2SC2733

Silicon NPN Epitaxial

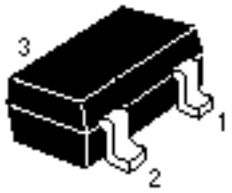
HITACHI

Application

VHF frequency converter

Outline

MPAK



1. Emitter
2. Base
3. Collector

Hitachi semiconductor

Absolute Maximum Ratings (Ta = 25°C)

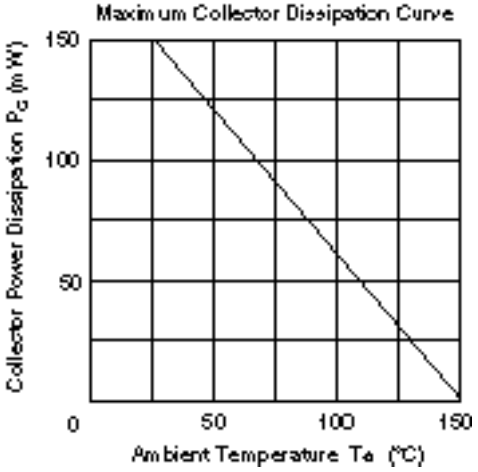
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	20	V
Emitter to base voltage	V_{EBO}	3	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	150	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

Electrical Characteristics (Ta = 25°C)

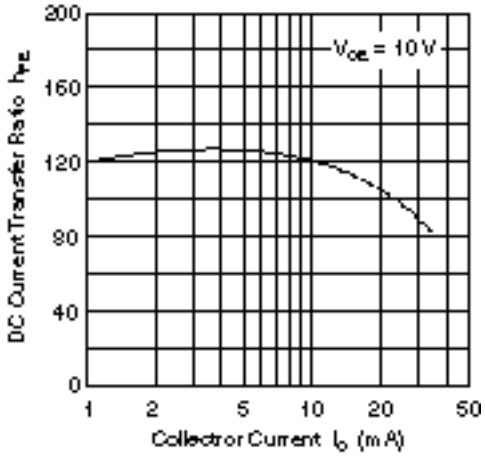
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	I_C = 10 µA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	20	—	—	V	I_C = 1 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	3	—	—	V	I_E = 10 µA, I_E = 0
Collector cutoff current	I_{CBO}	—	—	0.5	µA	V_{CB} = 10 V, I_C = 0
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.0	V	I_C = 20 mA, I_B = 4 mA
DC current transfer ratio	h_{FE}	60	120	—		V_{CE} = 10 V, I_C = 10 mA
Gain bandwidth product	f_T	600	1000	—	MHz	V_{CE} = 10 V, I_C = 10 mA
Collector output capacitance	Cob	—	0.35	0.65	pF	V_{CB} = 10 V, Emitter ground, f = 1 MHz
Conversion gain	CG	—	21	—	dB	V_{CC} = 12 V, I_C = 2 mA, f = 200 MHz, f_{OSC} = 230 MHz (0dBm), f_{out} = 30 MHz
Noise figure	NF	—	4.0	—	dB	V_{CC} = 12 V, I_C = 2 mA, f = 200 MHz, f_{OSC} = 230 MHz (0dBm), f_{out} = 30 MHz

Note: Marking is “HC”.

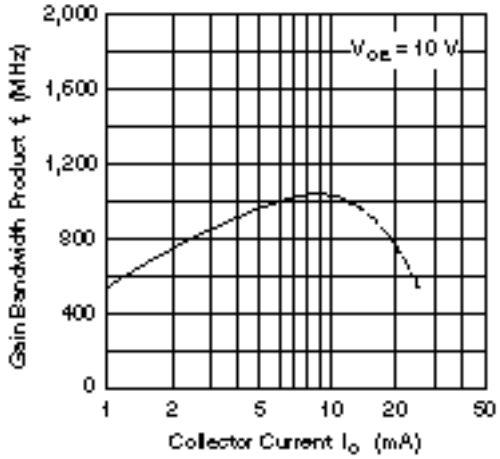
Maximum Collector Dissipation Curve



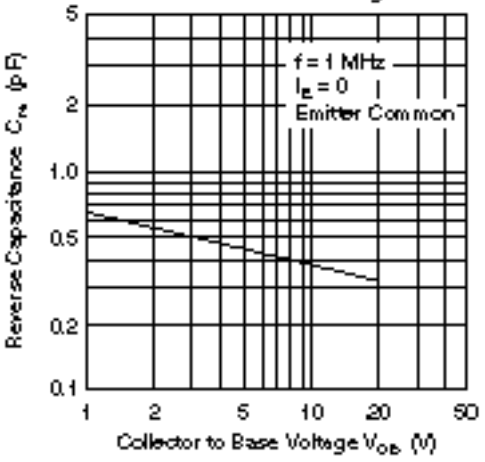
DC Current Transfer Ratio vs. Collector Current



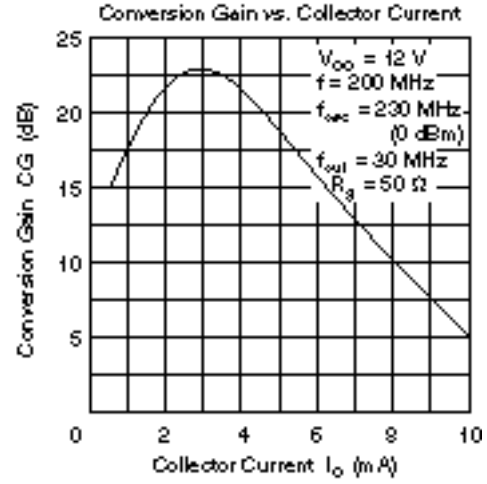
Gain Bandwidth Product vs. Collector Current



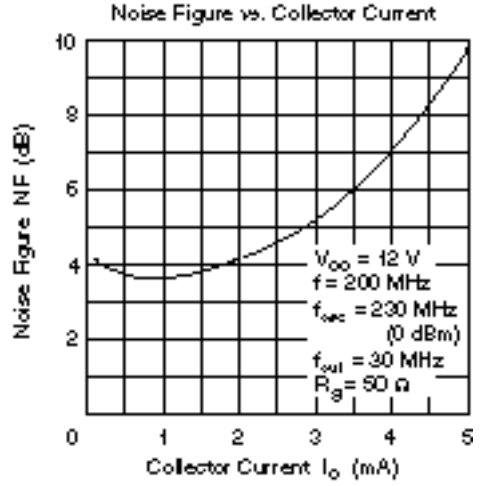
Reverse Transfer Capacitance vs. Collector to Base Voltage



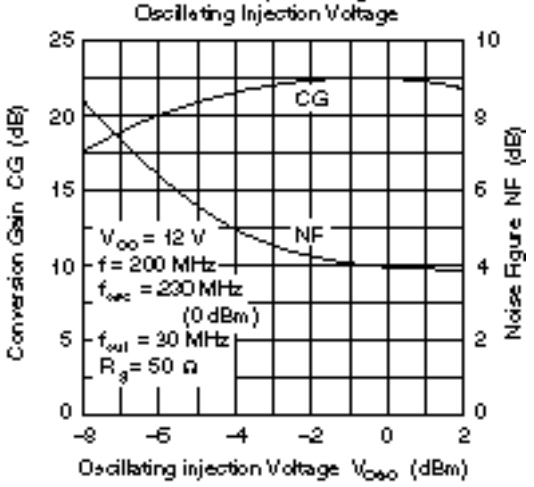
Conversion Gain vs. Collector Current



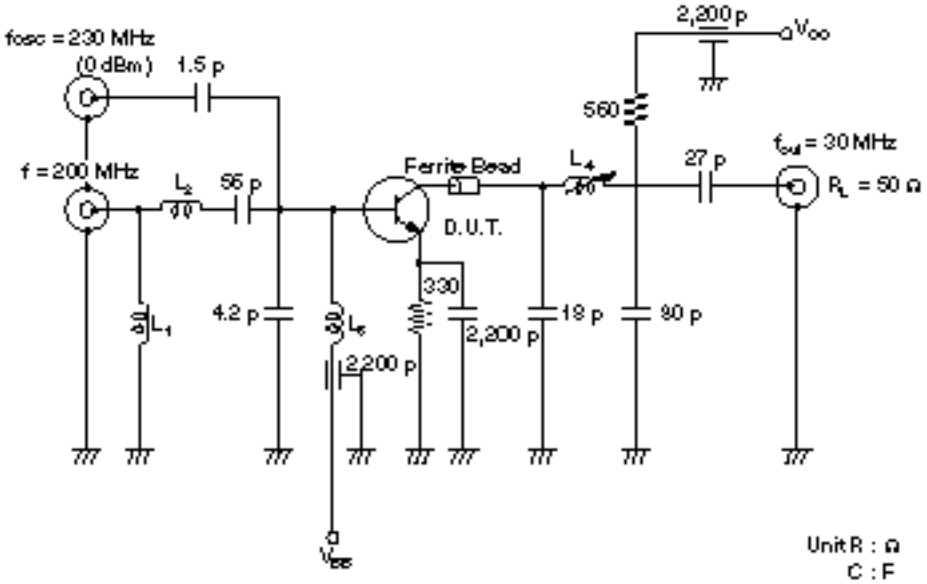
Noise Figure vs. Collector Current



Conversion Gain, Noise Figure vs.
Oscillating Injection Voltage



Conversion Gain, Noise Figure Test Curcuit



L_1: φ0.5 mm Enameled Copper wire 4 Turns inside dia φ5 mm
L_2: φ0.5 mm Enameled Copper wire 4 Turns inside dia φ4 mm
L_3: φ0.2 mm Enameled Copper wire 6 Turns inside dia φ3 mm
L_4: Outside dia φ5 mm Bobbin, φ0.2 mm Enameled Coper wire 16 Turns, using Ferrite bead.

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