

### Features

- SiGe Technology
- 19 dB Gain at 900 MHz
- +19 dBm P1dB
- +40 dBm Output IP3
- 2.9 dB Noise Figure
- MTTF > 100 Years
- Single +5 V Supply
- SOT-89 Surface Mount Package

### Description

The ASG303 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 <sup>1)</sup>

Parameters	Units	Min.	Typ.	Max.
Frequency Range	MHz		250 - 2500	
Gain	dB	18	19	
Input VSWR	-		1.5	
Output VSWR	-		1.5	
Output IP3 <sup>2)</sup>	dBm	38	40	
Noise Figure	dB		2.9	
Output P1dB	dBm		19	
Supply Current	mA		55	
Supply Voltage	V		5	
Thermal Resistance, R <sub>th</sub> <sup>3)</sup>	°C/W		78.2	

1) Measurement conditions are as follows: T = 25°C, V<sub>CC</sub> = 5 V, Freq. = 900 MHz, 50 ohm system.

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

3) The thermal resistance was determined at a DC power of 0.270 W (V<sub>CC</sub>=5 V, I<sub>C</sub>=54 mA) with RF signal and a lead temperature of 28.8 °C

### Applications

- CDMA, GSM, W-CDMA, PCS
- Gain Block
- CATV Amplifier
- IF Amplifier
- Bluetooth Amplifier
- Wireless LAN Amplifier

### Absolute Maximum Ratings

Parameters	Rating	Remarks
Operating Case Temperature	-40 to +85°C	
Storage Temperature	-40 to +150°C	
Supply Voltage	8 V	
Operating Junction Temperature	150°C	
Input RF Power (continuous)	+6 dB above Input P1dB	

### Application Note

### Ordering Information

Part Number	Description
ASG303	High linearity medium power amplifier (Available in tape and reel)
EB-ASG303-900	Fully assembled evaluation kit (900 MHz)
EB-ASG303-2000	Fully assembled evaluation kit (2000 MHz)

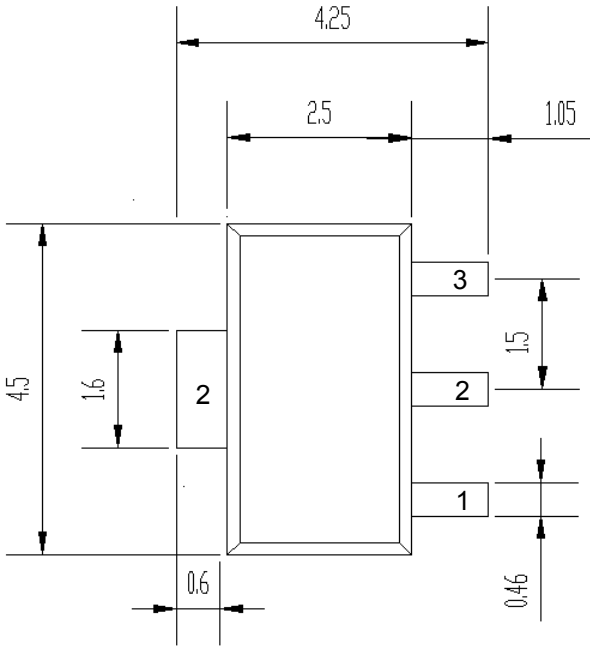
### More Information

Website: [www.asb.co.kr](http://www.asb.co.kr)  
E-mail: [sales@asb.co.kr](mailto:sales@asb.co.kr)

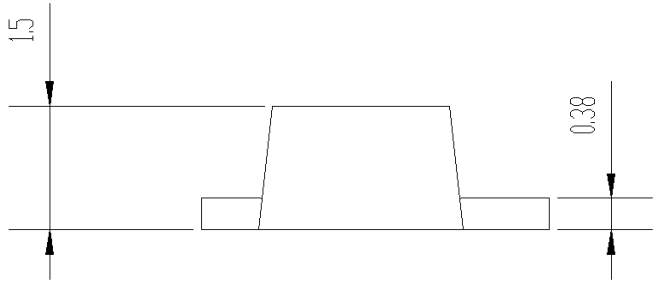
Tel: (82) 42-528-7220  
Fax: (82) 42-528-7222

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

Outline Drawing



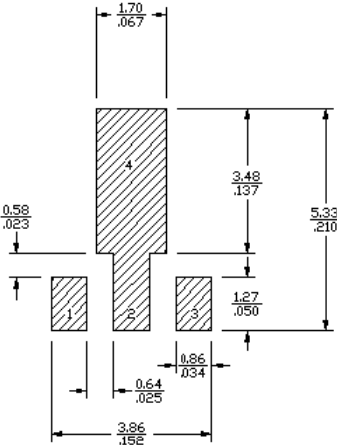
(Unit: mm)



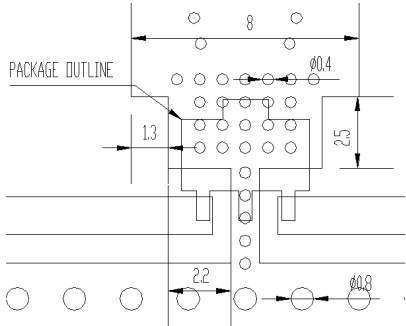
Pin Description

Function	Pin No.
Input	1
Ground	2
Output	3

Land Pattern



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.

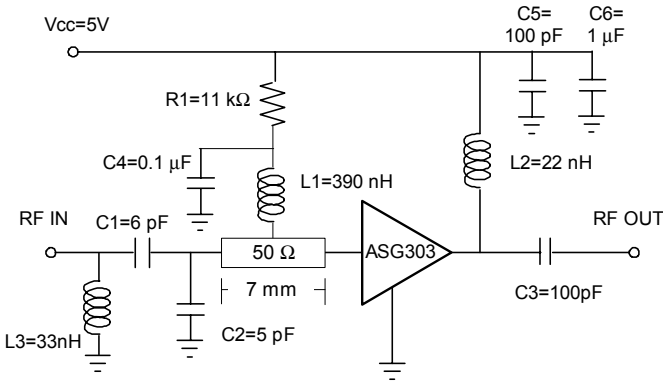
Application Circuit: 900 MHz

Typical Performance

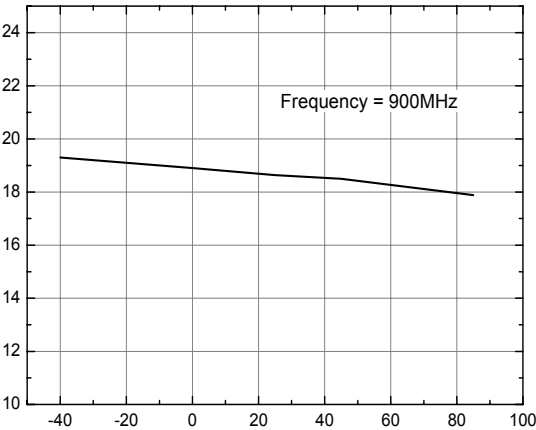
Frequency	900 MHz
Magnitude S21	19 dB
Magnitude S11	-16 dB
Magnitude S22	-16 dB
Output P1dB	19 dBm
Output IP3 <sup>1)</sup>	40 dBm
Noise Figure	2.8 dB
Supply Voltage	5 V
Current	55 mA

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

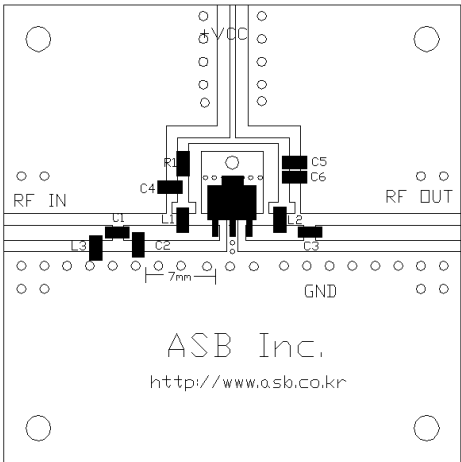
Schematic



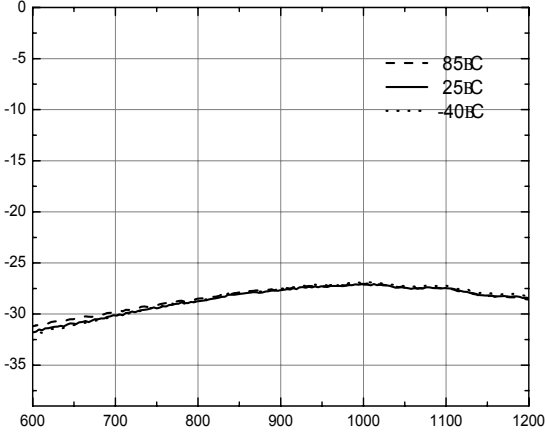
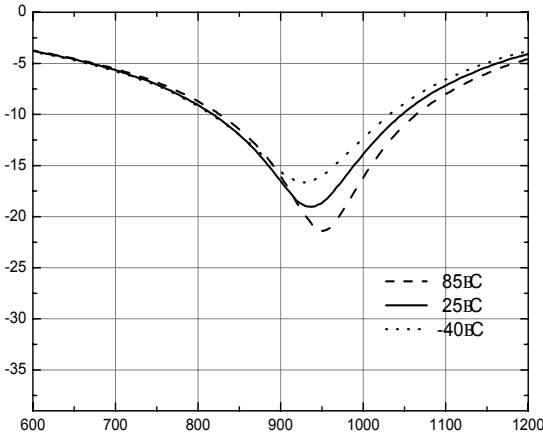
Gain vs. Temperature

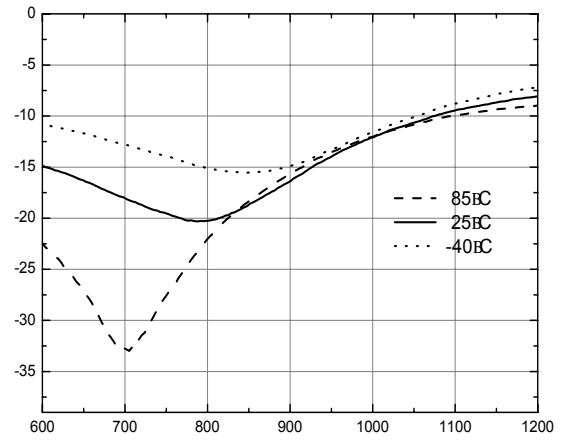
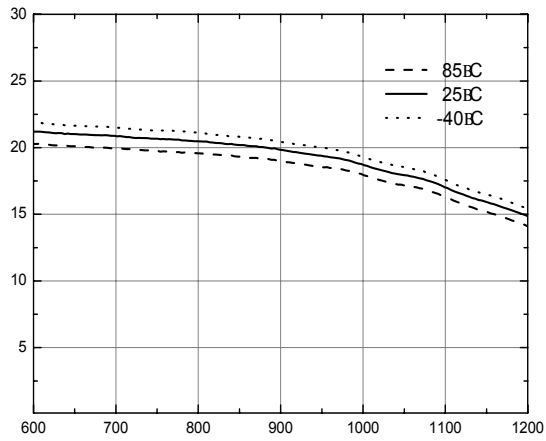


Board Layout (FR4, 40x40 mm<sup>2</sup>, 0.8T)

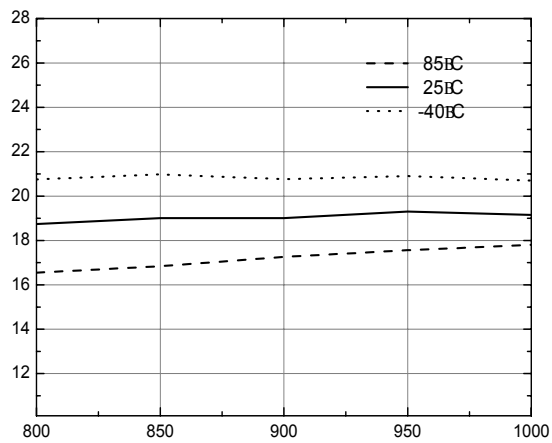


S-parameters

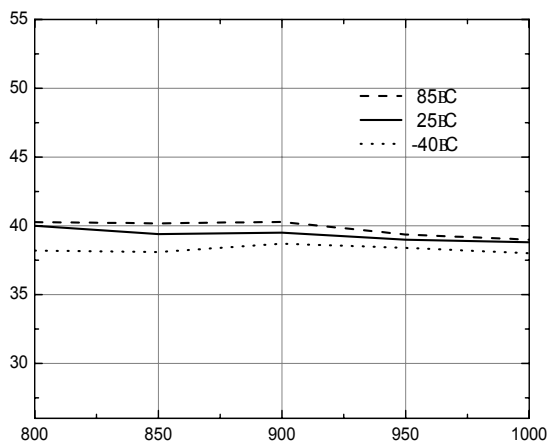




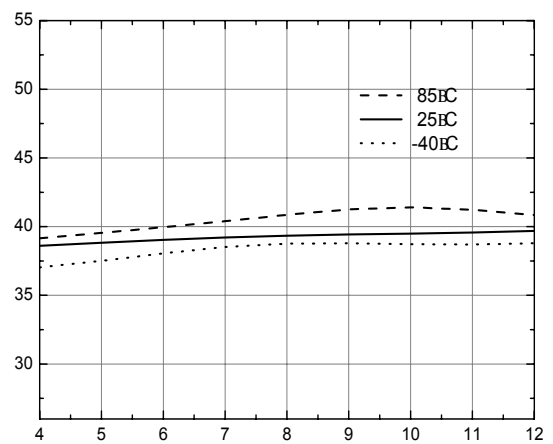
OP1 vs. Frequency



Output IP3 vs. Frequency  
(P<sub>out</sub> per tone = 8dBm)



Output IP3 vs. Tone Power  
(Frequency = 900MHz)



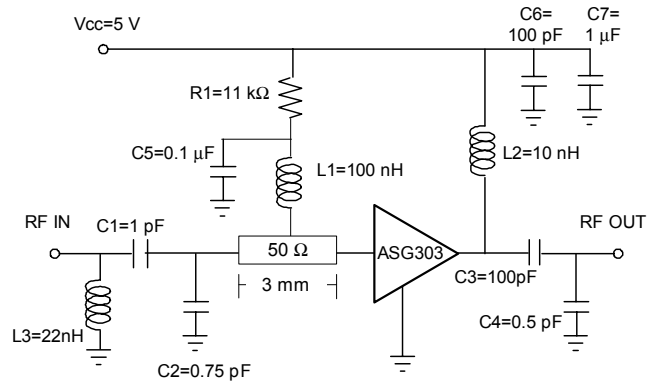
## Application Circuit: 2000 MHz

### Typical Performance

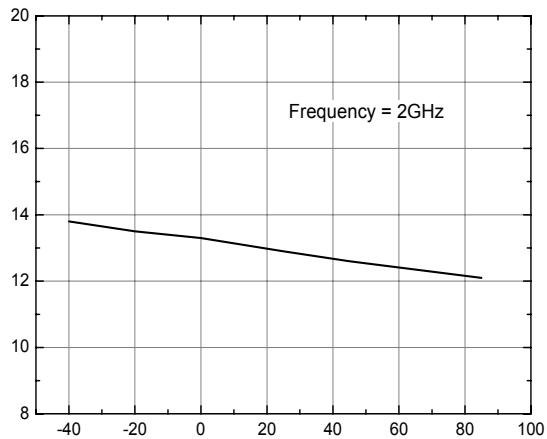
Frequency	2000 MHz
Magnitude S21	12.5 dB
Magnitude S11	-24 dB
Magnitude S22	-23 dB
Output P1dB	19 dBm
Output IP3 <sup>1)</sup>	40 dBm
Noise Figure	3.3 dB
Supply Voltage	5 V
Current	55 mA

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

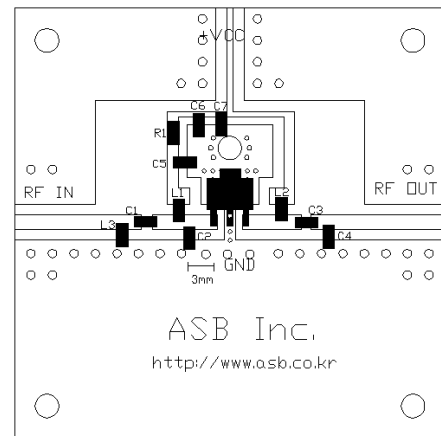
### Schematic



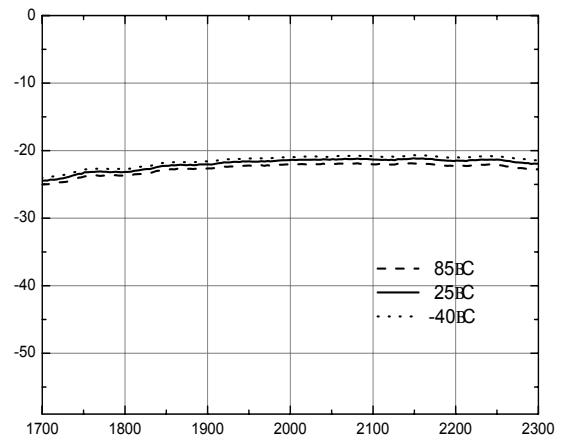
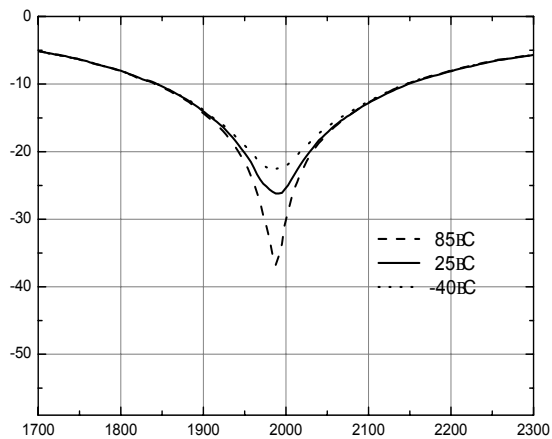
### Gain vs. Temperature

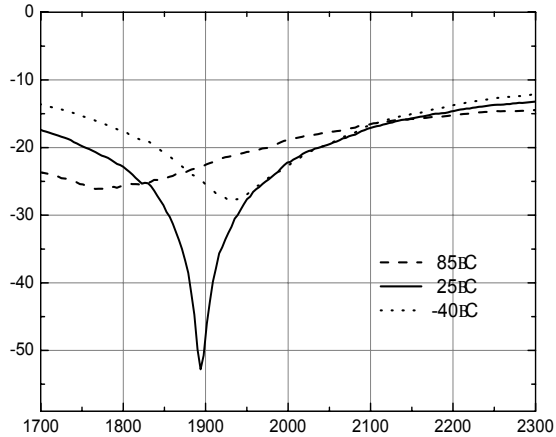
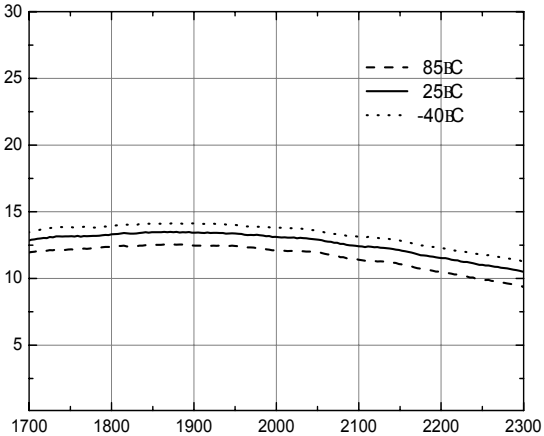


### Board Layout (FR4, 40x40 mm<sup>2</sup>, 0.8T)

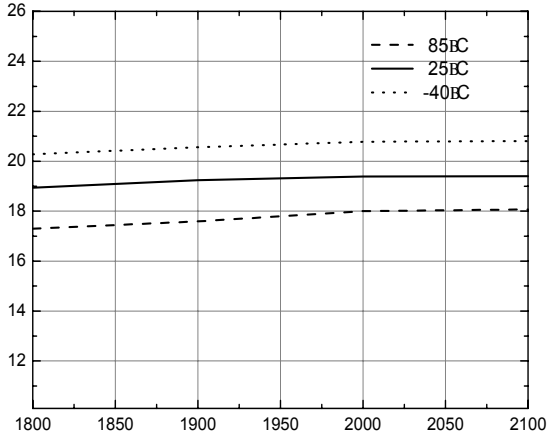


### S-parameters

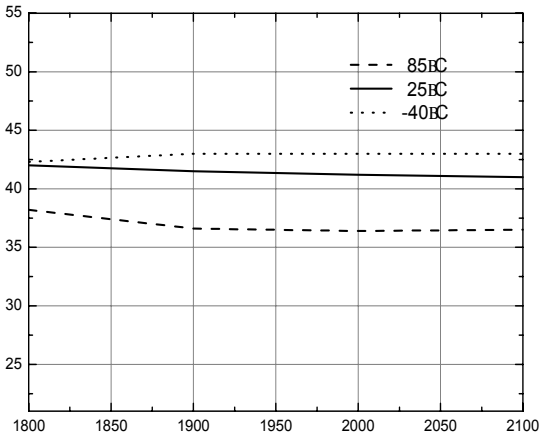




OP1 vs. Frequency



Output IP3 vs. Frequency  
(Pout per tone = 8dBm)



Output IP3 vs. Tone Power  
(Frequency = 2000MHz)

