

Product Features

- 10 ~ 4000MHz
- GaAs E-pHEMT
- 0.7dB Noise Figure
- 32dBm Output IP3
- 14dB Gain at 1900MHz
- 14dBm P1 dB
- SOT-143 Package
- Single Supply Voltage
- Pb Free / RoHS Standard

Application

- HF-Band, Cellular, CDMA, W-CDMA, Wimax Front-end Amplifier
- Low-Noise High Linearity Amplifier



Package Type: SOT-143

Description

AE608 is a Low-noise amplifier designed with GaAs E-pHEMT in a low cost SOT-143 package. This E-pHEMT amplifier is designed as low-noise devices for infrastructure equipment in the 10~4000MHz Wireless technologies such as HF-Band, Cellular, GSM, PCS, CDMA, W-CDMA, Wibro, Bluetooth, Wimax.

Specifications

PARAMETER	Units	Min	Typ	Max
Frequency Range	MHz		10- 4000	
Gain (S_{21})	dB	12	14	
Input Return Loss (S_{11})	dB		-18	
Output Return Loss (S_{22})	dB		-10	
Output 3 rd Order Intercept Point (OIP3)	dBm	29	32	
Output 1dB compression Point (P_{1dB})	dBm	12	14	
Noise Figure	dB		0.7	0.9
DC Operating Current	mA	30	45	60
Operating Gate Voltage($V_{ds}=3V, I_{ds}=45mA$)	V		0.4	
Threshold voltage	V	0.1	0.25	0.4

Test Condition

- ① 1900MHz, $V_{dd}=+3V$, 50ohm System at 25°C
- ② OIP3 is measured with two tones, at an output power of +0dBm/tone separated by 1MHz.

Absolute Maximum Ratings

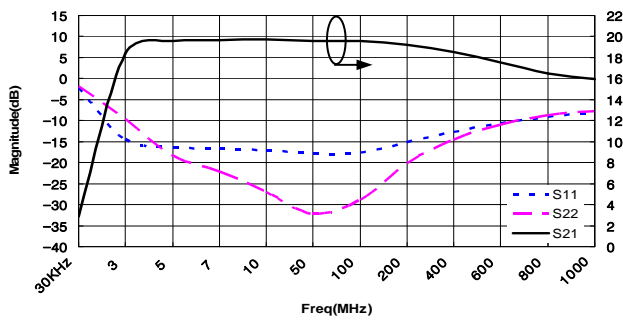
PARAMETER	Rating	Remark
Operating Case Temperature (°C)	-40 ~ 85	
Storage Temperature (°C)	-50 ~ 125	
Drain-Source Voltage	+7V	
Drain Current	120mA	
Gate-Source Voltage	-5V ~ 1V	
Channel Temperature	150°C	
RF Input Power	20dBm	

Frequency Range : 10~1000MHz

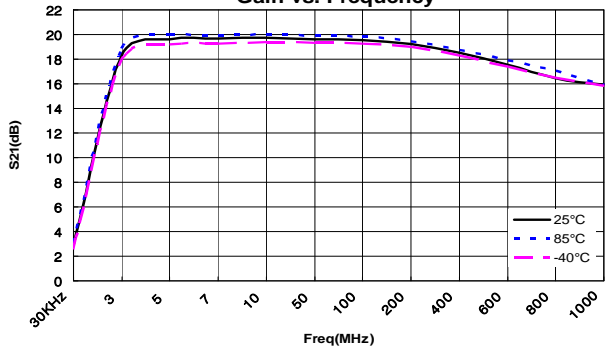
HF-Band, Cellular Performance Data ($V_d=2.5V, I_d=25mA, T_c=25^\circ C$)

Items	Data	Remarks	Items	Data	Remarks
Gain	18 dB	500 MHz	NF	1.4 dB	10~1000 MHz
OIP3	23 dBm	500 MHz	P1dB	12 dBm	500 MHz

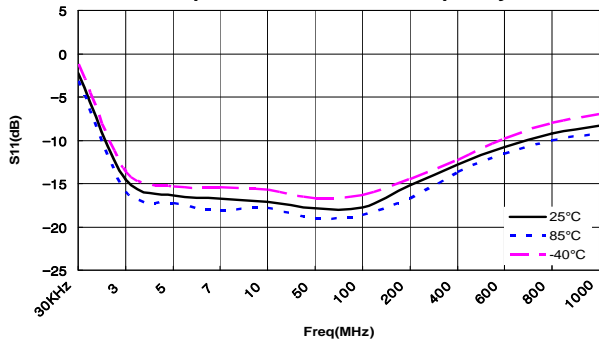
S-Parameter vs. Frequency(25°C)



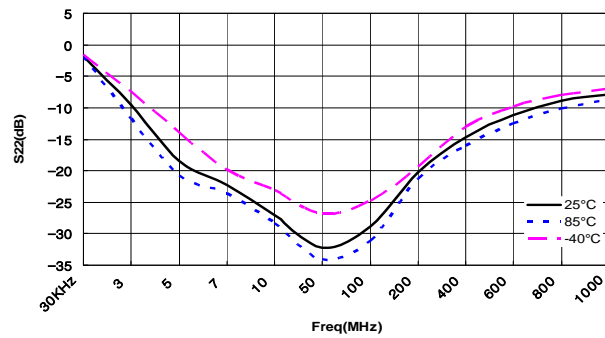
Gain vs. Frequency



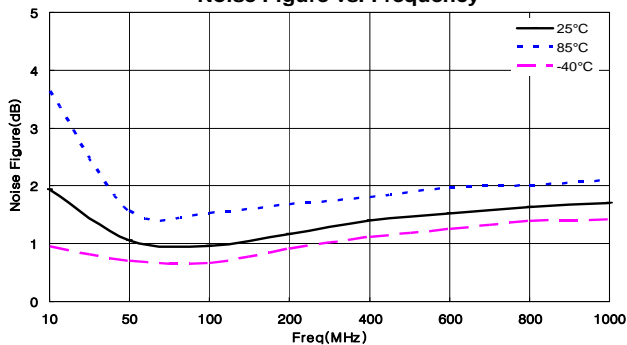
Input Return Loss vs. Frequency



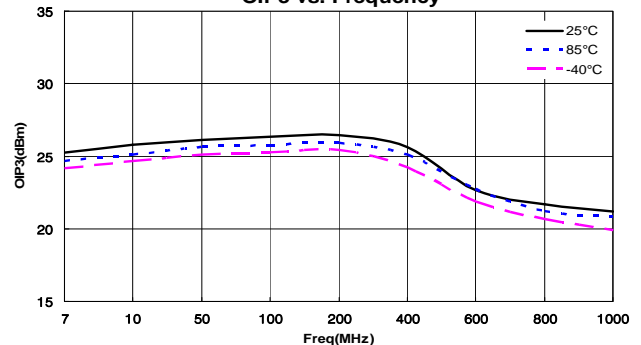
Output Return Loss vs. Frequency



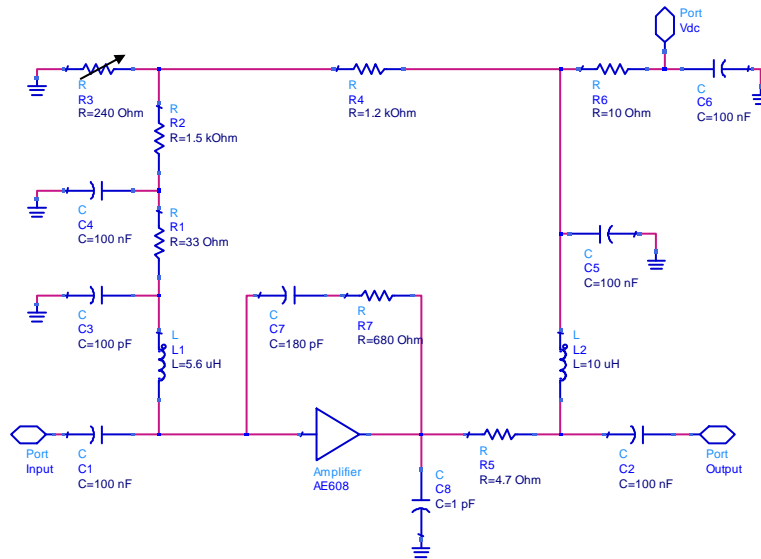
Noise Figure vs. Frequency



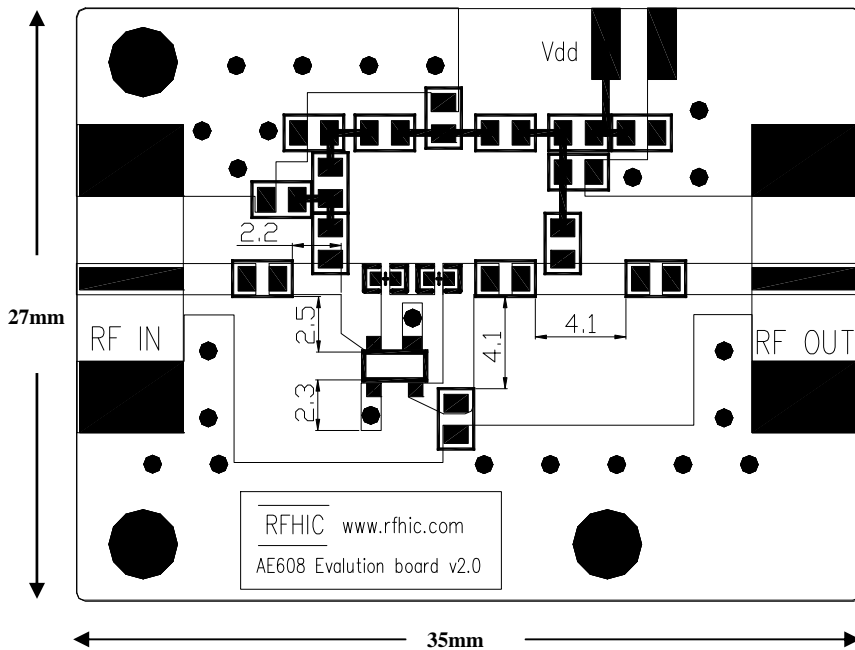
OIP3 vs. Frequency



Application Circuit : 10~1000MHz



PCB Evaluation Board Layout Pattern in mm

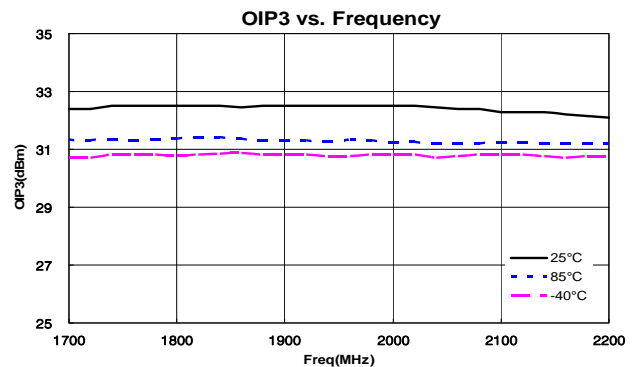
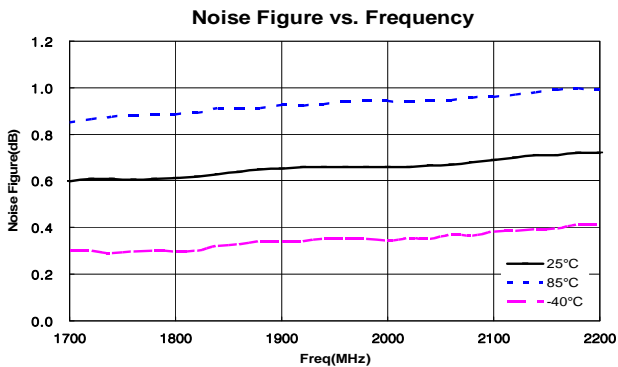
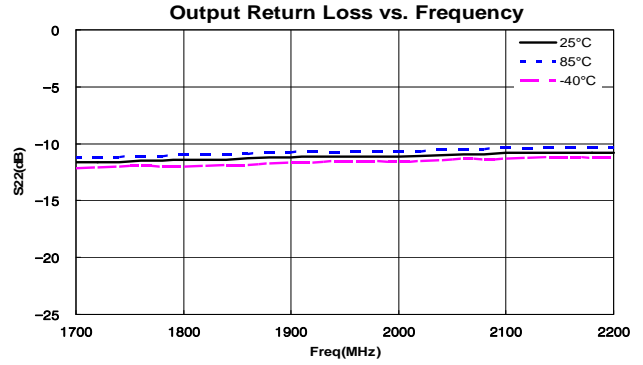
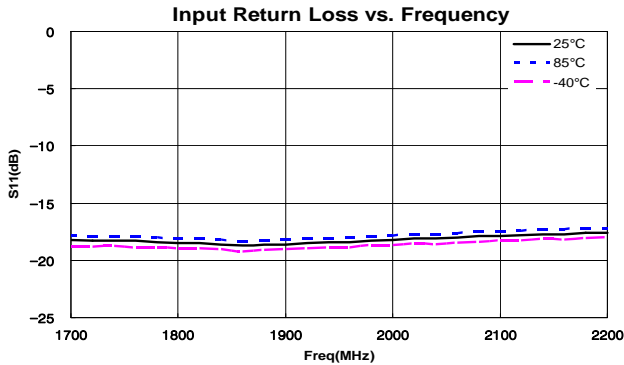
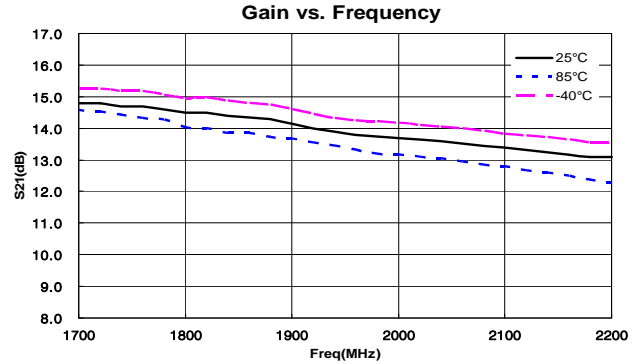
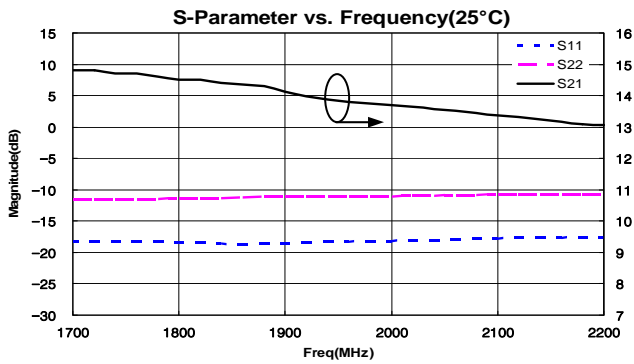


PCB material (FR4), PCB thickness (0.8t), Via hole ($\varnothing 0.6$)

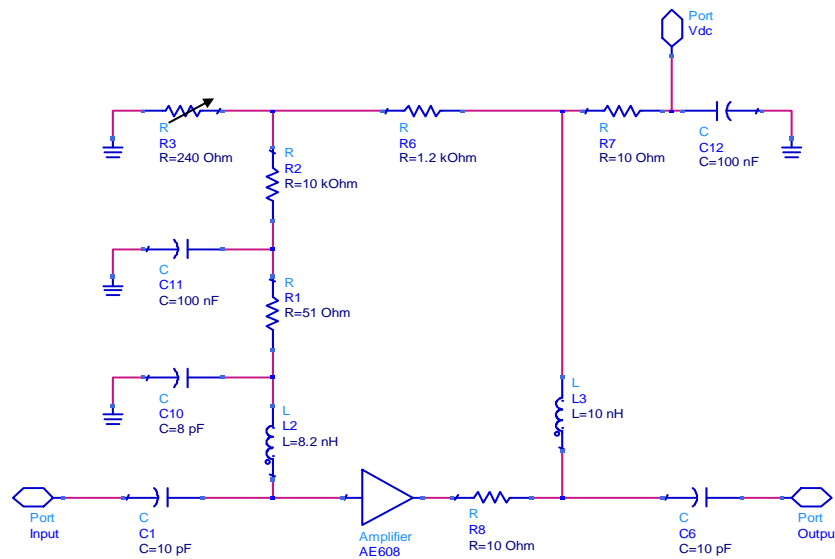
Frequency Range : 1700~2200MHz

PCS, DCS, WCDMA Performance Data ($V_d=3V, I_d=45mA, T_c=25^\circ C$)

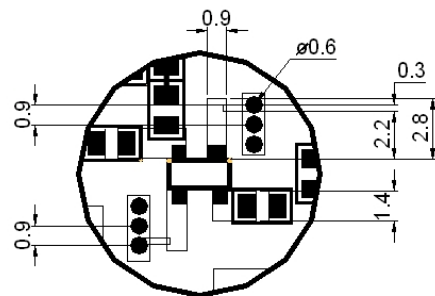
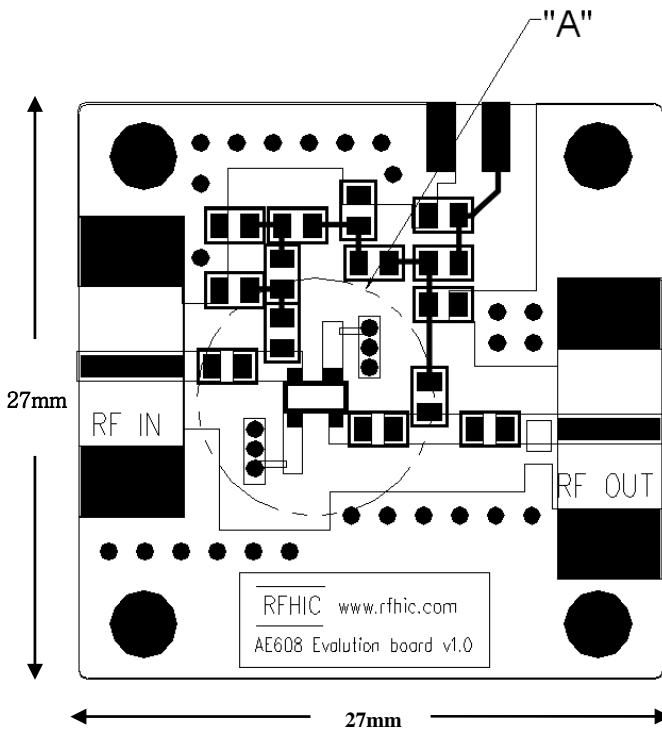
Items	Data	Remarks	Items	Data	Remarks
Gain	13.9 dB	1940 MHz	NF	0.7 dB	1700~2200 MHz
OIP3	32.5 dBm	1700~2200 MHz	P1dB	14 dBm	1700~2200 MHz



Application Circuit : 1700~2200MHz



PCB Evaluation Board Layout Pattern in mm



DETAIL A

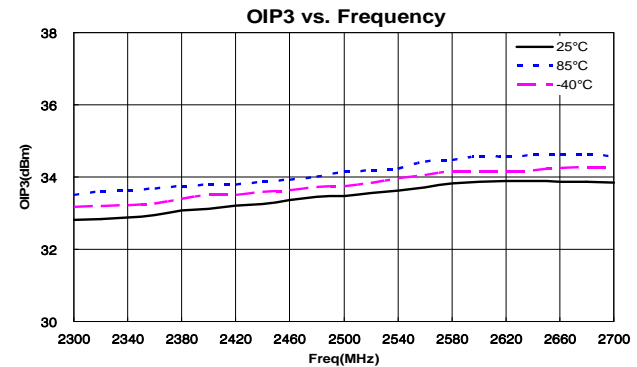
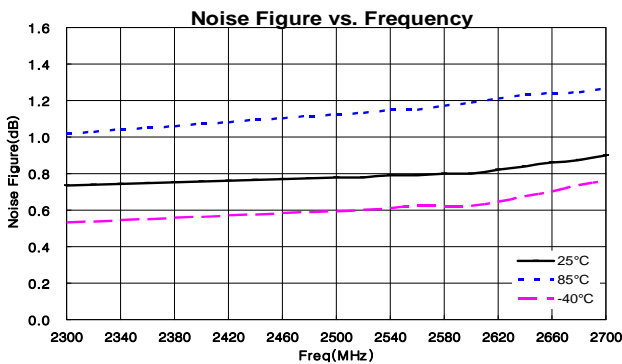
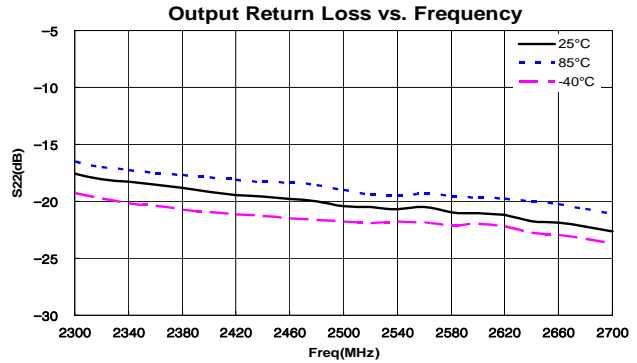
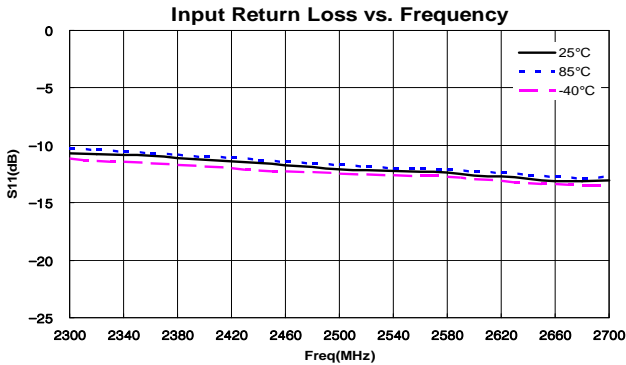
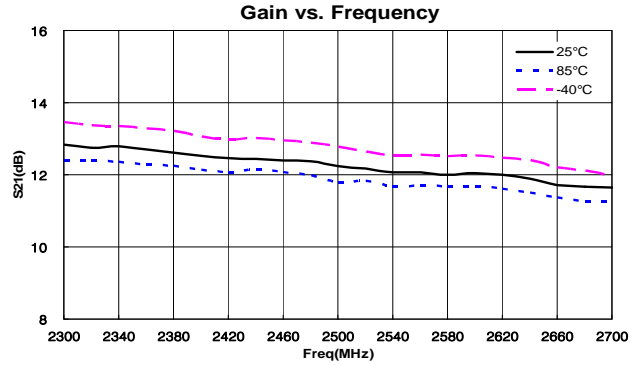
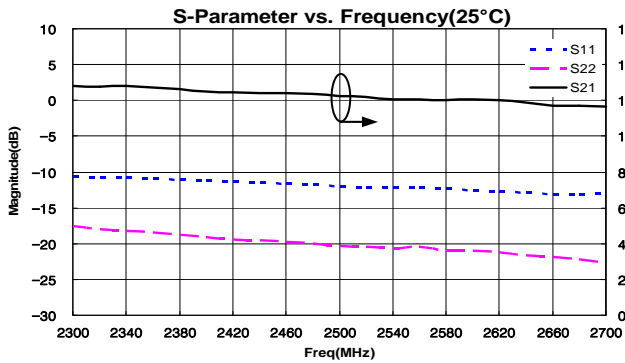
PCB material (FR4), PCB thickness (0.8t), Via hole ($\varnothing 0.6$)

The line-length between AE608 and Ground via can affect RF performance of the device. To obtain the measured data, it is highly recommended to refer to "Detail A" above .

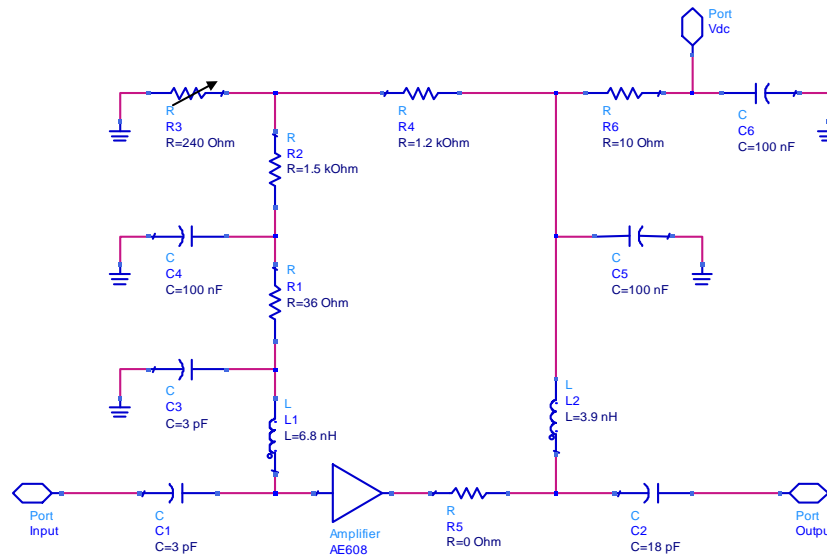
Frequency Range : 2300~2700MHz

Wimax, OFDM Performance Data ($V_d=3V, I_d=45mA, T_c=25^\circ C$)

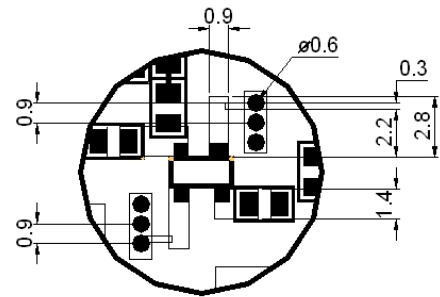
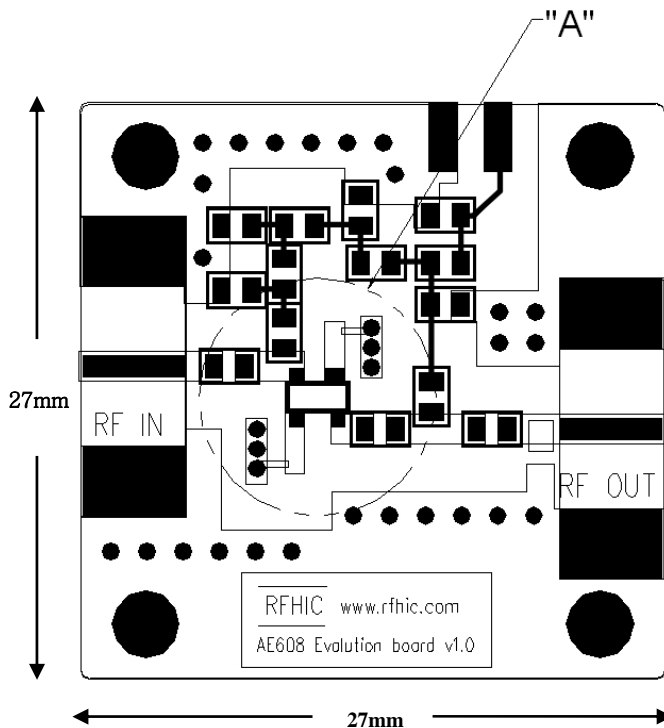
Items	Data	Remarks	Items	Data	Remarks
Gain	12 dB	2600 MHz	NF	0.8 dB	2300~2700 MHz
OIP3	34 dBm	2600 MHz	P1dB	13.5 dBm	2300~2700 MHz



Application Circuit : 2300~2700MHz



PCB Evaluation Board Layout Pattern in mm

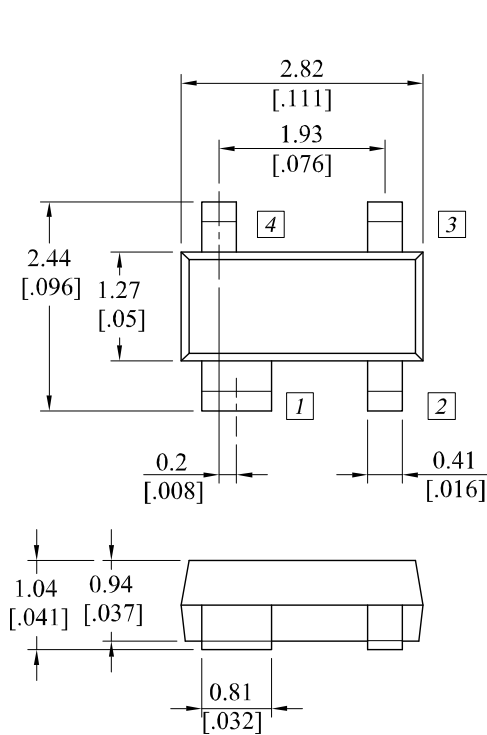


DETAIL A

PCB material (FR4), PCB thickness (0.8t), Via hole ($\varnothing 0.6$)

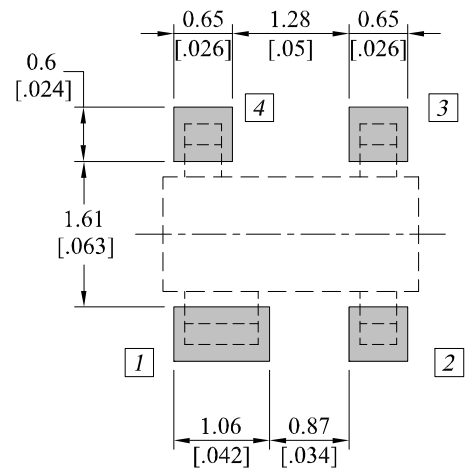
The line-length between AE608 and Ground via can affect RF performance of the device. To obtain the measured data, it is highly recommended to refer to "Detail A" above .

Package Dimensions (Type: SOT-143)



Unit : $\frac{\text{mm}}{\text{[inch]}}$	Tolerance : $\pm \frac{0.2}{.008}$
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Recommended Pattern



Pin Description

Pin No	Function
1	Ground
2	Input
3	Ground
4	Output, Vd

! ESD sensitive

Observe precautions for handling, testing and packaging.

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