To all our customers

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Renesas Technology Home Page: http://www.renesas.com

Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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Keep safety first in your circuit designs!

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   Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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2SC3127, 2SC3128, 2SC3510

Silicon NPN Epitaxial

ADE-208-1080A (Z)
2nd. Edition
Mar. 2001

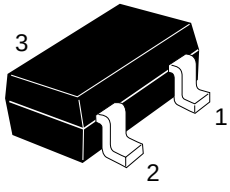
Application

UHF/VHF wide band amplifier

Outline

MPAK

2SC3127

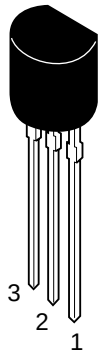


1. Emitter
2. Base
3. Collector

Note: Marking for 2SC3127 is “ID–”.

TO-92 (2)

2SC3128, 2SC3510



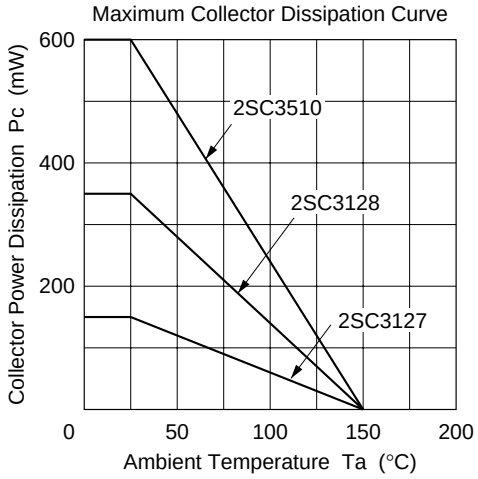
1. Base
2. Emitter
3. Collector

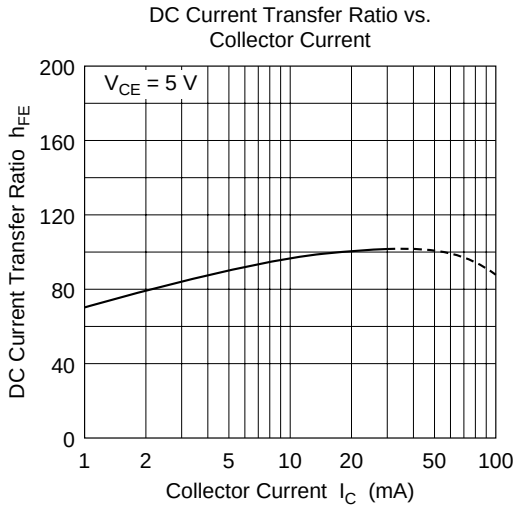
Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	2SC3127*[1]	2SC3128	2SC3510	Unit
Collector to base voltage	V_{CBO}	20	20	20	V
Collector to emitter voltage	V_{CEO}	12	12	12	V
Emitter to base voltage	V_{EBO}	3	3	3	V
Collector current	I_C	50	50	50	mA
Collector power dissipation	P_C	150	350	600	mW
Junction temperature	Tj	150	150	150	°C
Storage temperature	Tstg	–55 to +150	–55 to +150	–55 to +150	°C

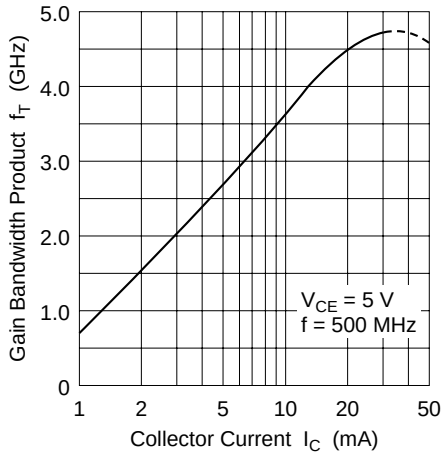
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	20	—	—	V	I_C = 10 µA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	12	—	—	V	I_C = 1 mA, R_{BE} =
Emitter cutoff current	I_{EBO}	—	—	10	µA	V_{EB} = 3 V, I_C = 0
Collector cutoff current	I_{CBO}	—	—	0.5	µA	V_{CB} = 12 V, I_E = 0
DC current transfer ratio	h_{FE}	30	90	200		V_{CE} = 5 V, I_C = 20 mA
Collector output capacitance	Cob	—	0.9	1.5	pF	V_{CB} = 5 V, I_E = 0, f = 1 MHz
Gain bandwidth product	f_T	3.5	4.5	—	GHz	V_{CE} = 5 V, I_C = 20 mA
Power gain	PG	—	10.5	—	dB	V_{CE} = 5 V, I_C = 20 mA, f = 900 MHz
Noise figure	NF	—	2.2	—	dB	V_{CE} = 5 V, I_C = 5 mA, f = 900 MHz

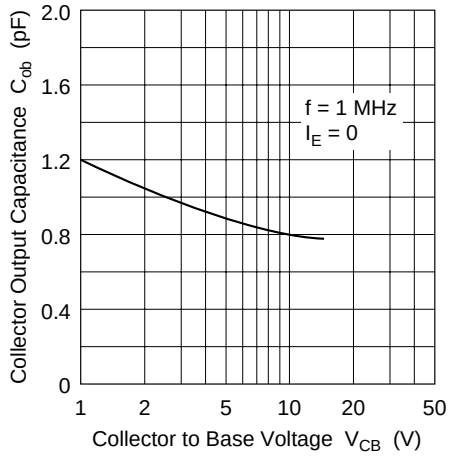




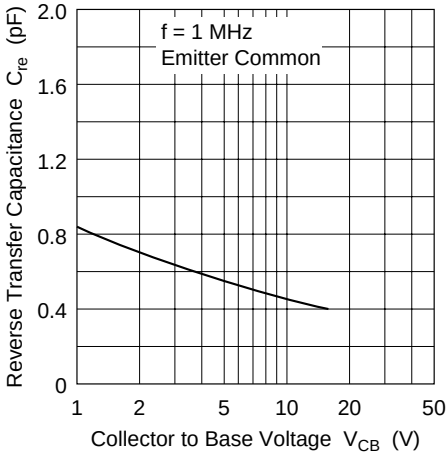
Gain Bandwidth Product vs. Collector Current



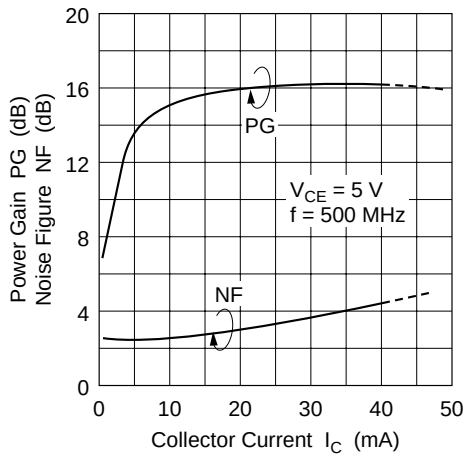
Collector Output Capacitance vs. Collector to Base Voltage



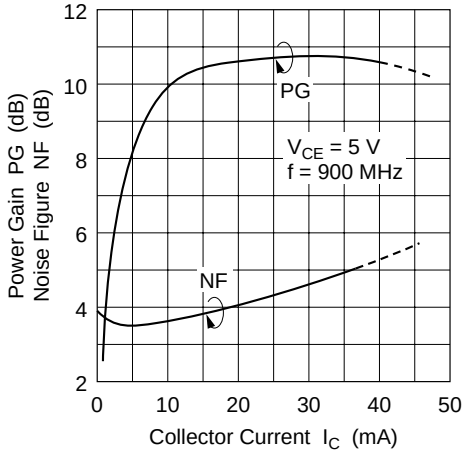
Reverse Transfer Capacitance vs. Collector to Base Voltage



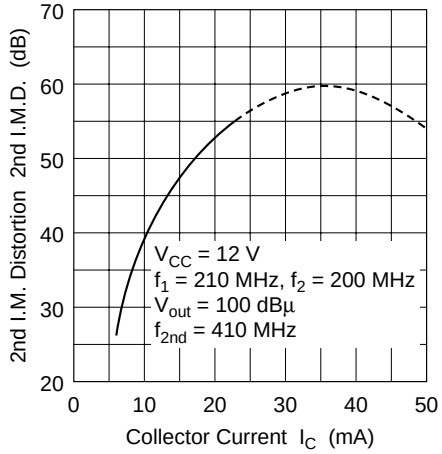
Power Gain and Noise Figure vs. Collector Current



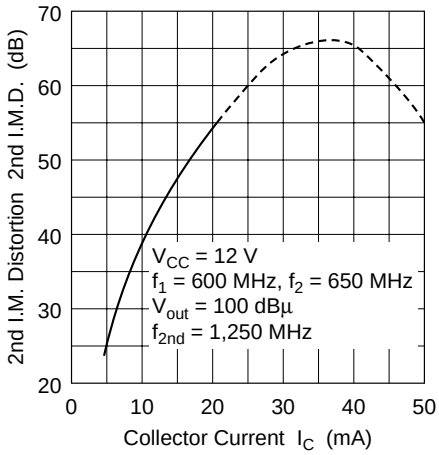
Power Gain and Noise Figure vs. Collector Current



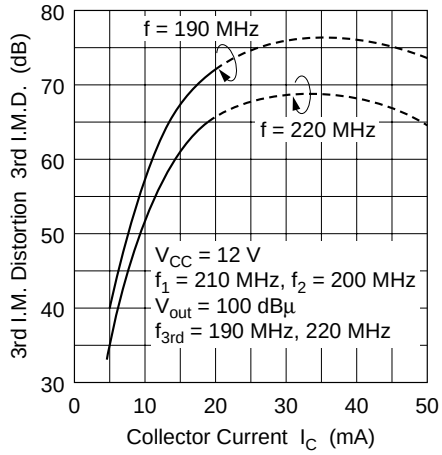
2nd I.M. Distortion vs. Collector Current



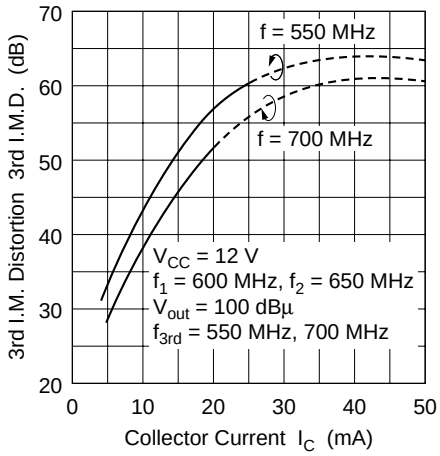
2nd I.M. Distortion vs. Collector Current



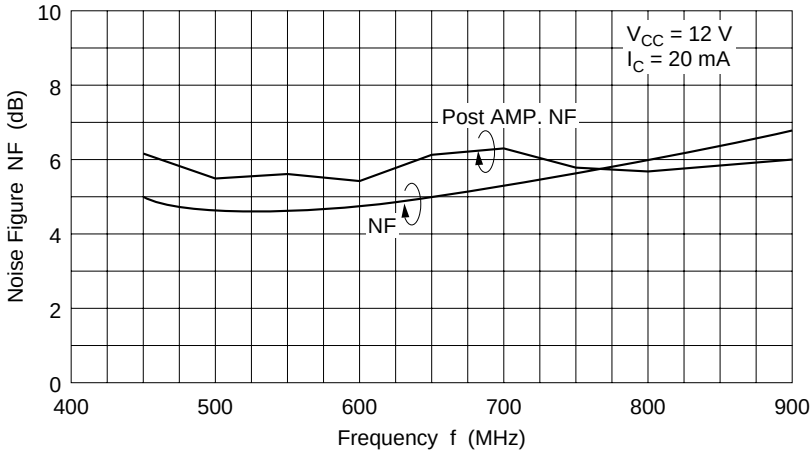
3rd I.M. Distortion vs. Collector Current



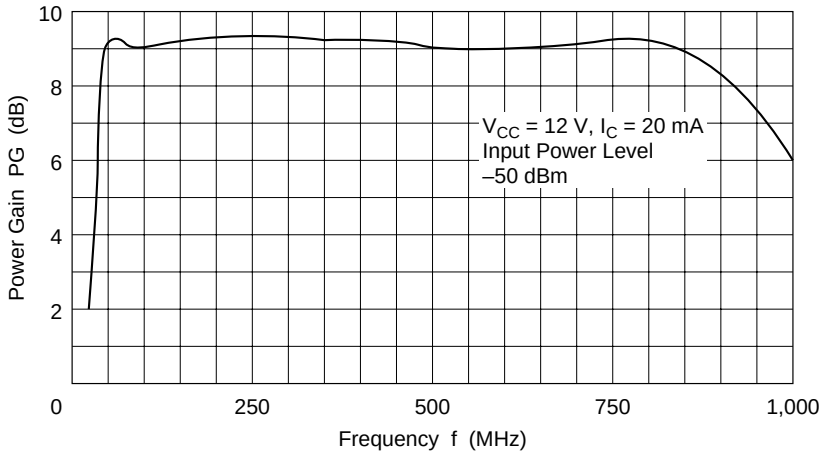
3rd I.M. Distortion vs. Collector Current



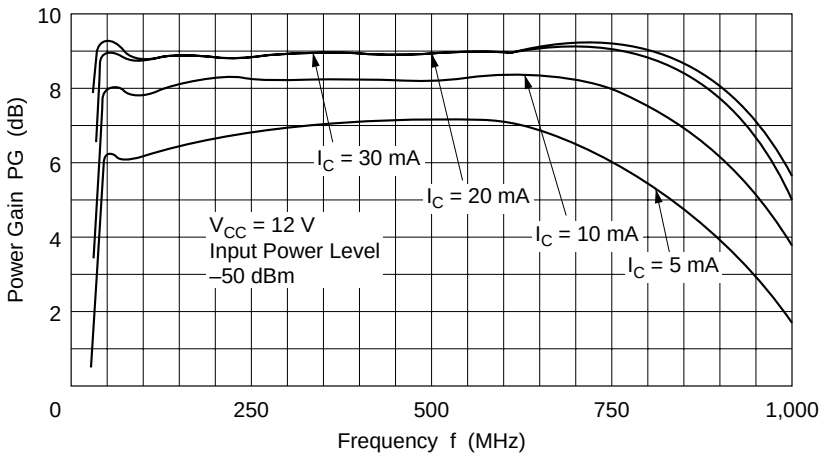
Noise Figure vs. Frequency



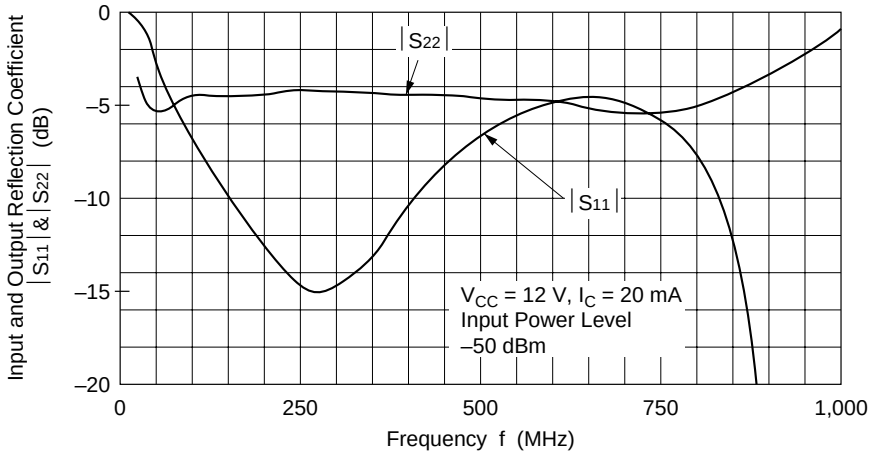
Power Gain vs. Frequency



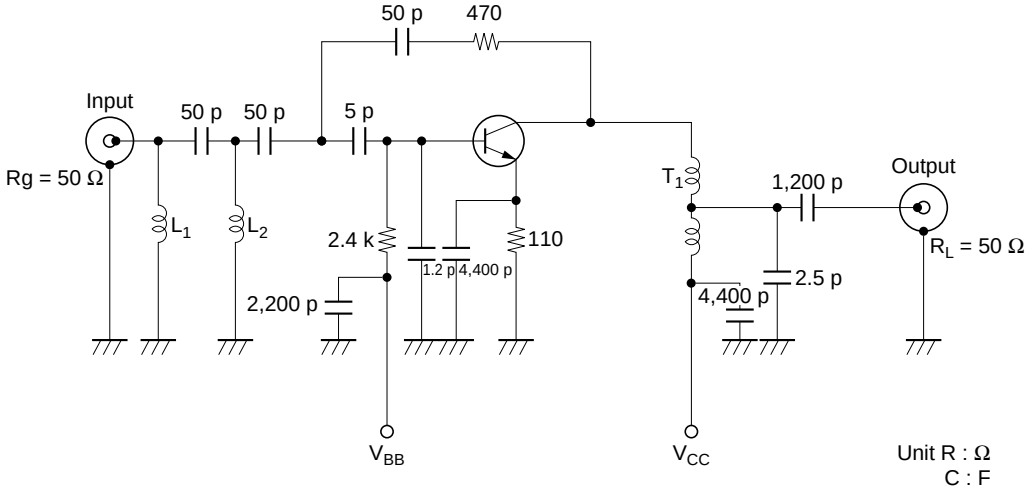
Power Gain vs. Frequency



Input and Output Reflection Coefficient vs. Frequency



Vhf to Uhf Wide Band Amp. Circuit



Parts Spcecification

L_1 : Inside dia ϕ3.0 mm, ϕ0.4 mm Polyurethane Coated Copper wire 12 Turns.

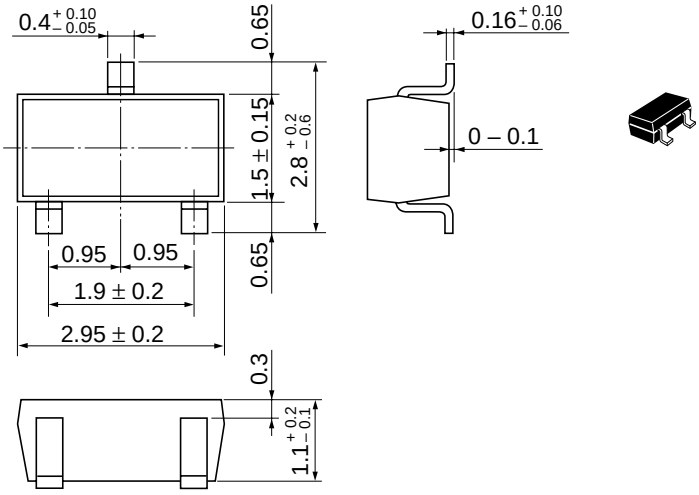
L_2 : Inside dia ϕ3.5 mm, ϕ0.5 mm Polyurethane Coated Copper wire 9 Turns.

T_1 : Balance wind used Ferrite Core
Outside dia ϕ4.0 mm, Inside dia ϕ2.0 mm
ϕ0.1 mm Polyurethane Coated Copper wire 3 Turns.
Ratio Input to Output is 2 : 1

Package Dimensions

As of January, 2001

Unit: mm



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

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