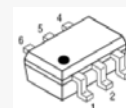


Features

- 14.2 dB Gain at 2 GHz
- 18 dBm P1dB at 2 GHz
- 32.5 dBm Output IP3 at 2 GHz
- 1.0 dB NF at 2 GHz
- MTTF > 100 Years
- Single Supply

Description

The ASL03H, a wideband linear low noise amplifier MMIC, has a low noise and high linearity at low bias current, being suitable for use in both receiver and transmitter of telecommunication systems up to 3.5 GHz. S11 down to -20 dB is easily achieved for low noise application to provide a good productivity. The amplifier is available in a SOT363 package and passes through the stringent DC, RF, and reliability tests.



Package Style: SOT363

Typical Performance

(Supply Voltage = +5 V, T_A = +25 °C, Z₀ = 50 Ω)

Parameters	Units	Typical	
Frequency	MHz	900	2000
Gain	dB	19.5	14.2
S11	dB	-18	-20
S22	dB	-14	-12
Output IP3 ¹⁾	dBm	31.0	32.5
Noise Figure	dB	0.9	1.0
Output P1dB	dBm	17.5	18.0
Current	mA	36	36
Device Voltage	V	+4.3	+4.3

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

Product Specifications

Parameters	Units	Min	Typ	Max
Testing Frequency	MHz		2000	
Gain	dB		14.2	
S11	dB		-14	
S22	dB		-12	
Output IP3	dBm		32.5	
Noise Figure	dB		1.0	
Output P1dB	dBm		18	
Current	mA		36	
Device Voltage	V		+4.3	

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, 50 Ω matched) ¹⁾	+20 dBm
Thermal Resistance	210 °C/W

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

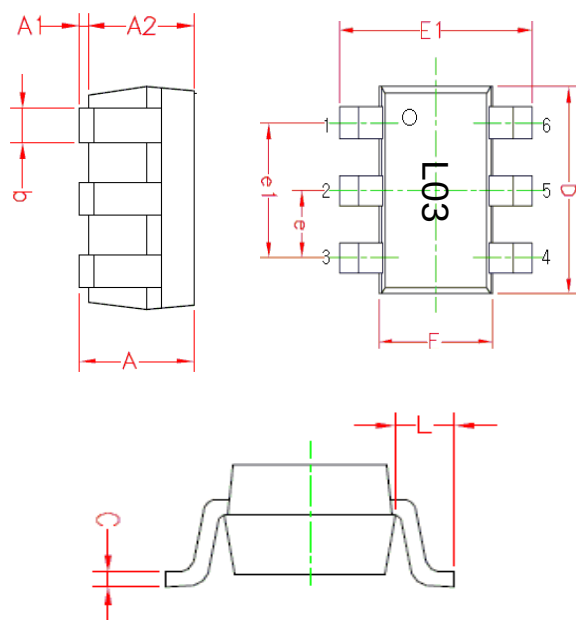
Application Circuit

- 10 ~ 88 MHz
- 30 ~ 500 MHz(3.3 V)
- 800 ~ 3500 MHz
- 400 ~ 500 MHz
- 800 ~ 1000 MHz
- 1600 ~ 2000 MHz
- 1800 ~ 2200 MHz

Pin Configuration

Pin No.	Function
1	RF IN
4	RF OUT & Bias
2,3,5,6	GND

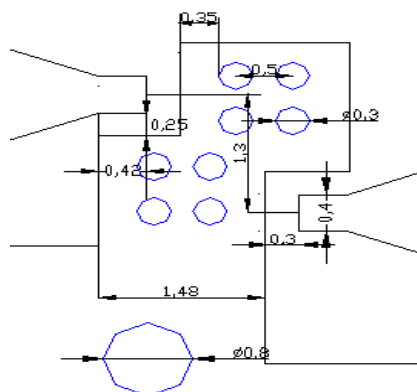
Outline Drawing



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	RF IN	4	RF OUT & Bias
2	GND	5	GND
3	GND	6	GND

Mounting Recommendation (In mm)



- Note:**
1. The number and size of ground via holes in a circuit board is critical for thermal and RF grounding considerations.
 2. We recommend that the ground via holes be placed on the bottom of lead pin 2 for better RF and thermal performance, as shown in the drawing at the left side.

ESD Classification & Moisture Sensitivity Level

ESD Classification

HBM	Class 1A
	Voltage Level: 400 V
MM	Class A
	Voltage Level: 50 V

CAUTION: ESD-sensitive device!

Moisture Sensitivity Level (MSL)

Level 3 at 260 °C reflow

APPLICATION CIRCUIT

IF

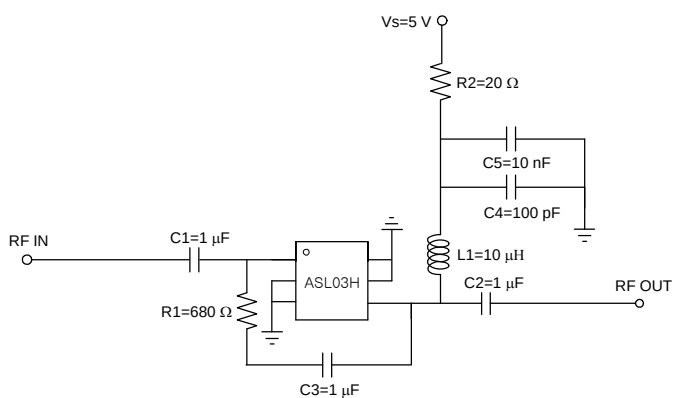
10 ~ 88 MHz

+5 V

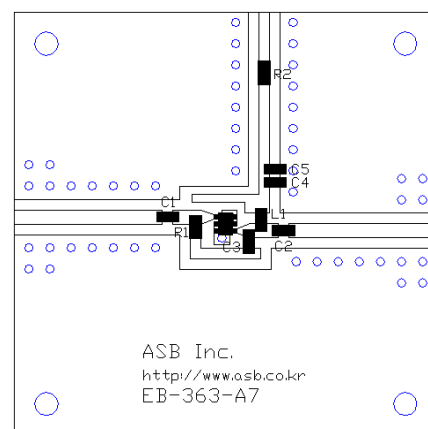
Frequency (MHz)	10	88
Magnitude S21 (dB)	20.3	19.1
Magnitude S11 (dB)	-18	-20
Magnitude S22 (dB)	-20	-15
Output P1dB (dBm)	16.5	16.0
Output IP3 ¹⁾ (dBm)	25.5	27.0
Noise Figure (dB)	-	1.5
Device Voltage (V)	+4.3	+4.3
Current (mA)	36	36

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

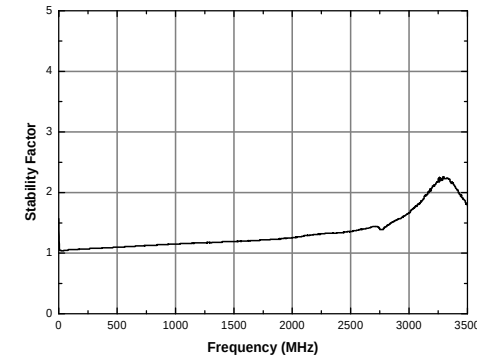
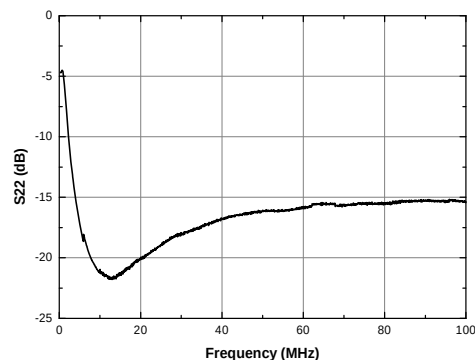
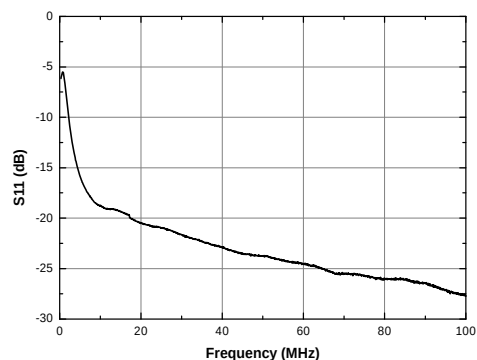
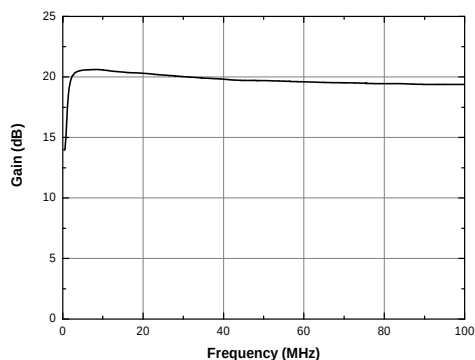
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters & K-factor



APPLICATION CIRCUIT

IF

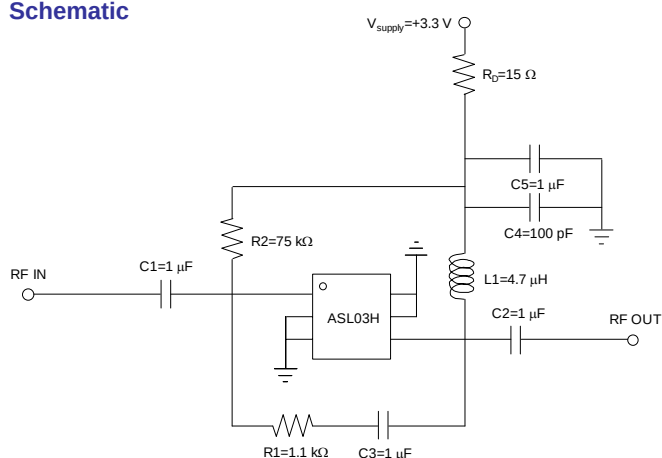
30 ~ 500 MHz

+3.3 V

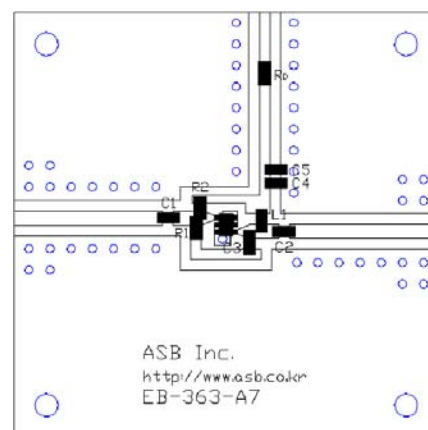
Frequency (MHz)	30	250	500
Magnitude S21 (dB)	20	19	18
Magnitude S11 (dB)	-9	-12	-13
Magnitude S22 (dB)	-16	-20	-18
Output P1dB (dBm)	12	12	12
Output IP3 ¹⁾ (dBm)	23	24	24
Noise Figure (dB)	0.85	0.90	1.00
Device Voltage (V)	+3	+3	+3
Current (mA)	20	20	20

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

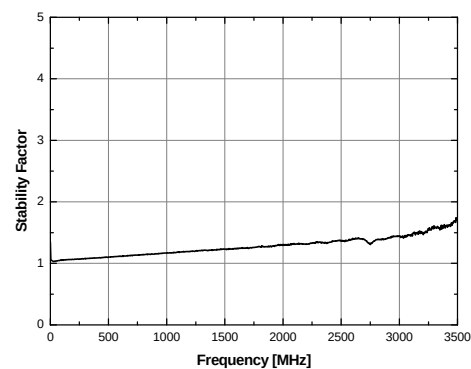
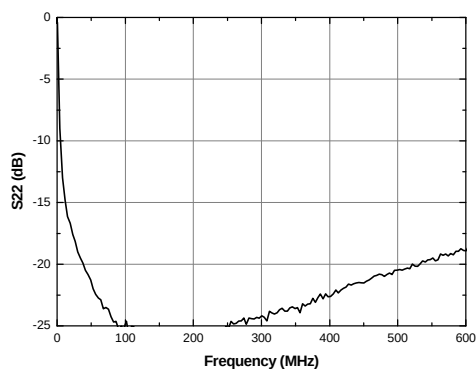
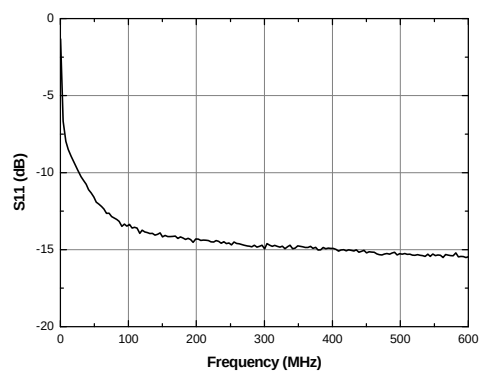
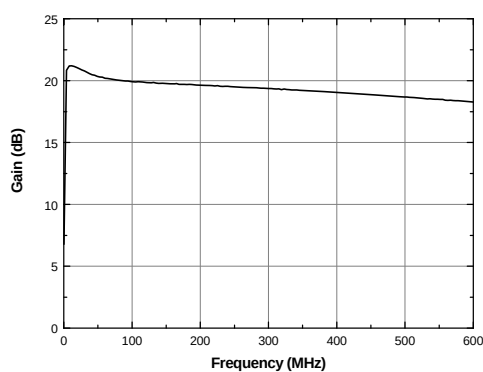
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters & K-factor



APPLICATION CIRCUIT

Wide Band

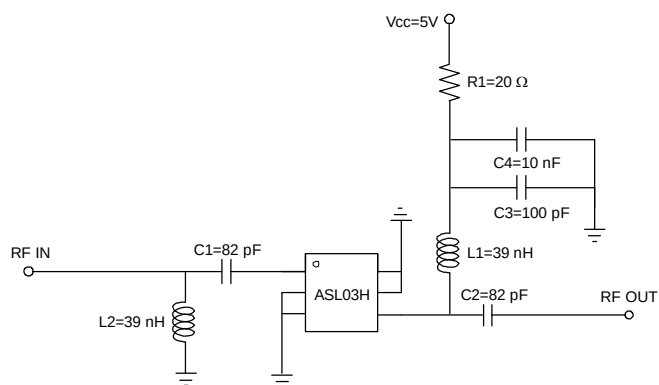
800 ~ 3500 MHz

+5 V

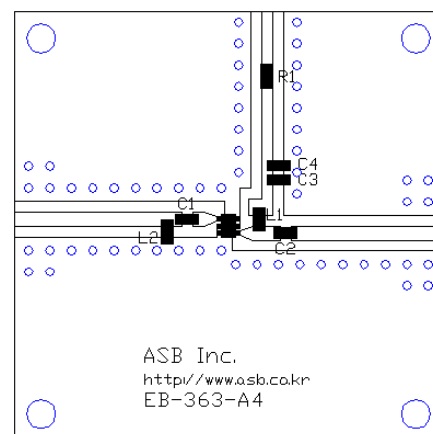
Frequency (MHz)	900	2000
Magnitude S21 (dB)	19	14
Magnitude S11 (dB)	-10	-14
Magnitude S22 (dB)	-12	-12
Output P1dB (dBm)	16.0	17.5
Output IP3 ¹⁾ (dBm)	29.5	32.0
Noise Figure (dB)	0.8	0.9
Device Voltage (V)	+4.3	+4.3
Current (mA)	36	36

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

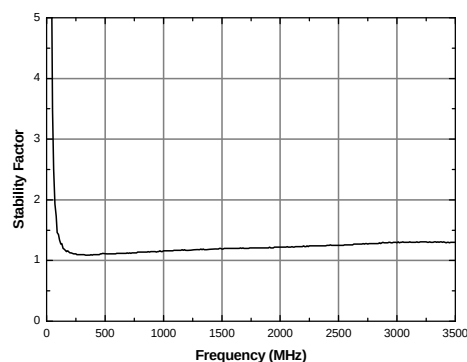
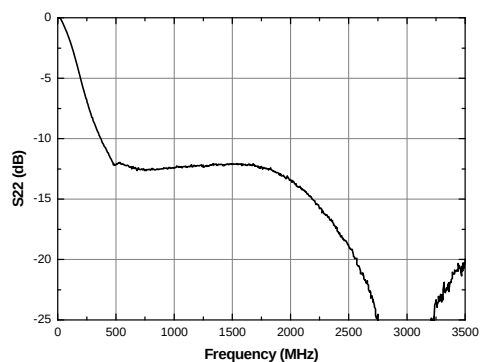
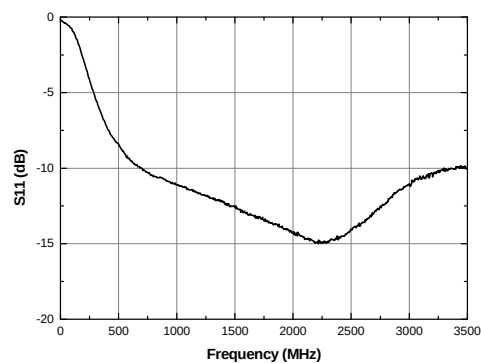
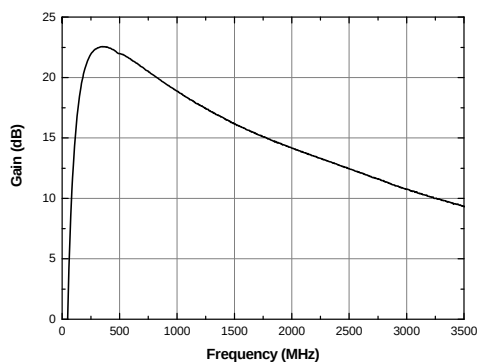
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters & K-factor



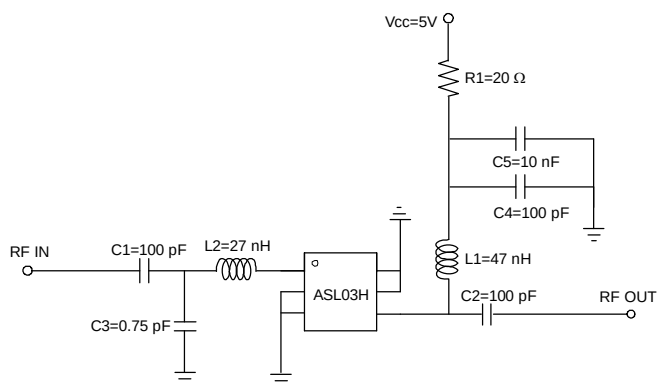
APPLICATION CIRCUIT

IF
400 ~ 500 MHz
+5 V

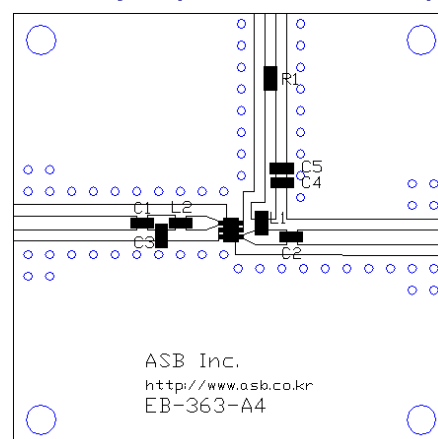
Frequency (MHz)	400	450	500
Magnitude S21 (dB)	23.0	22.5	22.0
Magnitude S11 (dB)	-18	-18	-13
Magnitude S22 (dB)	-15	-15	-15
Output P1dB (dBm)	16.5		
Output IP3 ¹⁾ (dBm)	30		
Noise Figure (dB)	1.15	1.25	1.40
Device Voltage (V)	+4.3	+4.3	+4.3
Current (mA)	36	36	36

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

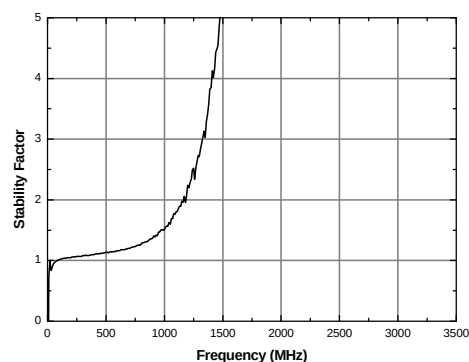
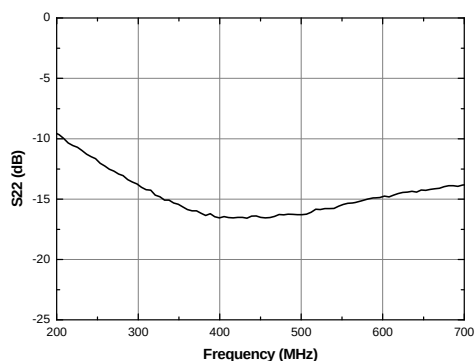
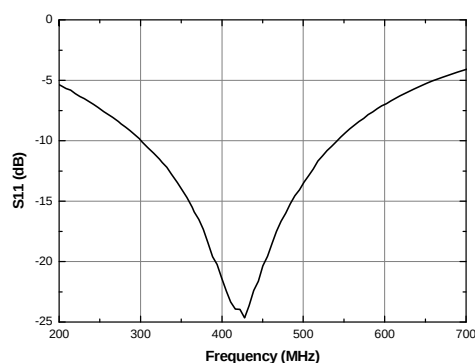
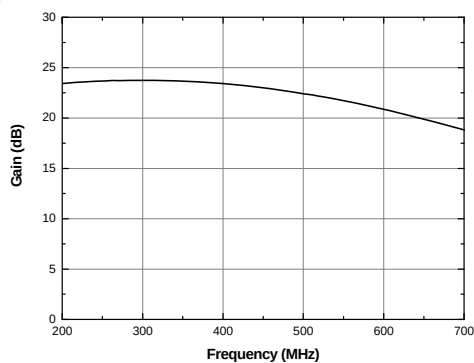
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters & K-factor



APPLICATION CIRCUIT

CDMA,GSM

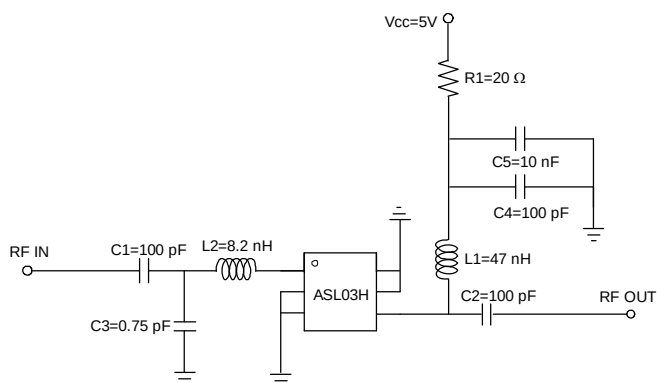
800 ~ 1000 MHz

+5 V

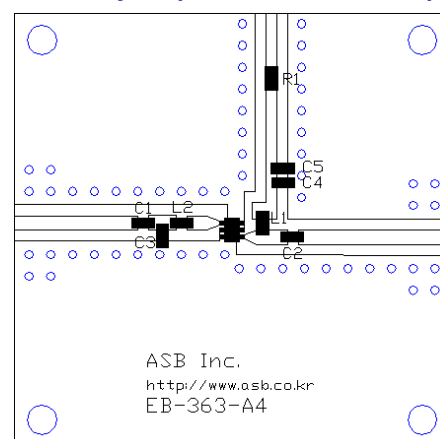
Frequency (MHz)	800	900	1000
Magnitude S21 (dB)	20.0	19.5	19.0
Magnitude S11 (dB)	-18	-18	-15
Magnitude S22 (dB)	-14	-14	-15
Output P1dB (dBm)	17.5		
Output IP3 ¹⁾ (dBm)	31		
Noise Figure (dB)	0.85	0.90	1.05
Device Voltage (V)	+4.3	+4.3	+4.3
Current (mA)	36	36	36

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

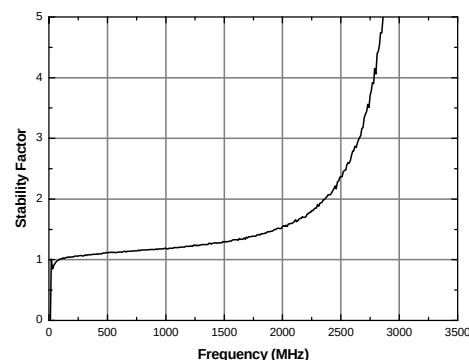
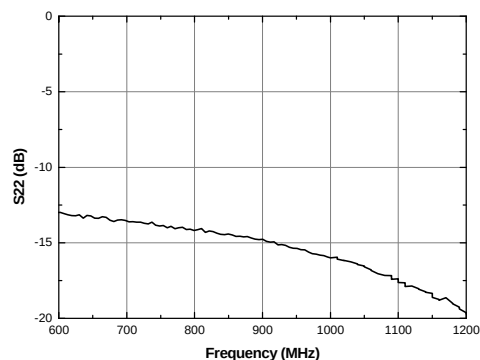
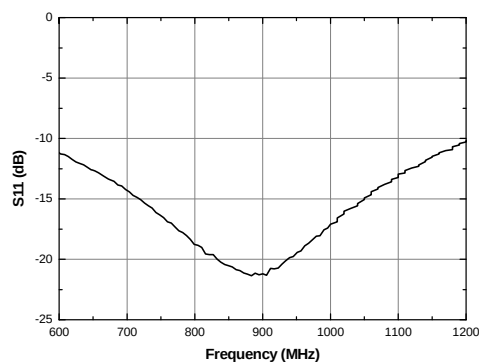
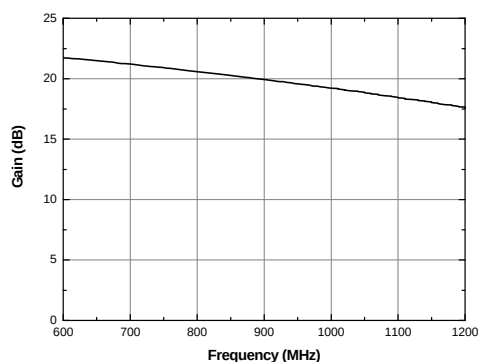
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters & K-factor



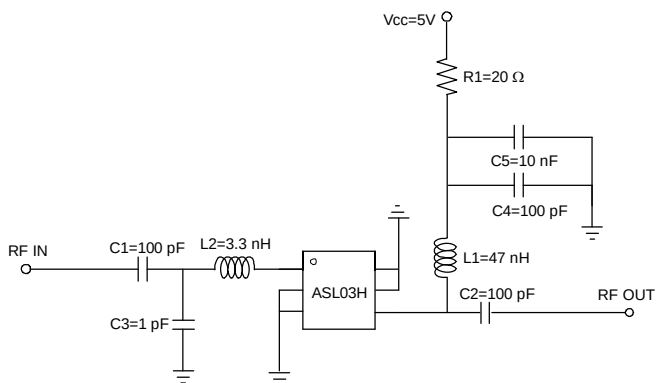
APPLICATION CIRCUIT

Wide Band
1600 ~ 2000 MHz
+5 V

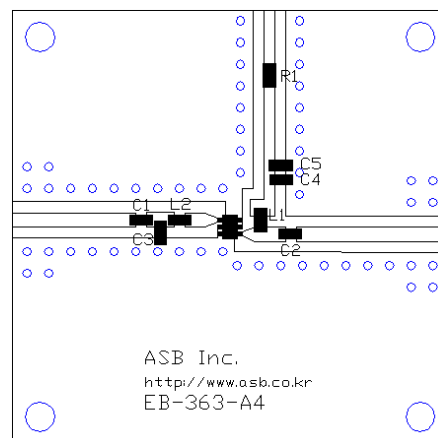
Frequency (MHz)	1600	1800	2000
Magnitude S21 (dB)	16	15	14
Magnitude S11 (dB)	-20	-20	-14
Magnitude S22 (dB)	-11	-12	-15
Output P1dB (dBm)	17.5		
Output IP3 ¹⁾ (dBm)	32		
Noise Figure (dB)	0.85	0.90	1.00
Device Voltage (V)	+4.3	+4.3	+4.3
Current (mA)	36	36	36

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

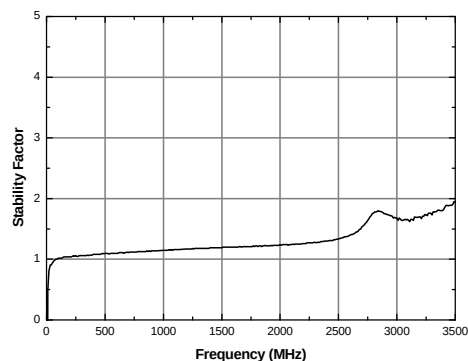
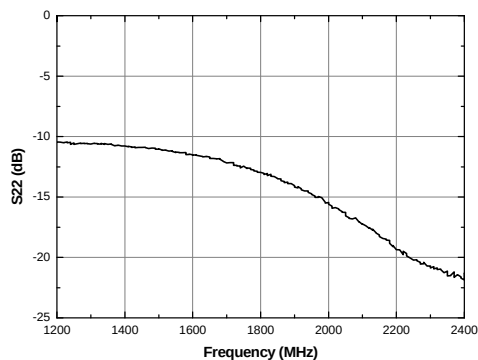
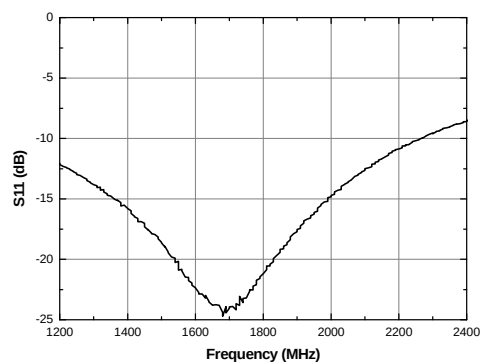
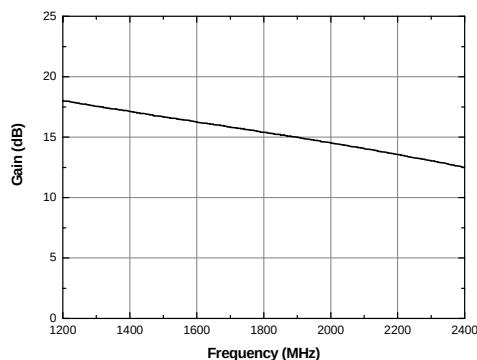
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters & K-factor



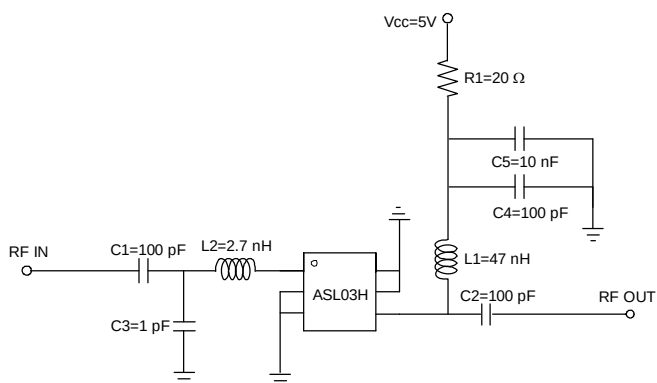
APPLICATION CIRCUIT

Wide Band
1800 ~ 2200 MHz
+5 V

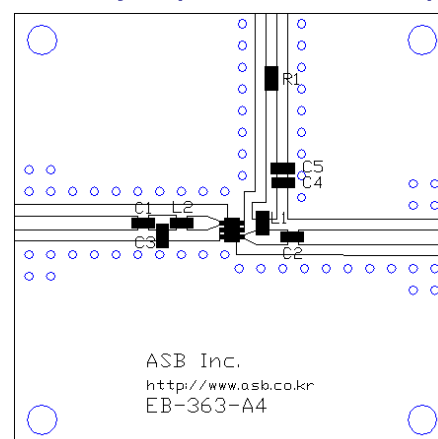
Frequency (MHz)	1800	2000	2200
Magnitude S21 (dB)	15.0	14.2	13.5
Magnitude S11 (dB)	-20	-20	-15
Magnitude S22 (dB)	-11	-12	-14
Output P1dB (dBm)	18		
Output IP3 ¹⁾ (dBm)	32.5		
Noise Figure (dB)	0.9	1.0	1.0
Device Voltage (V)	+4.3	+4.3	+4.3
Current (mA)	36	36	36

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

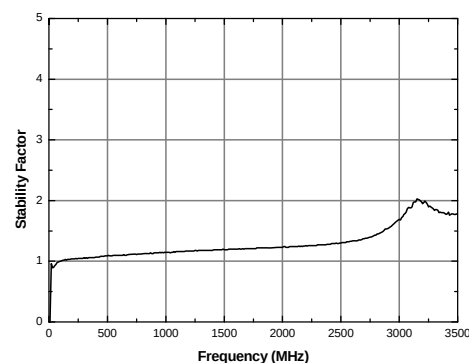
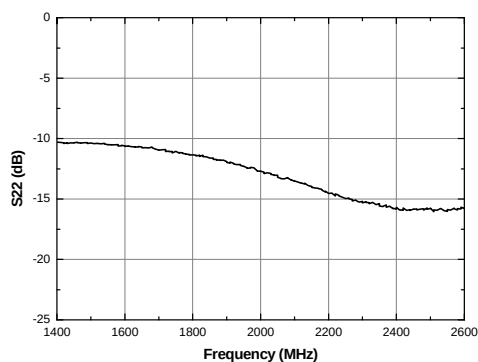
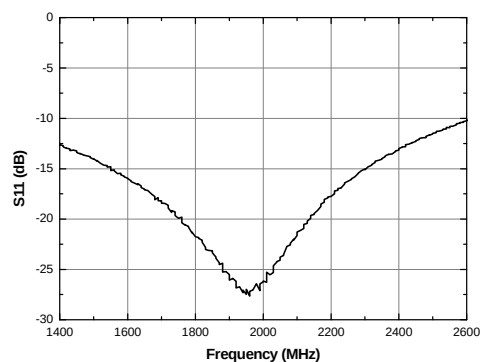
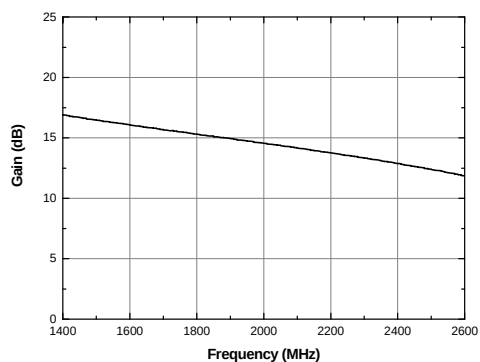
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters & K-factor



APPLICATION CIRCUIT

CMMB

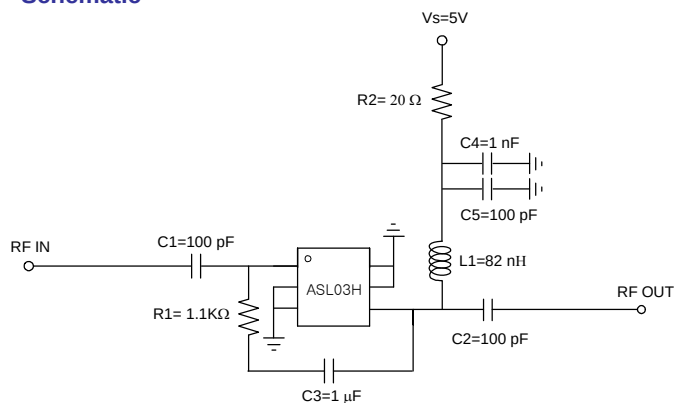
470 ~ 860 MHz

+5 V

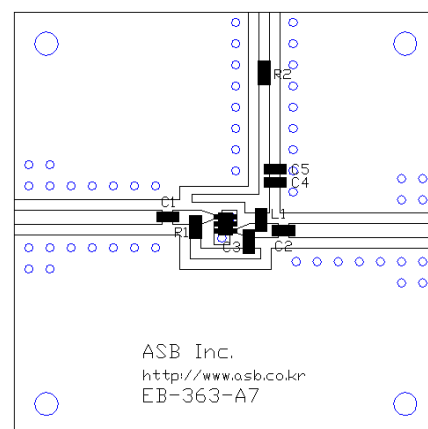
Frequency (MHz)	470	860
Magnitude S21 (dB)	19.4	17.7
Magnitude S11 (dB)	-14	-15
Magnitude S22 (dB)	-23	-28
Output P1dB (dBm)	15	15
Output IP3 ¹⁾ (dBm)	28	28
Noise Figure (dB)	1.05	1.05
Device Voltage (V)	+4.3	+4.3
Current (mA)	36	36

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

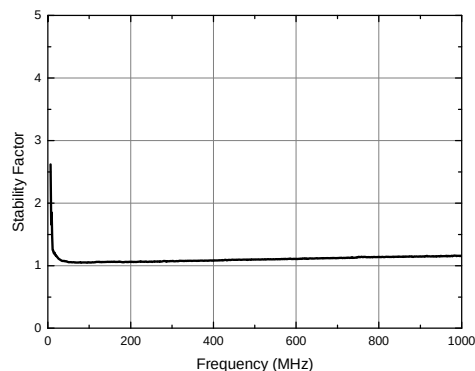
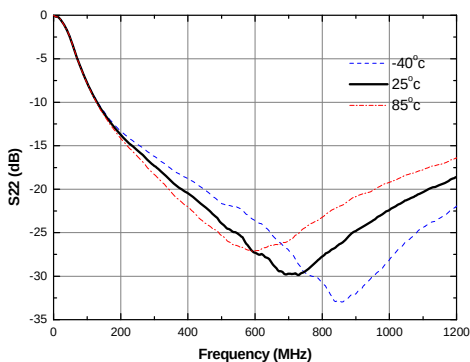
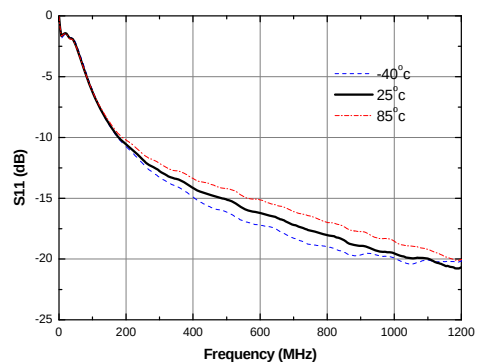
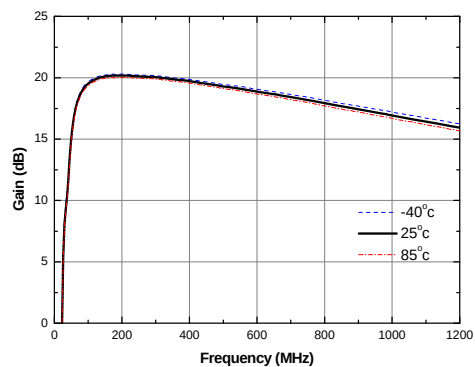
Schematic



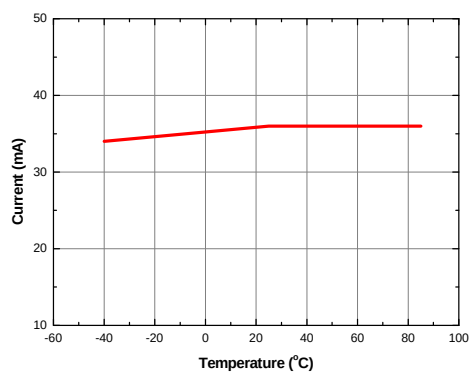
Board Layout (FR4, 40x40 mm², 0.8T)



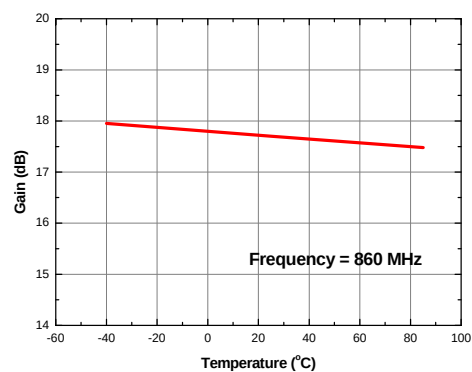
S-parameters & K-factor



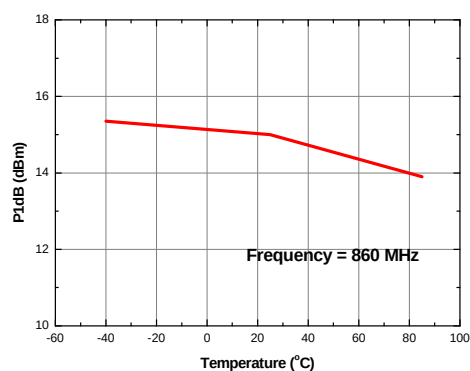
Current vs. Temperature



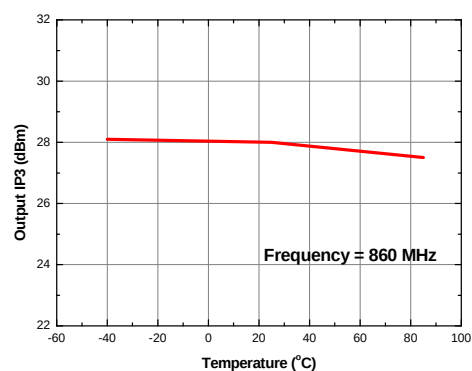
Gain vs. Temperature



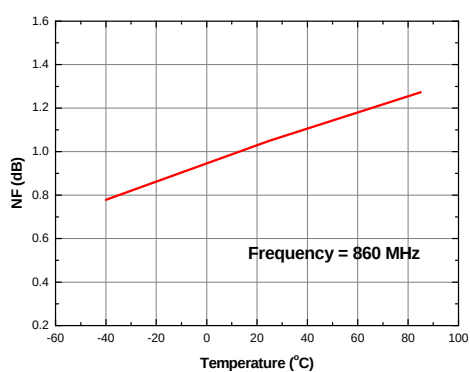
P1dB vs. Temperature



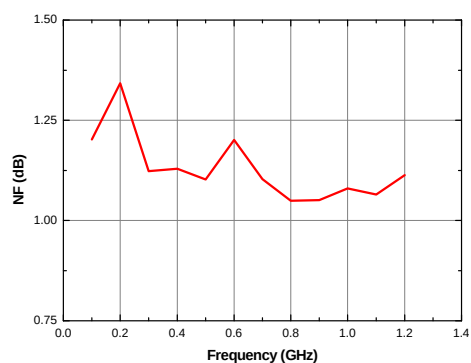
Output IP3 vs. Temperature



NF vs. Temperature



NF vs. Frequency



Recommended Soldering Reflow Profile

