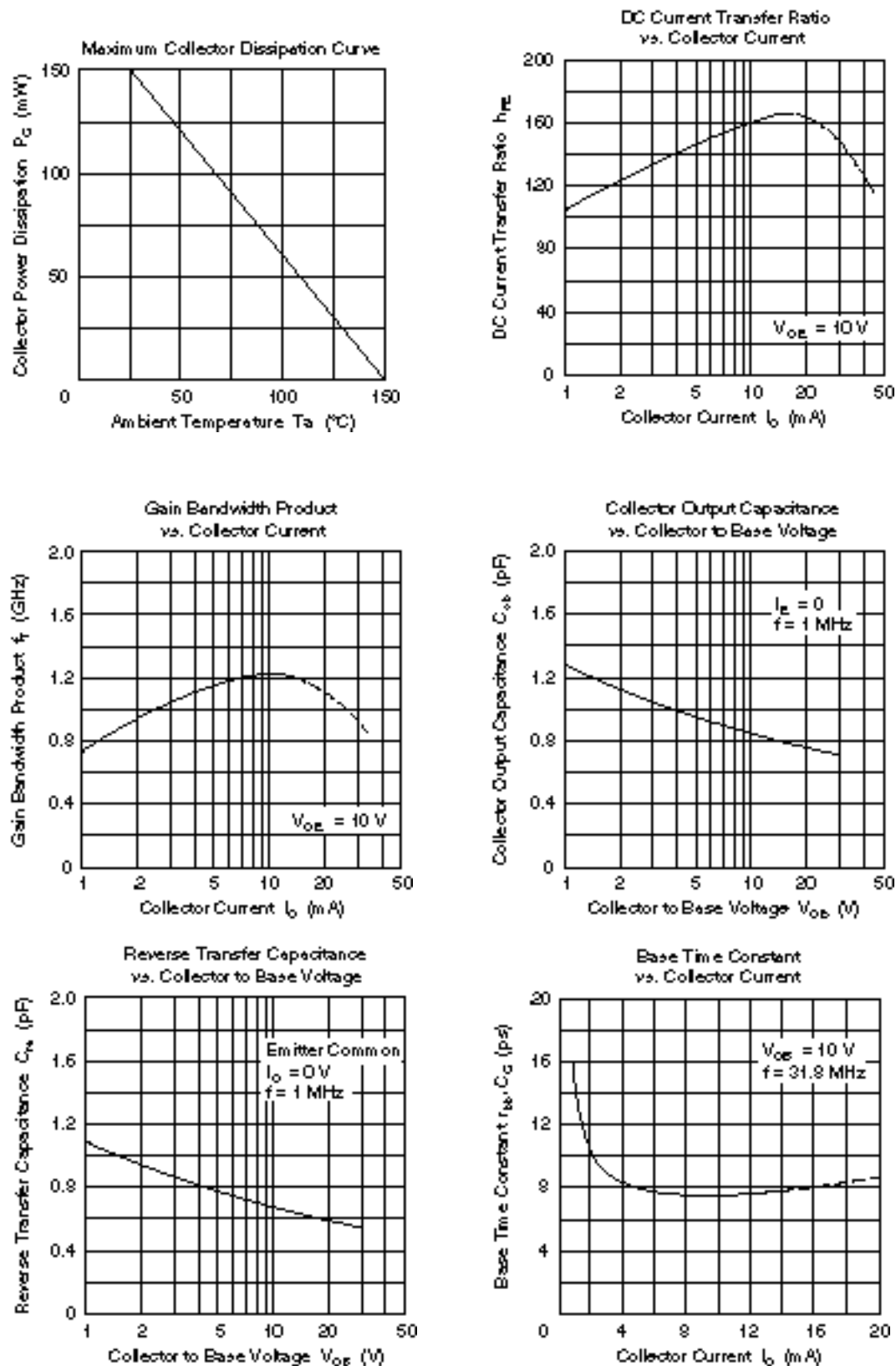
Absolute Maximum Ratings (Ta = 25°C)

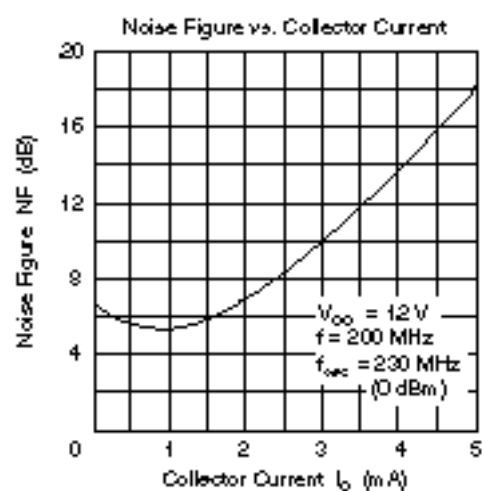
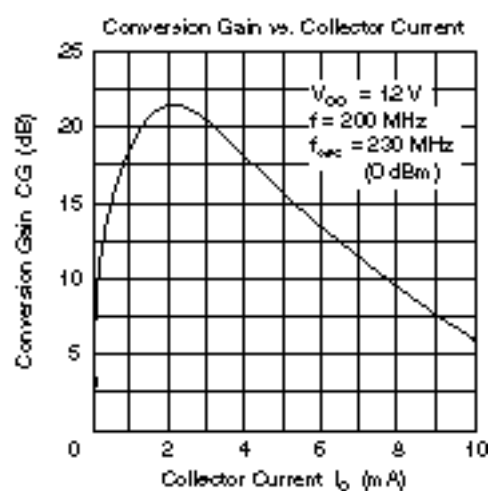
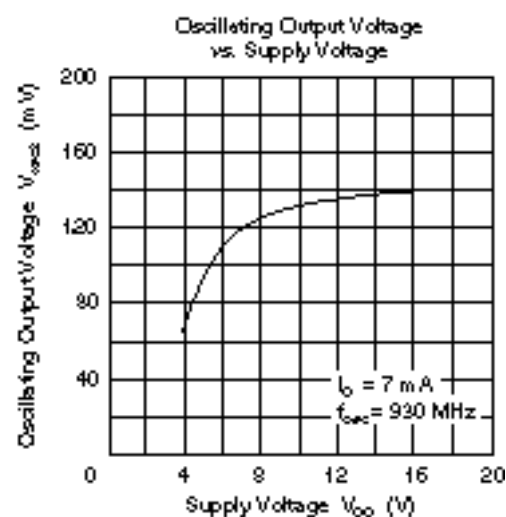
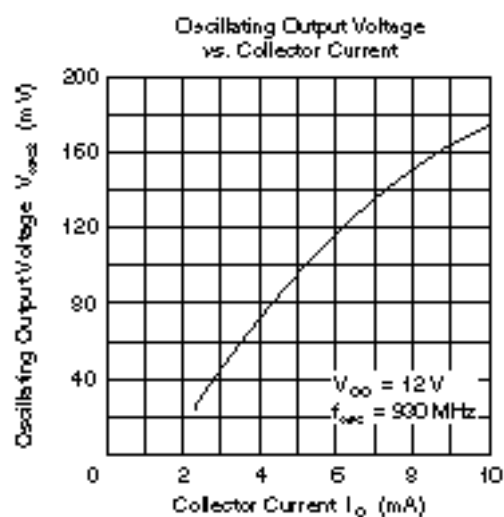
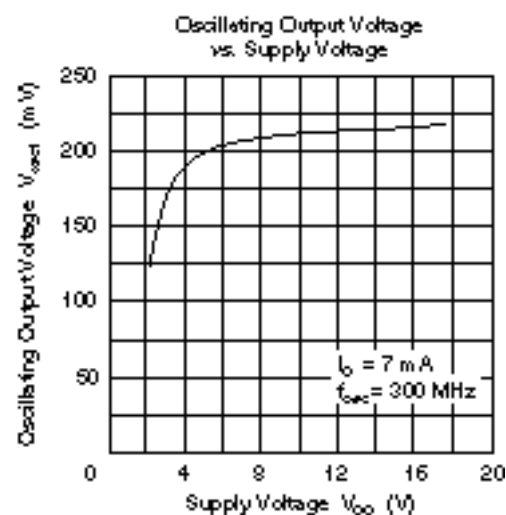
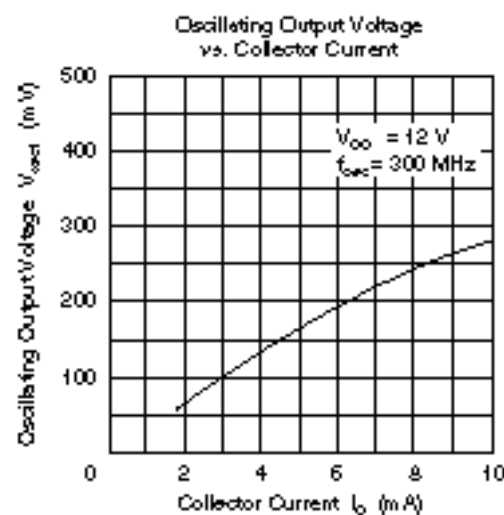
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	20	V
Emitter to base voltage	V_{EBO}	3	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	150	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	–55 to +150	°C

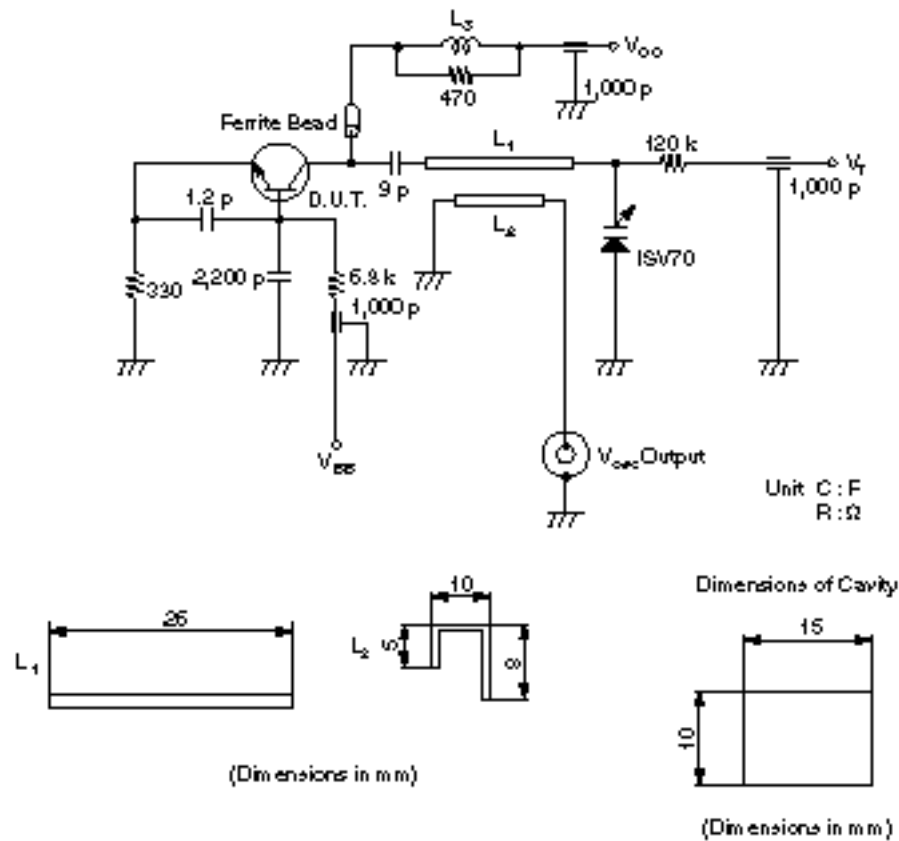
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	20	—	—	V	$I_C = 1 \text{ mA}, R_{BE} =$
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	$V_{CB} = 10 \text{ V}, I_C = 0$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.0	V	$I_C = 20 \text{ mA}, I_B = 4 \text{ mA}$
DC current transfer ratio	h_{FE}	40	—	—		$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$
Collector output capacitance	C_{ob}	—	0.85	1.5	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$
Gain bandwidth product	f_T	600	1200	—	MHz	$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$
Oscillating output voltage	V_{OSC1}	—	210	—	mV	$V_{CC} = 12 \text{ V}, I_C = 7 \text{ mA}, f_{OSC} = 300 \text{ MHz}$
	V_{OSC2}	—	130	—	mV	$V_{CC} = 12 \text{ V}, I_C = 7 \text{ mA}, f_{OSC} = 930 \text{ MHz}$
Conversion gain	CG	—	21	—	dB	$V_{CC} = 12 \text{ V}, I_C = 2 \text{ mA}, f = 200 \text{ MHz}, f_{OSC} = 230 \text{ MHz (0dBm)}$
Noise figure	NF	—	6.5	—	dB	$V_{CC} = 12 \text{ V}, I_C = 2 \text{ mA}, f = 200 \text{ MHz}, f_{OSC} = 230 \text{ MHz (0dBm)}$

Note: Marking is "JC".





V₀₀₀₂ UHF Oscillating Output Voltage Test Circuit

L_1 : Polyurethane Coated Copper Wire ϕ 1.0 mm

L_2 : Polyurethane Coated Copper Wire ϕ 0.8 mm

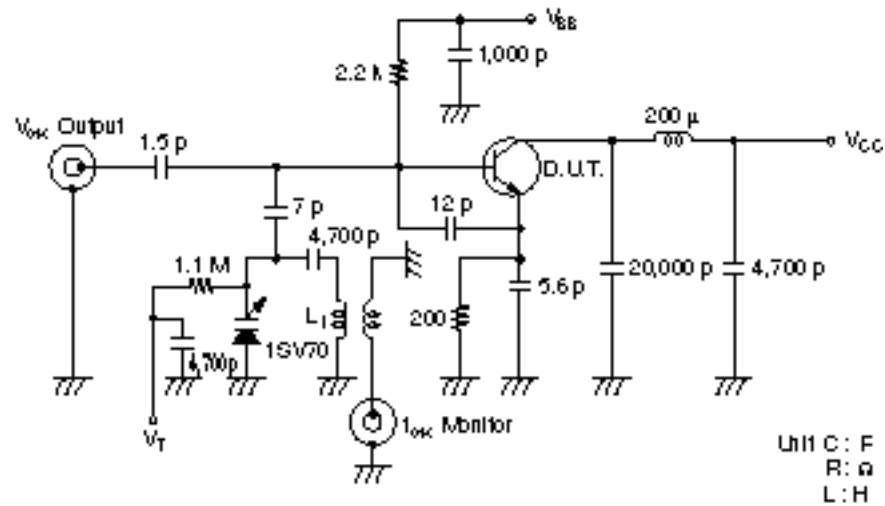
L_3 : ϕ 0.3 mm Enamelled Copper wire, 10 Turns with 470 Ω (1/4W) Resistor.

Test Frequency : $f_{sec} = 930$ MHz

Test Equipment : YHP 4271A Vector Voltmeter

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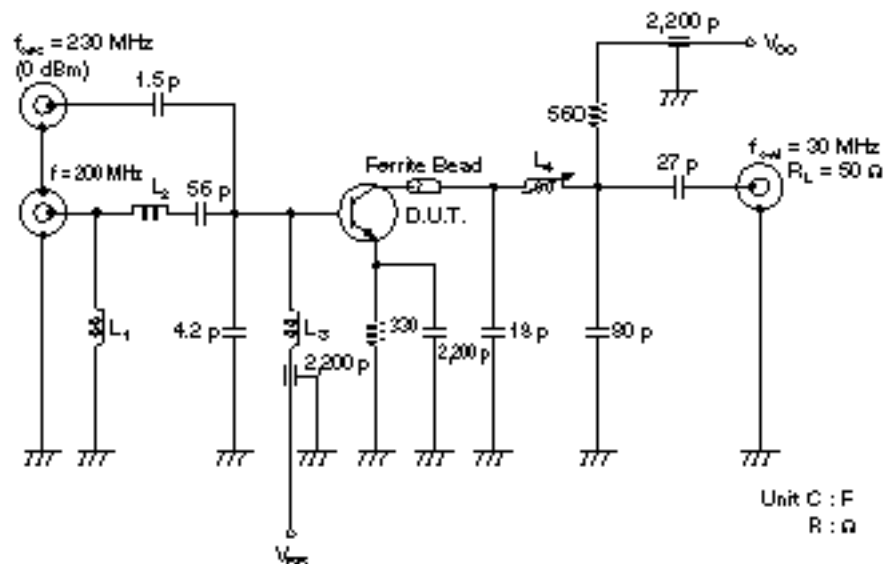
V_{06C1} VHF Oscillating Output Voltage Test Circuit



L₁ : Inside dia $\phi 3$ mm, $\phi 3$ mm Enameled Copper Wire 12 Turns

Test Frequency: $f_{osc} = 300$ MHz

VHF Conversion Gain : Noise Figure Test Circuit



L₁ : Inside dia $\phi 5$ mm, $\phi 0.5$ mm Enameled Copper Wire 4 Turns

L₂ : Inside dia $\phi 4$ mm, $\phi 0.5$ mm Enameled Copper Wire 4 Turns

L₃ : Inside dia $\phi 3$ mm, $\phi 0.2$ mm Enameled Copper Wire 6 Turns

L₄ : Outside dia $\phi 5$ mm Bobbin, $\phi 0.2$ mm Enameled Copper Wire 16 Turns, using Ferrite bead

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