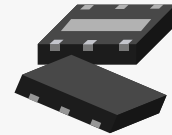


Features

- 21 dB Gain at 1950 MHz
- 34 dBm OIP3 at 1950 MHz
- 18 dBm P1dB at 1950 MHz
- 0.65 dB NF at 1950 MHz
- S11 < -18 dB
- MTTF > 100 Years
- Single Supply

Description

ASL52D6 is an easy-to-use low noise, high gain, and high linearity over a wide range of frequency up to 5 GHz. It is also suitable for use in the low noise amplifier block of the mobile wireless systems of PCS, WCDMA, WiBro, WiMAX, and WLAN so on. It has an active bias network for stable current over temperature and process variation. The amplifier is available in a DFN6 package and passes the stringent DC, RF, and reliability tests.



Package Style: DFN6

Typical Performance

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

Parameters	Units	Typical	
Testing Frequency	MHz	900	1950
Gain	dB	24	21
S11	dB	-18	-18
S22	dB	-10	-10
Output IP3 ¹⁾	dBm	33	34
Noise Figure	dB	0.55	0.65
Output P1dB	dBm	19	18
Current	mA	50	50
Device Voltage	V	+5	+5

1) OIP3 is measured with two tones at an output power of +4 dBm/tone separated by 1MHz.

Application Circuit

- 900 MHz
- GPS 1500 ~ 1600 MHz
- 1950 MHz
- TETRA 360 ~ 450 MHz

Product Specifications¹⁾

Parameters	Units	Min	Typ	Max
Frequency	MHz		1950	
Gain	dB		21	
S11	dB		-18	
S22	dB		-10	
Output IP3	dBm		34	
Noise Figure	dB		0.65	
Output P1dB	dBm		18	
Current	mA		50	
Device Voltage	V		+5	

1)100% in-house DC & RF testing is done on packaged products before taping

Absolute Maximum Ratings

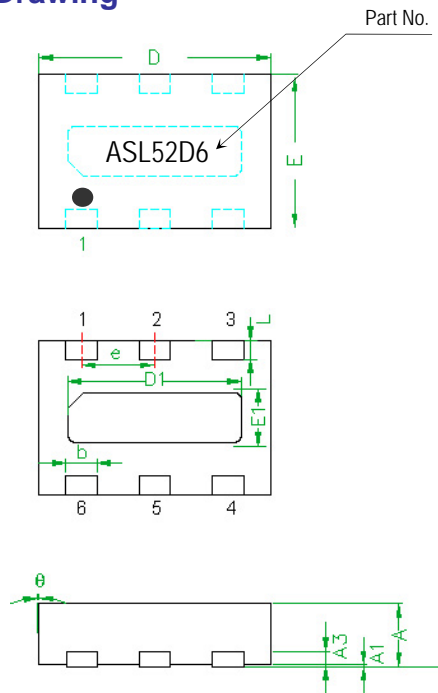
Parameters	Rating
Operating Case Temperature	-40 to +85 °C
Storage Temperature	-40 to +150 °C
Device Voltage	+6 V
Operating Junction Temperature	+150 °C
Input RF Power (CW, 50 Ω matched) ¹⁾	+22 dBm
Thermal Resistance	135 °C/W

1) 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	Bias
2	RF IN
5	RF OUT
3, 4, 6	NC & GND
Backside paddle	GND

Outline Drawing



Symbols	Dimensions (In mm)		
	MIN	NOM	MAX
A	0.80	0.85	0.90
A1	0	0.010	0.030
A3	---	0.20REF	---
b	0.35	0.40	0.45
D	2.95	3.00	3.03
D1	---	2.25BSC	---
E	1.95	2.00	2.03
E1	---	0.65BSC	---
e	---	0.95BSC	---
L	0.275	0.325	0.375
θ	-12	---	0

Pin No.	Function	Pin No.	Function.
1	Bias	4	GND or NC
2	RF IN	5	RF OUT
3	GND or NC	6	GND or NC

Note: 1. Backside metal paddle is RF and DC ground.

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

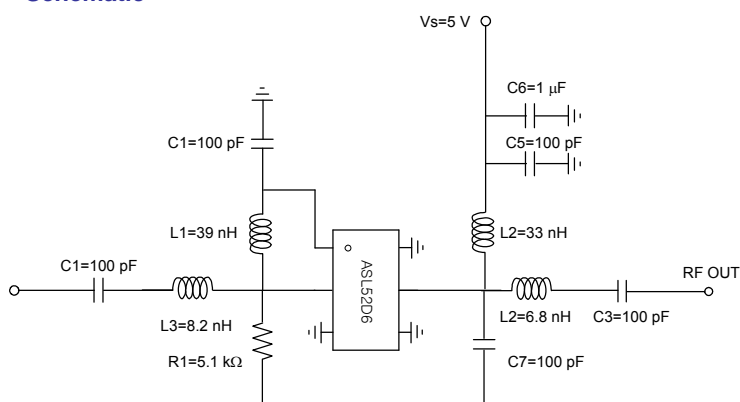
APPLICATION CIRCUIT

GSM
900 MHz
+5 V

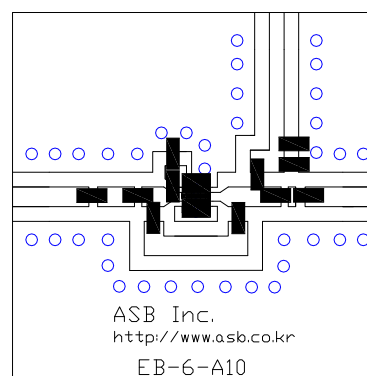
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain	G_p	F = 900 MHz		24		dB
Noise Figure	NF	F = 900 MHz		0.55		dB
Input Return Loss	RL_{in}	F = 900 MHz		-18		dB
Output Return Loss	RL_{out}	F = 900 MHz		-10		dB
1 dB Gain Compression Output Power	$P_{o(1dB)}$	F = 900 MHz		19		dBm
3 rd Intercept Point Output Power ¹⁾	OIP3	F = 900 MHz		33		dBm
Circuit Current	I_d	F = 900 MHz Non-RF		50		mA

1) OIP3 is measured with two tones at an output power of +4 dBm/tone separated by 1MHz.

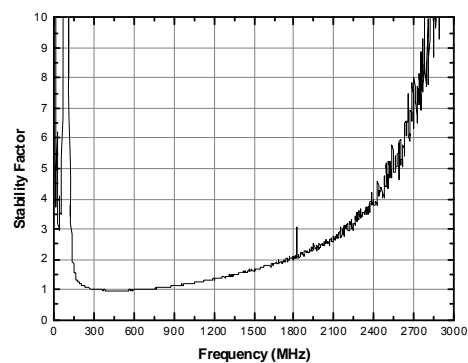
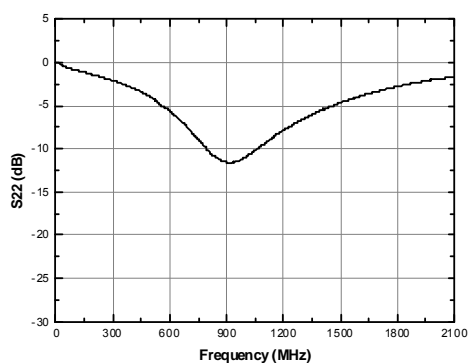
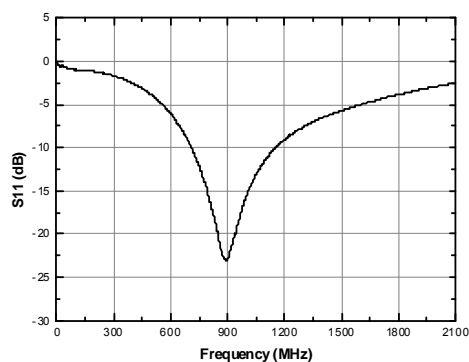
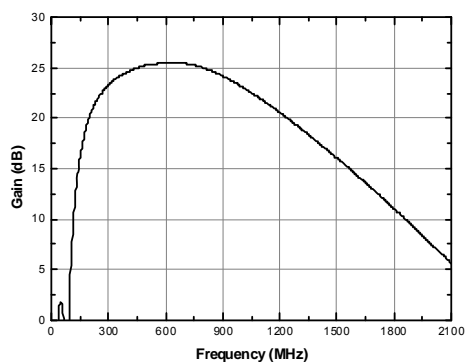
Schematic



Board Layout (FR4, 25x25 mm², 0.8T)



S-parameters & K-factor



APPLICATION CIRCUIT

GPS, GLONASS, Galileo & Compass

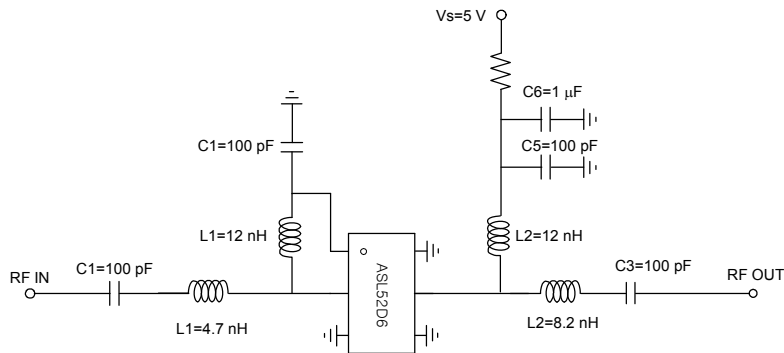
1500 ~ 1600 MHz

+5 V

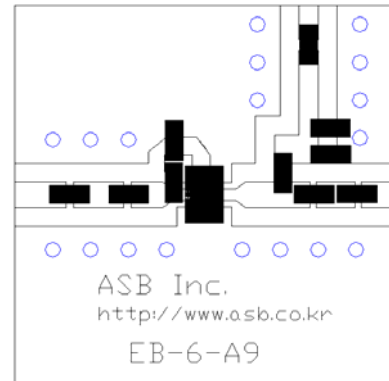
Parameter	Symbol	Unit	Frequency (MHz)	
			1500	1600
Power Gain	G_p	dB	24.5	23.7
Noise Figure	NF	dB	0.55	0.55
Input Return Loss	RL_{in}	dB	-18	-18
Output Return Loss	RL_{out}	dB	-18	-17
1 dB Gain Compression Output Power	$P_{o(1dB)}$	dBm	15.0	14.5
3 rd Intercept Point Output Power ¹⁾	OIP3	dBm	33	33
Circuit Current	I_d	mA	50	50

1) OIP3 is measured with two tones at an output power of +4 dBm/tone separated by 1MHz.

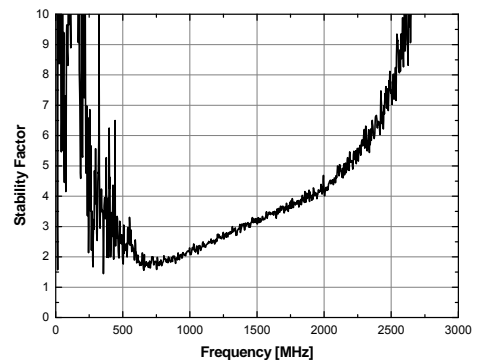
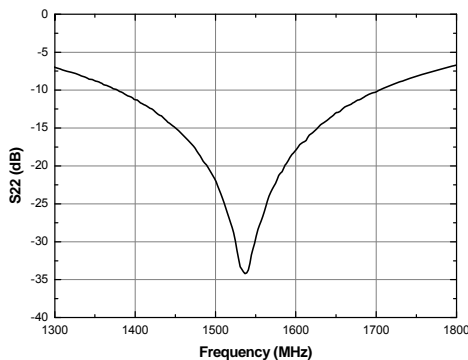
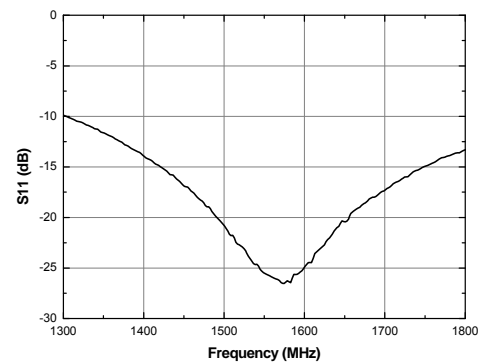
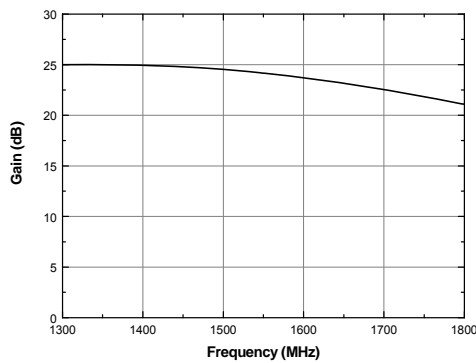
Schematic



Board Layout (FR4, 25x25 mm², 0.8T)



S-parameters & K-factor



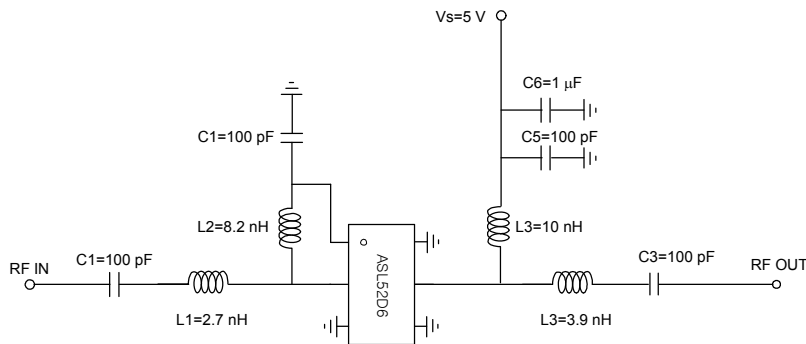
APPLICATION CIRCUIT

WCDMA
1950 MHz
+5 V

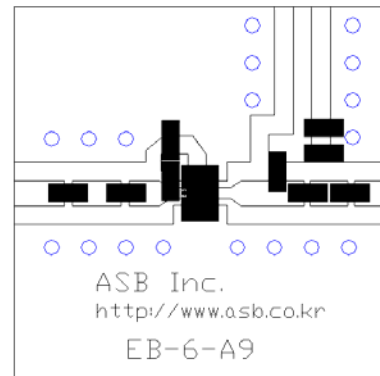
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain	G_p	F = 1950 MHz		21		dB
Noise Figure	NF	F = 1950 MHz		0.65		dB
Input Return Loss	RL_{in}	F = 1950 MHz		-18		dB
Output Return Loss	RL_{out}	F = 1950 MHz		-10		dB
1 dB Gain Compression Output Power	$P_{o(1dB)}$	F = 1950 MHz		18		dBm
3 rd Intercept Point Output Power ¹⁾	OIP3	F = 1950 MHz		34		dBm
Circuit Current	I_d	F = 1950 MHz Non-RF		50		mA

1) OIP3 is measured with two tones at an output power of +4 dBm/tone separated by 1MHz.

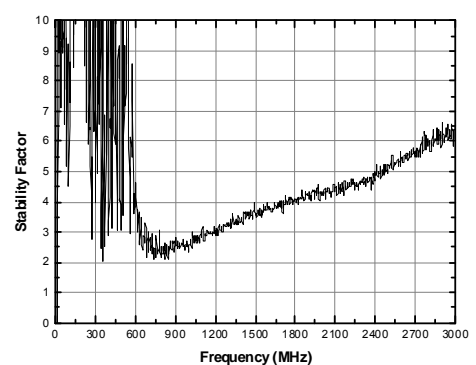
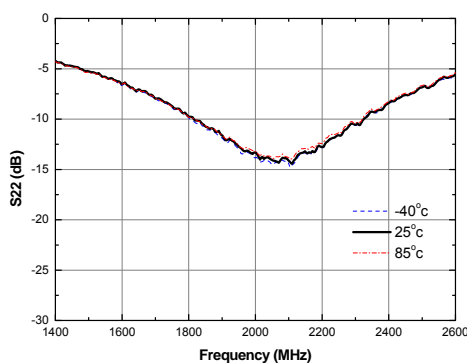
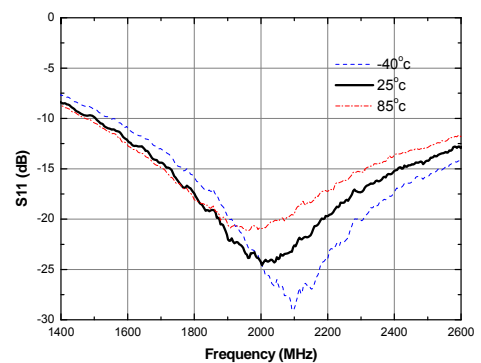
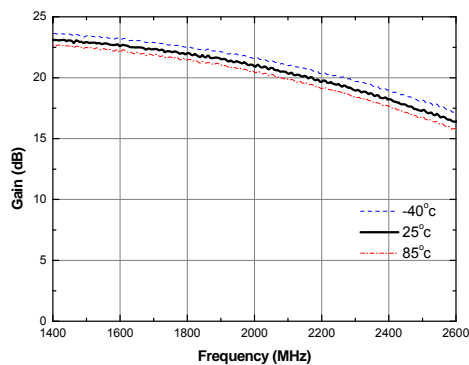
Schematic



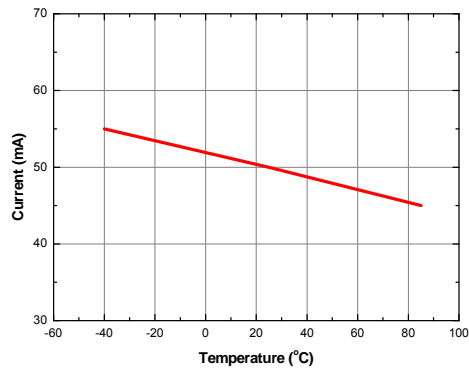
Board Layout (FR4, 25x25 mm², 0.8T)



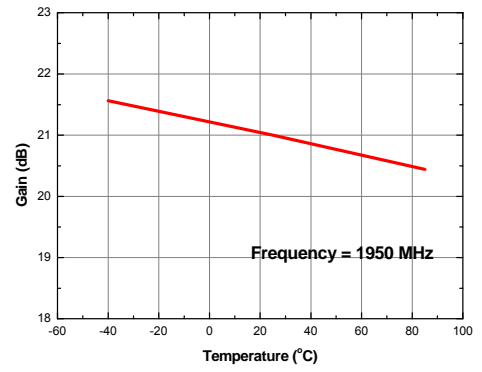
S-parameters & K-factor



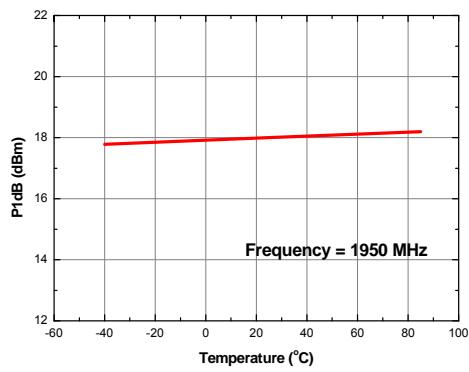
Current vs. Temperature



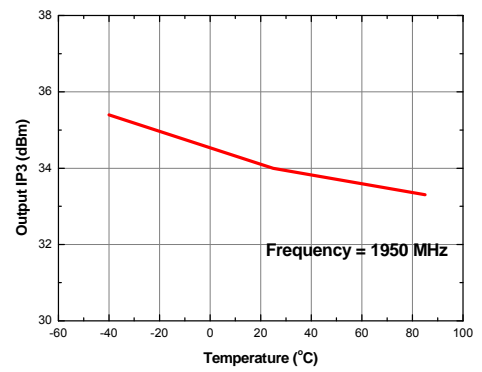
Gain vs. Temperature



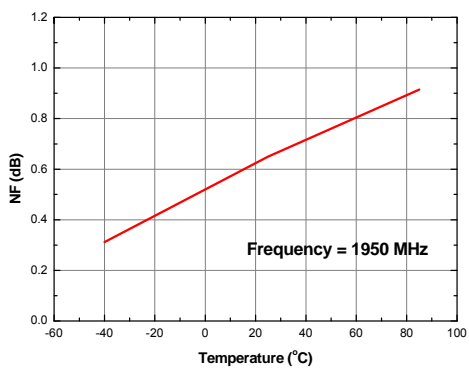
P1dB vs. Temperature



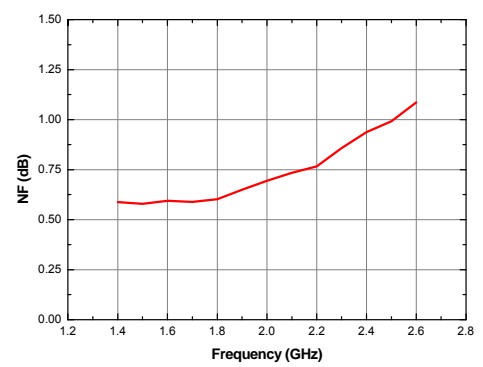
Output IP3 vs. Temperature



NF vs. Temperature



NF vs. Frequency



APPLICATION CIRCUIT

TETRA

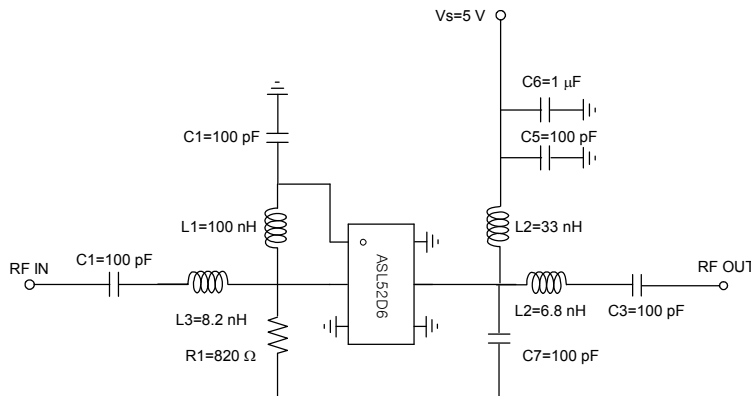
360 ~ 450

+5 V

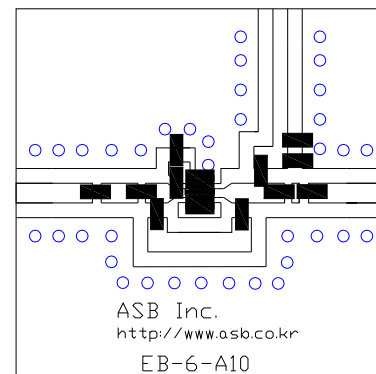
Parameter	Symbol	Unit	Frequency (MHz)	
			360	450
Power Gain	G_p	dB	21.3	21.1
Noise Figure	NF	dB	0.9	0.9
Input Return Loss	RL_{in}	dB	-18	-18
Output Return Loss	RL_{out}	dB	-18	-18
1 dB Gain Compression Output Power	$P_{o(1dB)}$	dBm	19	19
3 rd Intercept Point Output Power ¹⁾	OIP3	dBm	32	32
Circuit Current	I_d	mA	50	50

1) OIP3 is measured with two tones at an output power of +4 dBm/tone separated by 1MHz.

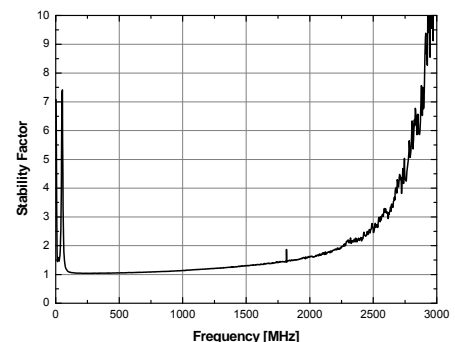
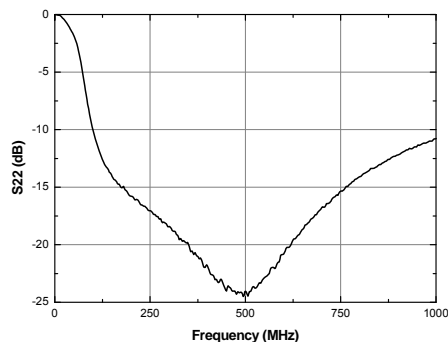
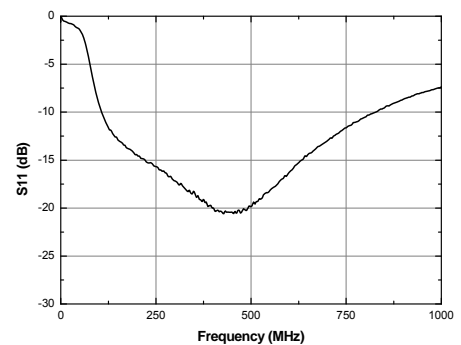
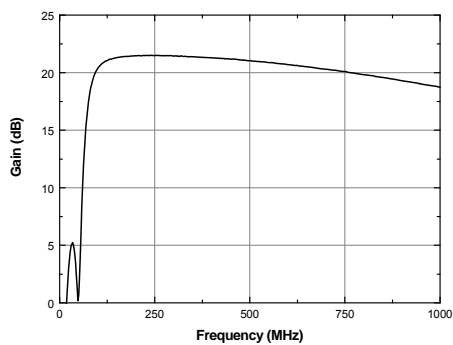
Schematic



Board Layout (FR4, 25x25 mm², 0.8T)



S-parameters & K-factor



Recommended Soldering Reflow Profile

