E-pHEMT AE616

RFHIC

Product Features

- 500 ~ 4000MHz
- GaAs E-pHEMT
- 37dBm Output IP3
- 20dB Gain at 900MHz
- 24dBm P1 dB
- Single +5V Supply
- Pb Free / RoHS Standard

Application

- Cellular, PCS, W-CDMA Systems
- High Linearity Drive Amplifier

Package Type: SOT-89

Description

AE616 is a drive or pre-drive amplifier designed with GaAs E-pHEMT in a low cost SOT-89 package.
This E-pHEMT amplifier is designed as driver devices for infrastructure equipment in the 500~4000MHz Wireless technologies such as cellular, GSM, PCS, CDMA, W-CDMA, Wibro, Wimax.

Specifications

PARAMETER	Units	Min	Typ	Max
Frequency Range	MHz		500-4000	
Gain (S_{21})	dB		20	
Input Return Loss (S_{11})	dB	10	12	
Output Return Loss (S_{22})	dB	10	12	
Output 3rd Order Intercept Point (OIP3)	dBm	35	37	
Output 1dB compression Point (P_1dB)	dBm	22	24	
Noise Figure	dB		2.7	3.4
DC Operating Current	mA	70	85	100
Operating Gate Voltage(Vds=5V, Ids=85mA)	V		0.4	
Threshold voltage	V	0.1	0.25	0.4

Test Condition

① 880MHz, Vds=5V, Ids=85mA at 25℃
② OIP3 is measured with two tones, at an output power of +10dBm/tone separated by 1MHz..

Absolute Maximum Ratings

PARAMETER	Rating	Remark
Operating Case Temperature (℃)	-40 ~ 85	
Storage Temperature (℃)	-50 ~ 125	
Drain-Source Voltage	+7V	
Drain Current	250mA	
Gate-Source Voltage	-5V ~ 1V	
Channel Temperature	150℃	
RF Input Power	25dBm	

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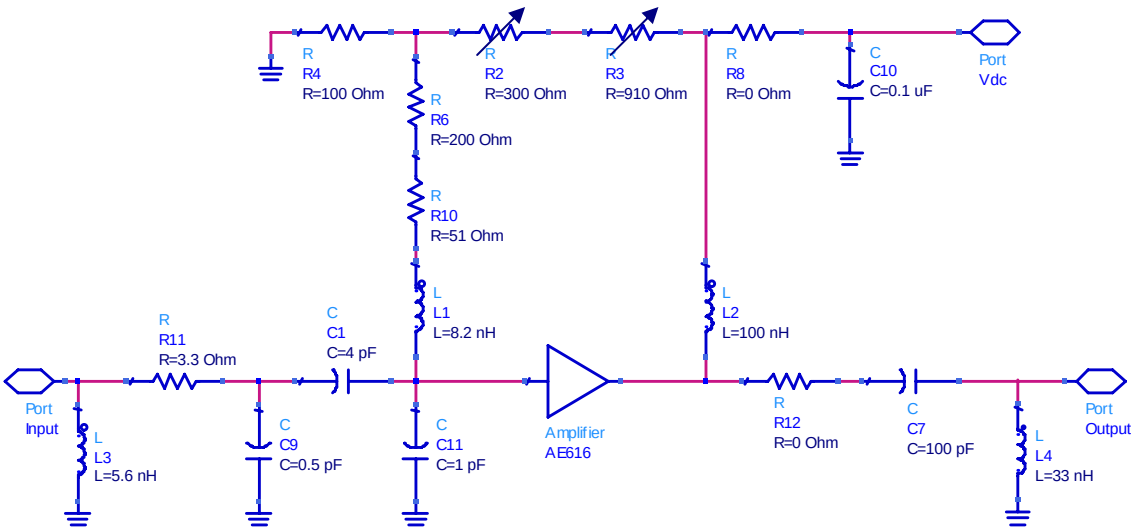
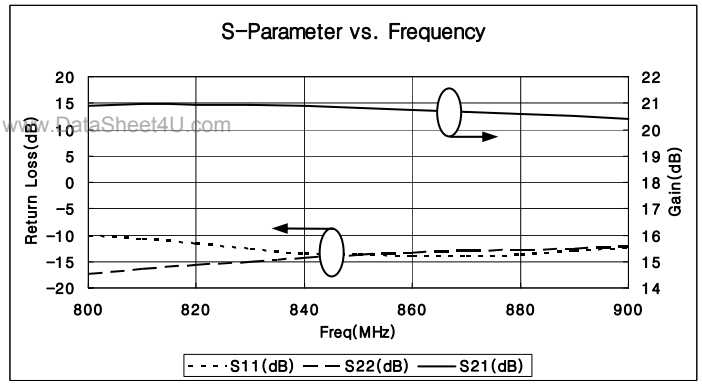
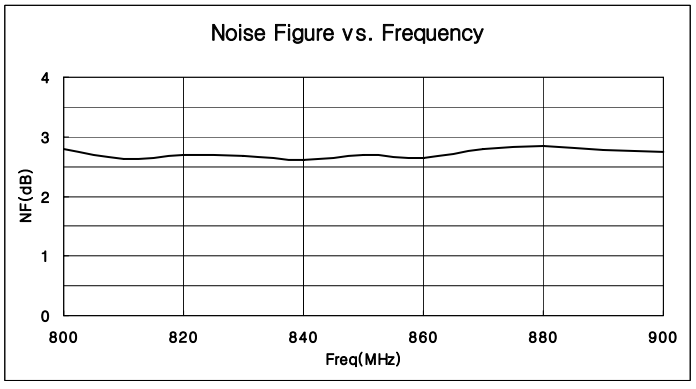
Application Circuit : 824~896MHz

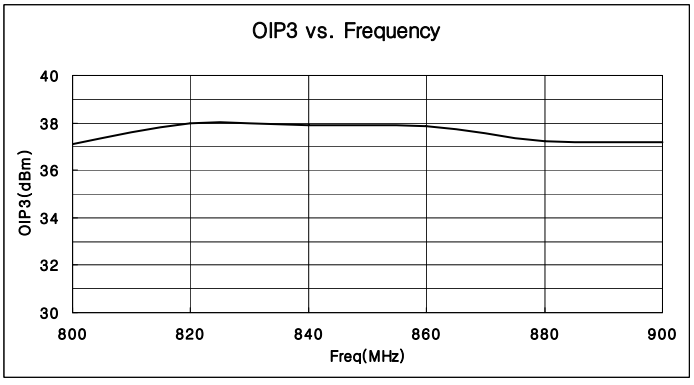


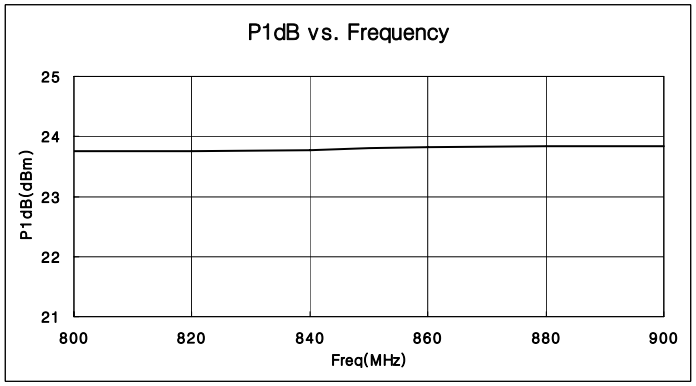
Cellular, CDMA (824~896MHz) Performance Data (V_d=5V, T_c=25℃)

Items	Data			Remarks	Items	Data			Remarks
	Min	Typ	Max	MHz		Min	Typ	Max	MHz
Gain		20dB		824~896	NF		2.7dB	3.1dB	824~896
OIP3	35dBm	37dBm		824~896	P1dB	22dBm	24dBm		824~896
CDMA 1FA		18dBm		880					

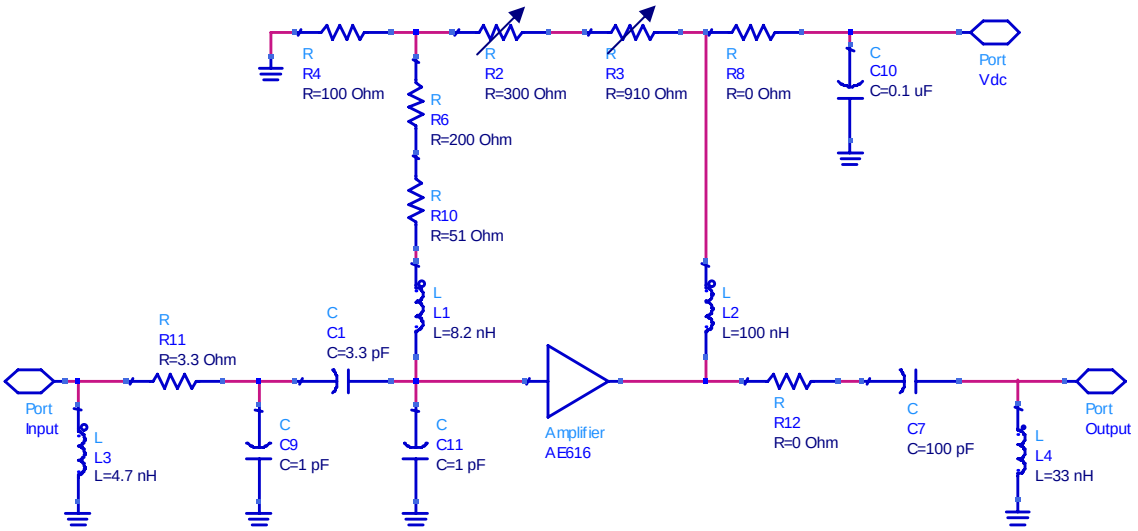






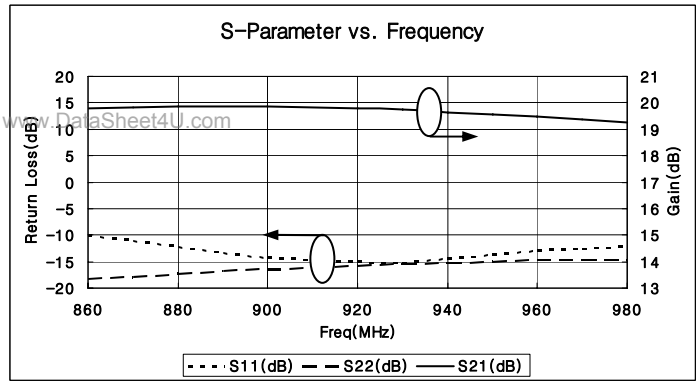


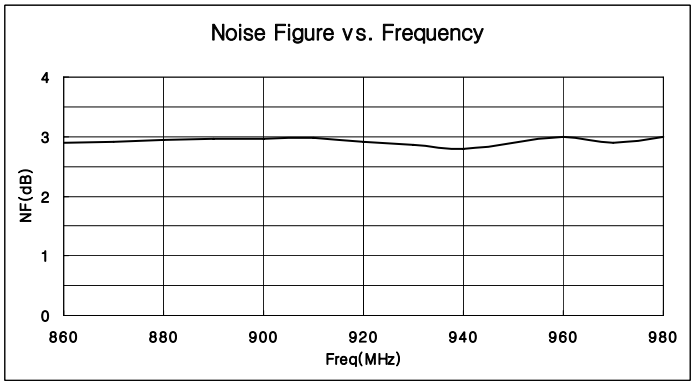
Application Circuit : 880~960MHz

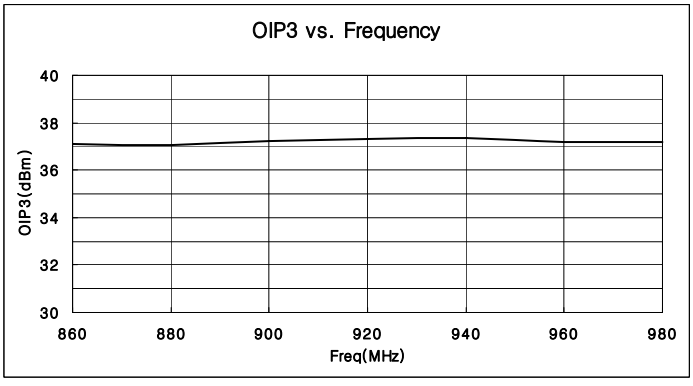


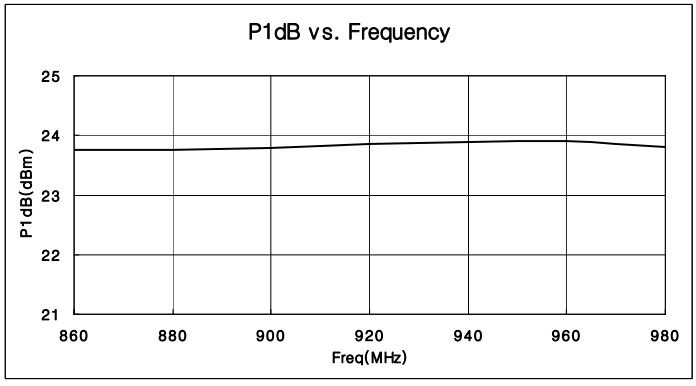
GSM, TDMA (880~960MHz) Performance Data (V_d=5V, T_c=25℃)

Items	Data			Remarks	Items	Data			Remarks
	Min	Typ	Max	MHz		Min	Typ	Max	MHz
Gain		19dB		880~960	NF		2.9dB	3.4dB	880~960
OIP3	35dBm	37dBm		880~960	P1dB	22dBm	24dBm		880~960

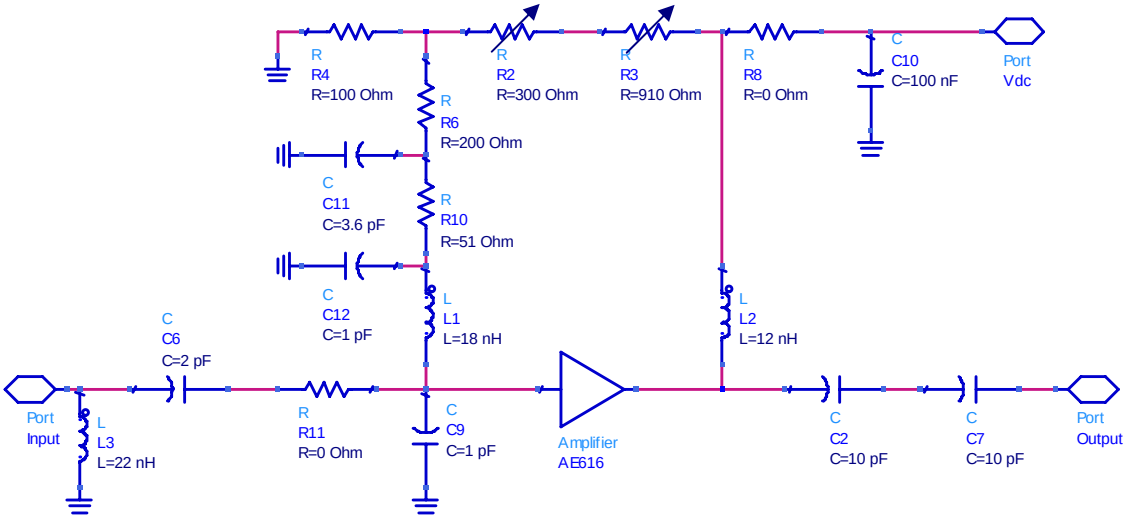






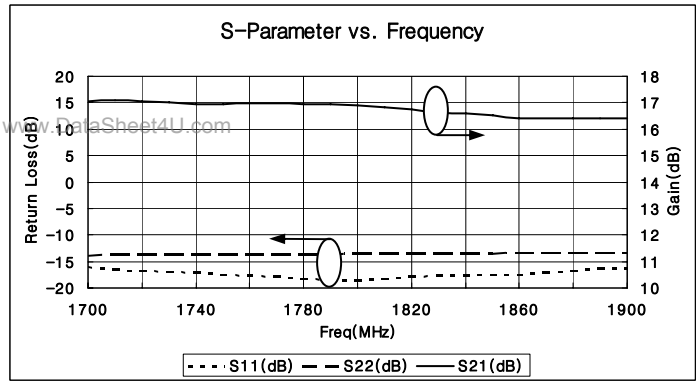


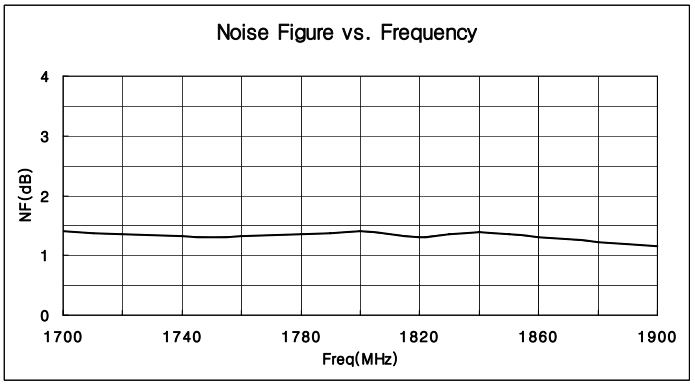
Application Circuit : 1700~1900MHz

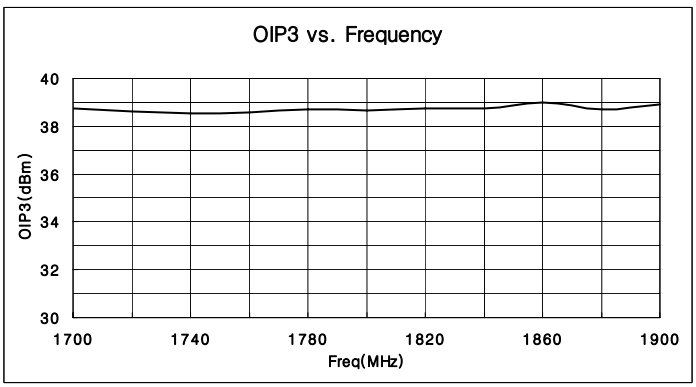


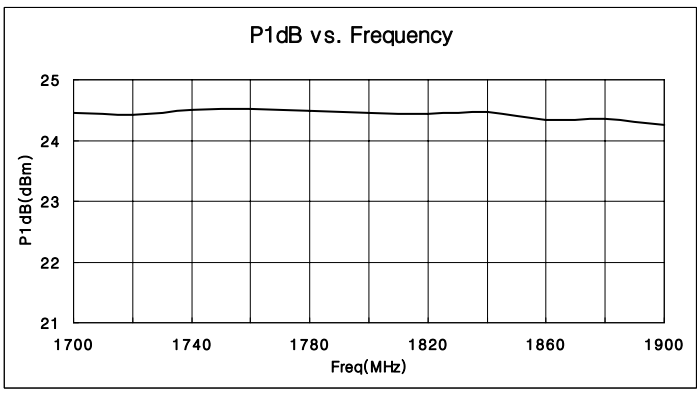
PCS, DCS, CDMA (1700~1900MHz) Performance Data (V_d=5V, T_c=25℃)

Items	Data			Remarks	Items	Data			Remarks
	Min	Typ	Max	MHz		Min	Typ	Max	MHz
Gain		16dB		1700~1900	NF		1.3dB	2dB	1700~1900
OIP3	36dBm	38dBm		1700~1900	P1dB	22dBm	24dBm		1700~1900
CDMA 1FA		20dBm		1850					

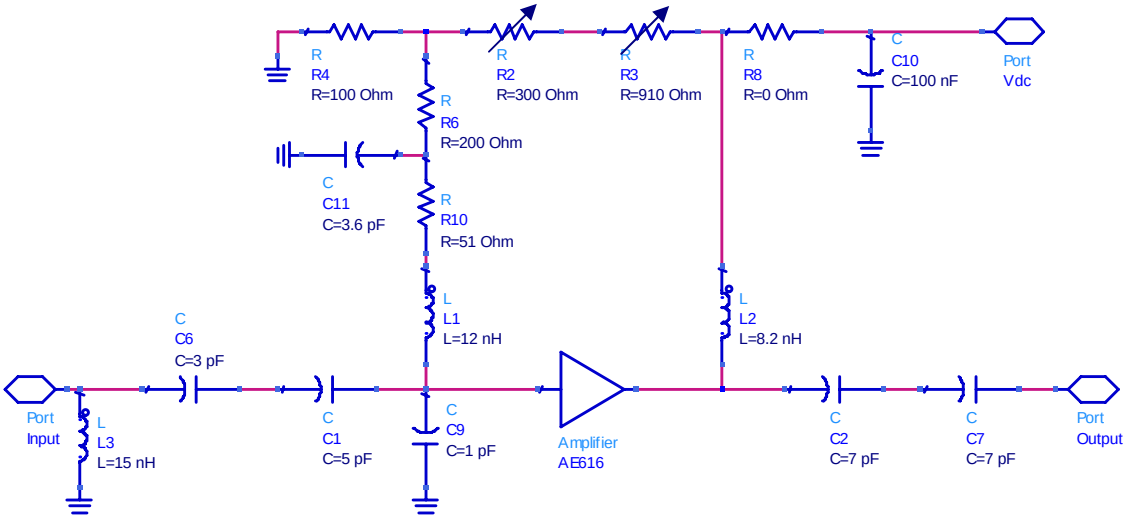






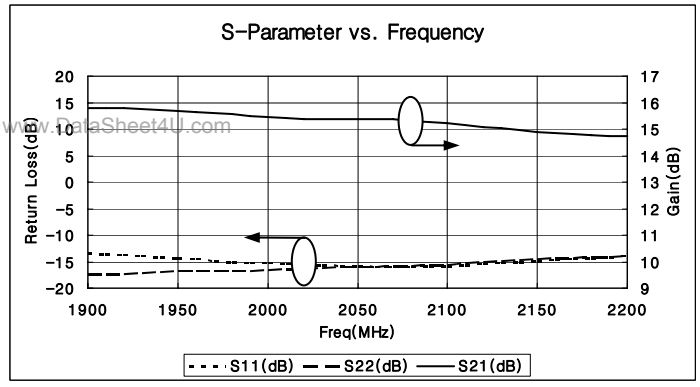


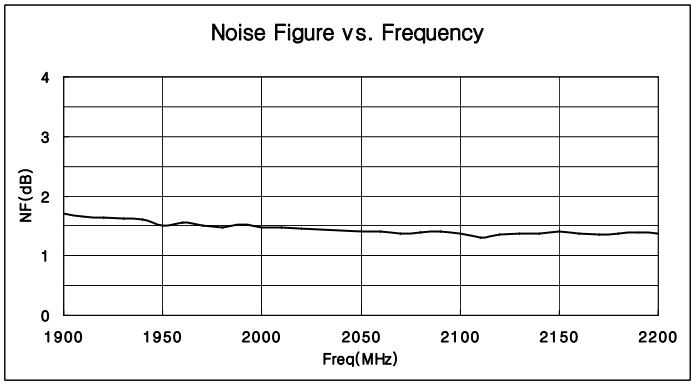
Application Circuit : 1900~2200MHz

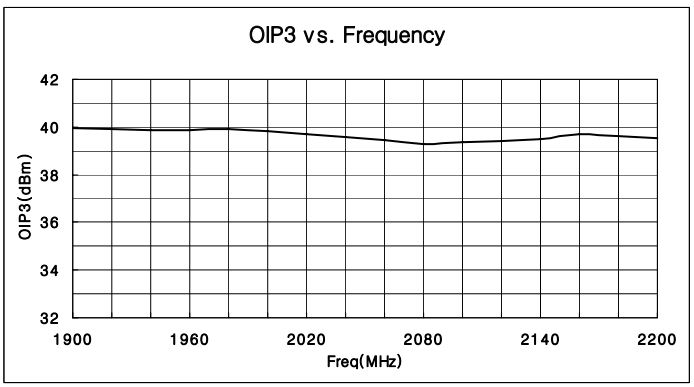


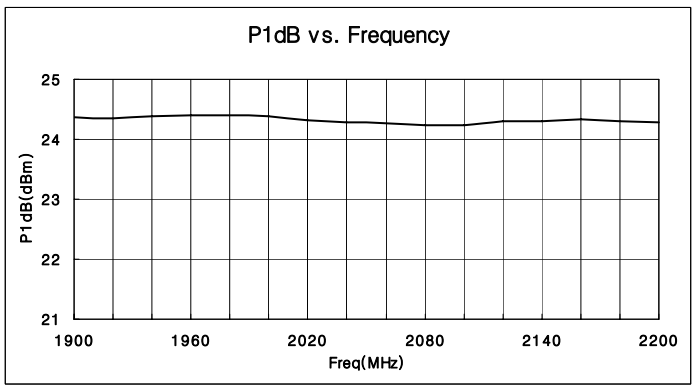
IMT, UMTS, WCDMA (1900~2200MHz) Performance Data (V_d=5V, T_c=25℃)

Items	Data			Remarks	Items	Data			Remarks
	Min	Typ	Max	MHz		Min	Typ	Max	MHz
Gain		14.5dB		1900~2200	NF		1.5dB	2dB	1900~2200
OIP3	37dBm	39dBm		1900~2200	P1dB	22dBm	24dBm		1900~2200
WCDMA 4FA		13dBm		2140					









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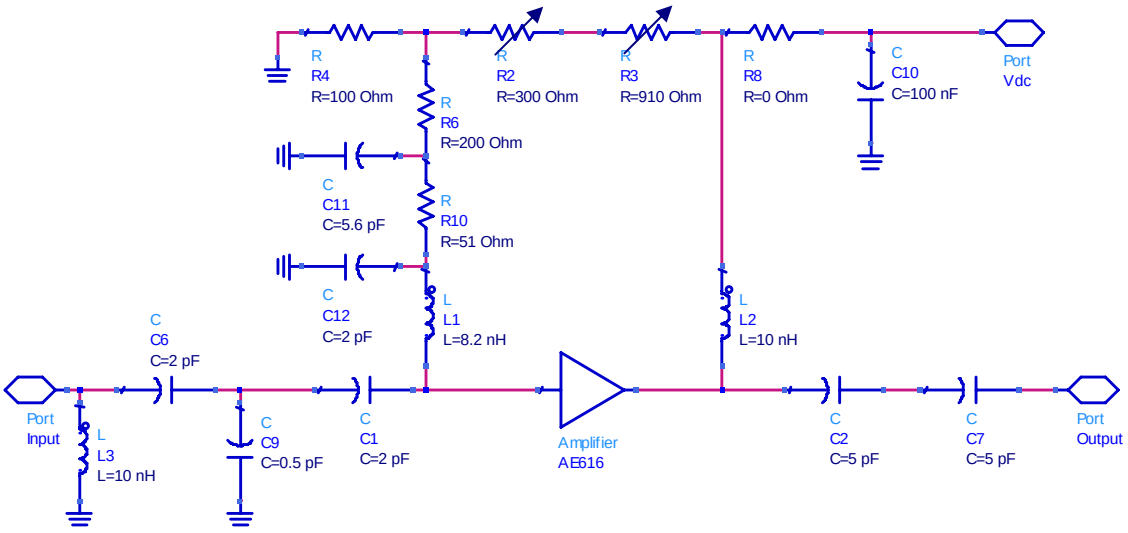
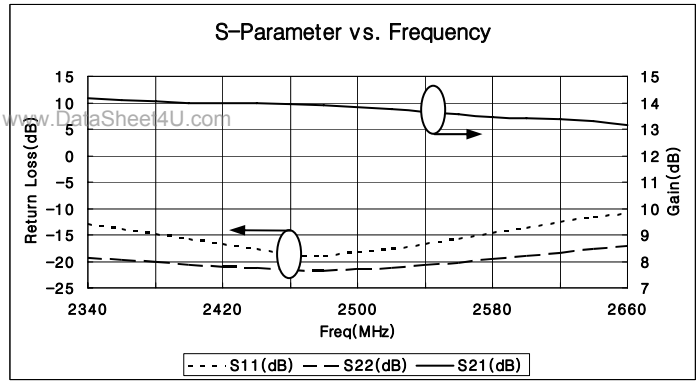
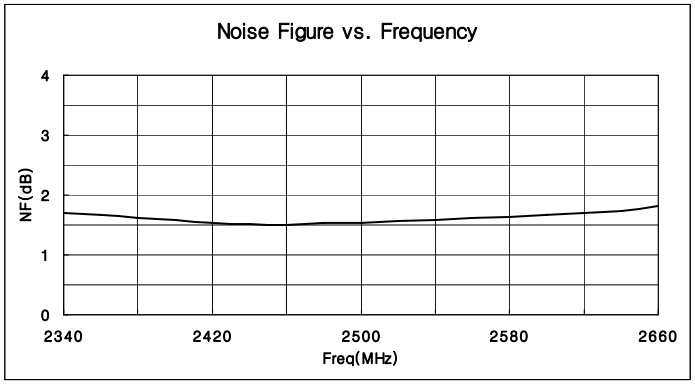
Application Circuit : 2350~2650MHz

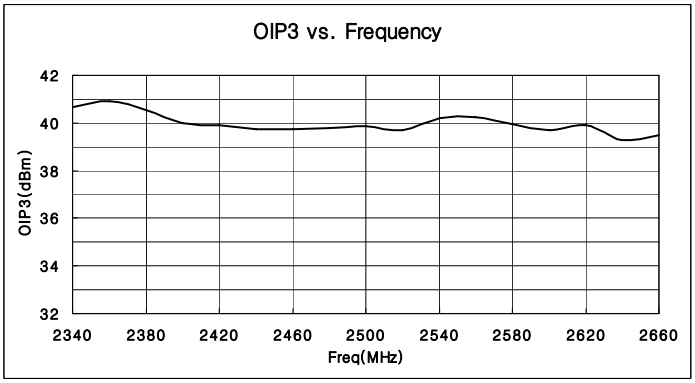


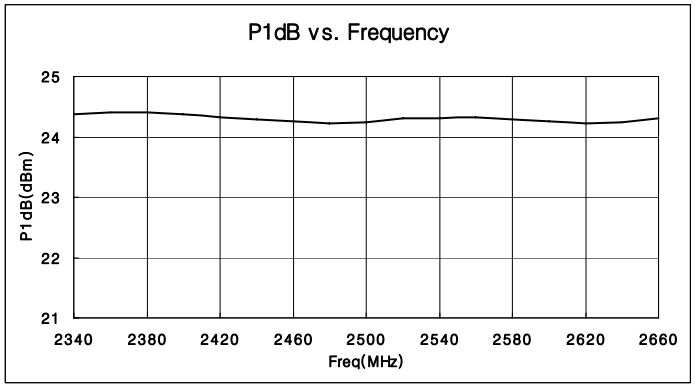
Wibro, OFDM (2350~2650MHz) Performance Data (V_d=5V, T_c=25℃)

Items	Data			Remarks	Items	Data			Remarks
	Min	Typ	Max	MHz		Min	Typ	Max	MHz
Gain		13dB		2350~2650	NF		1.6dB	2dB	2350~2650
OIP3	37dBm	39dBm		2350~2650	P1dB	22dBm	24dBm		2350~2650









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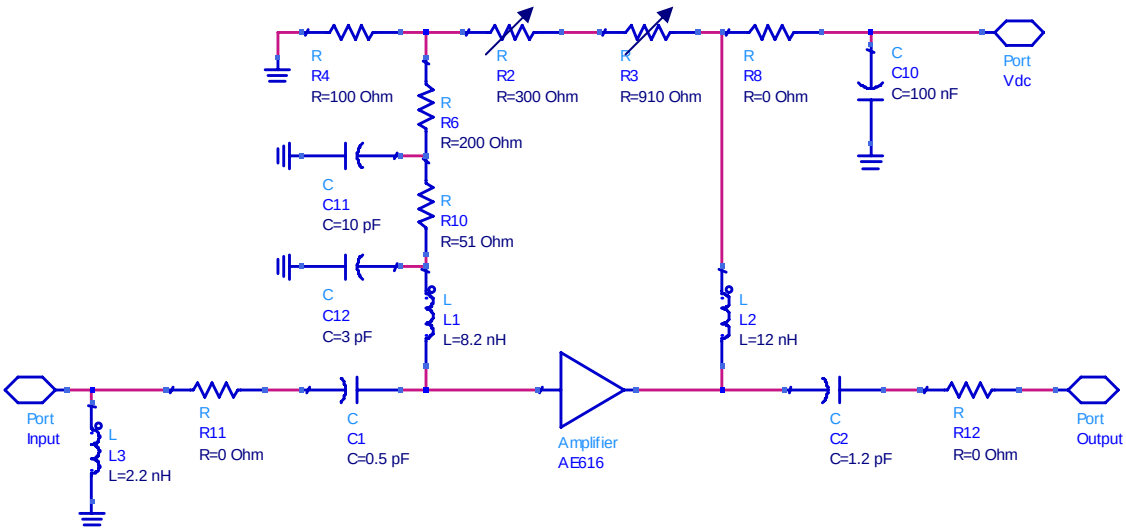
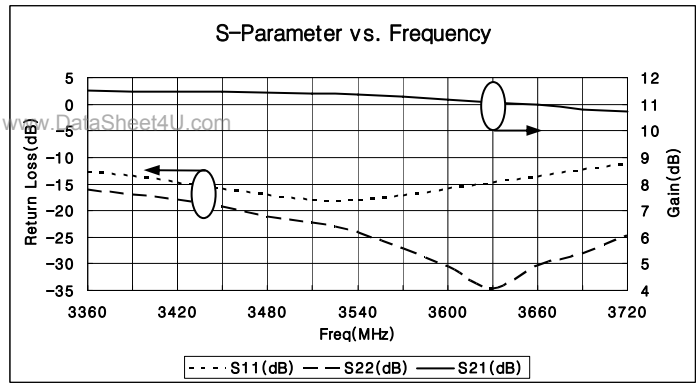
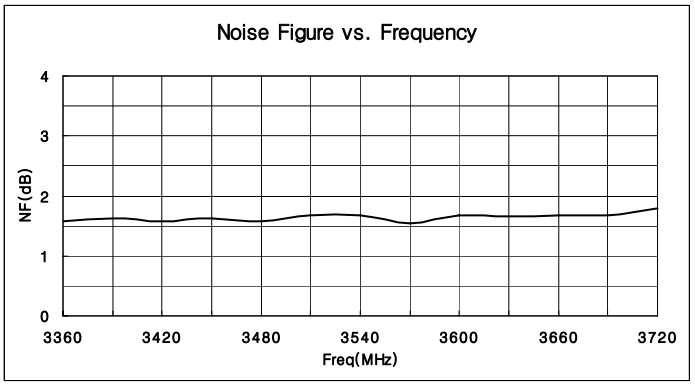
Application Circuit : 3400~3600MHz

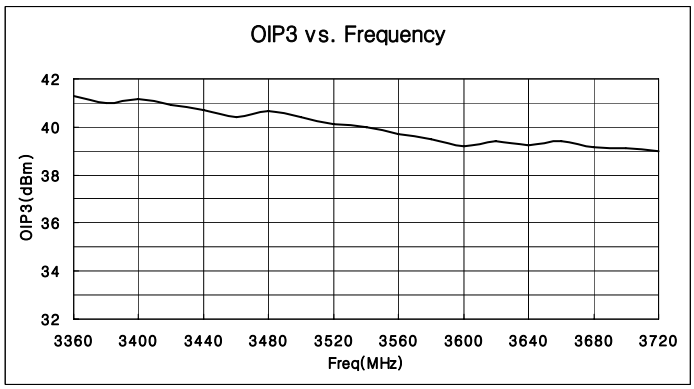


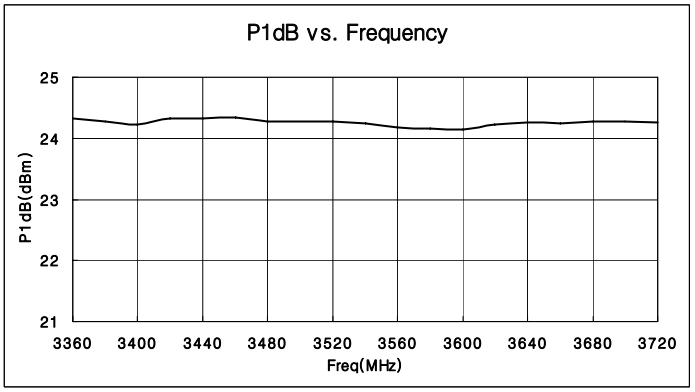
Wimax (3400~3600MHz) Performance Data (V_d=5V, T_c=25℃)

Items	Data			Remarks	Items	Data			Remarks
	Min	Typ	Max	MHz		Min	Typ	Max	MHz
Gain		11dB		3400~3600	NF		1.7dB	2dB	3400~3600
OIP3	38dBm	40dBm		3400~3600	P1dB	22dBm	24dBm		3400~3600

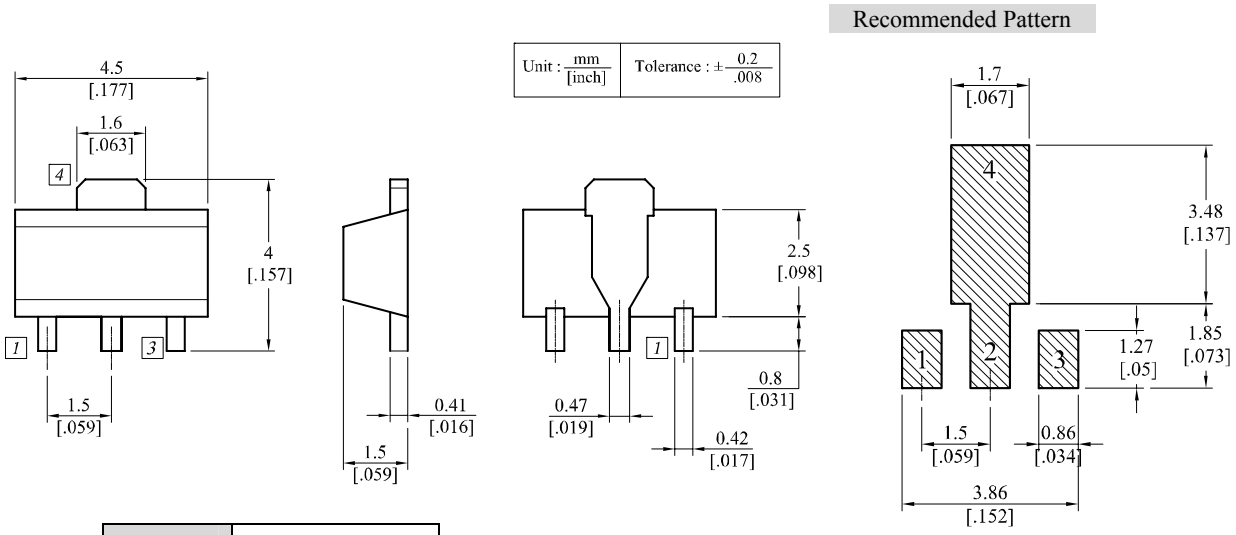








Package Dimensions (Type: SOT-89)

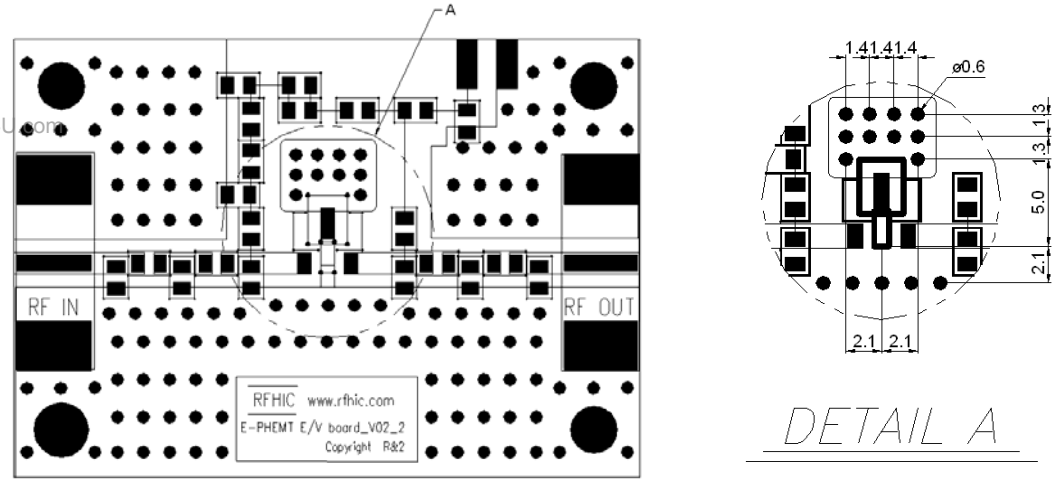


Pin No	Function
1	Input, Vg
2	Ground
3	Output, Vd
4	Ground

! ESD sensitive

Observe precautions for handling, testing and packaging.

PCB Evaluation Board Layout Pattern



PCB material (FR4), PCB thickness (0.8t), Via hole (⌀0.6)