

Features

- SiGe Technology
- 22 dB Gain at 900 MHz
- +18 dBm P1dB
- +31 dBm Output IP3
- 3.0 dB Noise Figure
- Single +4.5 V Supply
- SOT-89 Surface Mount Package

Description

The ASG101 is designed for high linearity, high gain, and low noise over a wide range of frequency, being suitable for use in both receiver and transmitter of wireless and wireline telecommunication systems. The product is manufactured using a state-of-the-art SiGe HBT process of the company's own, making it cost-effective and highly reliable. The amplifiers are available in a low cost SOT-89 package completing stringent DC and RF tests.



Package Style: SOT-89

Specifications ¹⁾

Parameters	Units	Min.	Typ.	Max.
Frequency Range	MHz		250 - 2500	
Gain	dB		22	
Input VSWR	-		1.5	
Output VSWR	-		1.5	
Output IP3 ²⁾	dBm	28	31	33
Noise Figure	dB		3.0	
Output P1dB	dBm		18	
Supply Current	mA	40	55	75
Supply Voltage	V		4.5	
Thermal Resistance, R _{th} ⁴⁾	°C/W		99.6	

1) Measurement conditions are as follows: T = 25°C, V_s = 4.5 V, Freq. = 900 MHz, 50 ohm system.

2) S11 & S22 can be improved, at a specific frequency, by moving an input shunt capacitor (C2) along an input transmission line.

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

4) The thermal resistance was determined at a DC power of 0.243 W (V_{CC}=4.5 V, I_C=54 mA) with RF signal and a lead temperature of 90.3 °C.

Absolute Maximum Ratings

Parameters	Rating	Remarks
Operating Case Temperature	-40 to + 85°C	
Storage Temperature	-40 to + 150°C	
Supply Voltage	6 V	
Input RF Power (continuous)	+6 dB above Input P1dB	

Application Note

Application circuit for 900 MHz

Application circuit for 2 GHz

Ordering Information

Part Number	Description
ASG101	High linearity medium power amplifier (Available in tape and reel)
EB-ASG101-900	Fully assembled evaluation kit (900 MHz)
EB-ASG101-2000	Fully assembled evaluation kit (2000 MHz)

Applications

- CDMA, GSM, W-CDMA, PCS
- PA Driver Amplifier
- Gain Block
- CATV Amplifier
- IF Amplifier

More Information

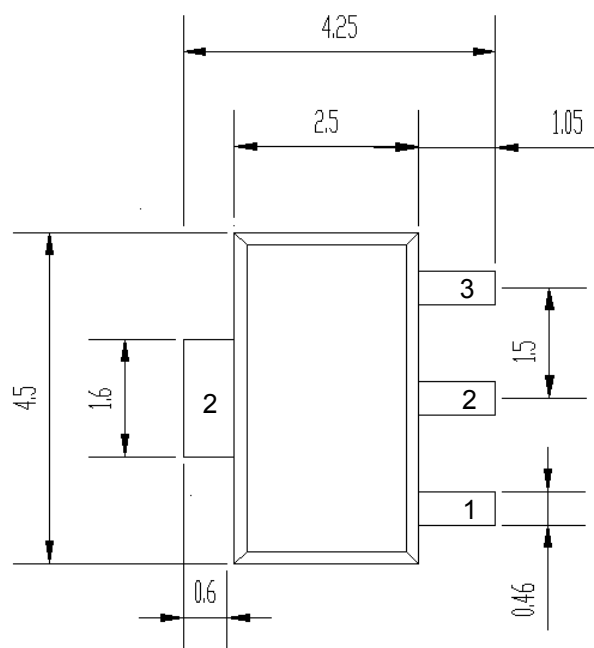
Website: www.asb.co.kr

E-mail: sales@asb.co.kr

Tel: (82) 42-528-7220

Fax: (82) 42-528-7222

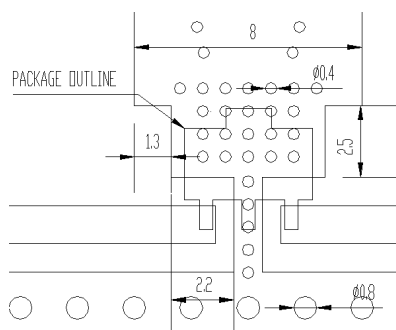
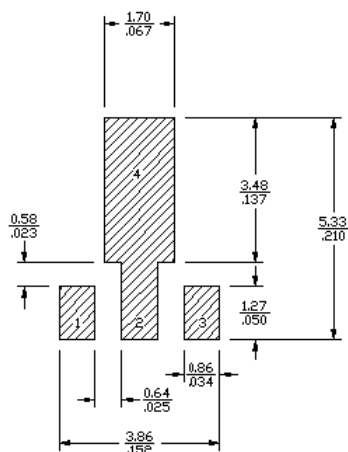
ASB Inc., 4th Fl. Venture Town
Bldg., 367-17 Goijeong-Dong,
Seo-Gu, Daejeon 302-716, Korea



Technical drawing of a mechanical part showing a cross-section. The drawing includes two dimension lines: a vertical one on the left labeled '1.5' and a horizontal one on the right labeled '0.38'. The part has a central trapezoidal section flanked by two rectangular sections.

Function	Pin No.
Input	1
Ground	2
Output	3

Mounting Configuration



(Unit: 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.

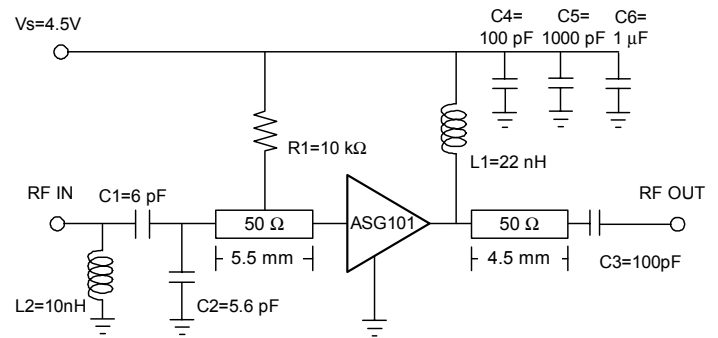
Application Circuit: 900 MHz

Typical Performance

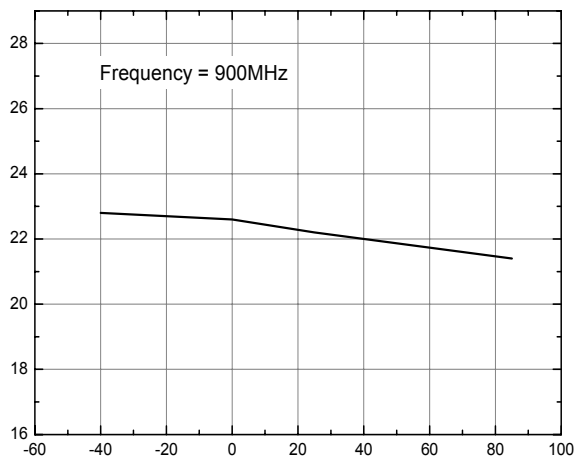
Frequency	900 MHz
Magnitude S21	22 dB
Magnitude S11 ¹⁾	-16 dB
Magnitude S22 ¹⁾	-19 dB
Output P1dB	18 dBm
Output IP3 ²⁾	31 dBm
Noise Figure	3.0 dB
Supply Voltage	4.5 V
Current	55 mA

- 1) S11 & S22 can be improved, at a specific frequency, by moving an input shunt capacitor (C2) along an input transmission line.
 2) OIP3 is measured with two tones at an output power of +5 dBm/tone separated by 1 MHz.

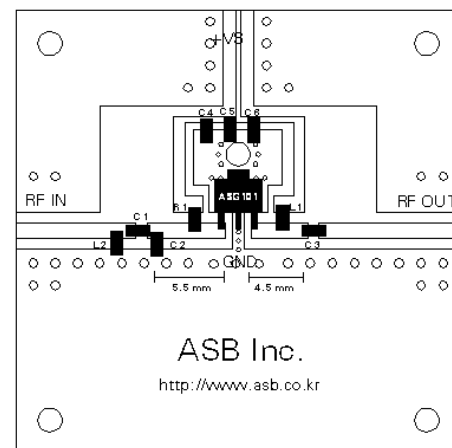
Schematic



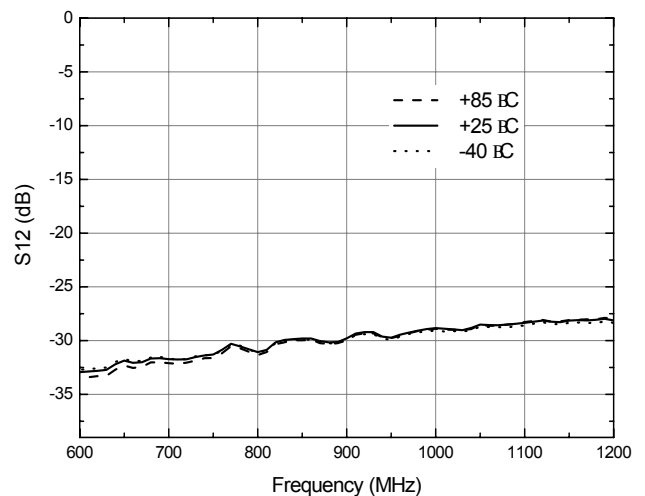
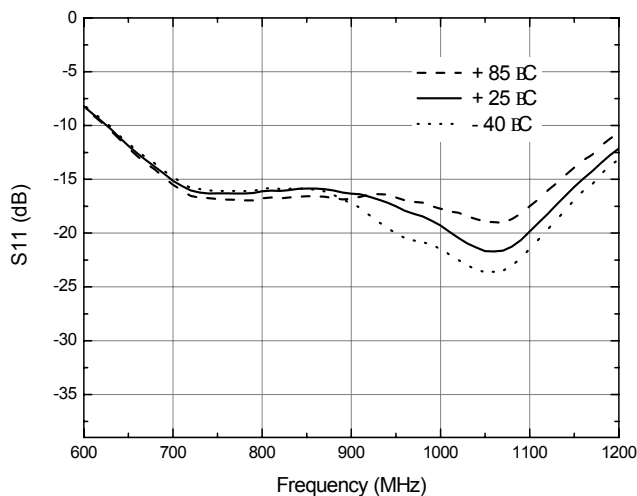
Gain vs. Temperature

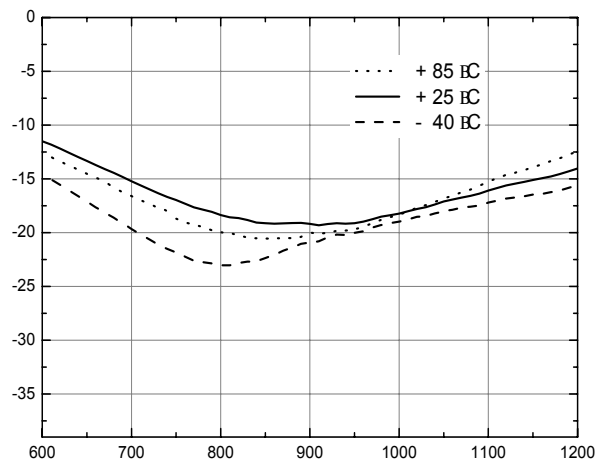
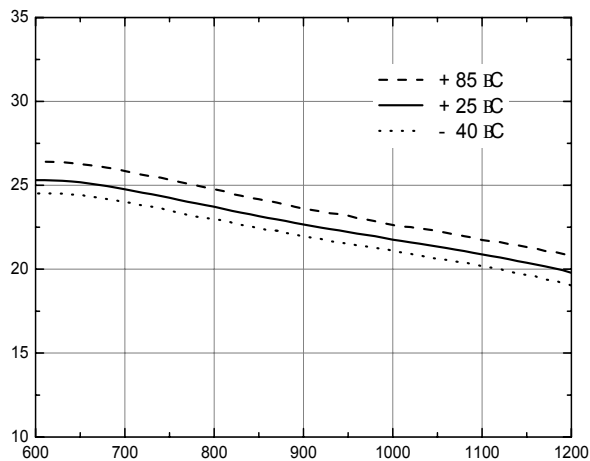


Board Layout (FR4, 40x40 mm², 0.8T)

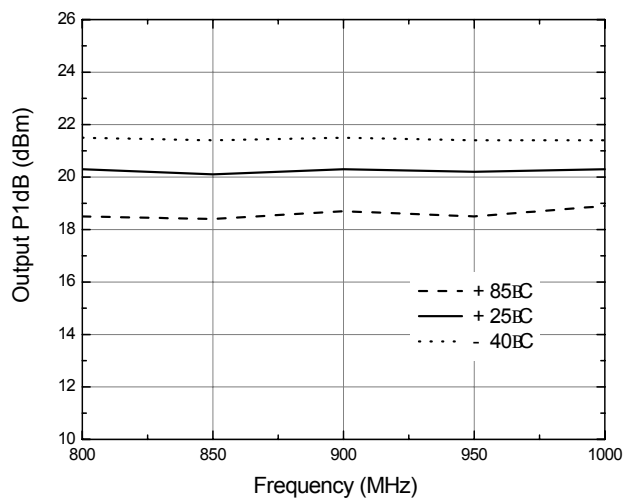


S-parameters

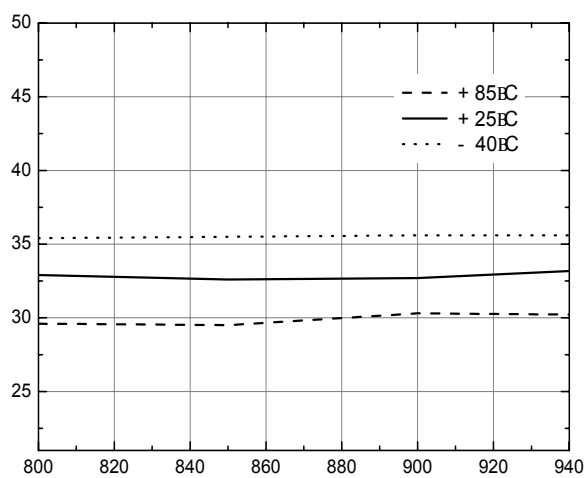




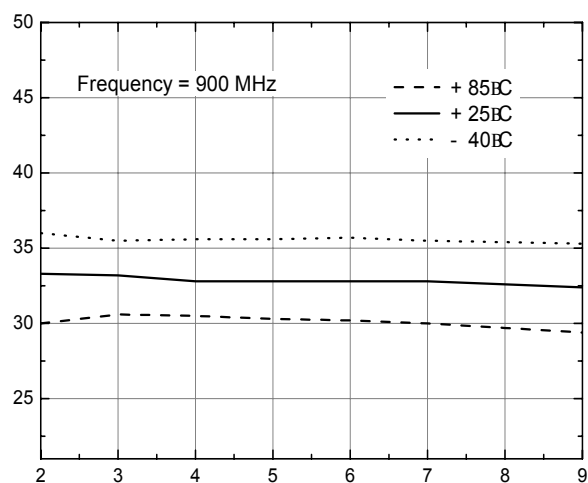
Output P1 vs. Frequency



Output IP3 vs. Frequency
(P_{out} per tone = 5 dBm)



Output IP3 vs. Tone Power



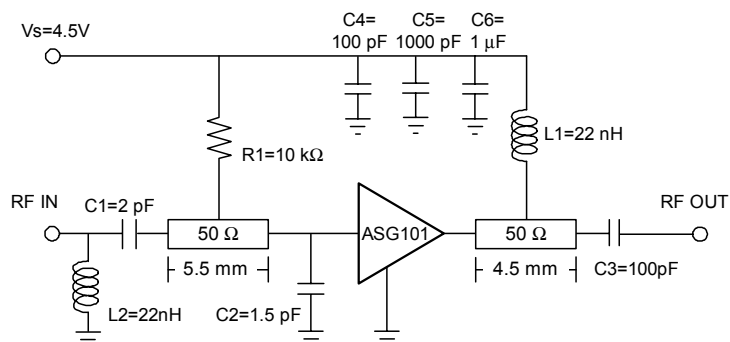
Application Circuit: 2000 MHz

Typical Performance

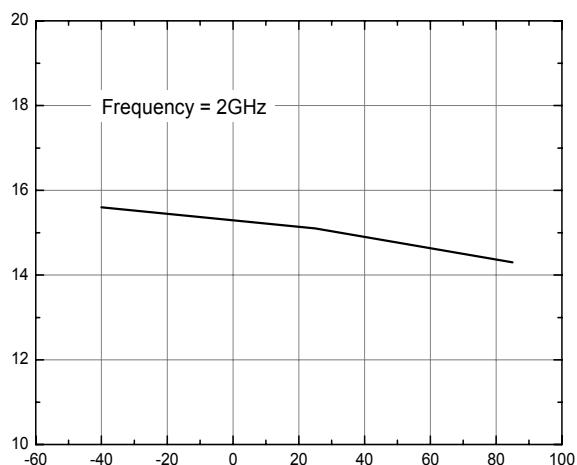
Frequency	2000 MHz
Magnitude S21	15 dB
Magnitude S11 ¹⁾	-20 dB
Magnitude S22 ¹⁾	-17 dB
Output P1dB	18 dBm
Output IP3 ²⁾	31 dBm
Noise Figure	4.0 dB
Supply Voltage	4.5 V
Current	55 mA

- 1) S11 & S22 can be improved, at a specific frequency, by moving an input shunt capacitor (C2) along an input transmission line.
2) OIP3 is measured with two tones at an output power of +5 dBm/tones separated by 1 MHz.

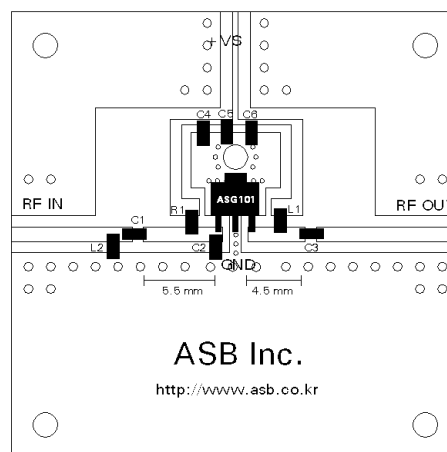
Schematic



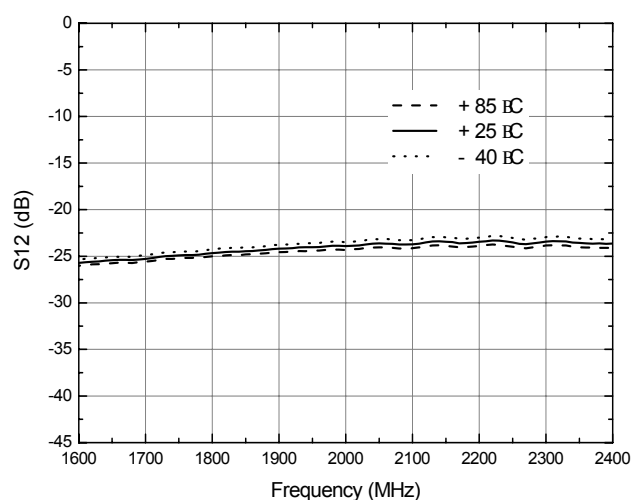
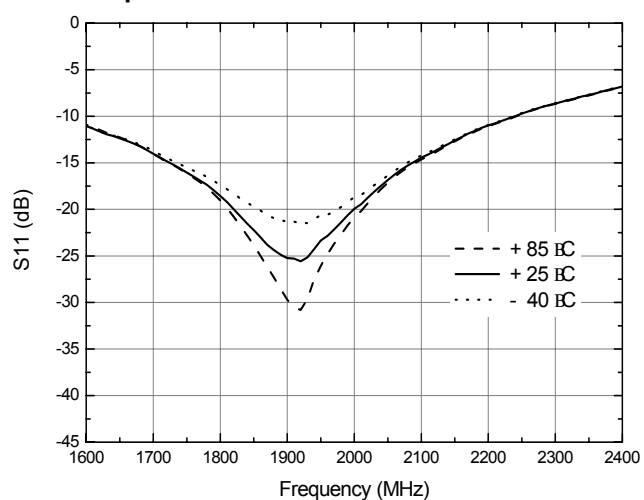
Gain vs. Temperature

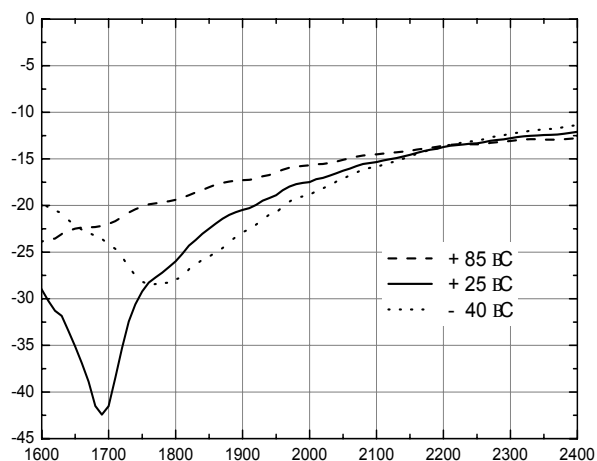
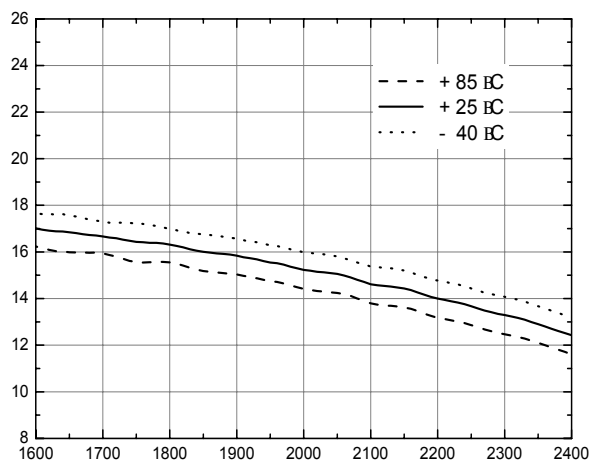


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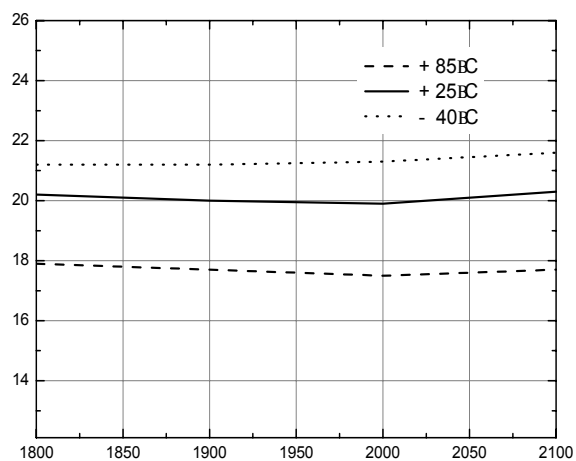


S-parameters

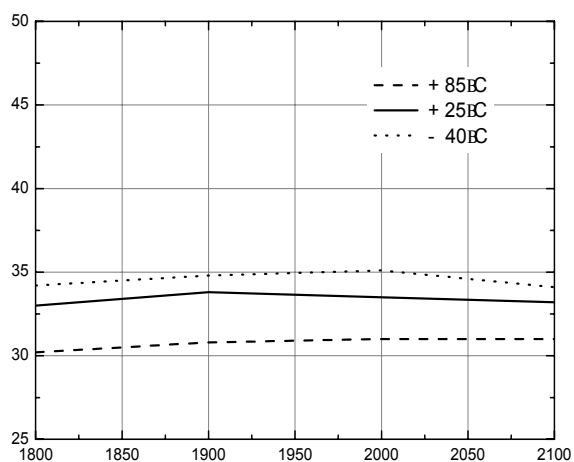




Output P1 vs. Frequency



Output IP3 vs. Frequency
(P_{out} per tone = 5 dBm)



Output IP3 vs. Tone Power

