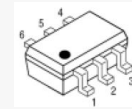


Features

- 33 dB Gain at 900 MHz
- 1.0 dB NF at 900 MHz
- Two-stage LNA
- Two power supplies in Type 2

Description

ASL563 is a two-stage LNA for GPS, DMB, and satellite receiver low noise blocks. It has a low noise, high gain, and high linearity over a wide range of frequency up to 6 GHz. It is also suitable for use in the low noise amplifier block of the mobile wireless systems of T-DMB, CDMA, GSM, PCS, WCDMA, WiBro, WiMAX, and WLAN so on. The amplifier is available in an SOT-363 package and passes the stringent DC, RF, and reliability tests.



Package Style: SOT-363

Typical Performance

Parameters	Units	Typical		
		900	1950	2450
Frequency	MHz	900	1950	2450
Gain	dB	33	26	22
S11	dB	-15	-15	-15
S22	dB	-20	-20	-14
Output IP3	dBm	23 ¹⁾	29 ²⁾	31 ²⁾
Noise Figure	dB	0.9	0.9	1.0
Output P1dB	dBm	11	14	14
Current	mA	50	50	50
Device Voltage	V	5	5	5

1) OIP3 is measured with two tones at an output power of +0 dBm/tone separated by 1MHz.

2) OIP3 is measured with two tones at an output power of +5 dBm/tone separated by 1MHz.

Application Circuit

- 900 MHz
- 1800 MHz
- 1950 MHz
- 2400 ~ 2500 MHz
- GPS (TYPE 1)
- GPS (TYPE 2 / Strip lines)
- 1163~1210 / 1204~1240 MHz
- 1558~1577 MHz
- GPS (TYPE 2 / Without strip lines)
- 2400 ~ 2500 MHz (3V)

Product Specifications*

Parameters	Units	Min	Typ	Max
Frequency	MHz		900	
Gain	dB	31	33	
S11	dB		-15	
S22	dB		-20	
Output IP3	dBm	21	23	
Noise Figure	dB		1.0	1.3
Output P1dB	dBm	9	11	
Current	mA		50	
Device Voltage	V		5	

* 100% in-house DC & RF testing is done on packaged products before taping.

Absolute Maximum Ratings

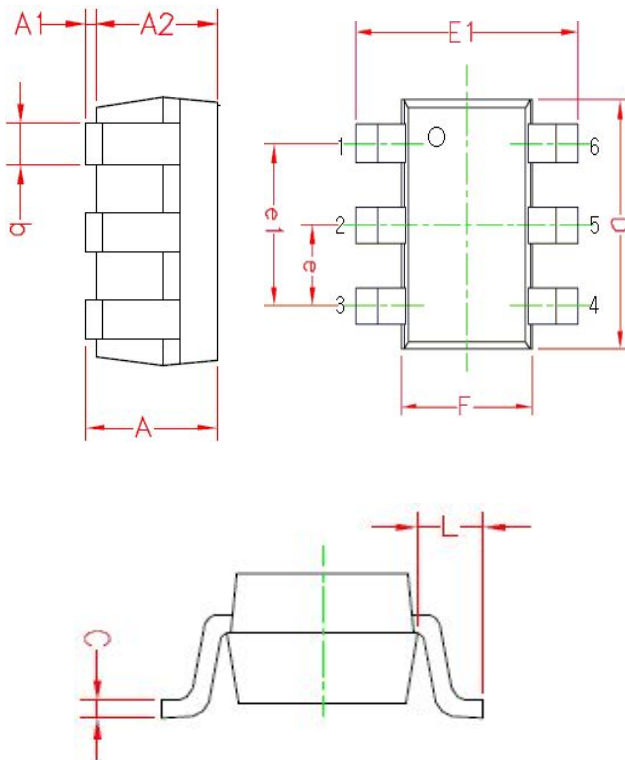
Parameters	Rating
Operating Case Temperature	-40 to +85°C
Storage Temperature	-40 to +150°C
Device Voltage	+5.5 V
Operating Junction Temperature	+150°C
Input RF Power (CW, 50ohm matched)*	22 dBm

* Please find the max. input power data from http://www.asb.co.kr/pdf/Maximum_Input_Power_Analysis.pdf

Pin Configuration

Pin No.	Function
1	GND1
2	GND2
3	OUT2 / VDD2
4	IN2
5	OUT1 / VDD1
6	IN1

Outline Drawing



Symbols	Dimensions (In mm)		
	MIN	NOM	MAX
A	0.90	1.00	1.10
A1	0.025	0.062	0.10
A2	0.875	0.937	1.00
b	0.20	0.30	0.40
C	0.10	0.125	0.15
D	1.90	2.00	2.10
F	1.15	1.25	1.35
E1	2.00	2.10	2.20
e	--	0.65BSC	--
e1	--	1.30BSC	--
L	--	0.425REF	--

Pin NO.	Function	Pin NO.	Function.
1	GND1	4	IN2
2	GND2	5	OUT1 / VDD1
3	OUT2 / VDD2	6	IN1

Ordering Information

Part Number	Description
-------------	-------------

APPLICATION CIRCUIT

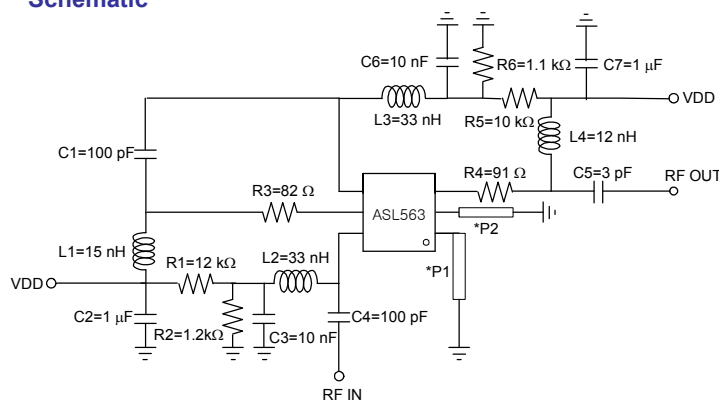
900 MHz

+5 V / 50mA

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain	G_p	F = 900 MHz		33		dB
Noise Figure	NF	F = 900 MHz		0.9		dB
Input Return Loss	RL_{in}	F = 900 MHz		-15		dB
Output Return Loss	RL_{out}	F = 900 MHz		-20		dB
1 dB Gain Compression Output Power	$P_{o(1dB)}$	F = 900 MHz		11		dBm
3 rd Intercept Point Output Power ¹⁾	OIP3	F = 900 MHz		23		dBm
Circuit Current	I_{cc}	F = 900 MHz, Non-RF		50		mA

1) OIP3 is measured with two tones at an output power of +0 dBm/tone separated by 1MHz.

Schematic



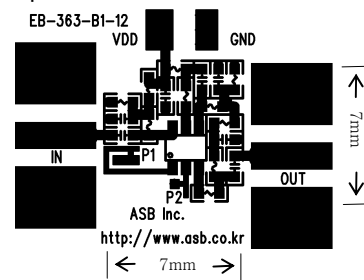
Note: 1) the length of the strip line P1 and P2 are given as below at the PCB with $\epsilon_r = 4.5$ and $T = 0.8$ mm.

*P1 Length: 5.3 mm, Width: 0.3 mm
*P2 Length: 0.3 mm, Width: 0.3 mm

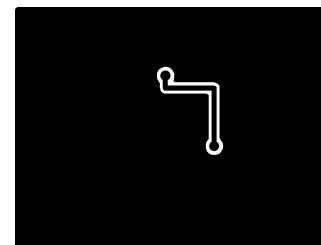
2) Gain and S11 are in trade-off and varied with the length of P1 and P2

Board Layout (FR4, 16x12 mm², 0.8T)

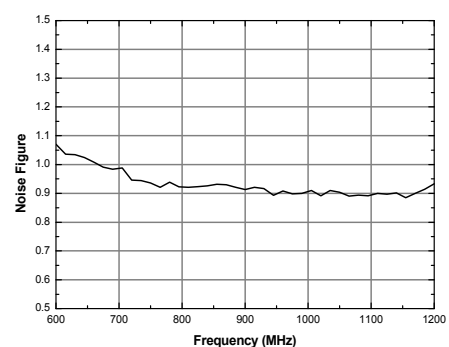
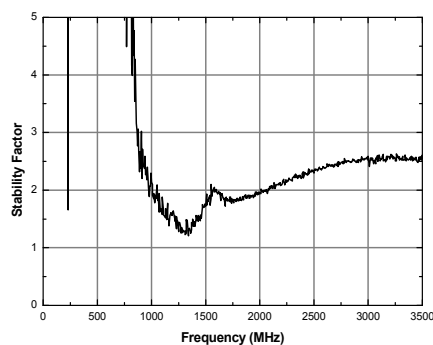
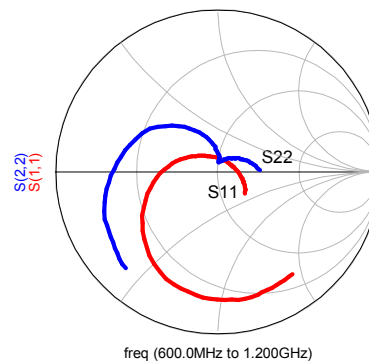
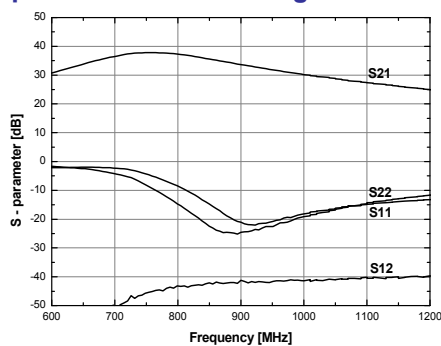
Top



Bottom



S-parameters & Noise Figure



APPLICATION CIRCUIT

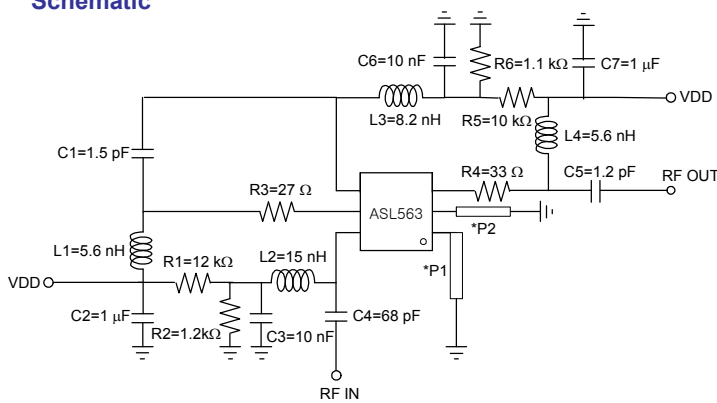
1800 MHz

+5 V / 50mA

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain	G_p	F = 1.8 GHz		27		dB
Noise Figure	NF	F = 1.8 GHz		0.9		dB
Input Return Loss	RL_{in}	F = 1.8 GHz		-15		dB
Output Return Loss	RL_{out}	F = 1.8 GHz		-20		dB
1 dB Gain Compression Output Power	$P_{o(1dB)}$	F = 1.8 GHz		14		dBm
3 rd Intercept Point Output Power ¹⁾	OIP3	F = 1.8 GHz		30		dBm
Circuit Current	I_{cc}	F = 1.8 GHz, Non-RF		50		mA

1) OIP3 is measured with two tones at an output power of +5 dBm/tone separated by 1MHz.

Schematic



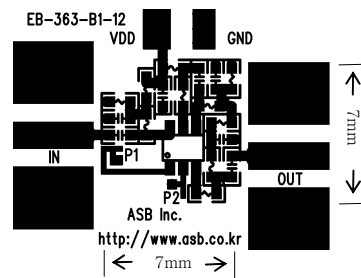
Note: 1) the length of the strip line P1 and P2 are given as below at the PCB with $\epsilon_r = 4.5$ and $T = 0.8$ mm.

*P1 Length: 4.3 mm, Width: 0.3 mm
*P2 Length: 0.3 mm, Width: 0.3 mm

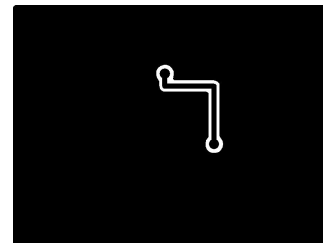
2) Gain and S_{11} are in trade-off and varied with the length of P1 and P2

Board Layout (FR4, 16x12 mm², 0.8T)

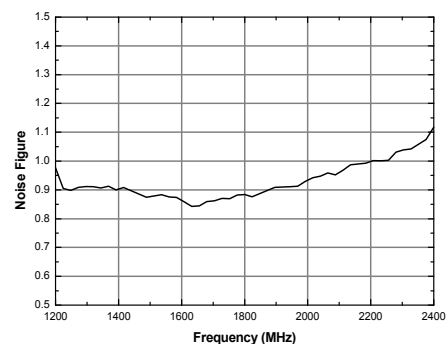
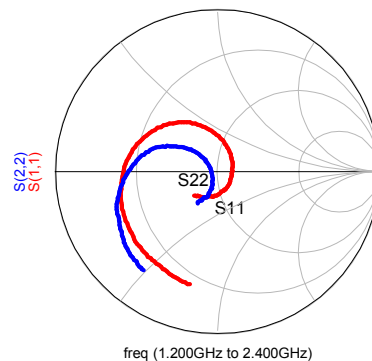
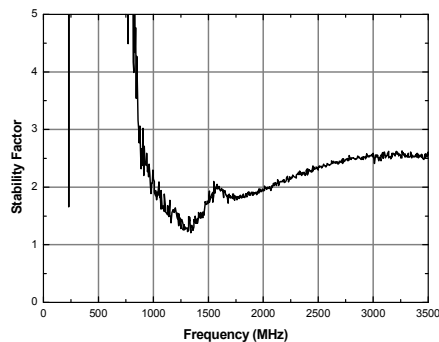
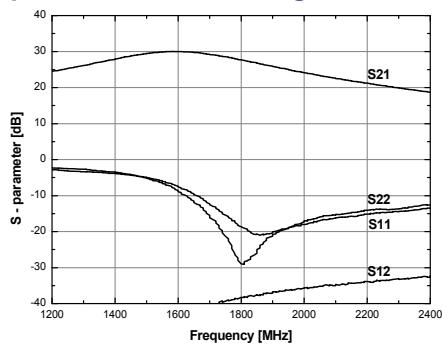
Top



Bottom



S-parameters & Noise Figure



APPLICATION CIRCUIT

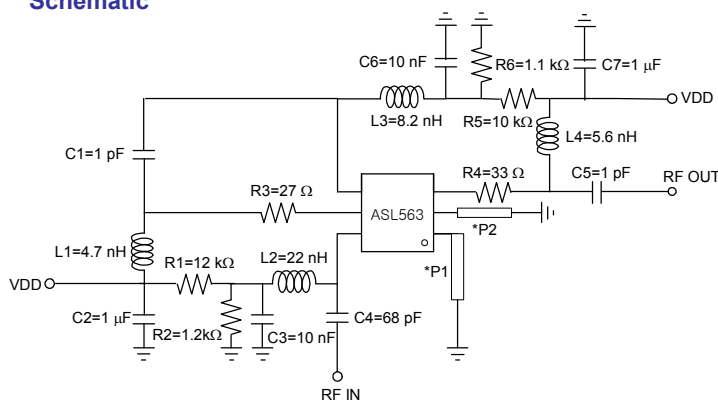
1950 MHz

+5 V / 50mA

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain	G_p	F = 1.95 GHz		26		dB
Noise Figure	NF	F = 1.95 GHz		0.9		dB
Input Return Loss	RL_{in}	F = 1.95 GHz		-15		dB
Output Return Loss	RL_{out}	F = 1.95 GHz		-20		dB
1 dB Gain Compression Output Power	$P_{o(1dB)}$	F = 1.95 GHz		14		dBm
3 rd Intercept Point Output Power ¹⁾	OIP3	F = 1.95 GHz		29		dBm
Circuit Current	I_{cc}	F = 1.95 GHz, Non-RF		50		mA

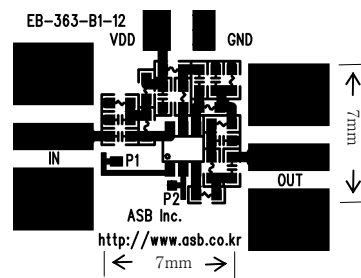
1) OIP3 is measured with two tones at an output power of +5 dBm/tone separated by 1MHz.

Schematic

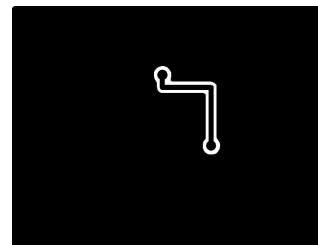


Board Layout (FR4, 16x12 mm², 0.8T)

Top



Bottom

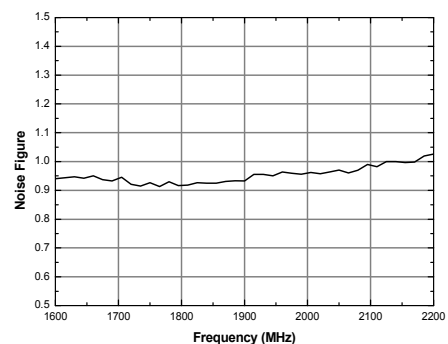
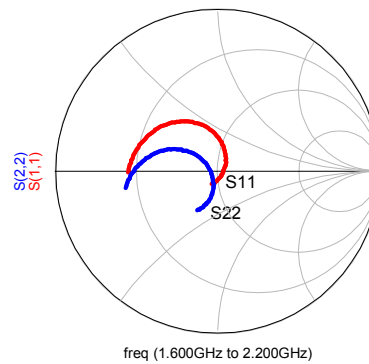
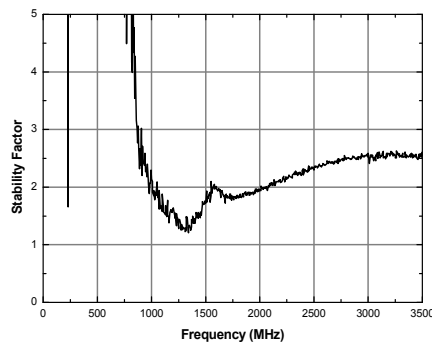
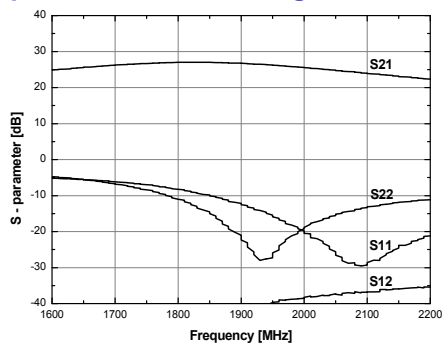


Note: 1) the length of the strip line P1 and P2 are given as below at the PCB with $\epsilon_r = 4.5$ and $T = 0.8$ mm.

*P1 Length: 3.7 mm, Width: 0.3 mm
*P2 Length: 0.3 mm, Width: 0.3 mm

2) Gain and S_{11} are in trade-off and varied with the length of P1 and P2

S-parameters & Noise Figure



APPLICATION CIRCUIT

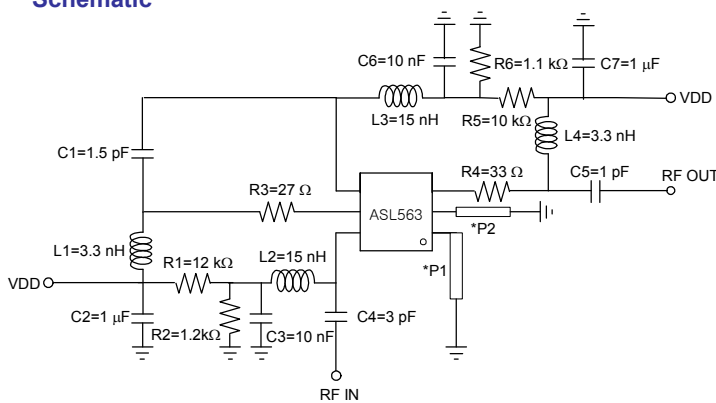
2400 ~ 2500 MHz

+5 V / 50mA

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain	G_p	F = 2.45 GHz		22		dB
Noise Figure	NF	F = 2.45 GHz		1.0		dB
Input Return Loss	RL_{in}	F = 2.45 GHz		-15		dB
Output Return Loss	RL_{out}	F = 2.45 GHz		-14		dB
1 dB Gain Compression Output Power	$P_{o(1dB)}$	F = 2.45 GHz		14		dBm
3 rd Intercept Point Output Power ¹⁾	OIP3	F = 2.45 GHz		31		dBm
Circuit Current	I_{cc}	F = 2.45 GHz, Non-RF		50		mA

1) OIP3 is measured with two tones at an output power of +5 dBm/tone separated by 1MHz.

Schematic



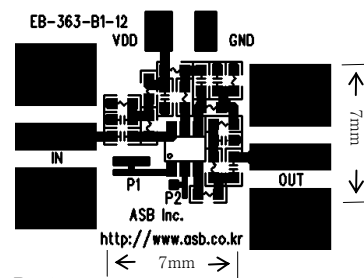
Note: 1) the length of the strip line P1 and P2 are given as below at the PCB with $\epsilon_r = 4.5$ and $T = 0.8$ mm.

*P1 Length: 2.0 mm, Width: 0.3 mm
*P2 Length: 0.3 mm, Width: 0.3 mm

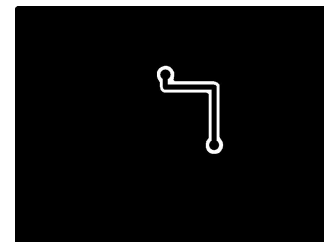
2) Gain and S_{11} are in trade-off and varied with the length of P1 and P2

Board Layout (FR4, 16x12 mm², 0.8T)

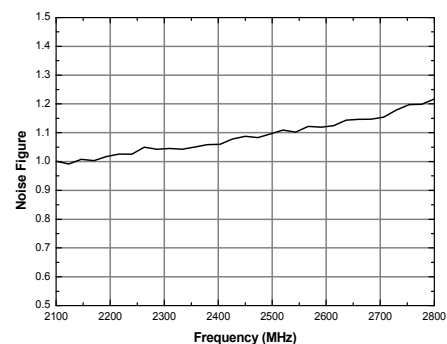
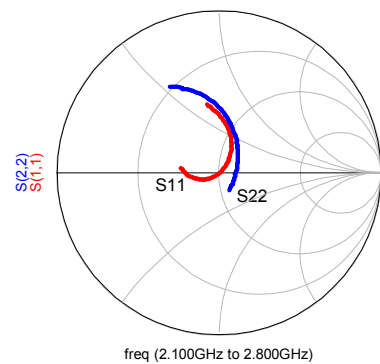
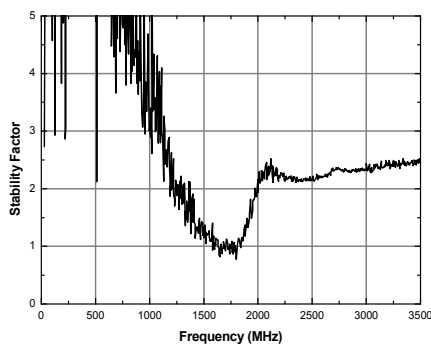
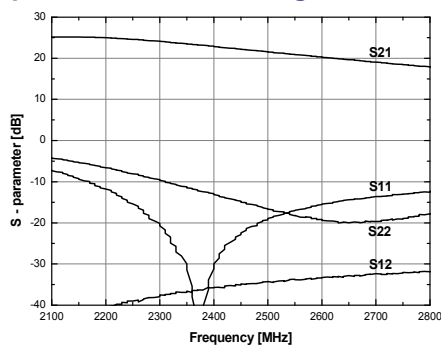
Top



Bottom



S-parameters & Noise Figure



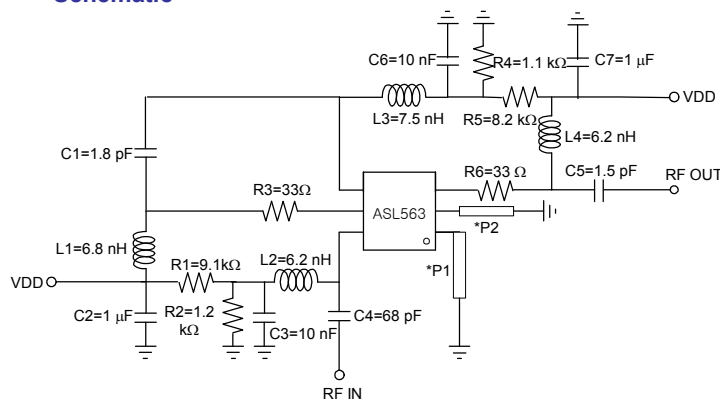
APPLICATION CIRCUIT (TYPE 1)

GPS
1575 MHz
+3 V

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain	G_p	F = 1.575 GHz	24	25		dB
Noise Figure	NF	F = 1.575 GHz		1.1	1.3	dB
Input Return Loss	RL_{in}	F = 1.575 GHz		-14		dB
Output Return Loss	RL_{out}	F = 1.575 GHz		-12		dB
1 dB Gain Compression Output Power	$P_{o(1dB)}$	F = 1.575 GHz	8	10		dBm
3 rd Intercept Point Output Power ¹⁾	OIP3	F = 1.575 GHz	14	16		dBm
Circuit Current	I_{cc}	F = 1.575 GHz, Non-RF		7.7		mA

1) OIP3 is measured with two tones at an output power of -5 dBm/tone separated by 1MHz.

Schematic



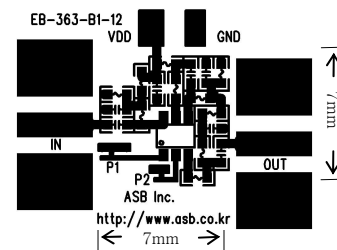
Note: 1) the length of the strip line P1 and P2 are given as below at the PCB with $\epsilon_r = 4.5$ and $T = 0.8$ mm.

*P1 Length: 2.8 mm, Width: 0.3 mm
*P2 Length: 1.0 mm, Width: 0.3 mm

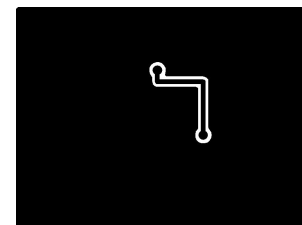
2) Gain and S11 are in trade-off and varied with the length of P1 and P2

Board Layout (FR4, 16x12 mm², 0.8T)

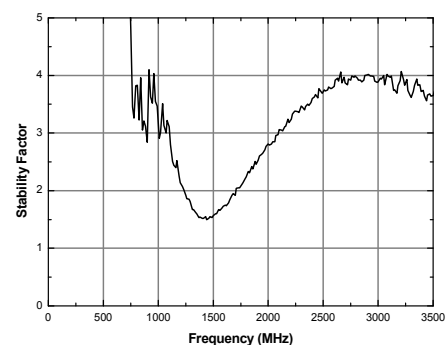
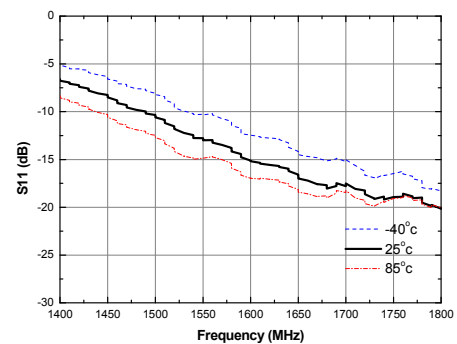
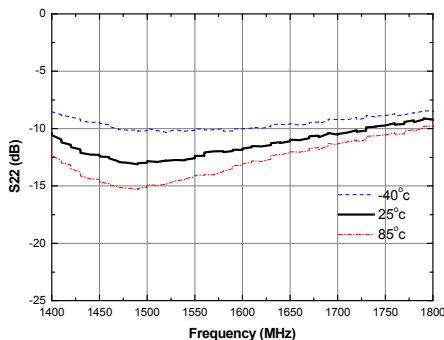
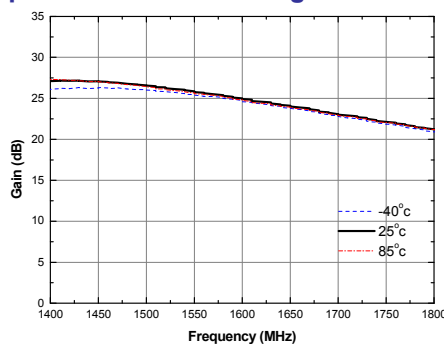
Top

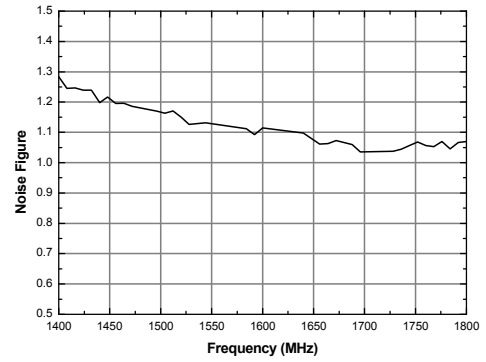
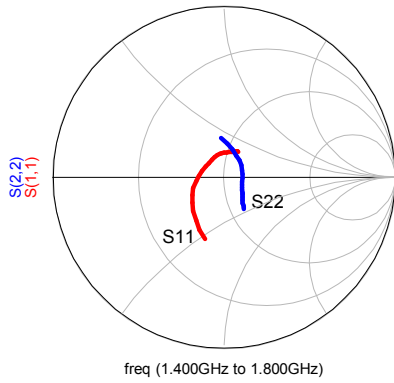


Bottom

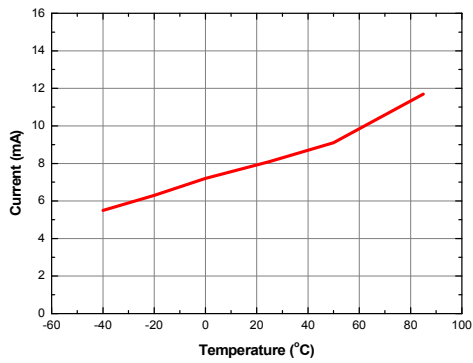


S-parameters & Noise Figure

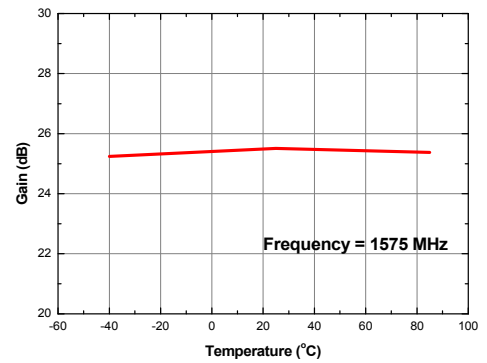




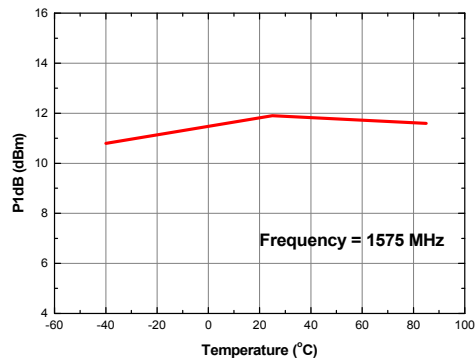
Current vs. Temperature



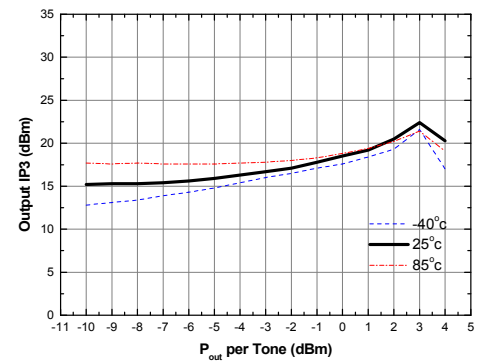
Gain vs. Temperature



P1dB vs. Temperature



Output IP3 vs. Tone Power (Frequency = 1575 MHz)



APPLICATION CIRCUIT (TYPE 2)

Strip lines (P1 & P2)

GPS

1575 MHz

+3 V

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain ¹⁾	G _p	F = 1.575 GHz	24	25		dB
Noise Figure ²⁾	NF	F = 1.575 GHz		1.1	1.3	dB
Input Return Loss ³⁾	RL _{in}	F = 1.575 GHz		-15		dB
Output Return Loss ³⁾	RL _{out}	F = 1.575 GHz		-15		dB
1 dB Gain Compression Output Power	P _{o(1dB)}	F = 1.575 GHz	8	10		dBm
3 rd Intercept Point Output Power ⁴⁾	OIP3	F = 1.575 GHz	17	19		dBm
Circuit Current ⁵⁾	I _{cc}	F = 1.575 GHz, Non-RF		7.7		mA

1) Total gain is sum of the 1st stage and 2nd stage amplifiers (not include filter loss).

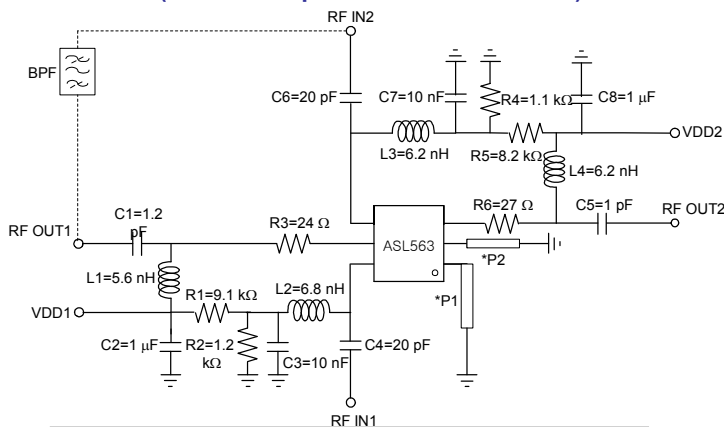
2) NF is that of the 1st stage amplifier.

3) S11 is that of the 1st stage amplifier and S22 is that of the 2nd stage amplifier.

4) OIP3 is that of the 2nd stage amplifier measured with two tones at an output power of +0 dBm/tone separated by 1MHz.

5) Total current is the sum of the 1st stage and the 2nd stage amplifiers.

Schematic (with the striplines at the Pin 1 and 2)

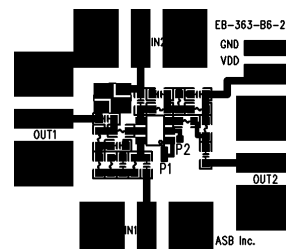


Note: the length of the strip line P1 and P2 are given as below at the PCB with Er = 4.5 and T = 0.8 mm.

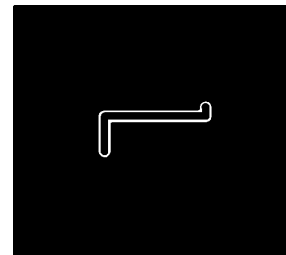
*P1 Length: 1.0 mm, Width: 0.3 mm
*P2 Length: 0.65 mm, Width: 0.3 mm

Board Layout (FR4, 19.4x17.4 mm², 0.8T)

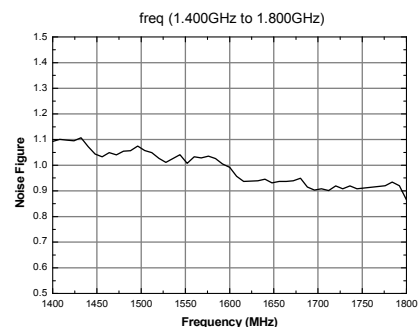
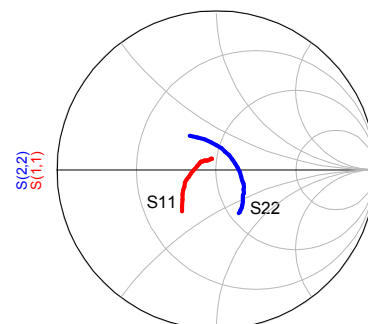
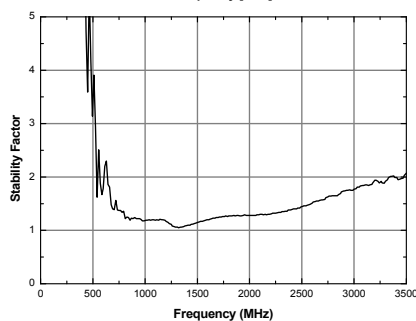
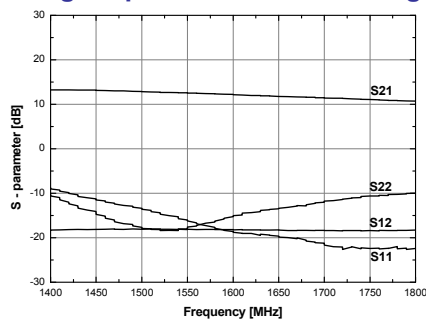
Top



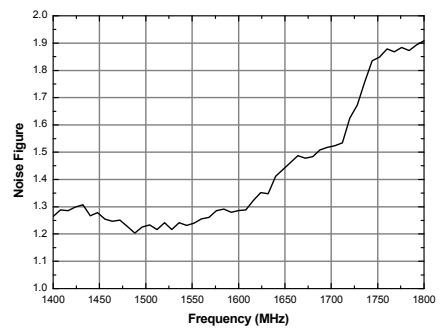
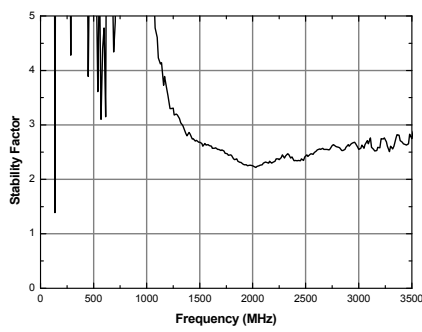
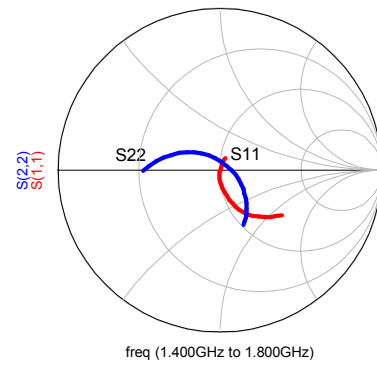
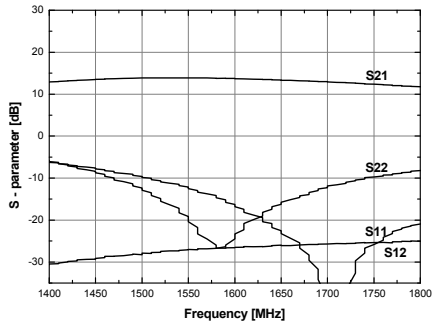
Bottom



1st stage S-parameters & Noise Figure



2nd stage S-parameters & Noise Figure



APPLICATION CIRCUIT (TYPE 2)

Strip lines (P1 & P2)

GPS

1575 MHz

+3 V

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain ¹⁾	G _p	F = 1.575 GHz	24	27		dB
Noise Figure ²⁾	NF	F = 1.575 GHz		0.8	0.9	dB
Input Return Loss ³⁾	RL _{in}	F = 1.575 GHz		-18		dB
Output Return Loss ³⁾	RL _{out}	F = 1.575 GHz		-18		dB
1 dB Gain Compression Output Power	P _{o(1dB)}	F = 1.575 GHz	9	11		dBm
3 rd Intercept Point Output Power ⁴⁾	OIP3	F = 1.575 GHz	20	22		dBm
Circuit Current ⁵⁾	I _{cc}	F = 1.575 GHz, Non-RF		14		mA

1) Total gain is sum of the 1st stage and 2nd stage amplifiers (not include filter loss).

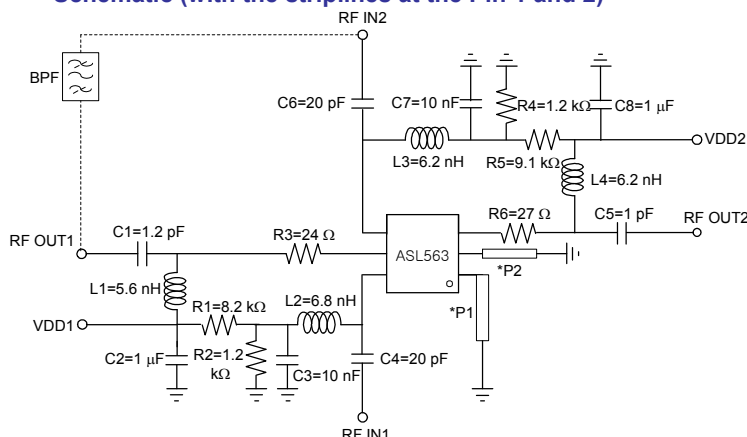
2) NF is that of the 1st stage amplifier.

3) S11 is that of the 1st stage amplifier and S22 is that of the 2nd stage amplifier.

4) OIP3 is that of the 2nd stage amplifier measured with two tones at an output power of +0 dBm/tone separated by 1MHz.

5) Total current is the sum of the 1st stage and the 2nd stage amplifiers.

Schematic (with the striplines at the Pin 1 and 2)



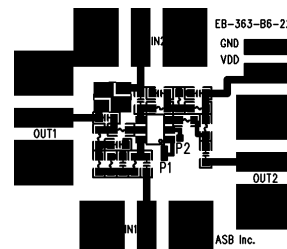
Note: the length of the strip line P1 and P2 are given as below at the PCB with Er = 4.5 and T = 0.8 mm.

*P1 Length: 1.5 mm, Width: 0.3 mm

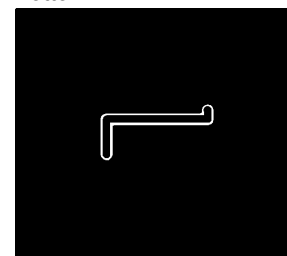
*P2 Length: 1.5 mm, Width: 0.3 mm

Board Layout (FR4, 19.4x17.4 mm², 0.8T)

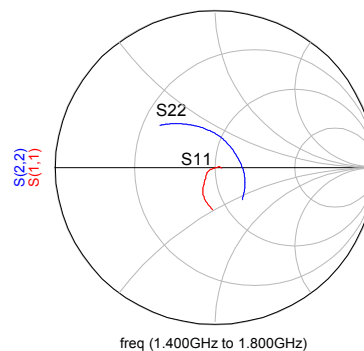
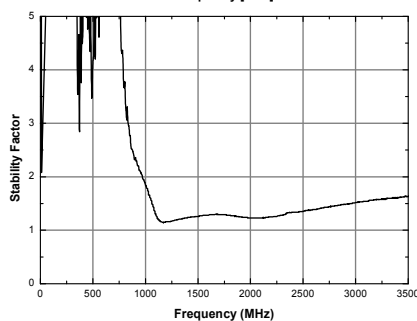
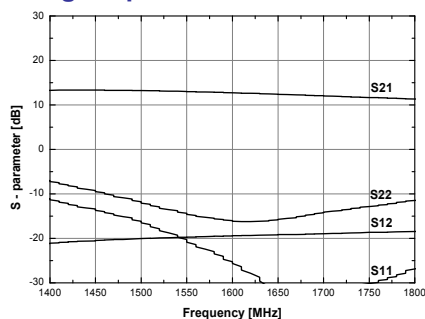
Top



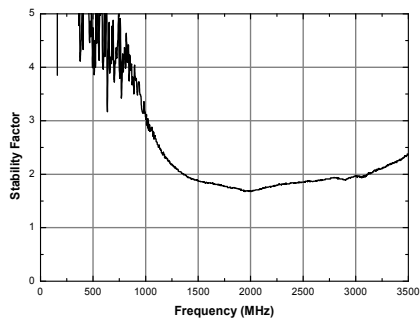
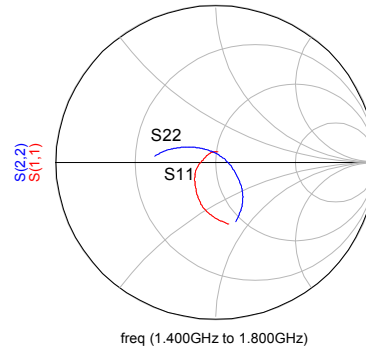
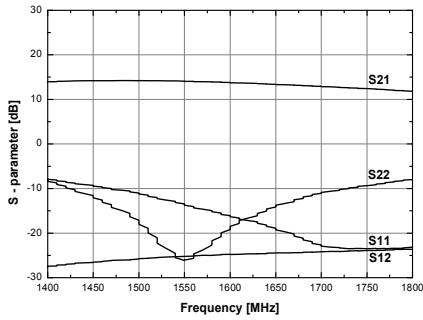
Bottom



1st stage S-parameters & K-factor



2nd stage S-parameters & K-factor



APPLICATION CIRCUIT (TYPE 2)

Strip lines (P1 & P2)

GPS

1575 MHz

+3 V

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain ¹⁾	G_p	F = 1.575 GHz		30		dB
Noise Figure ²⁾	NF	F = 1.575 GHz		0.7		dB
Input Return Loss ³⁾	RL_{in}	F = 1.575 GHz		-18		dB
Output Return Loss ³⁾	RL_{out}	F = 1.575 GHz		-18		dB
1 dB Gain Compression Output Power	$P_{o(1dB)}$	F = 1.575 GHz		10.5		dBm
3 rd Intercept Point Output Power ⁴⁾	OIP3	F = 1.575 GHz		25.5		dBm
Circuit Current ⁵⁾	I_{cc}	F = 1.575 GHz, Non-RF		28		mA

1) Total gain is sum of the 1st stage and 2nd stage amplifiers (not include filter loss).

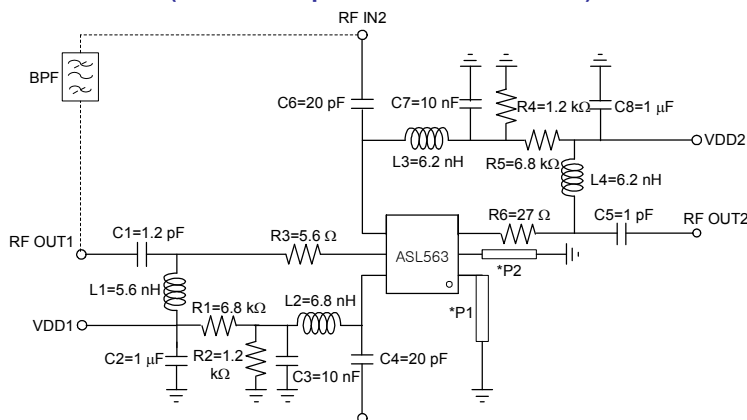
2) NF is that of the 1st stage amplifier.

3) S11 is that of the 1st stage amplifier and S22 is that of the 2nd stage amplifier.

4) OIP3 is that of the 2nd stage amplifier measured with two tones at an output power of +0 dBm/tone separated by 1MHz.

5) Total current is the sum of the 1st stage and the 2nd stage amplifiers.

Schematic (with the striplines at the Pin 1 and 2)

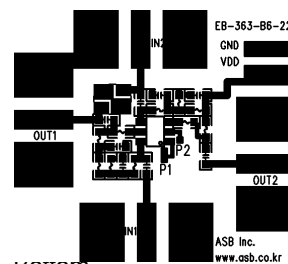


Note: the length of the strip line P1 and P2 are given as below at the PCB with $\epsilon_r = 4.5$ and $T = 0.8$ mm.

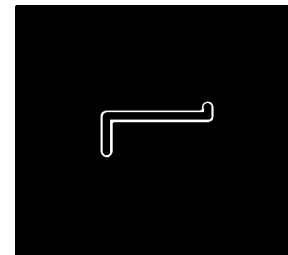
*P1 Length: 1.0 mm, Width: 0.3 mm
*P2 Length: 1.5 mm, Width: 0.3 mm

Board Layout (FR4, 19.4x17.4 mm², 0.8T)

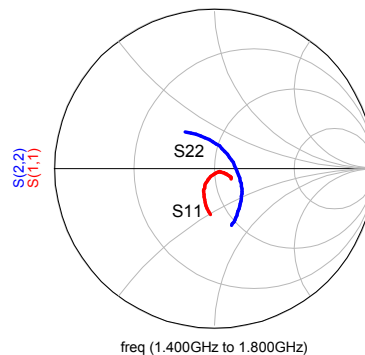
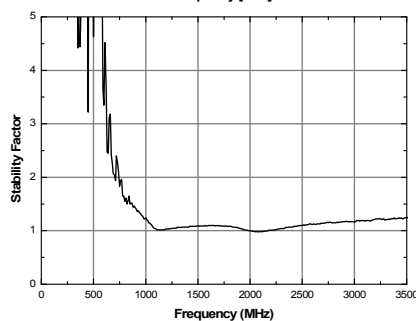
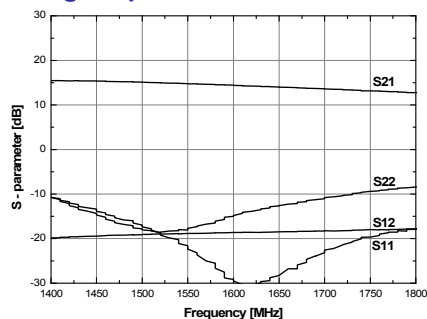
Top



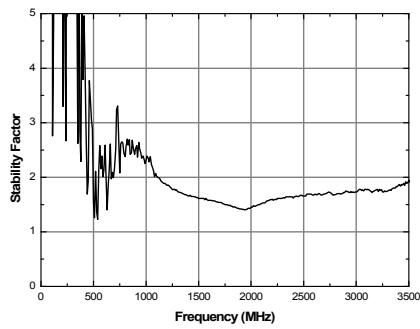
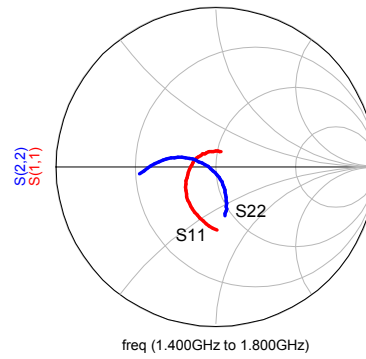
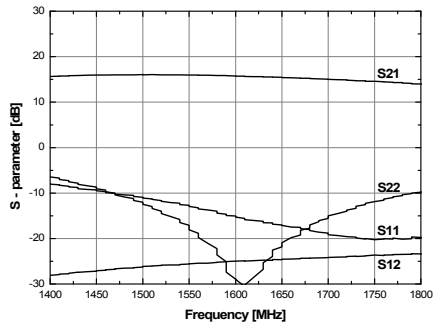
BOTTOM



1st stage S-parameters & K-factor



2nd stage S-parameters & K-factor



High Gain, Low Noise Amplifier

APPLICATION CIRCUIT

(TYPE 2)

Strip lines (P1 & P2)

GPS

1163 ~ 1210 MHz /

1204 ~ 1240 MHz

+3 V

Parameter	Symbol	Unit	Frequency [MHz]	
			1163-1210	1204-1240
Power Gain	G_p	dB	24.5	26
Noise Figure	NF	dB	1.1	1.0
Input Return Loss	RL_{in}	dB	-15	-15
Output Return Loss	RL_{out}	dB	-15	-16
1 dB Gain Compression Output Power	$P_{o(1dB)}$	dBm	10	10.5
3 rd Intercept Point Output Power ¹⁾	OIP3	dBm	21	21
Current	I_{cc}	mA	7.7	7.7
Device Voltage	V_{dd}	V	3	3

1) Total gain is sum of the 1st stage and 2nd stage amplifiers (not include filter loss).

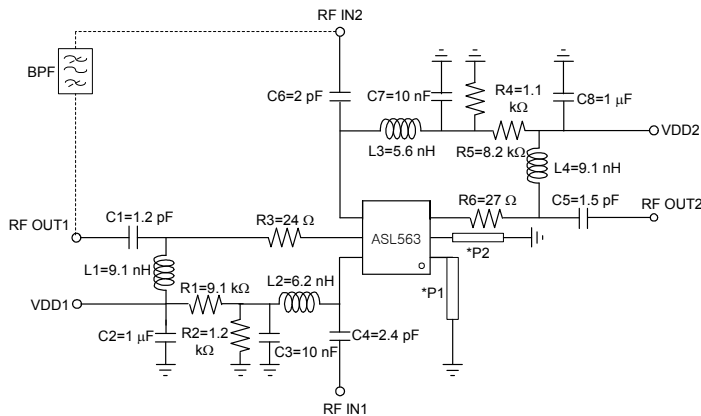
2) NF is that of the 1st stage amplifier.

3) S11 is that of the 1st stage amplifier and S22 is that of the 2nd stage amplifier.

4) OIP3 is that of the 2nd stage amplifier measured with two tones at an output power of +0 dBm/tone separated by 1MHz.

5) Total current is the sum of the 1st stage and the 2nd stage amplifiers.

Schematic (with the striplines at the Pin 1 and 2)

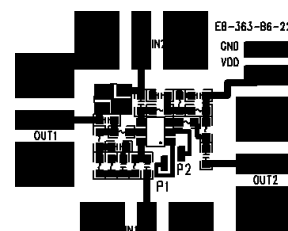


Note: the length of the strip line P1 and P2 are given as below at the PCB with $\epsilon_r = 4.5$ and $T = 0.8$ mm.

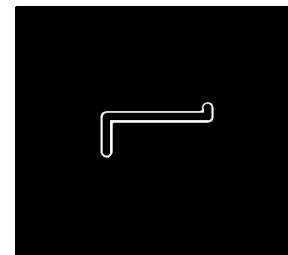
*P1 Length: 5.0 mm, Width: 0.3 mm
*P2 Length: 2.5 mm, Width: 0.3 mm

Board Layout (FR4, 19.4x17.4 mm², 0.8T)

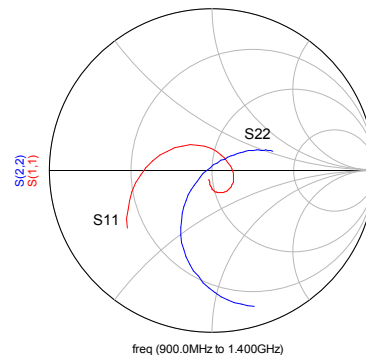
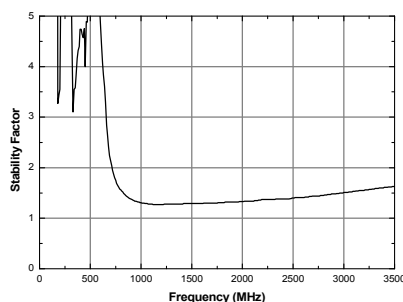
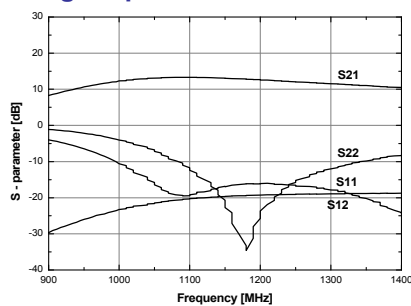
Top



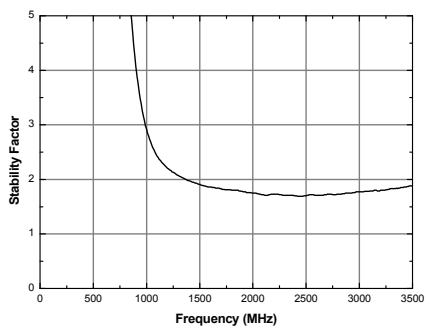
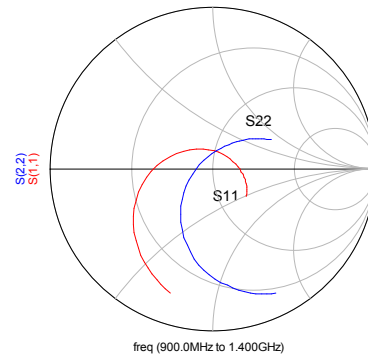
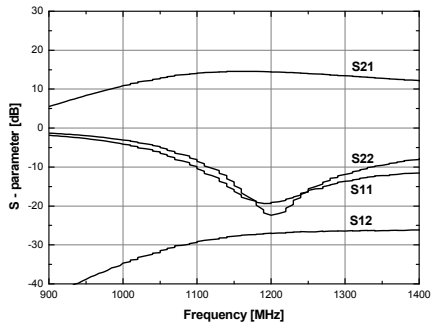
BOTTOM



1st stage S-parameters & K-factor



2nd stage S-parameters & K-factor



High Gain, Low Noise Amplifier

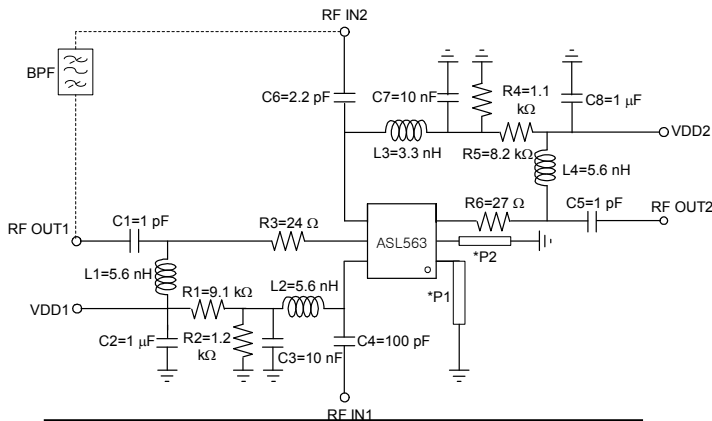
APPLICATION CIRCUIT (TYPE 2) Strip lines (P1 & P2)

GPS
1558 ~ 1577 MHz
+3 V

Parameter	Symbol	Unit	Frequency [MHz]
			1558-1577
Power Gain	G_p	dB	25
Noise Figure	NF	dB	1.2
Input Return Loss	RL_{in}	dB	-14
Output Return Loss	RL_{out}	dB	-16
1 dB Gain Compression Output Power	$P_{o(1dB)}$	dBm	11
3 rd Intercept Point Output Power ¹⁾	OIP3	dBm	18.5
Current	I_{cc}	mA	7.7
Device Voltage	V_{dd}	V	3

- 1) Total gain is sum of the 1st stage and 2nd stage amplifiers (not include filter loss).
- 2) NF is that of the 1st stage amplifier.
- 3) S11 is that of the 1st stage amplifier and S22 is that of the 2nd stage amplifier.
- 4) OIP3 is that of the 2nd stage amplifier measured with two tones at an output power of +0 dBm/tone separated by 1MHz.
- 5) Total current is the sum of the 1st stage and the 2nd stage amplifiers.

Schematic (with the striplines at the Pin 1 and 2)

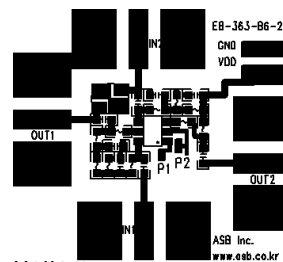


Note: the length of the strip line P1 and P2 are given as below at the PCB with $\epsilon_r = 4.5$ and $T = 0.8$ mm.

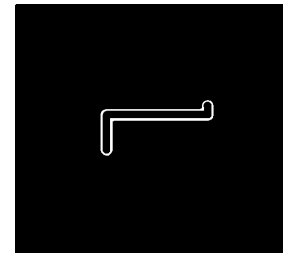
- *P1 Length: 0.5 mm, Width: 0.3 mm
- *P2 Length: 2 mm, Width: 0.3 mm

Board Layout (FR4, 19.4x17.4 mm², 0.8T)

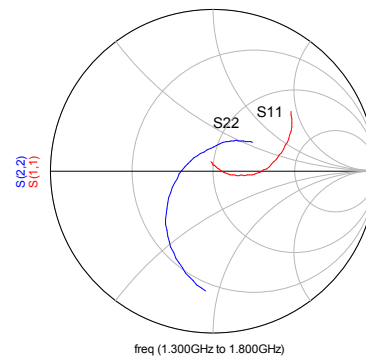
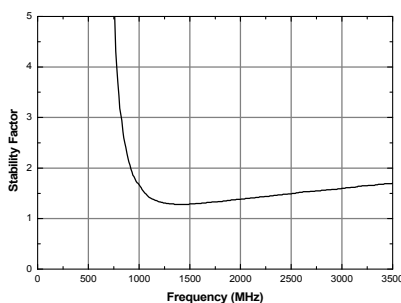
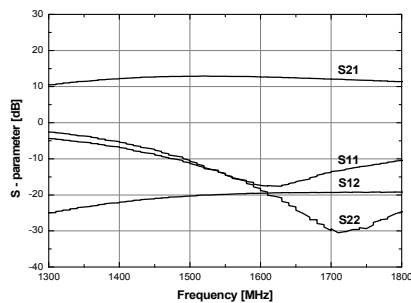
Top



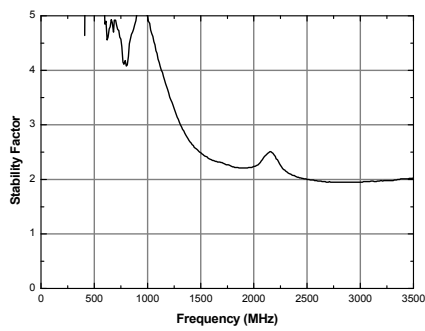
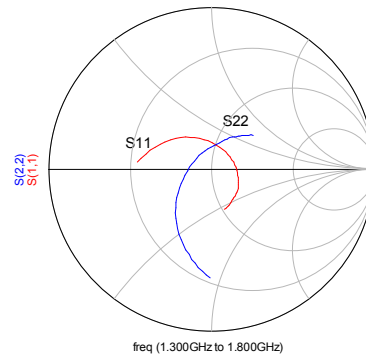
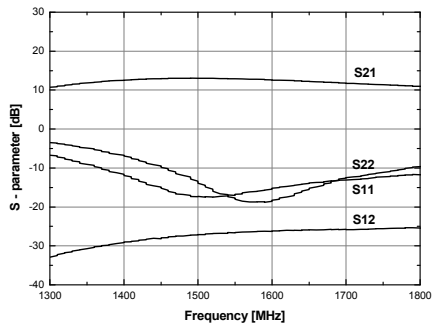
Bottom



1st stage S-parameters & K-factor



2nd stage S-parameters & K-factor



APPLICATION CIRCUIT (TYPE 2)

Without strip lines

GPS

1575 MHz

+3 V

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain ¹⁾	G_p	F = 1.575 GHz	24	25		dB
Noise Figure ²⁾	NF	F = 1.575 GHz		1.1	1.3	dB
Input Return Loss ³⁾	RL_{in}	F = 1.575 GHz		-15		dB
Output Return Loss ³⁾	RL_{out}	F = 1.575 GHz		-15		dB
1 dB Gain Compression Output Power	$P_{o(1dB)}$	F = 1.575 GHz	8	10		dBm
3 rd Intercept Point Output Power ⁴⁾	OIP3	F = 1.575 GHz	17	19		dBm
Circuit Current ⁵⁾	I_{cc}	F = 1.575 GHz, Non-RF		7.7		mA

1) Total gain is sum of the 1st stage and 2nd stage amplifiers (not include filter loss).

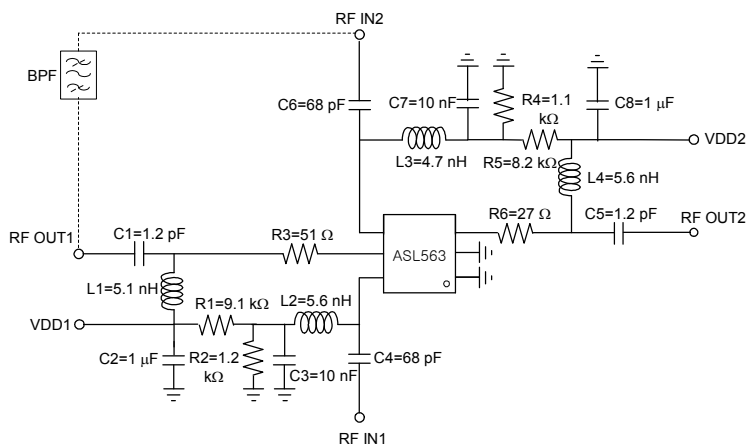
2) NF is that of the 1st stage amplifier.

3) S11 is that of the 1st stage amplifier and S22 is that of the 2nd stage amplifier.

4) OIP3 is that of the 2nd stage amplifier measured with two tones at an output power of +0 dBm/tone separated by 1MHz.

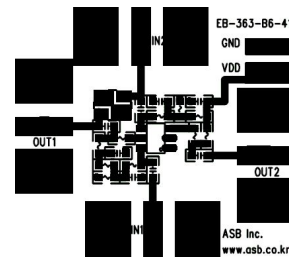
5) Total current is the sum of the 1st stage and the 2nd stage amplifiers.

Schematic (without the stripline at the Pin 1 and 2)

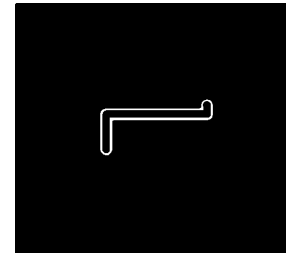


Board Layout (FR4, 19.4x17.4 mm², 0.8T)

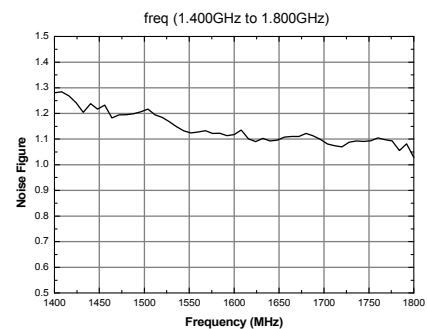
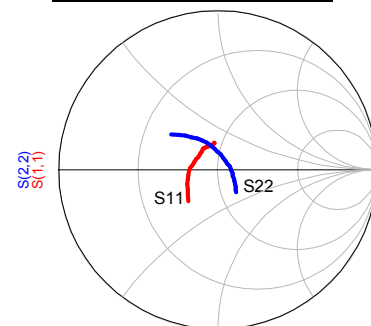
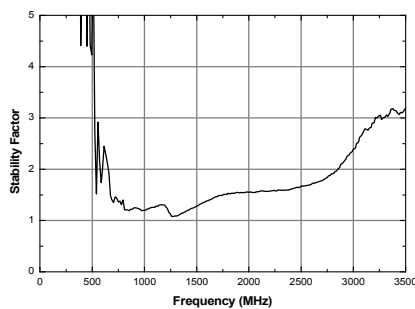
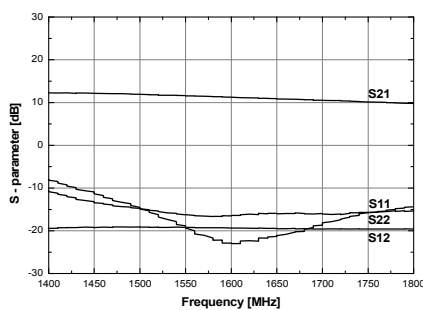
Top



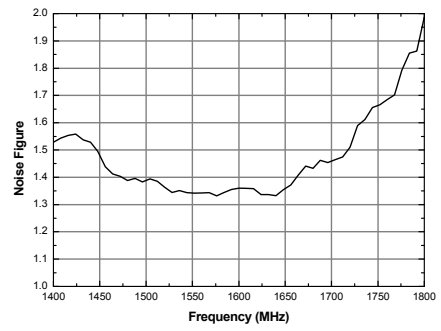
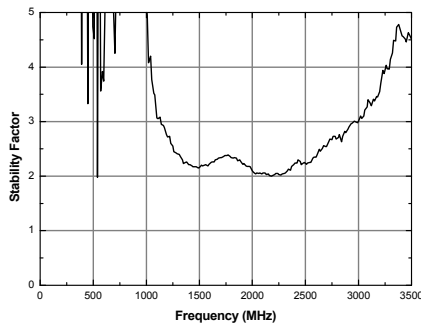
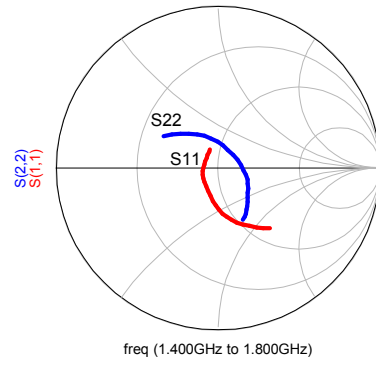
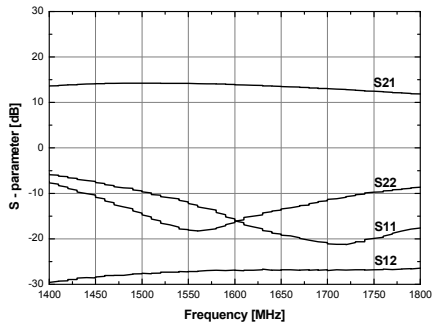
Bottom



1st stage S-parameters & Noise Figure



2nd stage S-parameters & Noise Figure



APPLICATION CIRCUIT

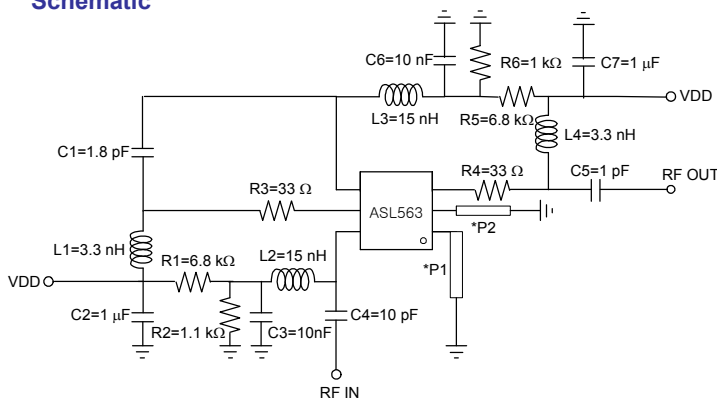
2400 ~ 2500 MHz

+3 V / 10mA

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain	G_p	F = 2.45 GHz	16	17		dB
Noise Figure	NF	F = 2.45 GHz		1.2		dB
Input Return Loss	RL_{in}	F = 2.45 GHz		-15		dB
Output Return Loss	RL_{out}	F = 2.45 GHz		-14		dB
1 dB Gain Compression Output Power	$P_{o(1dB)}$	F = 2.45 GHz	9	11		dBm
3 rd Intercept Point Output Power ¹⁾	OIP3	F = 2.45 GHz	13	17		dBm
Circuit Current	I_{cc}	F = 2.45 GHz, Non-RF		10		mA

1) OIP3 is measured with two tones at an output power of -5 dBm/tone separated by 1MHz.

Schematic



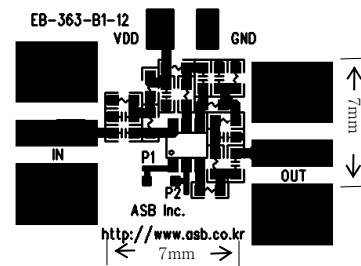
Note: 1) the length of the strip line P1 and P2 are given as below at the PCB with $\epsilon_r = 4.5$ and $T = 0.8$ mm.

- *P1 Length: 2.5 mm, Width: 0.3 mm
- *P2 Length: 0.3 mm, Width: 0.3 mm

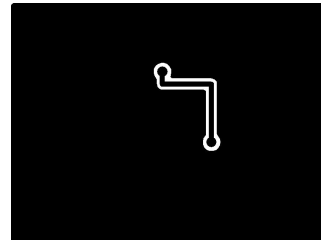
2) Gain and S_{11} are in trade-off and varied with the length of P1 and P2

Board Layout (FR4, 16x12 mm², 0.8T)

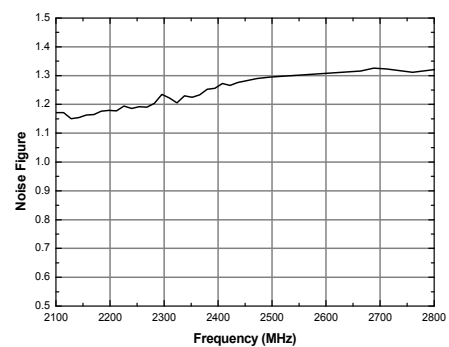
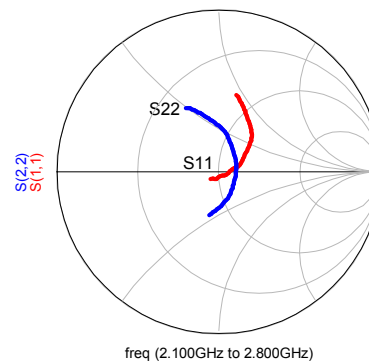
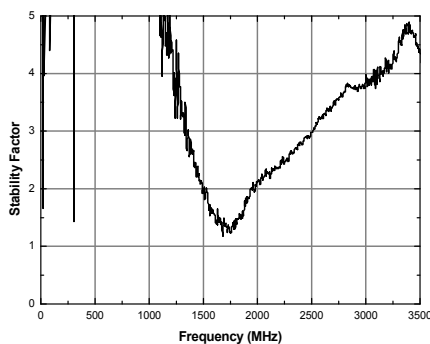
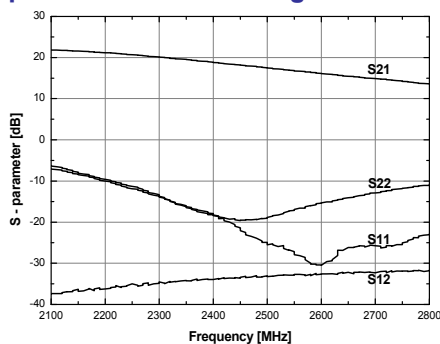
Top



Bottom



S-parameters & Noise Figure



APPLICATION CIRCUIT

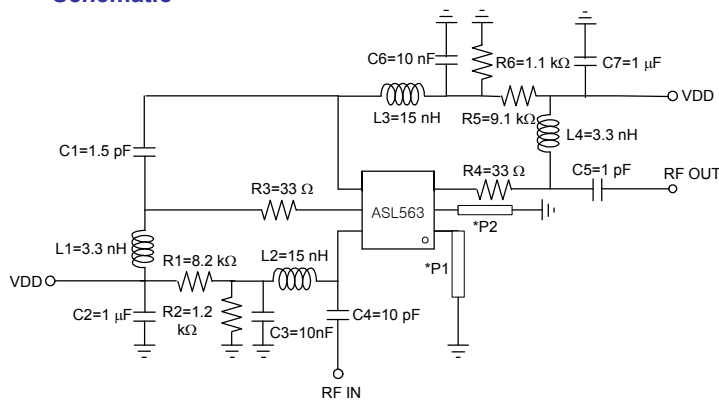
2400 ~ 2500 MHz

+3 V / 15mA

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain	G_p	F = 2.45 GHz	18	19		dB
Noise Figure	NF	F = 2.45 GHz		1	1.1	dB
Input Return Loss	RL_{in}	F = 2.45 GHz		-15		dB
Output Return Loss	RL_{out}	F = 2.45 GHz		-15		dB
1 dB Gain Compression Output Power	$P_{o(1dB)}$	F = 2.45 GHz	9	11		dBm
3 rd Intercept Point Output Power ¹⁾	OIP3	F = 2.45 GHz	13	18		dBm
Circuit Current	I_{cc}	F = 2.45 GHz, Non-RF		15		mA

1) OIP3 is measured with two tones at an output power of -5 dBm/tone separated by 1MHz.

Schematic



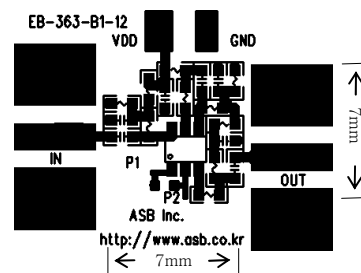
Note: 1) the length of the strip line P1 and P2 are given as below at the PCB with $\epsilon_r = 4.5$ and $T = 0.8$ mm.

*P1 Length: 2.5 mm, Width: 0.3 mm
*P2 Length: 0.3 mm, Width: 0.3 mm

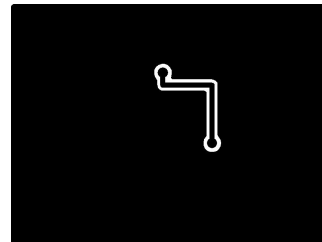
2) Gain and S11 are in trade-off and varied with the length of P1 and P2

Board Layout (FR4, 16x12 mm², 0.8T)

Top



Bottom



S-parameters & Noise Figure

