To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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RENESAS

NEC

Evaluation Board Information

EC-2SC5508/NE662M04 (Ver 2)
1.575 GHz LNA Evaluation Board

- **Evaluation Board Pattern Layout**
- **Circuit Description**
- **Evaluation Board Test Results**
- **Gain and Isolation**
- **Input and Output Return Loss**
- **1 dB Gain Compression Output Power**
- **Stability Factor**

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Date Published May 2008 NS

For the purposes of maintaining up-to-date information, the contents of this document are subject to change without notice.
This document outlines general applications for this product. The application circuits and circuit constants provided in this document are simply examples and should not be used for mass production design. Be aware also that there is no intention to standardize the restrictions and characteristics of these application circuits.
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M8E 02. 11-1

The mark <R> shows major revised points.
The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.

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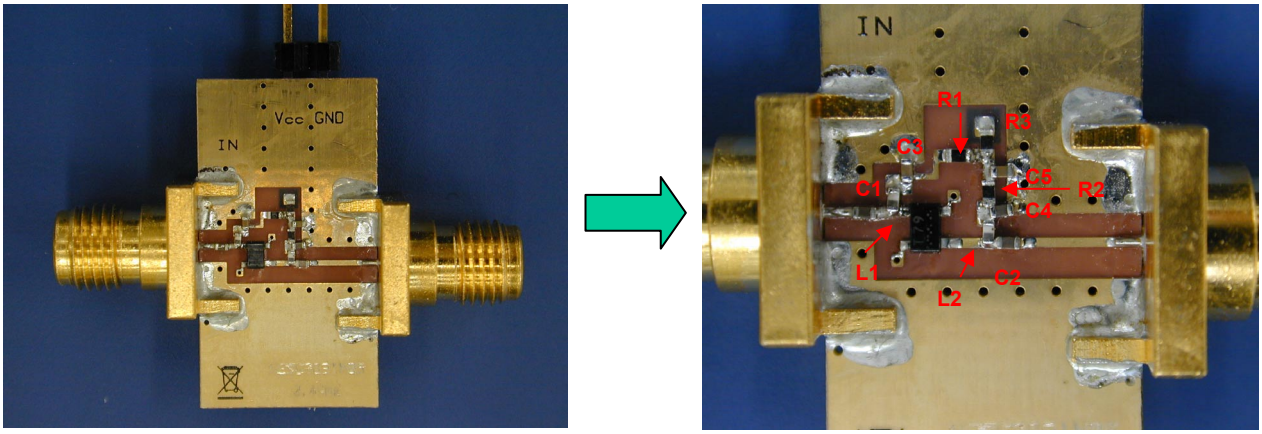
Evaluation Board Pattern Layout



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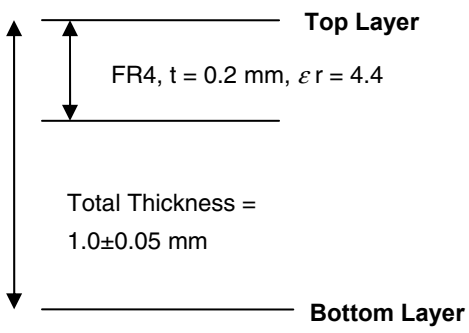

size 13.0 mm × 24.0 mm

material FR4 (ELC4756/Sumitomo)
t = 0.2 mm, εr = 4.4

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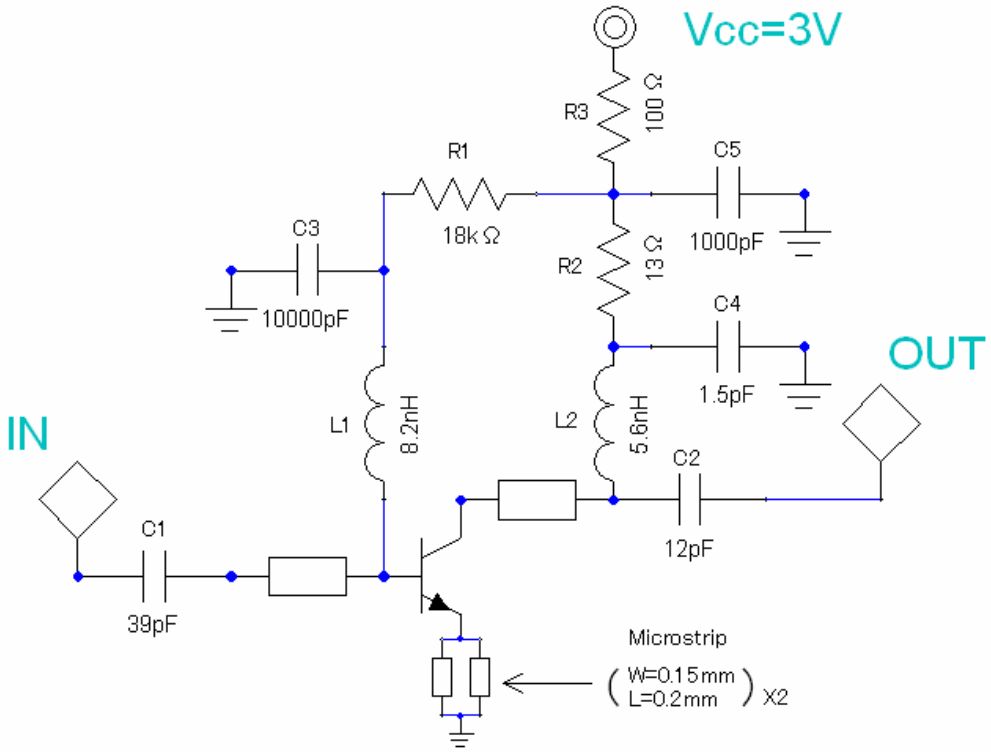
Circuit Description

(V_{CC} = 3.0 V, I_C = 6.4 mA, f = 1.575 GHz)



COMPONENTS OF TEST CIRCUIT

Parts	Part Number	Maker	Symbol	Value	Unit
Chip Capacitor	GRM1552C1H390JZ01	Murata	C1	39	pF
Chip Capacitor	GRM1552C1H120JZ01	Murata	C2	12	pF
Chip Capacitor	GRM155B11C103KA01	Murata	C3	10 000	pF
Chip Capacitor	GRM1554C1H1R5CZ01	Murata	C4	1.5	pF
Chip Capacitor	GRM155B11H102KA01	Murata	C5	1 000	pF
Chip Inductor	AML1005H8N2JTS	FDK	L1	8.2	nH
Chip Inductor	AML1005H5N6STS	FDK	L2	5.6	nH
Chip Resistor	MCR01MZPJ183	ROHM	R1	18	kΩ
Chip Resistor	MCR01MZPJ130	ROHM	R2	13	Ω
Chip Resistor	MCR01MZPJ101	ROHM	R3	100	Ω
Transistor	2SC5508 (NE662M04)	NEC	TR		
DC Connector	A2-2PA-2.54DSA (71)	Hirose			
RF Connector	01K2266-00	WAKA			
Substrate	FR4 (t = 0.2 mm)	Sumitomo			

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Evaluation Board Test Results

(V_{CC} = 3.0 V, I_C = 6.4 mA, f = 1.575 GHz)

Item	Symbol	Data	Unit
Noise Figure	NF Note	1.66	dB
Associated Gain	G_a	16.9	dB
Input Return Loss	RL_{in}	10.1	dB
Output Return Loss	RL_{out}	14.1	dB
Output Power at 1 dB Compression Point	$P_{O\ (1\ dB)}$	–1.1	dBm

Note The loss of the substrate is included in the value of NF.

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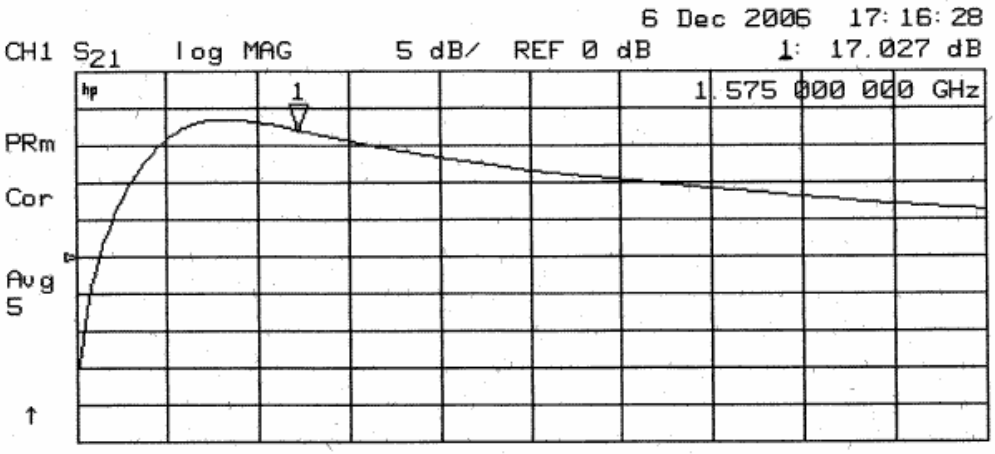
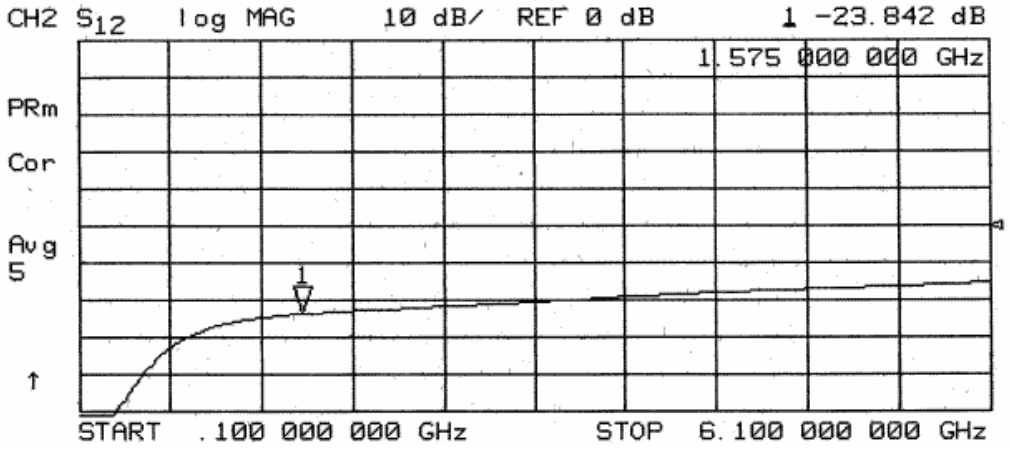
Gain and Isolation

(V_{CC} = 3.0 V, I_C = 6.4 mA, f = 1.575 GHz)

S_{21}



S_{12}



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Input and Output Return Loss

(V_{CC} = 3.0 V, I_C = 6.4 mA, f = 1.575 GHz)

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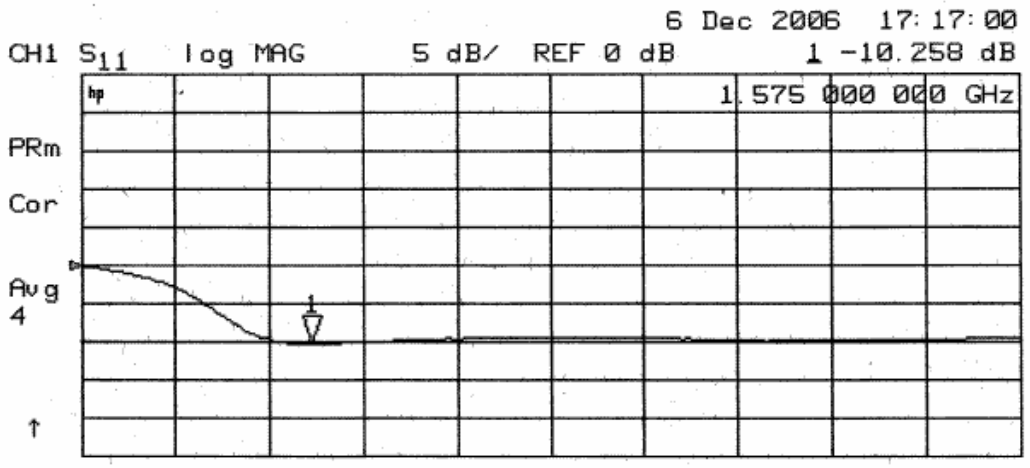

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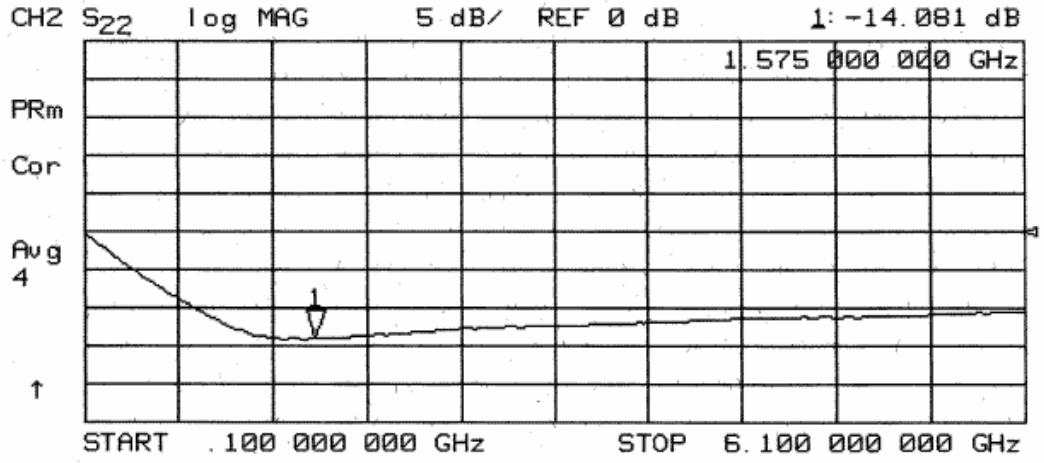

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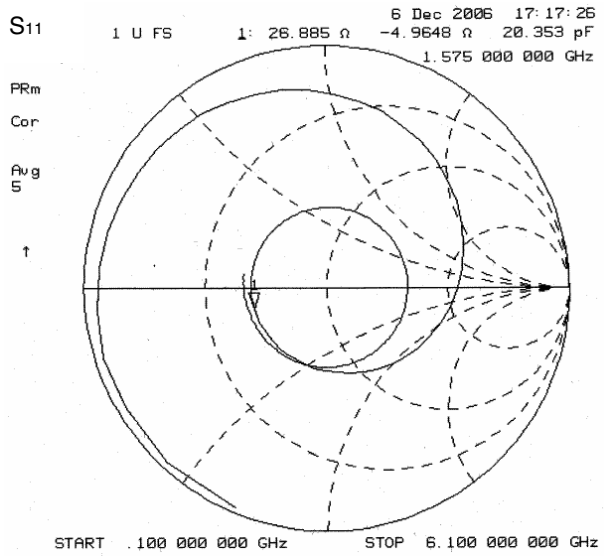

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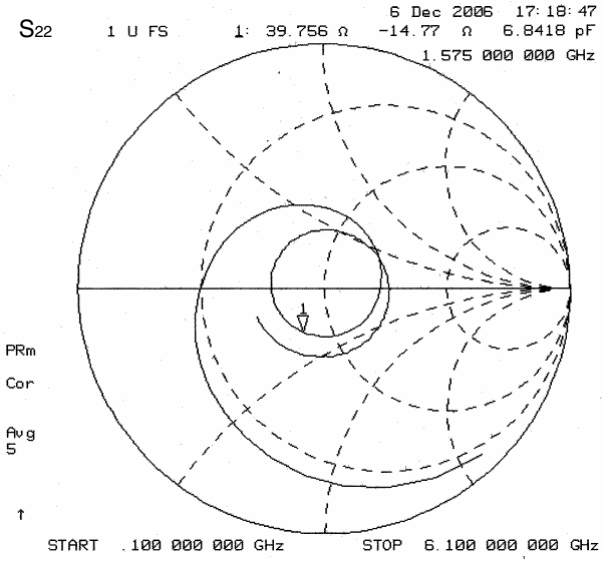

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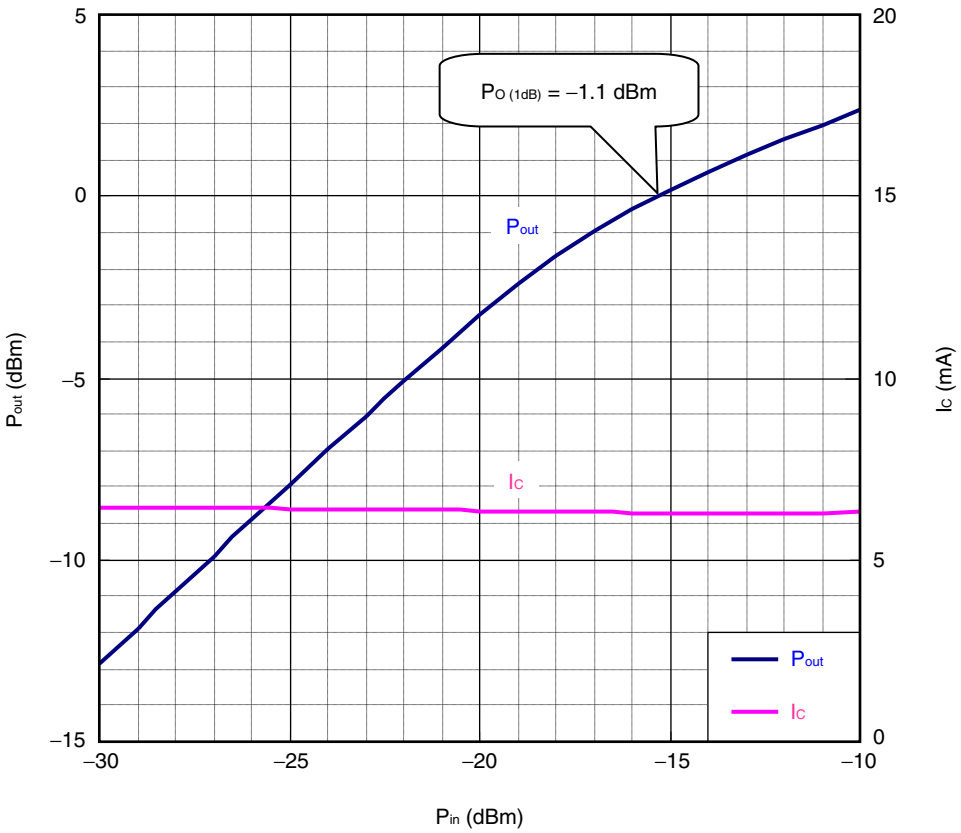
1 dB Gain Compression Output Power

(V_{CC} = 3.0 V, I_C = 6.4 mA, f = 1.575 GHz)



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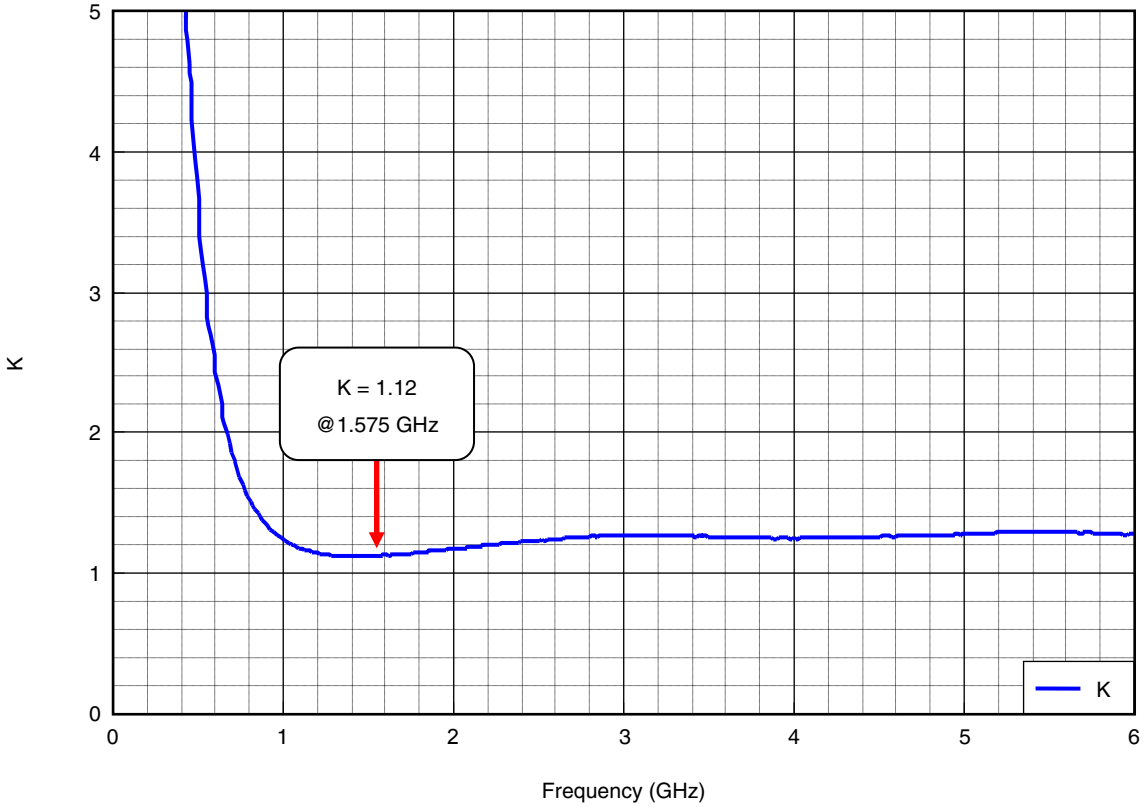
Stability Factor

K factor

(V_{CC} = 3.0 V, I_C = 6.4 mA)



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