

Features

- High Linearity 43 dBm OIP3
- Low Noise Figure 2.0 dB
- 24 dBm P1dB
- 75 Ohm Input / Output Match
- Bandwidth 5~1000 MHz
- Single Supply 8 V

Description

The ASL550, a wideband linear amplifier MMIC, has a high linearity and low noise over a wide range of frequency 5 MHz to 1 GHz, being suitable for use in the fiber receiver, distribution amplifiers and drop amplifiers of CATV systems, and in the mobile wireless repeaters and BTS. The amplifier is available in an SOT-89 package and passes through the stringent DC, RF, and reliability tests.



Package Style: SOT-89

Typical Performance

| Parameters | Units | Typical | | | | |
|----------------------------------|-------|---------|------|------|------|------|
| | | 5 | 50 | 500 | 860 | 2600 |
| Frequency | MHz | 5 | 50 | 500 | 860 | 2600 |
| Noise Figure | dB | 2.9 | 2.0 | 2.0 | 2.2 | 3.6 |
| Gain | dB | 16.2 | 17.1 | 17.0 | 16.9 | 14.9 |
| S11 | dB | -17 | -15 | -15 | -16 | -8 |
| S22 | dB | -16 | -14 | -17 | -20 | -9 |
| Output P1dB | dBm | 26.5 | 23 | 24 | 24 | 19 |
| Output IP3 ¹⁾ | dBm | 36.5 | 40 | 43 | 41.5 | 38 |
| Output IP2 ^{1),2)} | dBm | 72 | 53 | 54 | 53 | - |
| CSO ³⁾ (@ 355.25 MHz) | dBc | - | 74 | | | - |
| CTB ³⁾ (@ 355.25 MHz) | dBc | - | 75 | | | - |
| Current | mA | 240 | | 120 | | 120 |
| Device Voltage | V | 8 | | 8 | | 8 |

1) OIP3 and OIP2 are measured with two tones at an output power of +9 dBm/ tone separated by 1 MHz(up-link) or 6 MHz(down-link).

2) OIP2 is measured at F1+F2 Frequency.

3) CSO & CTB was measured at 335.25 MHz.

For 116 flat channels at the input, measured at the output were 77 analog channels (55 MHz to 550 MHz) @ +20 dBmV per channel and 39 digital channels (550 MHz to 750 MHz) @ 6 dB lower than that of the analog channel.

Product Specifications

| Parameters | Units | Min | Typ | Max |
|-------------------|-------|------|------|-----|
| Testing Frequency | MHz | | 500 | |
| Gain | dB | 16.0 | 17.0 | |
| S11 | dB | -12 | -15 | |
| S22 | dB | -13 | -17 | |
| Output IP3 | dBm | 41 | 43 | |
| Noise Figure | dB | | 2.0 | 2.2 |
| Output P1dB | dBm | 23 | 24 | |
| Current | mA | 100 | 120 | 142 |
| Device Voltage | V | | 8 | |

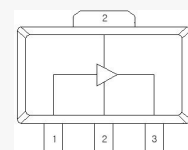
Absolute Maximum Ratings

| Parameters | Rating |
|-------------------------------------|---------------|
| Operating Case Temperature | -40 to +85°C |
| Storage Temperature | -40 to +150°C |
| Device Voltage | +9 V |
| Operating Junction Temperature | +160°C |
| Input RF Power (CW, 75 ohm matched) | 8 dBm |
| Maximum Current | 220 mA |
| Thermal Resistance | 43 °C/W |

Application Circuit

- 50 ~ 1000 MHz (Gain Flatness: 8 V)
- 50 ~ 1000 MHz (High Linearity)
- 50 ~ 1000 MHz (Gain Flatness, 5 V)
- 50 ~ 1000 MHz (Gain Flatness, 6 V)
- 50 ~ 1000 MHz (Positive Gain Slope)
- 50 ~ 1000 MHz (Min. VSWR)
- 50 ~ 1000 MHz (Low Gain)
- 5 ~ 200 MHz (8V / 5V)
- 5 ~ 200 MHz (Min. VSWR)
- 950 ~ 2600 MHz (SMATV)
- 90 ~ 2600 MHz
- 50 ~ 1000 MHz (Push-Pull / 2:1 transformer)
- 50 ~ 1000 MHz (Push-Pull / 1:1 transformer)
- 5 ~ 200 MHz (Push-Pull / 2:1 transformer)
- 5 ~ 200 MHz (Push-Pull / 1:1 transformer)

Pin Configuration



| Pin No. | Function |
|---------|---------------|
| 1 | RF IN |
| 2 | GND |
| 3 | RF OUT / Bias |

Wideband Linear Amplifier MMIC

APPLICATION CIRCUIT

Gain Flatness (0.2 dB)

CATV

50 ~ 1000 MHz

+8 V

| Frequency (MHz) | 50 | 500 | 860 |
|-----------------------------------|------|------|------|
| Noise Figure (dB) | 2.0 | 2.0 | 2.2 |
| Magnitude S21 (dB) | 17.1 | 17.0 | 16.9 |
| Magnitude S11 (dB) | -15 | -15 | -16 |
| Magnitude S22 (dB) | -14 | -17 | -20 |
| Output P1dB (dBm) | 23 | 24 | 24 |
| Output IP3 ¹⁾ (dBm) | 40 | 43 | 41.5 |
| Output IP2 ^{1),2)} (dBm) | 53 | 54 | 53 |
| CSO ³⁾ (dBc) | 74 | | |
| CTB ³⁾ (dBc) | 75 | | |
| Device Voltage (V) | 8 | | |
| Current (mA) | 120 | | |

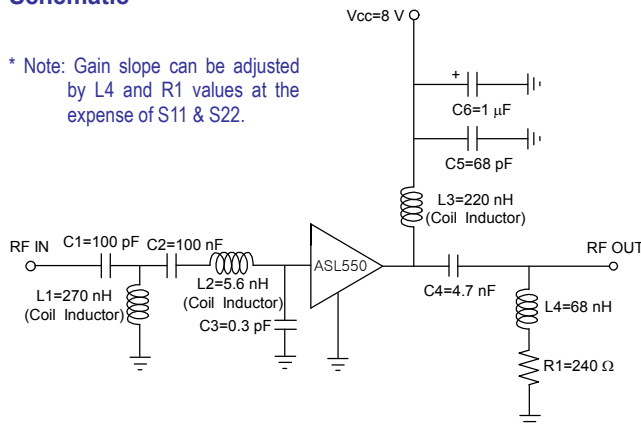
1) OIP3 and OIP2 are measured with two tones at an output power of +9 dBm/tone separated by 6 MHz.

2) OIP2 is measured at F1+F2 Frequency.

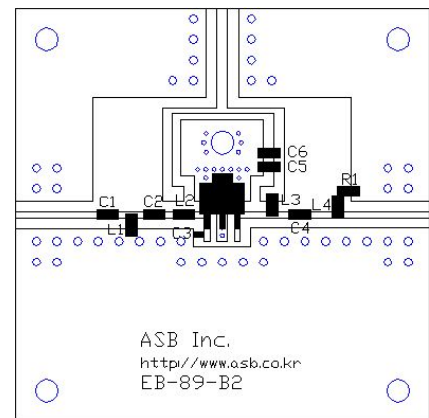
3) CSO & CTB was measured at 335.25 MHz. For 116 flat channels at the input, measured at the output were 77 analog channels (55 MHz to 550 MHz) @ +20 dBmV per channel and 39 digital channels (550 MHz to 750 MHz) @ 6 dB lower than that of the analog channel.

Schematic

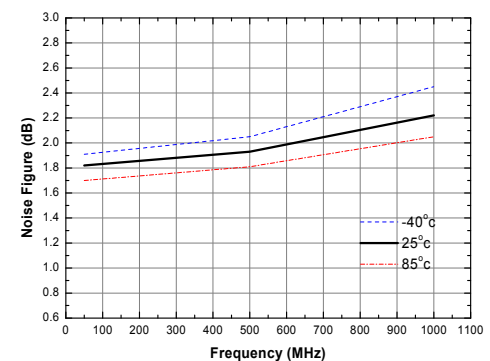
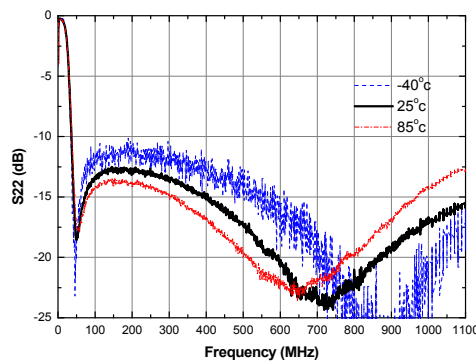
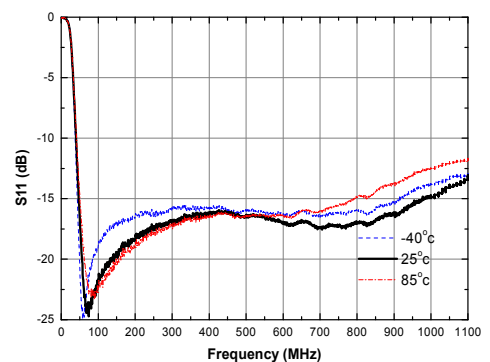
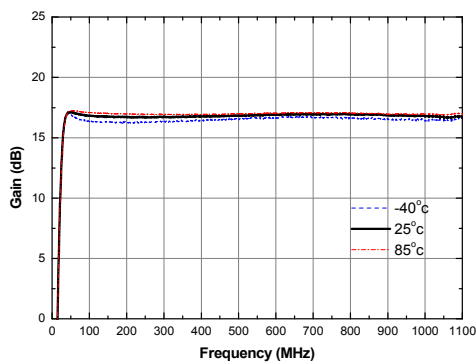
* Note: Gain slope can be adjusted by L4 and R1 values at the expense of S11 & S22.



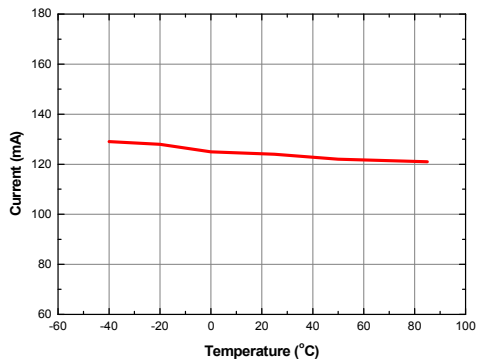
Board Layout (FR4, 40x40 mm², 0.8T)



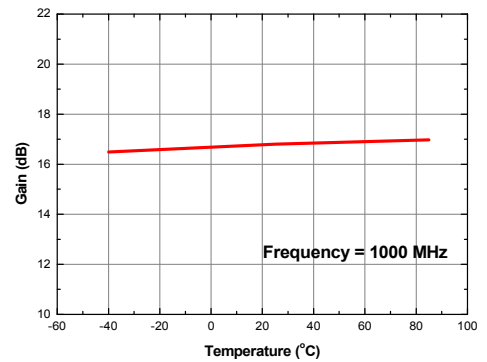
S-parameters & Noise Figure



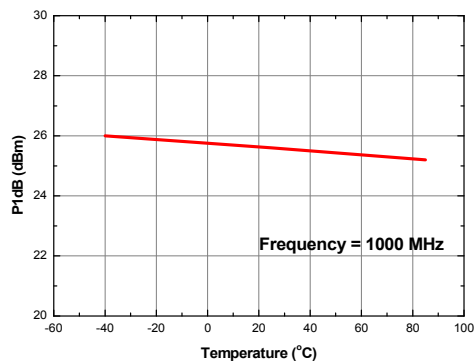
Current vs. Temperature



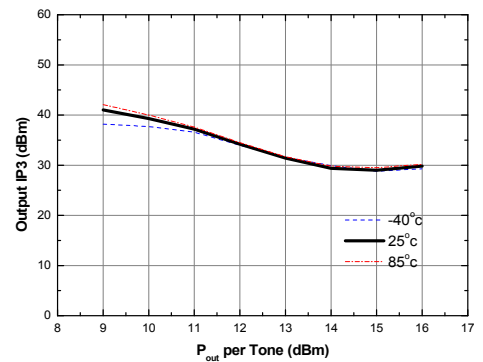
Gain vs. Temperature



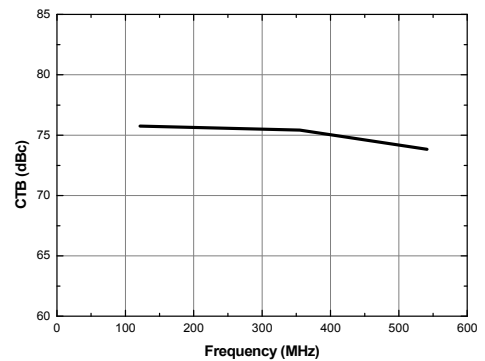
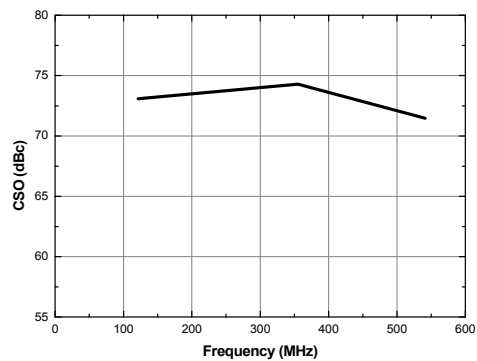
P1dB vs. Temperature



Output IP3 vs. Tone Power (Frequency = 1000 MHz)



CSO & CTB



Typical Performance (at 4.8V / 55mA)

| Frequency (MHz) | 50 | 500 | 860 |
|--------------------------------|------|------|------|
| Noise Figure (dB) | 2.0 | 2.0 | 2.2 |
| Magnitude S21 (dB) | 16.7 | 16.4 | 16.7 |
| Magnitude S11 (dB) | -15 | -14 | -11 |
| Magnitude S22 (dB) | -13 | -17 | -11 |
| Output P1dB (dBm) | 17 | 20 | 19 |
| Output IP3 ¹⁾ (dBm) | 31 | 36 | 33.5 |
| Supply Voltage (V) | 4.8 | | |
| Current (mA) | 55 | | |

1) OIP3 is measured with two tones at an output power of +5 dBm/tone separated by 6 MHz.

Wideband Linear Amplifier MMIC

APPLICATION CIRCUIT

Gain Flatness (0.2 dB)

CATV

50 ~ 1000 MHz

+8 V

| Frequency (MHz) | 50 | 500 | 860 |
|-----------------------------------|------|------|------|
| Noise Figure (dB) | 2.0 | 1.9 | 2.1 |
| Magnitude S21 (dB) | 16.3 | 16 | 16.1 |
| Magnitude S11 (dB) | -18 | -17 | -14 |
| Magnitude S22 (dB) | -12 | -16 | -16 |
| Output P1dB (dBm) | 24.5 | 25 | 24.5 |
| Output IP3 ¹⁾ (dBm) | 42 | 43.5 | 39 |
| Output IP2 ^{1),2)} (dBm) | 55 | 50 | 54 |
| CSO ³⁾ (dBc) | 74 | | |
| CTB ³⁾ (dBc) | 75 | | |
| Device Voltage (V) | 8 | | |
| Current (mA) | 120 | | |

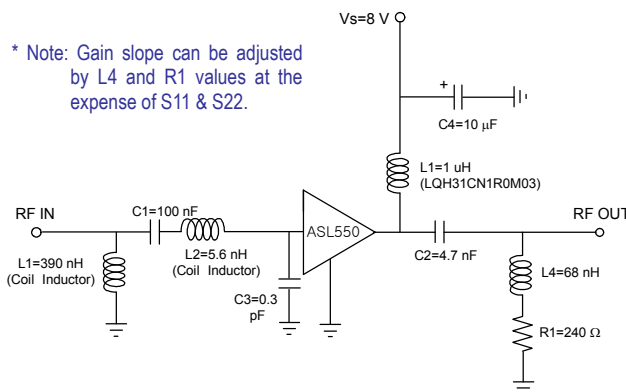
1) OIP3 and OIP2 are measured with two tones at an output power of +10 dBm/tone separated by 6 MHz.

2) OIP2 is measured at F1+F2 Frequency.

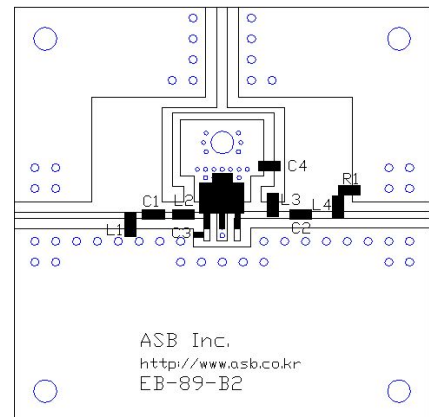
3) CSO & CTB was measured at 335.25 MHz. For 116 flat channels at the input, measured at the output were 77 analog channels (55 MHz to 550 MHz) @ +20 dBmV per channel and 39 digital channels (550 MHz to 750 MHz) @ 6 dB lower than that of the analog channel.

Schematic

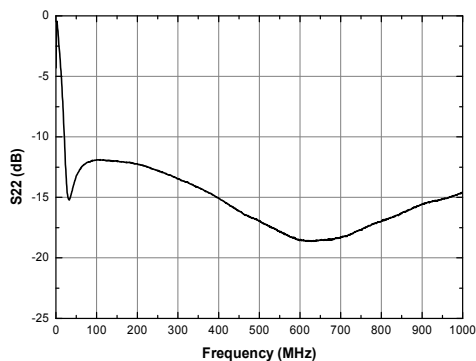
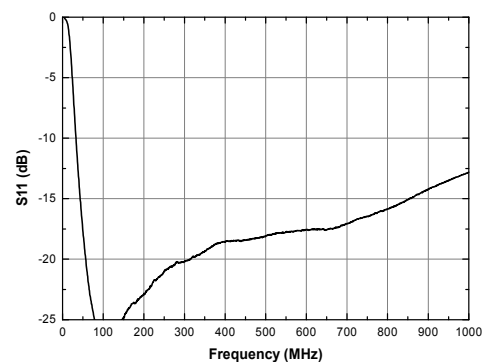
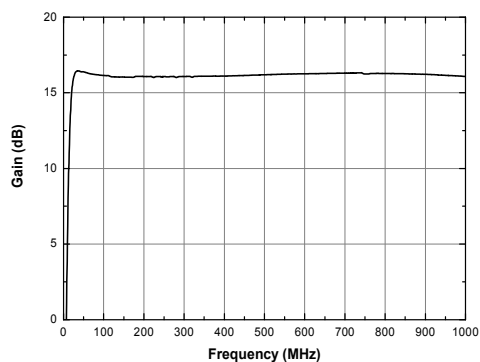
* Note: Gain slope can be adjusted by L4 and R1 values at the expense of S11 & S22.



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

Gain Flatness (1.0 dB)

CATV

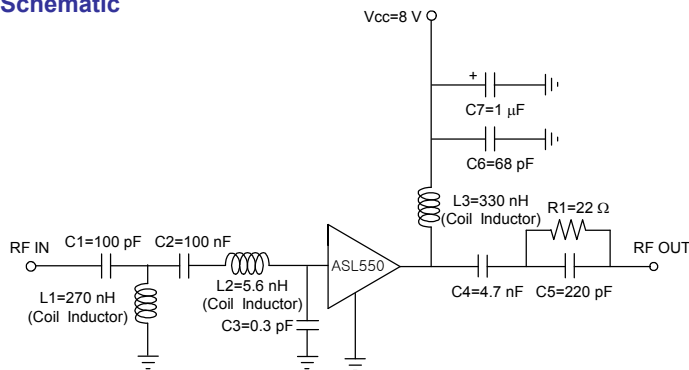
50 ~ 1000 MHz

+8 V

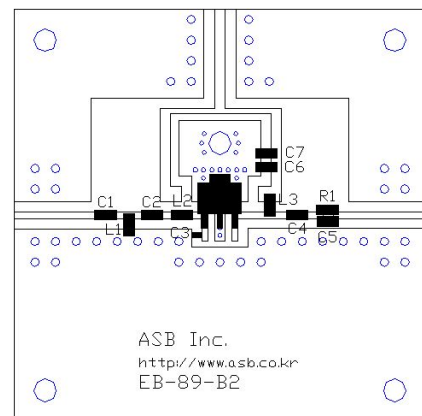
| Frequency (MHz) | 50 | 500 | 860 |
|--------------------------------|------|------|------|
| Noise Figure (dB) | 2.0 | 2.0 | 2.2 |
| Magnitude S21 (dB) | 17.8 | 17.5 | 16.8 |
| Magnitude S11 (dB) | -16 | -18 | -16 |
| Magnitude S22 (dB) | -20 | -20 | -16 |
| Output P1dB (dBm) | 24 | 25 | 25 |
| Output IP3 ¹⁾ (dBm) | 40 | 42 | 43 |
| CSO ²⁾ (dBc) | 74 | | |
| CTB ²⁾ (dBc) | 75 | | |
| Device Voltage (V) | 8 | | |
| Current (mA) | 120 | | |

- 1) OIP3 is measured with two tones at an output power of +10 dBm/tone separated by 6 MHz.
- 2) 116 total channels, flat input; 77 analog channels (55 MHz to 550MHz) @ +20 dBmV per channel; 39 digital channels (550 MHz to 750 MHz) @ 6 dB below analog channels, measured at 335.25 MHz.

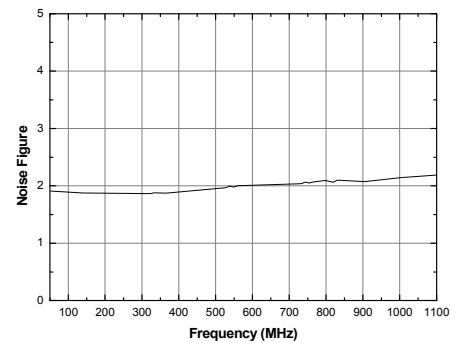
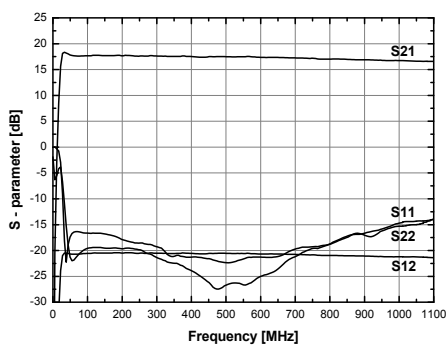
Schematic



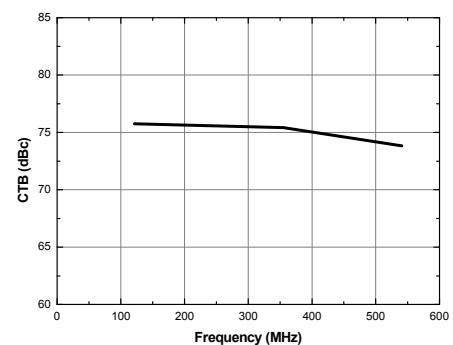
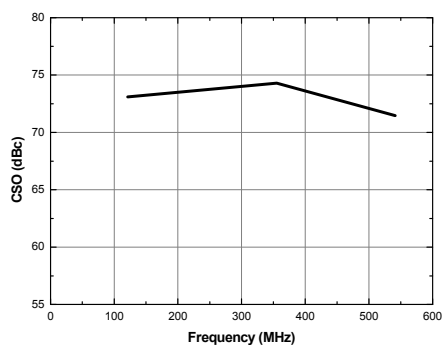
Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters & Noise Figure



CSO & CTB



Wideband Linear Amplifier MMIC

APPLICATION CIRCUIT

CATV

Gain Flatness (0.2 dB)

High Linearity

50 ~ 1000 MHz

+8 V

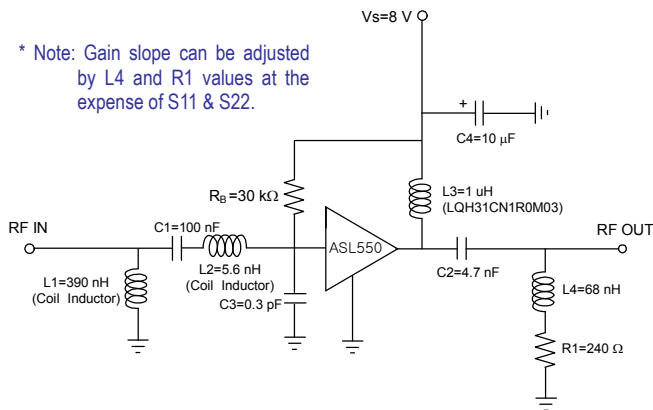
| Frequency (MHz) | 50 | 500 | 860 |
|-----------------------------------|------|------|------|
| Noise Figure (dB) | 2.0 | 1.9 | 2.1 |
| Magnitude S21 (dB) | 16.4 | 16.2 | 16.2 |
| Magnitude S11 (dB) | -18 | -16 | -13 |
| Magnitude S22 (dB) | -12 | -17 | -16 |
| Output P1dB (dBm) | 25 | 24.5 | 24 |
| Output IP3 ¹⁾ (dBm) | 44 | 43 | 40 |
| Output IP2 ^{1),2)} (dBm) | 61 | 59 | 58 |
| CSO (dBc) | - | | |
| CTB (dBc) | - | | |
| Device Voltage (V) | 8 | | |
| Current (mA) | 185 | | |

1) OIP3 and OIP2 are measured with two tones at an output power of +10 dBm/tone separated by 6 MHz.

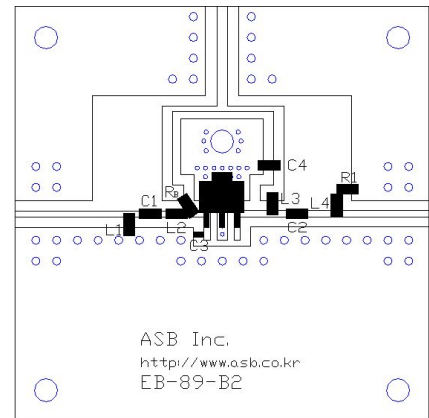
2) OIP2 is measured at F1+F2 Frequency.

Schematic

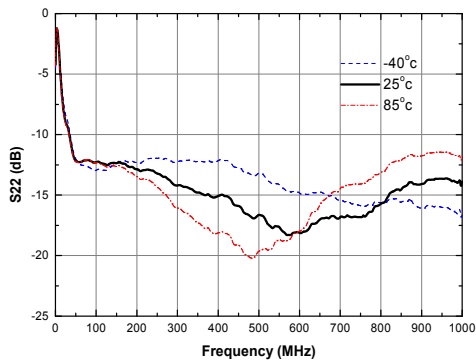
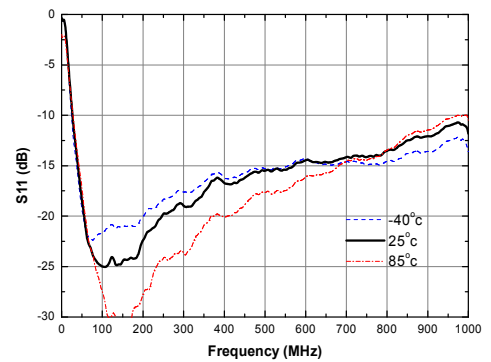
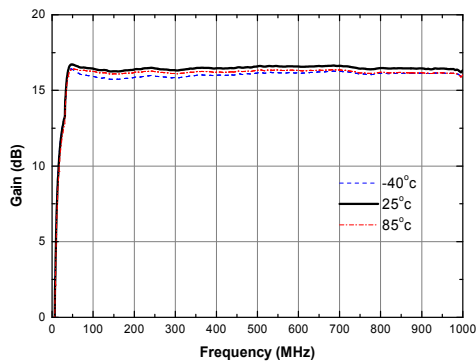
* Note: Gain slope can be adjusted by L4 and R1 values at the expense of S11 & S22.



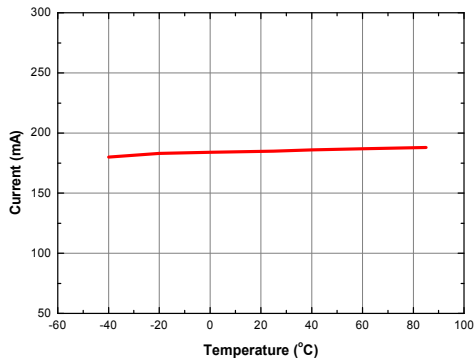
Board Layout (FR4, 40x40 mm², 0.8T)



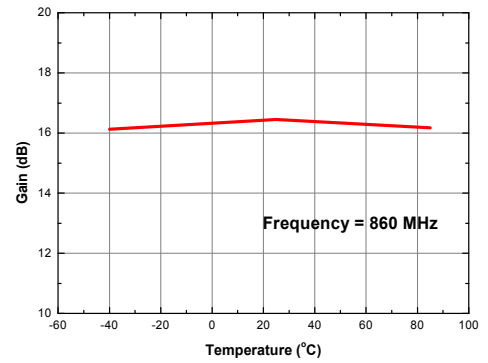
S-parameters



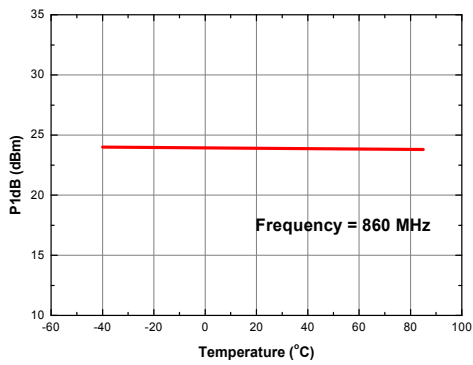
Current vs. Temperature



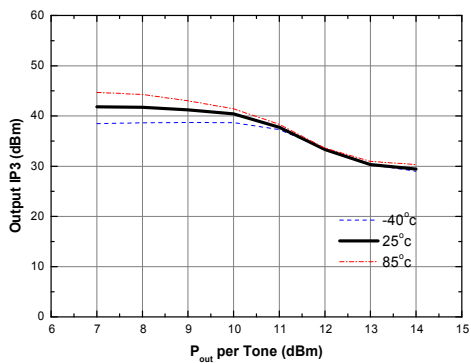
Gain vs. Temperature



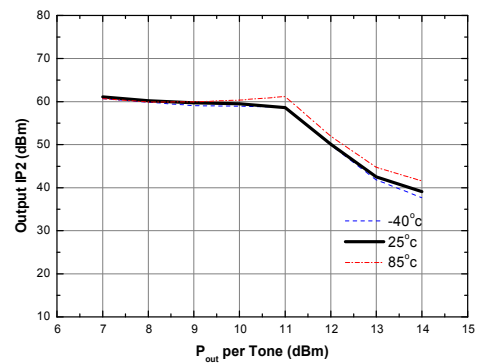
P1dB vs. Temperature



Output IP3 vs. Tone Power (Frequency = 860 MHz)



Output IP2 vs. Tone Power (Frequency = 860 MHz)



APPLICATION CIRCUIT

Gain Flatness (0.2 dB)

CATV

50 ~ 1000 MHz

+5 V

| Frequency (MHz) | 50 | 500 | 860 |
|--------------------------------|------|------|------|
| Noise Figure (dB) | 2.1 | 2.1 | 2.2 |
| Magnitude S21 (dB) | 15.8 | 15.7 | 15.6 |
| Magnitude S11 (dB) | -13 | -16 | -12 |
| Magnitude S22 (dB) | -11 | -15 | -16 |
| Output P1dB (dBm) | 20 | 21 | 19.5 |
| Output IP3 ¹⁾ (dBm) | 37 | 39 | 35 |
| Output IP2 ²⁾ (dBm) | 50 | 48 | 54 |
| CSO ³⁾ (dBc) | 66 | | |
| CTB ³⁾ (dBc) | 76 | | |
| Device Voltage (V) | 5 | | |
| Current (mA) | 92 | | |

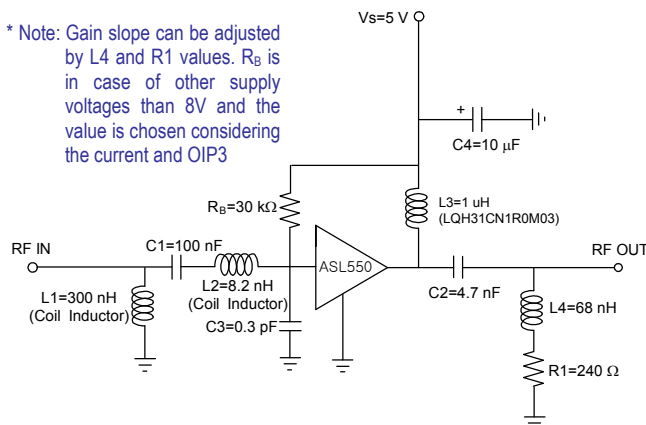
1) OIP3 and OIP2 are measured with two tones at an output power of +6 dBm/tone separated by 6 MHz.

2) OIP2 is measured at F1+F2 Frequency.

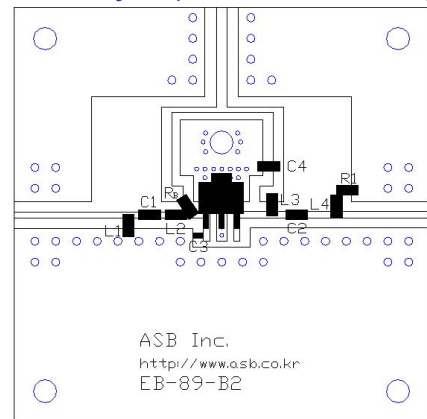
3) 160 channels, +20 dBmV per channel (measured at output).

Schematic

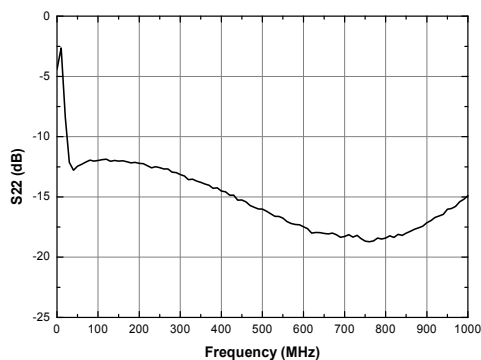
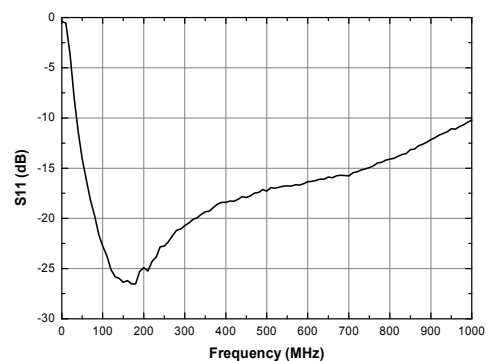
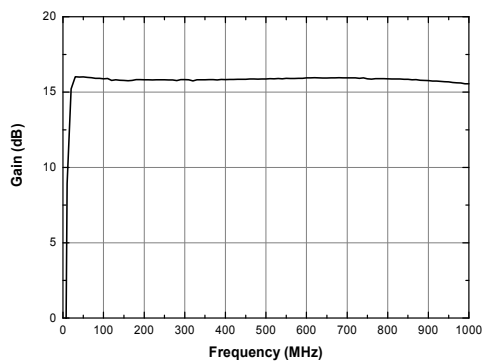
* Note: Gain slope can be adjusted by L4 and R1 values. R_B is in case of other supply voltages than 8V and the value is chosen considering the current and OIP3



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

Gain Flatness (0.3 dB)

CATV

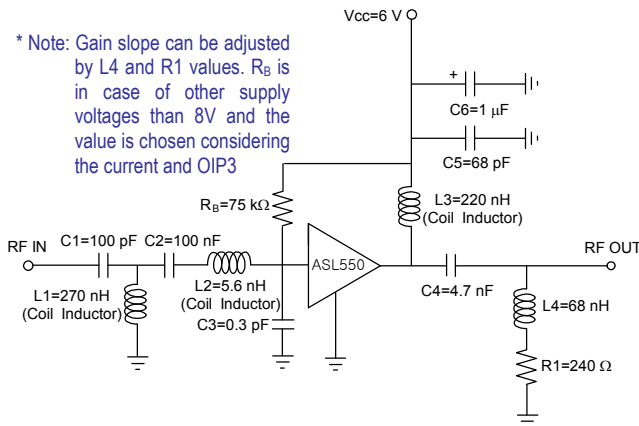
50 ~ 1000 MHz

+6 V

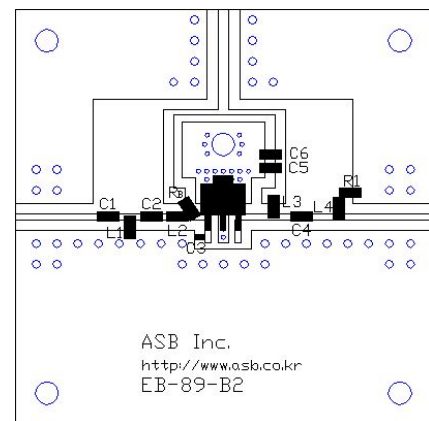
| Frequency (MHz) | 50 | 500 | 860 |
|--------------------------------|------|------|------|
| Noise Figure (dB) | 1.9 | 2.0 | 2.2 |
| Magnitude S21 (dB) | 16.9 | 16.7 | 16.6 |
| Magnitude S11 (dB) | -15 | -14 | -14 |
| Magnitude S22 (dB) | -14 | -18 | -18 |
| Output P1dB (dBm) | 21 | 23 | 23 |
| Output IP3 ¹⁾ (dBm) | 38 | 42 | 39.5 |
| Device Voltage (V) | 6 | | |
| Current (mA) | 92 | | |

1) OIP3 is measured with two tones at an output power of +5 dBm/tone separated by 6 MHz.

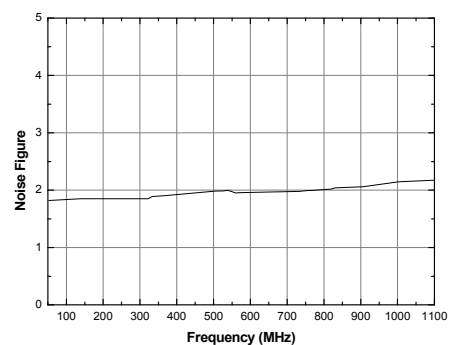
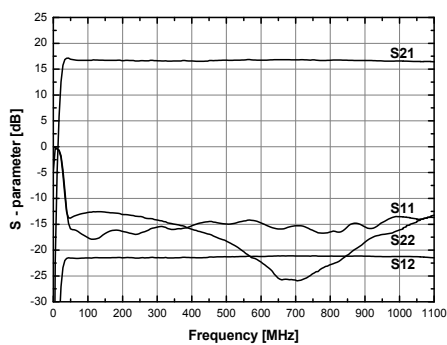
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters & Noise Figure



APPLICATION CIRCUIT

Gain Flatness (0.8 dB)

CATV

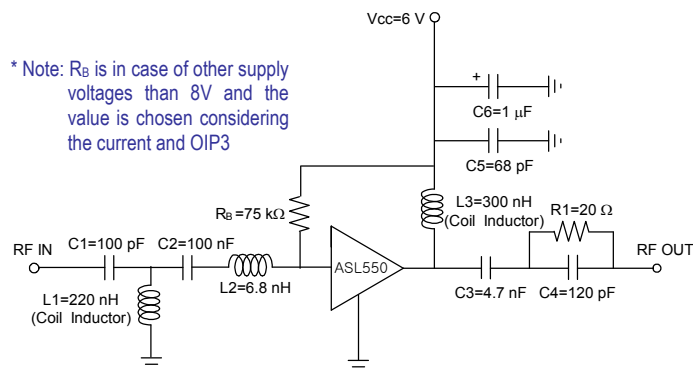
50 ~ 1000 MHz

+6 V

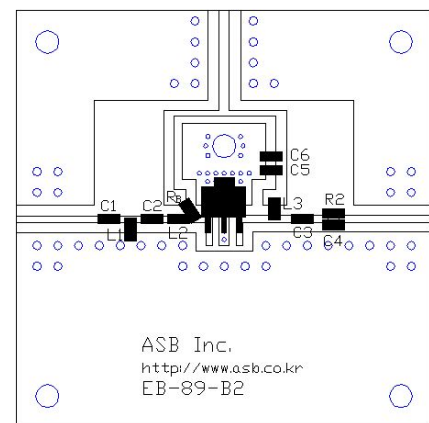
| Frequency (MHz) | 50 | 500 | 860 |
|--------------------------------|------|------|------|
| Noise Figure (dB) | 2.1 | 2.2 | 2.5 |
| Magnitude S21 (dB) | 17.7 | 17.4 | 16.9 |
| Magnitude S11 (dB) | -18 | -18 | -16 |
| Magnitude S22 (dB) | -15 | -22 | -18 |
| Output P1dB (dBm) | 20 | 21 | 20 |
| Output IP3 ¹⁾ (dBm) | 36 | 40 | 36.5 |
| Device Voltage (V) | 6 | | |
| Current (mA) | 92 | | |

1) OIP3 is measured with two tones at an output power of +5 dBm/tone separated by 6 MHz.

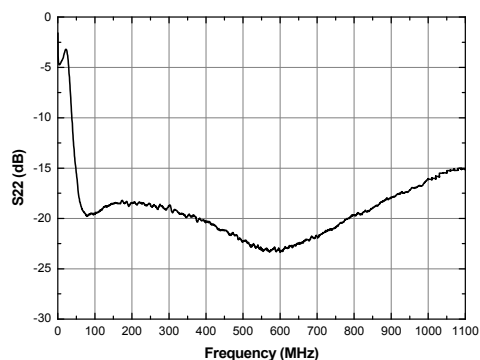
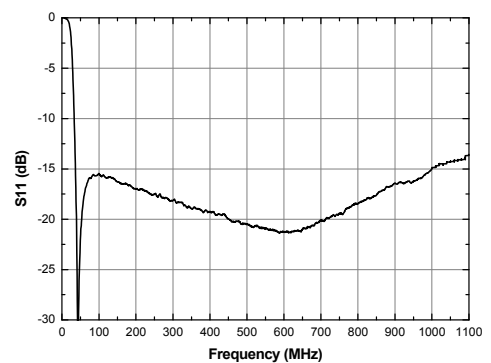
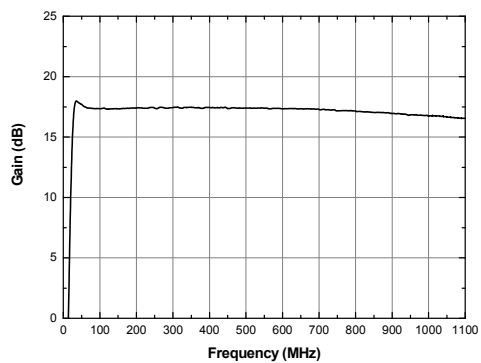
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

Positive Gain Slope

CATV

50 ~ 1000 MHz

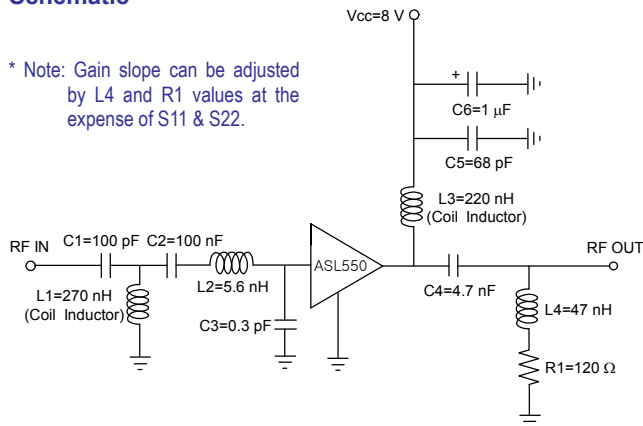
+8 V

| Frequency (MHz) | 50 | 500 | 860 |
|--------------------------------|------|------|------|
| Noise Figure (dB) | 1.9 | 1.9 | 2.2 |
| Magnitude S21 (dB) | 15.9 | 16.6 | 16.9 |
| Magnitude S11 (dB) | -15 | -11 | -12 |
| Magnitude S22 (dB) | -10 | -13 | -20 |
| Output P1dB (dBm) | 23.5 | 25 | 24.5 |
| Output IP3 ¹⁾ (dBm) | 40 | 42 | 40 |
| CSO ²⁾ (dBc) | 74 | | |
| CTB ²⁾ (dBc) | 75 | | |
| Device Voltage (V) | 8 | | |
| Current (mA) | 120 | | |

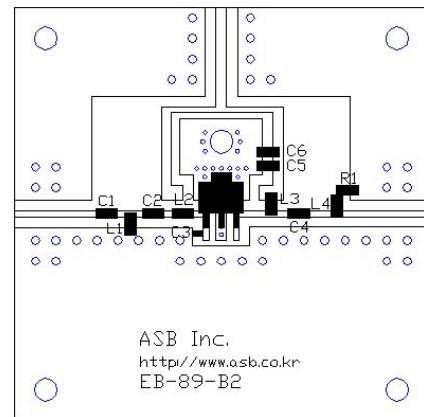
- 1) OIP3 is measured with two tones at an output power of +9 dBm/tone separated by 6 MHz.
- 2) 116 total channels, flat input; 77 analog channels (55 MHz to 550MHz) @ +20 dBmV per channel; 39 digital channels (550 MHz to 750 MHz) @ 6 dB below analog channels, measured at 335.25 MHz.

Schematic

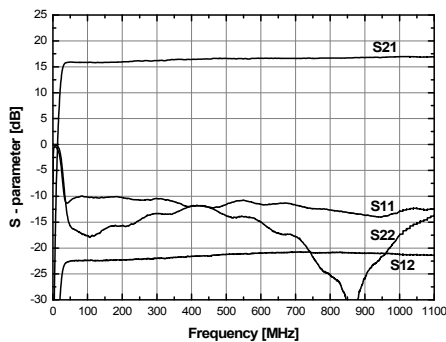
* Note: Gain slope can be adjusted by L4 and R1 values at the expense of S11 & S22.



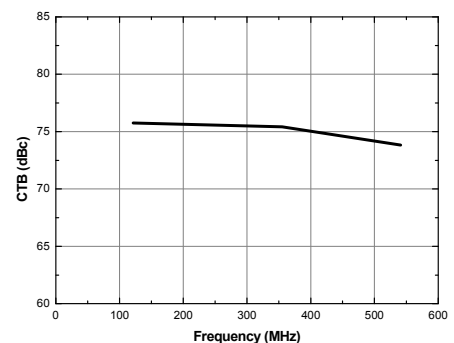
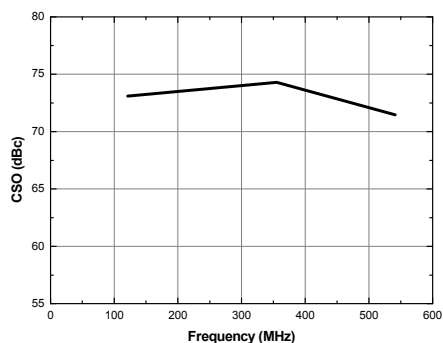
Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



CSO & CTB



Wideband Linear Amplifier MMIC

APPLICATION CIRCUIT

Min. VSWR

CATV

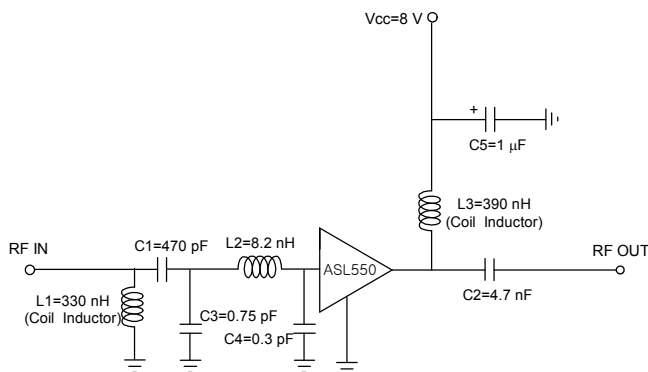
50 ~ 1000 MHz

+8 V

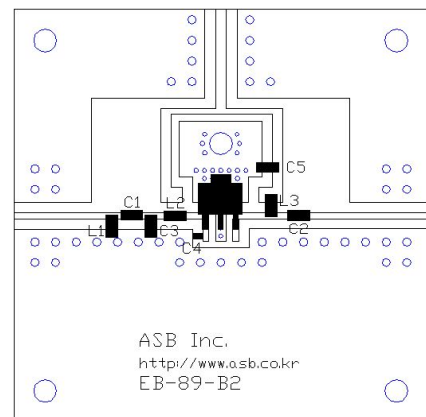
| Frequency (MHz) | 50 | 500 | 860 |
|-----------------------------------|------|------|------|
| Noise Figure (dB) | 2.0 | 2.0 | 2.2 |
| Magnitude S21 (dB) | 18.2 | 17.5 | 16.9 |
| Magnitude S11 (dB) | -18 | -18 | -17 |
| Magnitude S22 (dB) | -20 | -20 | -17 |
| Output P1dB (dBm) | 24 | 25 | 25 |
| Output IP3 ¹⁾ (dBm) | 40 | 42 | 39.5 |
| Output IP2 ^{1),2)} (dBm) | 55 | 56 | 54 |
| CSO ³⁾ (dBc) | 74 | | |
| CTB ³⁾ (dBc) | 75 | | |
| Device Voltage (V) | 8 | | |
| Current (mA) | 120 | | |

- 1) OIP3 is measured with two tones at an output power of +10 dBm/tone separated by 6 MHz.
- 2) OIP2 is measured at F1+F2 Frequency.
- 3) 116 total channels, flat input; 77 analog channels (55 MHz to 550MHz) @ +20 dBmV per channel; 39 digital channels (550 MHz to 750 MHz) @ 6 dB below analog channels, measured at 335.25 MHz.

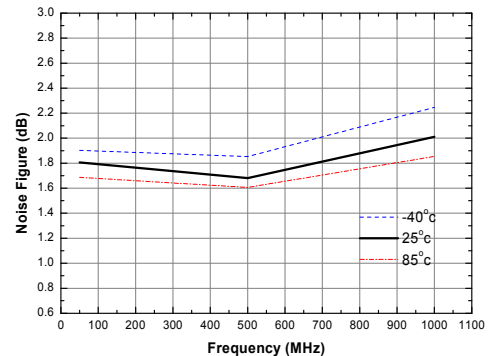
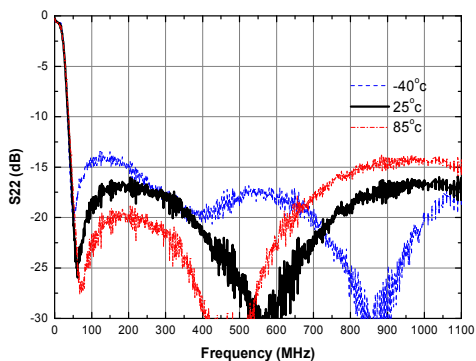
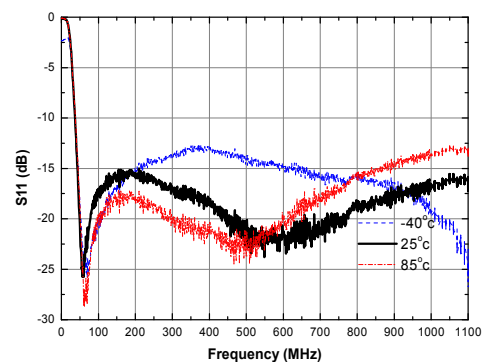
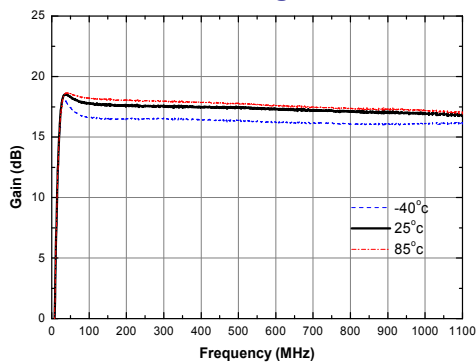
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters & Noise Figure



APPLICATION CIRCUIT

Low Gain (12dB)

CATV

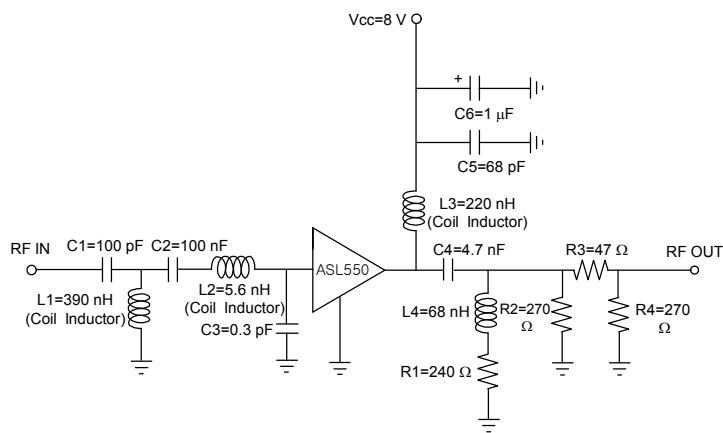
50 ~ 1000 MHz

+8 V

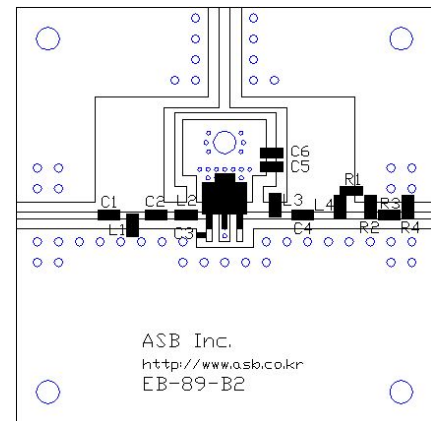
| Frequency (MHz) | 50 | 500 | 860 |
|--------------------------------|------|------|------|
| Noise Figure (dB) | 2.2 | 2.2 | 2.6 |
| Magnitude S21 (dB) | 11.9 | 11.5 | 11.9 |
| Magnitude S11 (dB) | -11 | -14 | -14 |
| Magnitude S22 (dB) | -18 | -18 | -20 |
| Output P1dB (dBm) | 18.5 | 20 | 20 |
| Output IP3 ¹⁾ (dBm) | 34 | 37 | 34.5 |
| Device Voltage (V) | 8 | | |
| Current (mA) | 120 | | |

1) OIP3 is measured with two tones at an output power of +5 dBm/tone separated by 6 MHz.

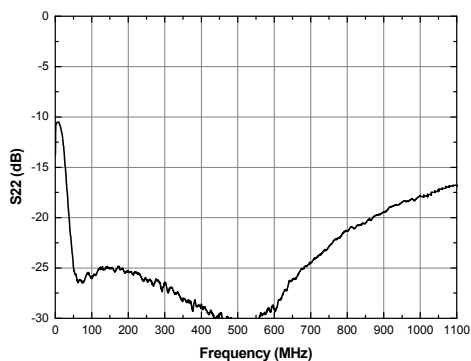
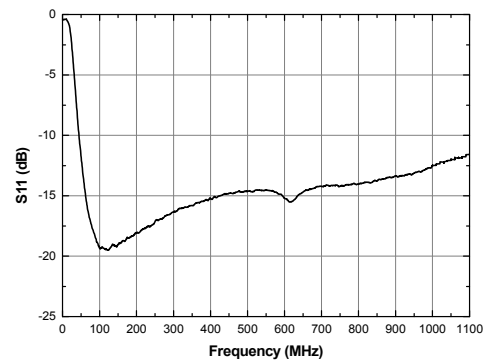
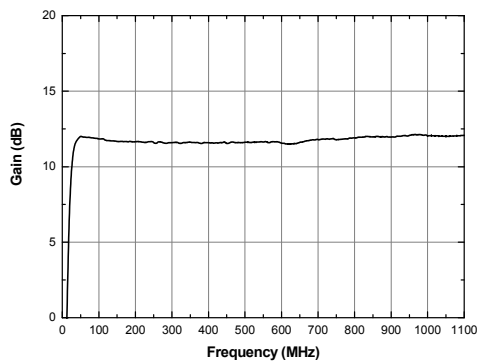
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

CATV

5 ~ 200 MHz

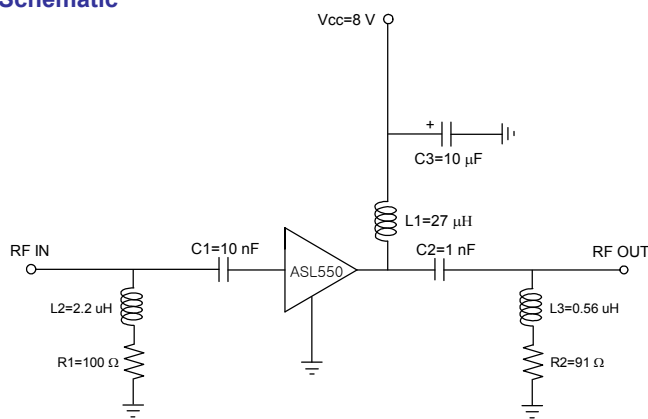
+8 V

| Frequency (MHz) | 5 | 50 | 200 |
|----------------------------------|------|------|------|
| Noise Figure (dB) | 1.7 | 1.9 | 2.1 |
| Magnitude S21 (dB) | 17.1 | 16.8 | 16.8 |
| Magnitude S11 (dB) | -14 | -12 | -18 |
| Magnitude S22 (dB) | -7 | -15 | -15 |
| Output P1dB (dBm) | 22 | 25 | 25 |
| Output IP3 ¹⁾ (dBm) | 32 | 39 | 41 |
| Output IP2 ^{1,2)} (dBm) | 35 | 58 | 56 |
| Device Voltage (V) | 8 | | |
| Current (mA) | 120 | | |

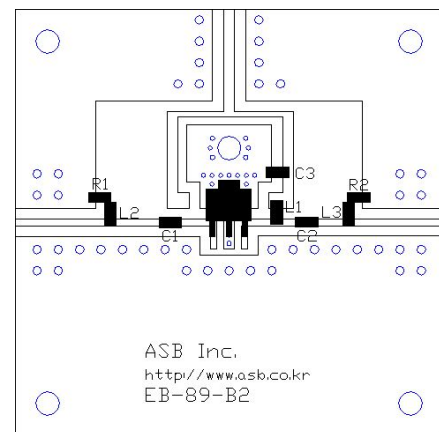
1) OIP3 and OIP2 are measured with two tones at an output power of +12 dBm/tone separated by 6 MHz.

2) OIP2 is measured at F1+F2 Frequency.

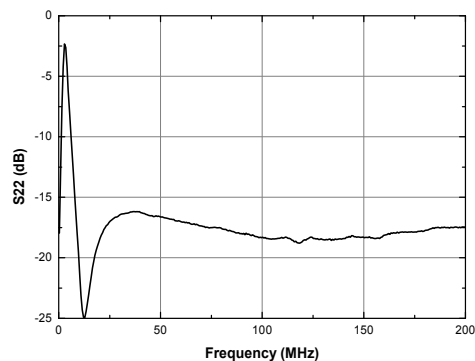
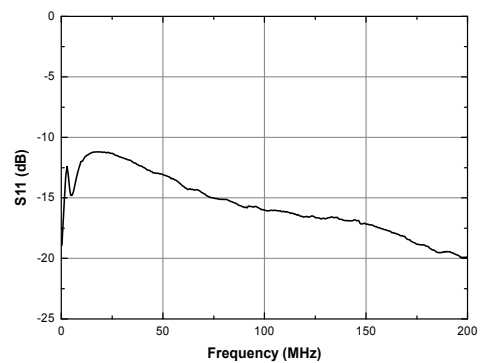
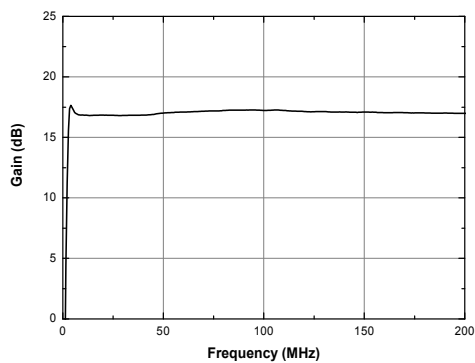
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

CATV

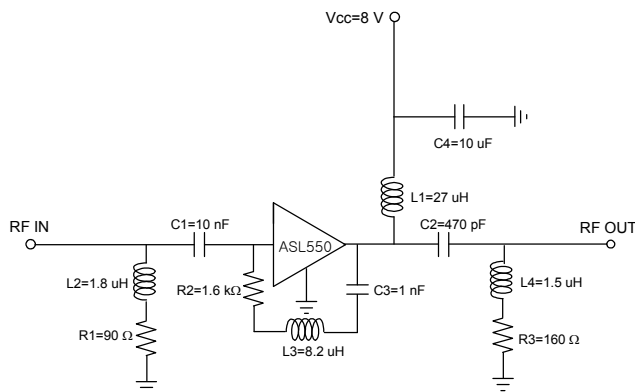
5 ~ 200 MHz

+8 V

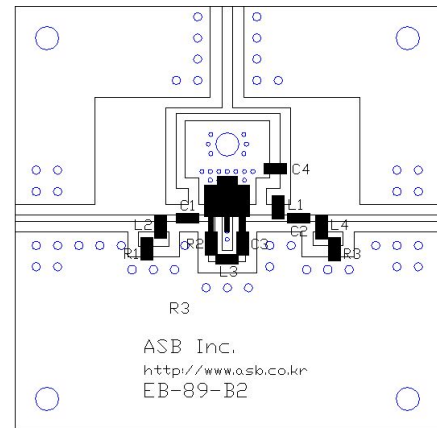
| Frequency (MHz) | 5 | 50 | 200 |
|--------------------------------|------|------|------|
| Noise Figure (dB) | 2.3 | 2.1 | 2.3 |
| Magnitude S21 (dB) | 16.0 | 16.5 | 16.0 |
| Magnitude S11 (dB) | -15 | -16 | -15 |
| Magnitude S22 (dB) | -10 | -15 | -14 |
| Output P1dB (dBm) | 21 | 25.5 | 25.5 |
| Output IP3 ¹⁾ (dBm) | 31 | 43 | 43 |
| Device Voltage (V) | 8 | | |
| Current (mA) | 120 | | |

1) OIP3 is measured with two tones at an output power of +9 dBm/tone separated by 1 MHz.

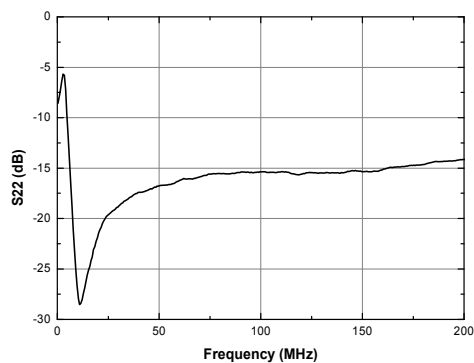
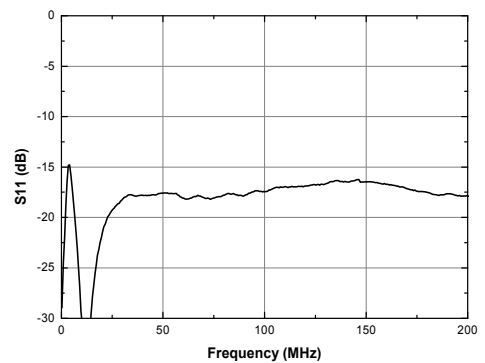
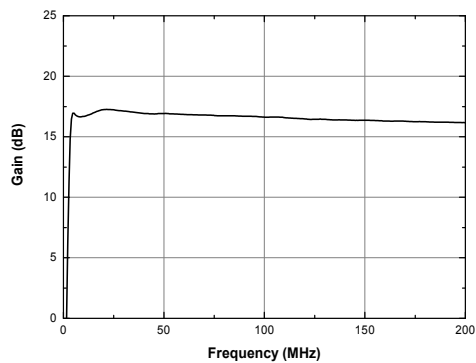
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

CATV

5 ~ 200 MHz

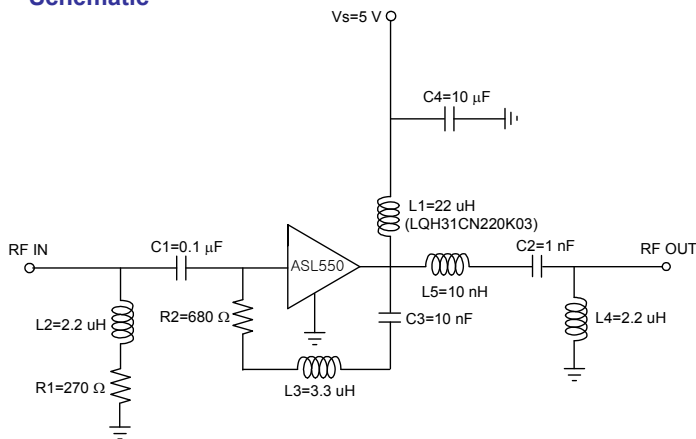
+8 V

| Frequency (MHz) | 5 | 50 | 200 |
|----------------------------------|------|------|------|
| Noise Figure (dB) | 2.1 | 2.0 | 2.1 |
| Magnitude S21 (dB) | 15.5 | 15.5 | 15 |
| Magnitude S11 (dB) | -18 | -13 | -13 |
| Magnitude S22 (dB) | -9 | -14 | -13 |
| Output P1dB (dBm) | 24.5 | 25 | 25 |
| Output IP3 ¹⁾ (dBm) | 27.5 | 37 | 42.5 |
| Output IP2 ^{1,2)} (dBm) | 54 | 56.5 | 59 |
| Device Voltage (V) | 8 | | |
| Current (mA) | 120 | | |

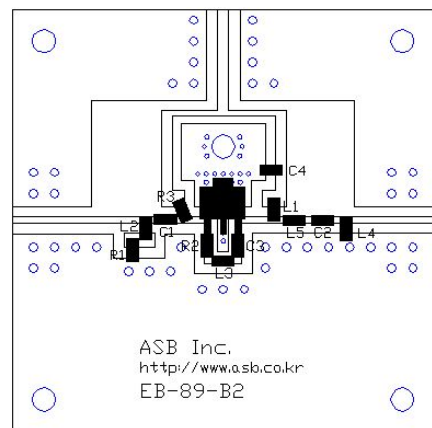
1) OIP3 is measured with two tones at an output power of +8 dBm/tone separated by 1 MHz.

2) OIP2 is measured at F1+F2 Frequency.

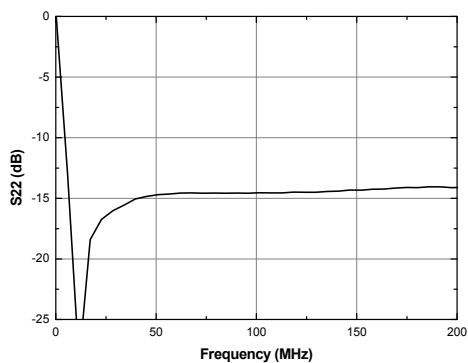
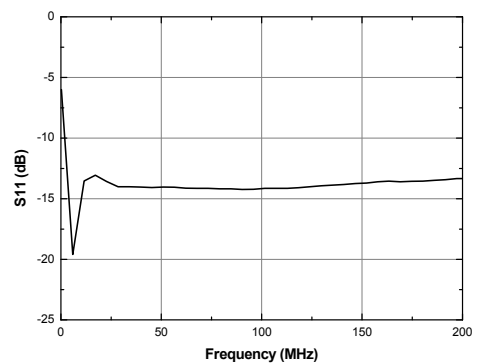
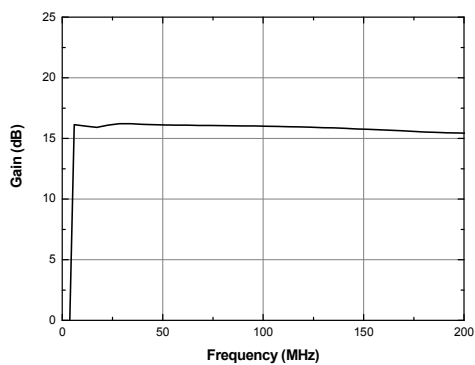
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

Min. VSWR

CATV

5 ~ 200 MHz

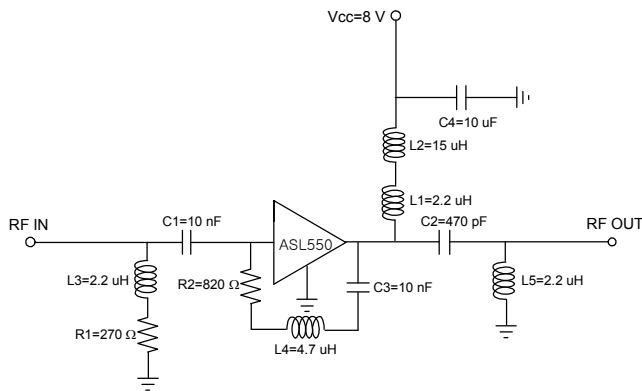
+8 V

| Frequency (MHz) | 5 | 50 | 200 |
|----------------------------------|------|------|------|
| Noise Figure (dB) | 2.3 | 1.7 | 1.9 |
| Magnitude S21 (dB) | 16.6 | 16.3 | 15.2 |
| Magnitude S11 (dB) | -20 | -15 | -14 |
| Magnitude S22 (dB) | -16 | -15 | -13 |
| Output P1dB (dBm) | 22 | 25 | 25 |
| Output IP3 ¹⁾ (dBm) | 27.5 | 38 | 43 |
| Output IP2 ^{1,2)} (dBm) | 37 | 55 | 56 |
| Device Voltage (V) | 8 | | |
| Current (mA) | 120 | | |

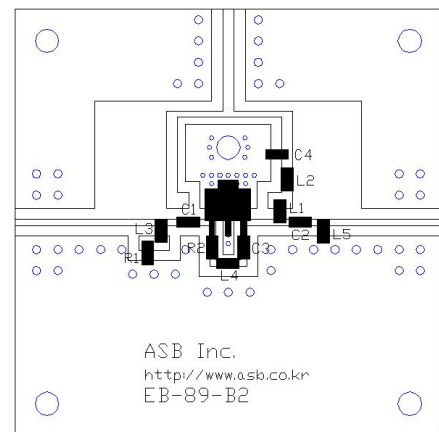
1) OIP3 is measured with two tones at an output power of +10 dBm/tone separated by 1 MHz.

2) OIP2 is measured at F1+F2 Frequency.

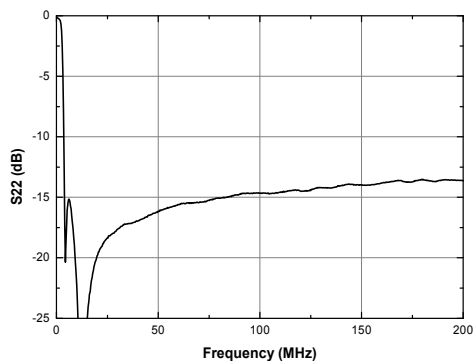
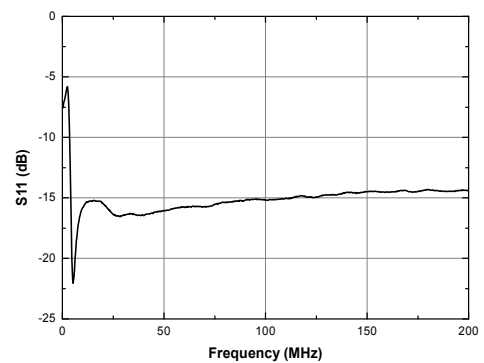
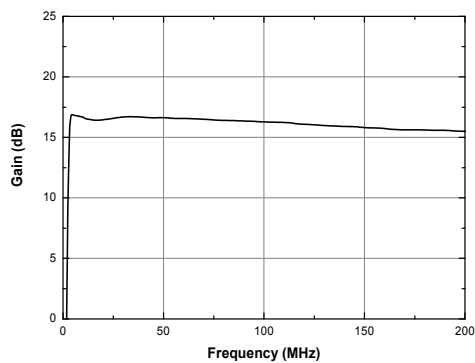
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

CATV

5 ~ 200 MHz

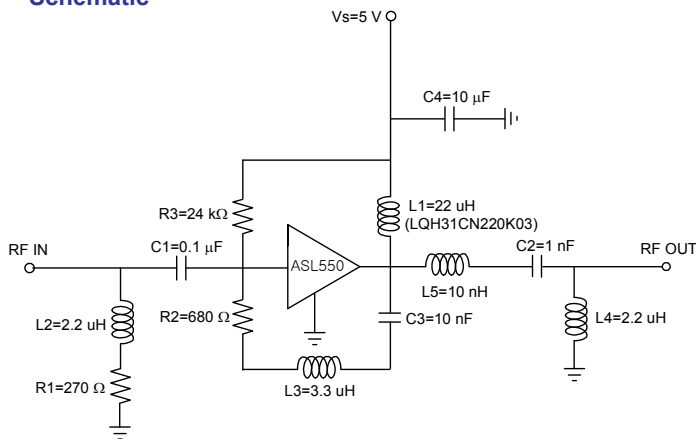
+5 V

| Frequency (MHz) | 5 | 50 | 200 |
|----------------------------------|------|------|-------|
| Noise Figure (dB) | 1.8 | 1.8 | 1.9 |
| Magnitude S21 (dB) | 15.5 | 15.5 | 15 |
| Magnitude S11 (dB) | -18 | -13 | -12.5 |
| Magnitude S22 (dB) | -10 | -14 | -13.5 |
| Output P1dB (dBm) | 20.5 | 21.5 | 21 |
| Output IP3 ¹⁾ (dBm) | 27 | 37 | 40 |
| Output IP2 ^{1,2)} (dBm) | 51 | 53.5 | 56.5 |
| Device Voltage (V) | 5 | | |
| Current (mA) | 100 | | |

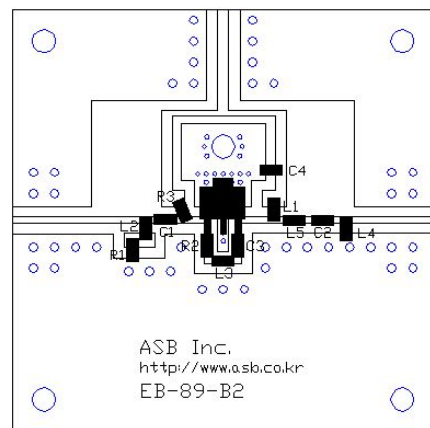
1) OIP3 is measured with two tones at an output power of +8 dBm/tone separated by 1 MHz.

2) OIP2 is measured at F1+F2 Frequency.

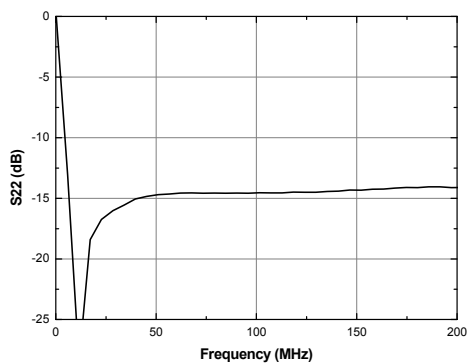
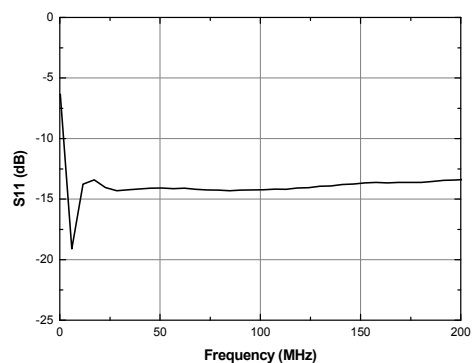
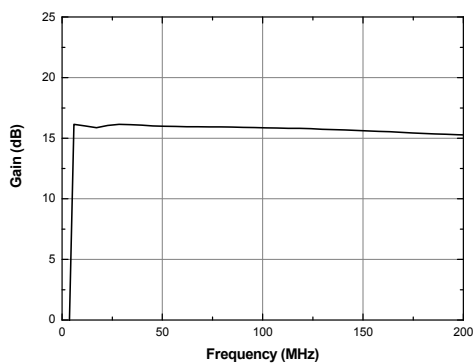
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

SMATV

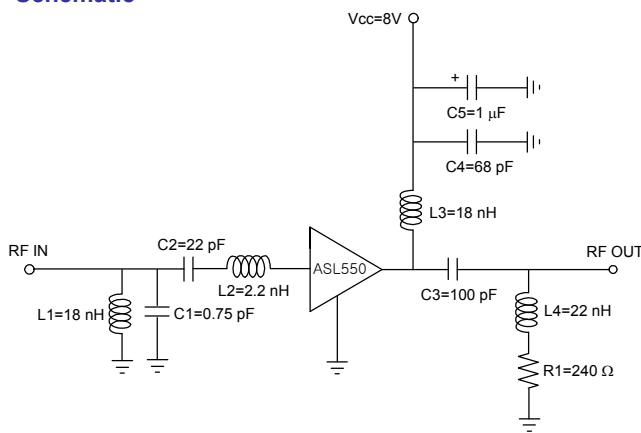
950 ~ 2600 MHz

+8 V

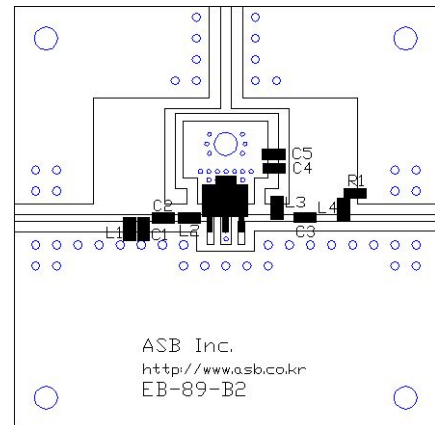
| Frequency (MHz) | 950 | 1800 | 2600 |
|--------------------------------|------|------|------|
| Noise Figure (dB) | 2.2 | 2.5 | 3.6 |
| Magnitude S21 (dB) | 15.5 | 16.5 | 14.9 |
| Magnitude S11 (dB) | -8 | -12 | -8 |
| Magnitude S22 (dB) | -16 | -8 | -9 |
| Output P1dB (dBm) | 23 | 24 | 19 |
| Output IP3 ¹⁾ (dBm) | 39 | 40.5 | 38 |
| Device Voltage (V) | 8 | | |
| Current (mA) | 120 | | |

1) OIP3 is measured with two tones at an output power of +5 dBm/tone separated by 6 MHz.

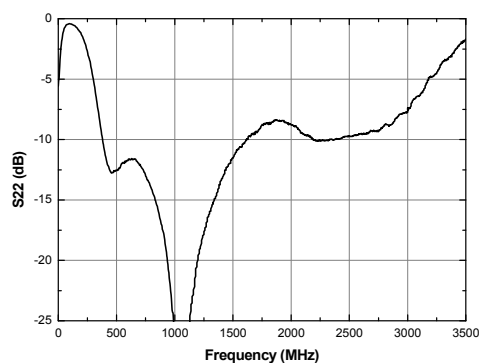
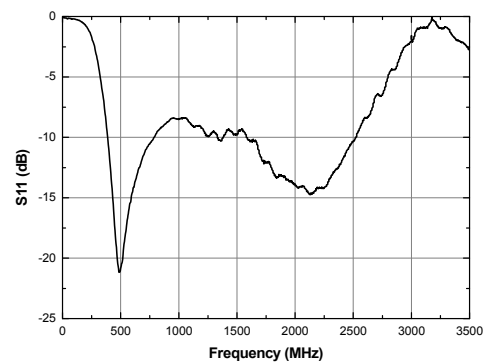
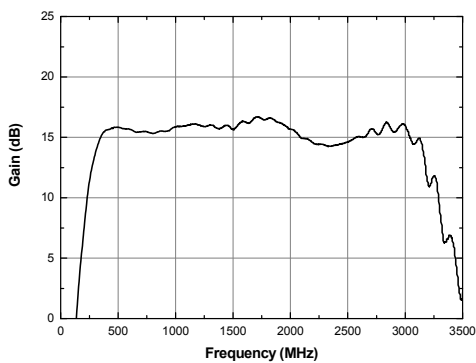
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

90 ~ 2600 MHz

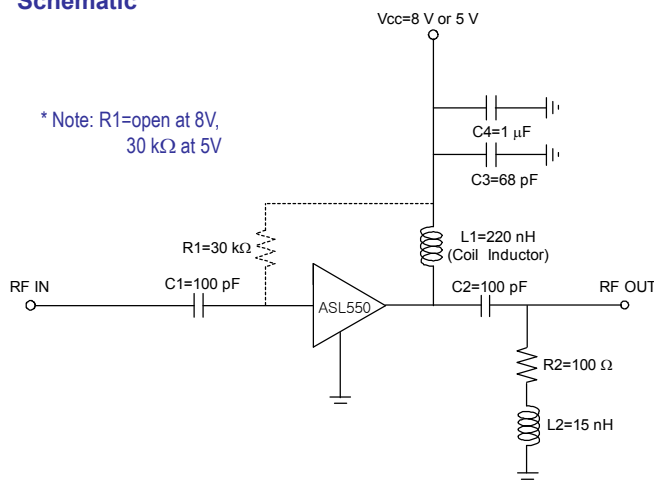
+8 V / +5 V

| Frequency (MHz) | 90 | 900 | 1800 | 2600 | 90 | 900 | 1800 | 2600 |
|--------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Noise Figure (dB) | 1.7 | 2.2 | 2.5 | 3.4 | 1.7 | 2.1 | 2.4 | 3.4 |
| Magnitude S21 (dB) | 15.4 | 15 | 13.6 | 13.8 | 15.2 | 14.8 | 13.5 | 13.7 |
| Magnitude S11 (dB) | -8 | -7 | -5 | -7 | -8 | -7 | -5 | -7 |
| Magnitude S22 (dB) | -13 | -10 | -4 | -12 | -13 | -9 | -4 | -12 |
| Output P1dB (dBm) | 24 | 24 | 22.5 | 19.5 | 20.5 | 19 | 19 | 16 |
| Output IP3 (dBm) | 42 ¹⁾ | 39 ¹⁾ | 41 ¹⁾ | 37 ¹⁾ | 40 ²⁾ | 38 ²⁾ | 37 ²⁾ | 35 ²⁾ |
| Device Voltage (V) | 8 | | | | 5 | | | |
| Current (mA) | 120 | | | | 95 | | | |

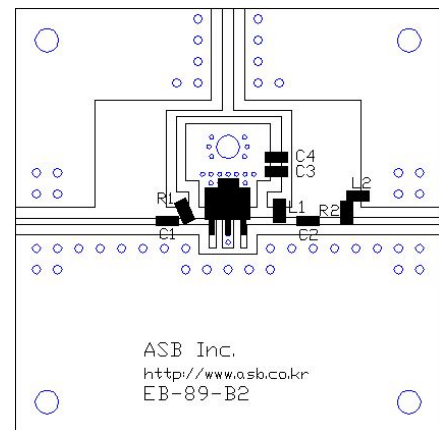
1) OIP3 is measured with two tones at an output power of +8 dBm/tone separated by 1 MHz.

2) OIP3 is measured with two tones at an output power of +3 dBm/tone separated by 1 MHz.

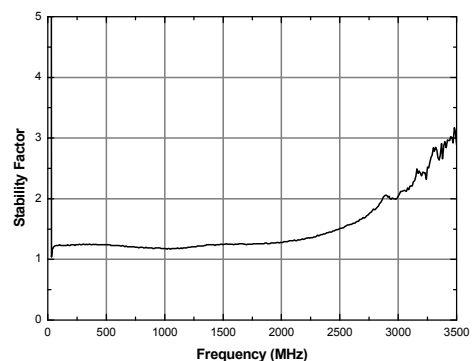
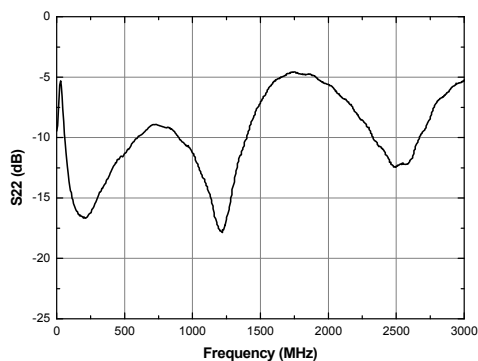
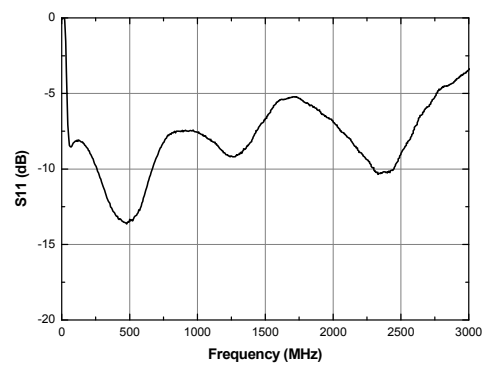
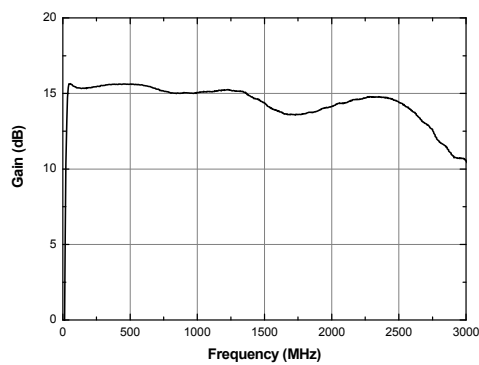
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters & K-factor



APPLICATION CIRCUIT

CATV Push-Pull

2 : 1 transformer

50 ~ 1000 MHz

+8 V

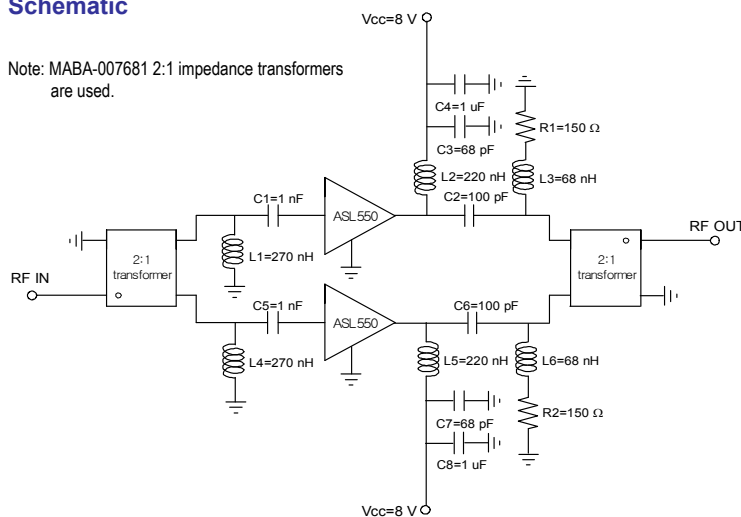
| Frequency (MHz) | 50 | 500 | 860 |
|-----------------------------------|------|------|------|
| Magnitude S21 (dB) | 15 | 14.9 | 14.1 |
| Magnitude S11 (dB) | -15 | -15 | -11 |
| Magnitude S22 (dB) | -9 | -18 | -13 |
| Output P1dB (dBm) | 26.5 | 26.5 | 26.5 |
| Output IP3 ¹⁾ (dBm) | 44 | 43 | 44 |
| Output IP2 ^{1),2)} (dBm) | 81 | 69 | 70 |
| Noise Figure (dB) | 2.5 | 2.7 | 3.1 |
| Device Voltage (V) | 8 | | |
| Current (mA) | 240 | | |

1) OIP3 and OIP2 are measured with two tones at an output power of +9 dBm/tone separated by 6 MHz.

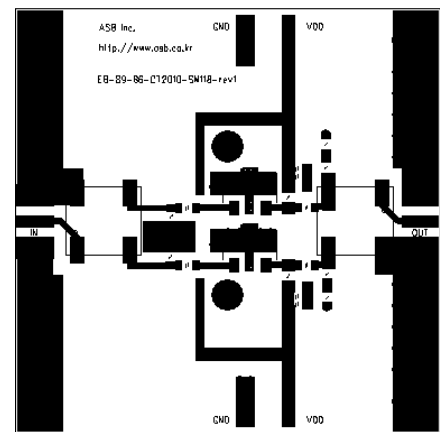
2) OIP2 is measured at F1+F2 Frequency.

Schematic

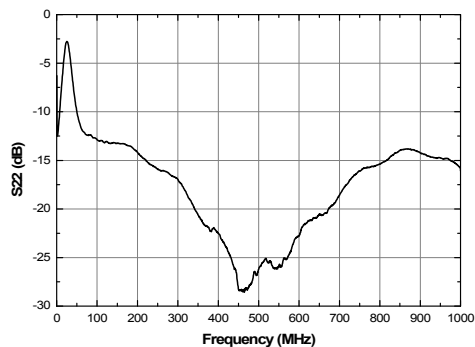
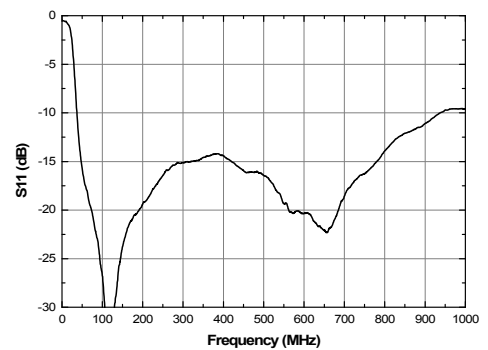
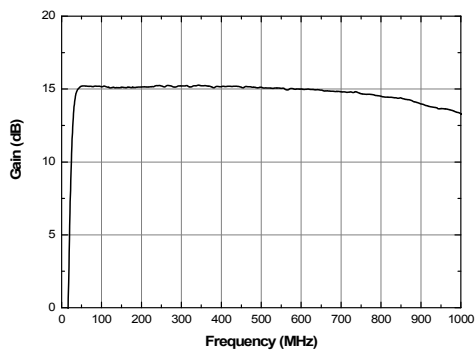
Note: MABA-007681 2:1 impedance transformers are used.



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

CATV Push-Pull

1 : 1 transformer

50 ~ 1000 MHz

+8 V

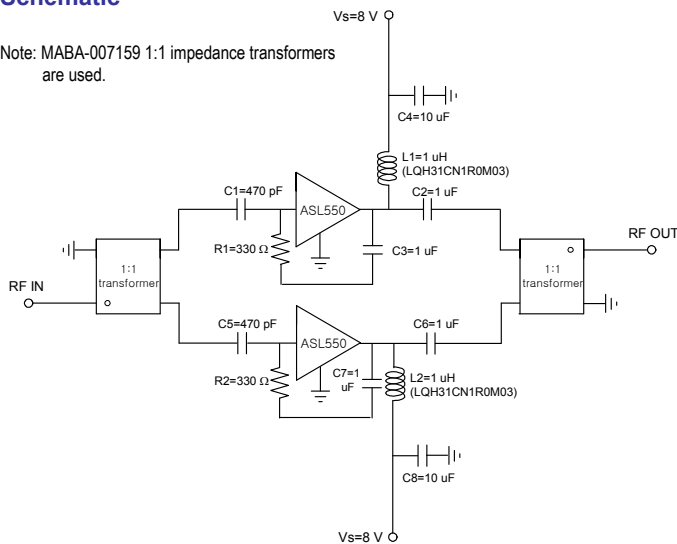
| Frequency (MHz) | 50 | 500 | 860 |
|-----------------------------------|------|------|------|
| Magnitude S21 (dB) | 11.5 | 11.3 | 11 |
| Magnitude S11 (dB) | -20 | -14 | -17 |
| Magnitude S22 (dB) | -20 | -13 | -16 |
| Output P1dB (dBm) | 26 | 27.5 | 27 |
| Output IP3 ¹⁾ (dBm) | 41 | 46 | 44.5 |
| Output IP2 ^{1),2)} (dBm) | 67 | 68 | 64 |
| Noise Figure (dB) | 3.0 | 2.9 | 2.9 |
| Device Voltage (V) | 8 | | |
| Current (mA) | 240 | | |

1) OIP3 and OIP2 are measured with two tones at an output power of +10 dBm/tone separated by 6 MHz.

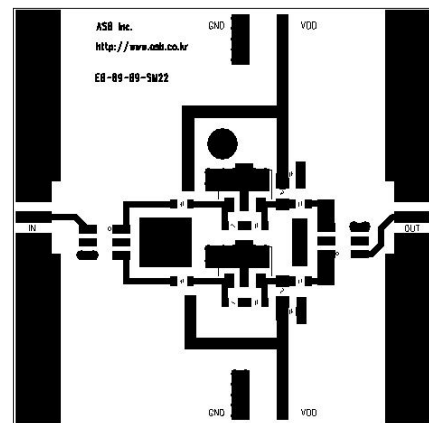
2) OIP2 is measured at F1+F2 Frequency.

Schematic

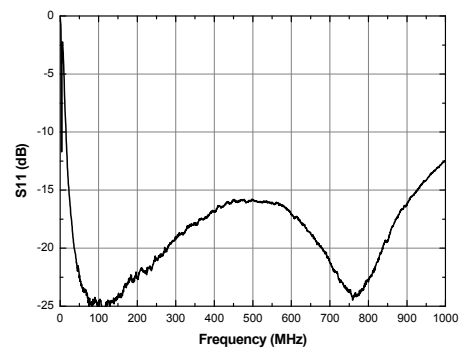
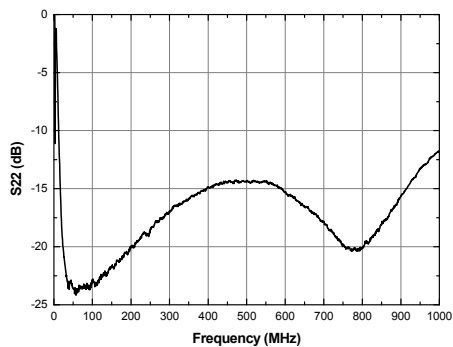
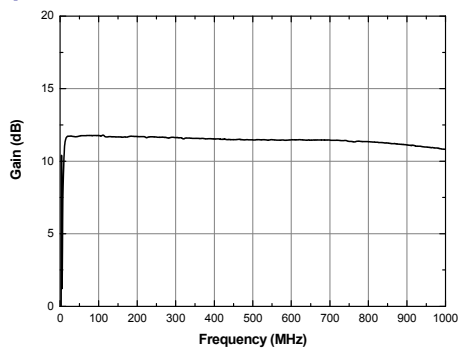
Note: MABA-007159 1:1 impedance transformers are used.



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

CATV Push-Pull

2 : 1 transformer

5 ~ 200 MHz

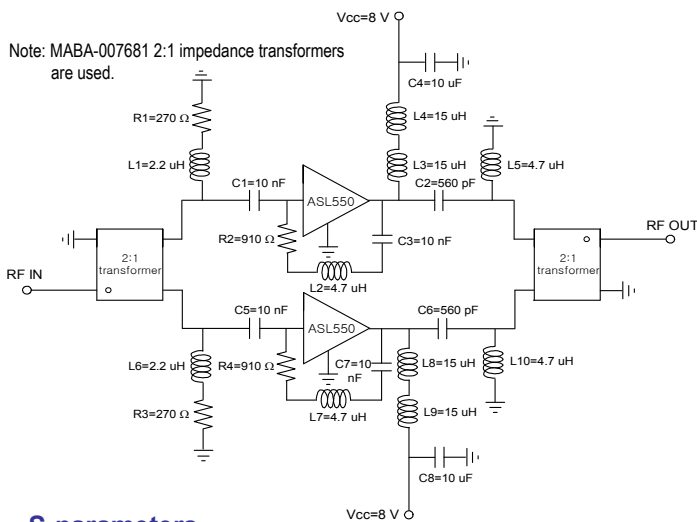
+8 V

| Frequency (MHz) | 5 | 50 | 200 |
|-----------------------------------|------|------|------|
| Magnitude S21 (dB) | 16.2 | 15.8 | 14.5 |
| Magnitude S11 (dB) | -17 | -15 | -14 |
| Magnitude S22 (dB) | -16 | -15 | -14 |
| Output P1dB (dBm) | 26.5 | 27.5 | 27.5 |
| Output IP3 ¹⁾ (dBm) | 36.5 | 40.5 | 43.5 |
| Output IP2 ^{1),2)} (dBm) | 72 | 73 | 77 |
| Noise Figure (dB) | 2.9 | 2.2 | 2.4 |
| Device Voltage (V) | 8 | | |
| Current (mA) | 240 | | |

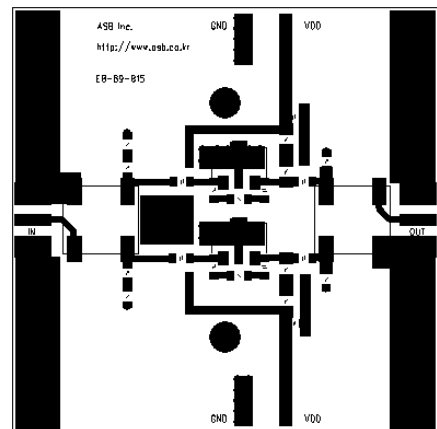
1) OIP3 and OIP2 are measured with two tones at an output power of +12 dBm/tone separated by 1 MHz.

2) OIP2 is measured at F1+F2 Frequency.

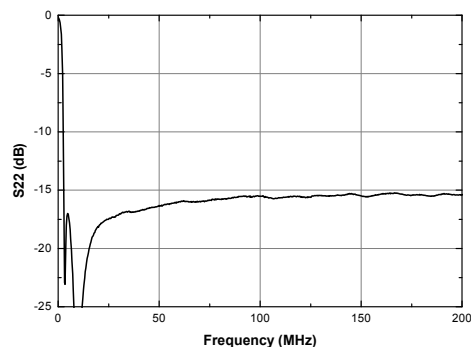
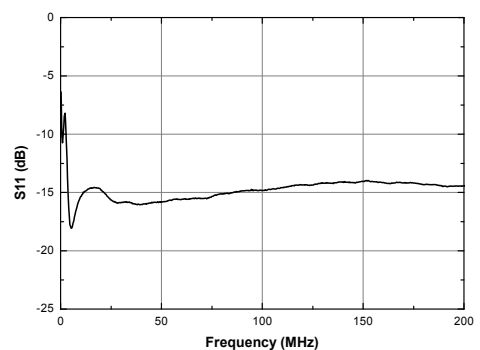
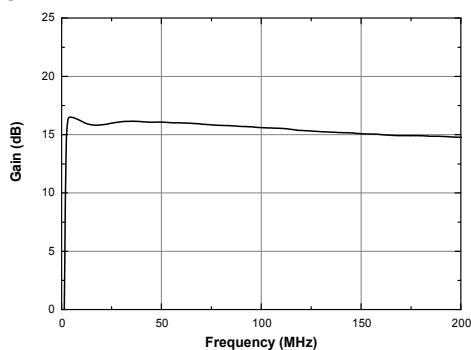
Schematic



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters



APPLICATION CIRCUIT

CATV Push-Pull

1 : 1 transformer

5 ~ 200 MHz

+8 V

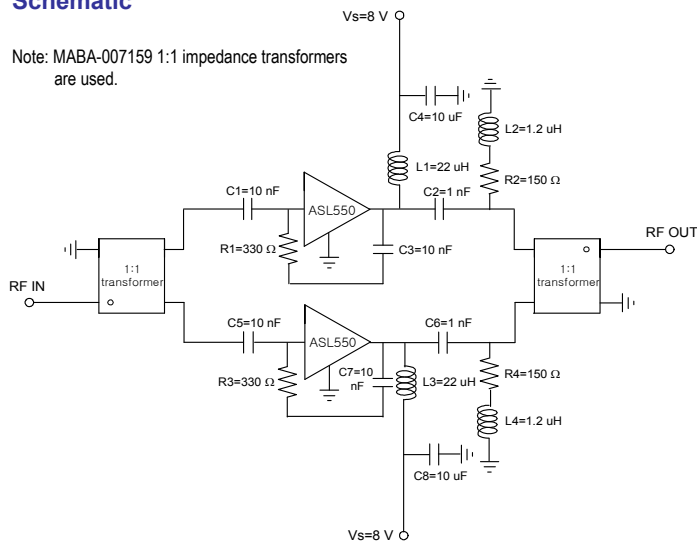
| Frequency (MHz) | 5 | 50 | 200 |
|-----------------------------------|------|------|------|
| Magnitude S21 (dB) | 12.5 | 11.8 | 11.7 |
| Magnitude S11 (dB) | -20 | -20 | -20 |
| Magnitude S22 (dB) | -18 | -20 | -20 |
| Output P1dB (dBm) | 25 | 25.5 | 26.5 |
| Output IP3 ¹⁾ (dBm) | 34 | 41.5 | 46 |
| Output IP2 ^{1),2)} (dBm) | 47 | 70 | 74 |
| Noise Figure (dB) | 3.0 | 2.8 | 2.8 |
| Device Voltage (V) | 8 | | |
| Current (mA) | 240 | | |

1) OIP3 and OIP2 are measured with two tones at an output power of +12 dBm/tone separated by 1 MHz.

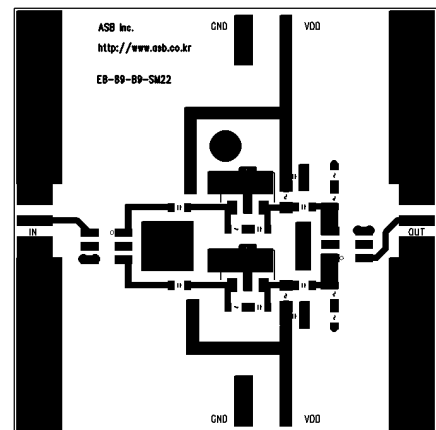
2) OIP2 is measured at F1+F2 Frequency.

Schematic

Note: MABA-007159 1:1 impedance transformers are used.



Board Layout (FR4, 40x40 mm², 0.8T)



S-parameters

