

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

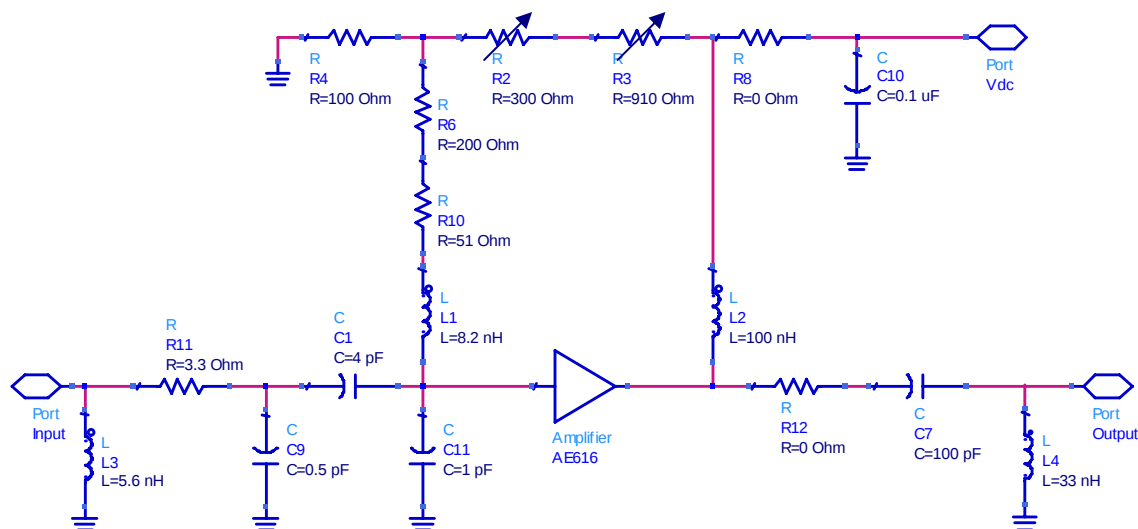
PARAMETER	Units	Min	Typ	Max
Frequency Range	MHz		500-4000	
Gain (S_{21})	dB		20	
Input Return Loss (S_{11})	dB	10	12	
Output Return Loss (S_{22})	dB	10	12	
Output 3 rd Order Intercept Point (OIP3)	dBm	35	37	
Output 1dB compression Point (P_{1dB})	dBm	22	24	
Noise Figure	dB		2.7	3.4
DC Operating Current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

Test Condition

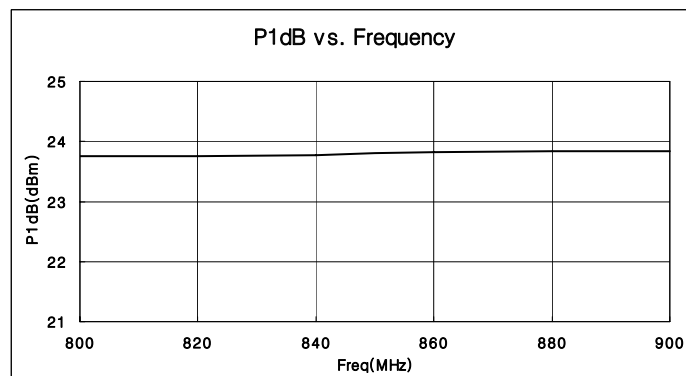
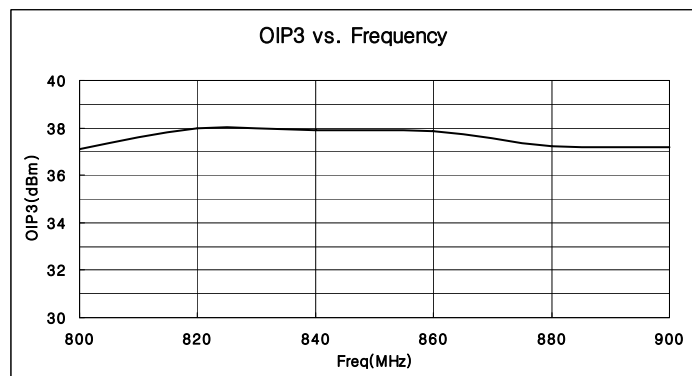
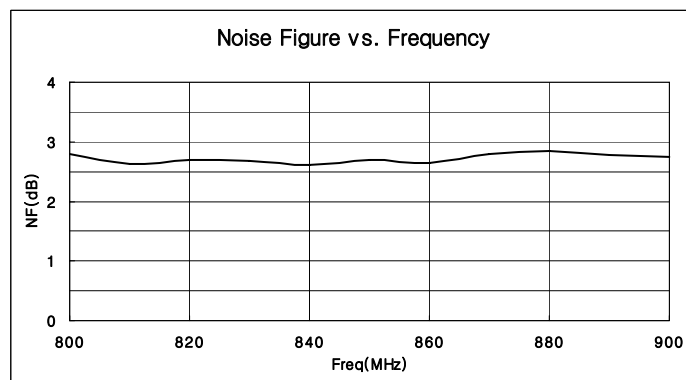
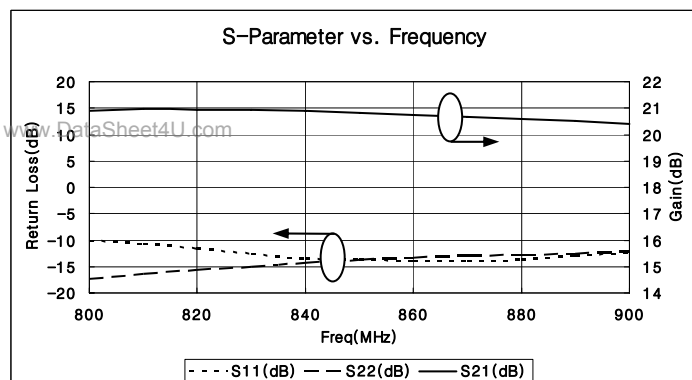
- ① 880MHz, $V_{ds}=5V$, $I_{ds}=85mA$ at 25 °C
- ② OIP3 is measured with two tones, at an output power of +10dBm/tone separated by 1MHz..

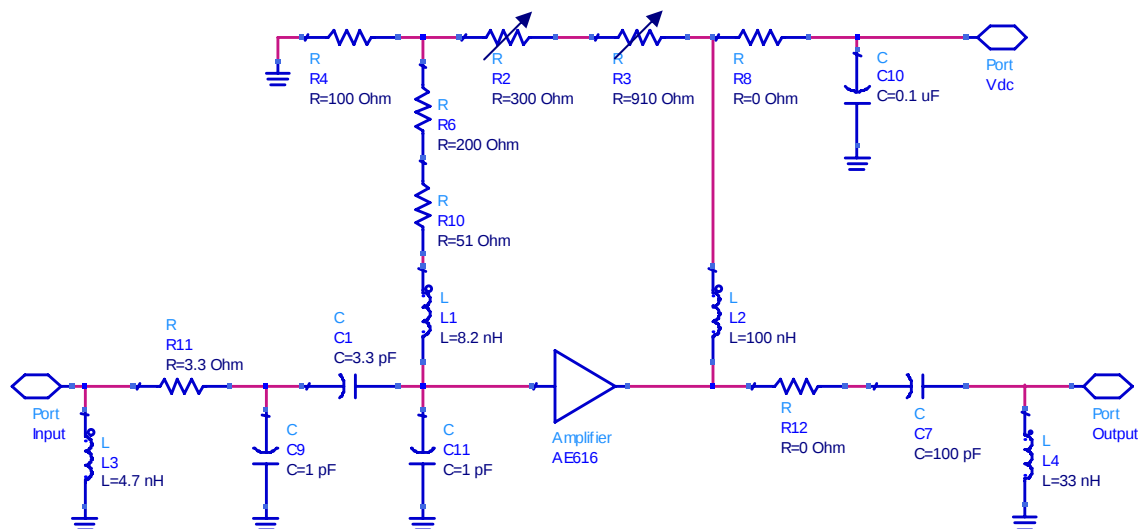
Absolute Maximum Ratings

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

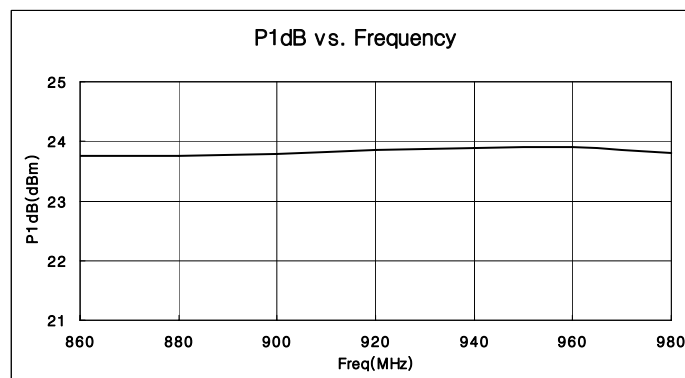
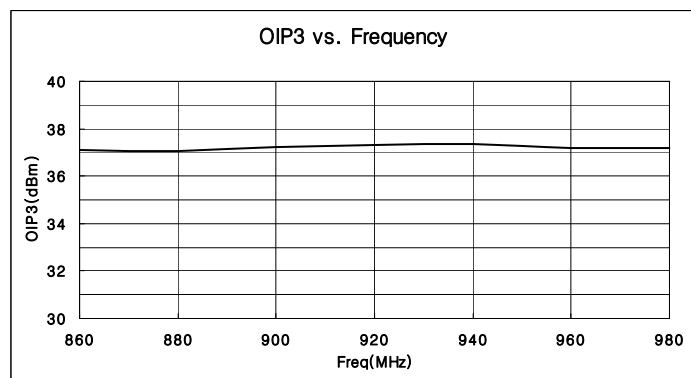
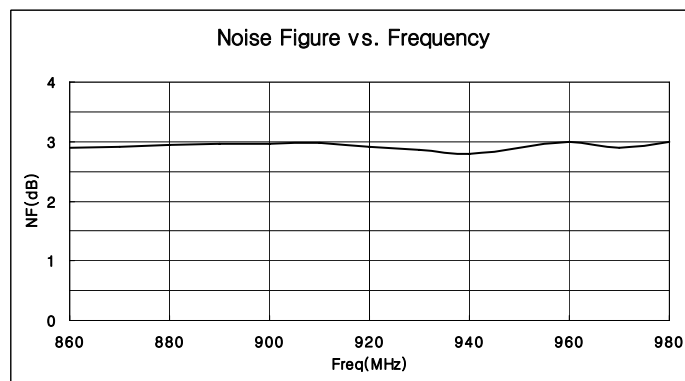
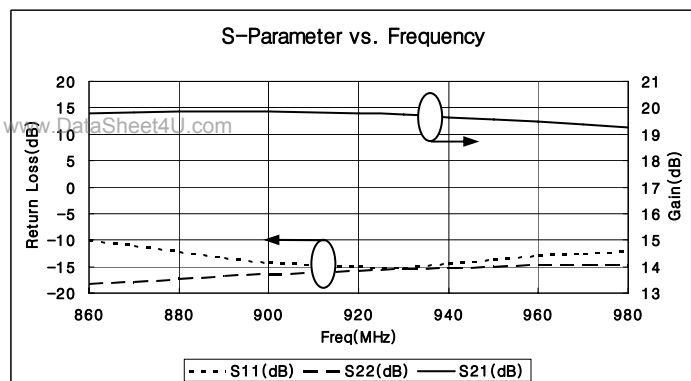
E-pHEMT**AE616****RFHIC****Application Circuit : 824~896MHz****Cellular, CDMA (824~896MHz) Performance Data ($V_d=5V$, $T_c=25^\circ C$)**

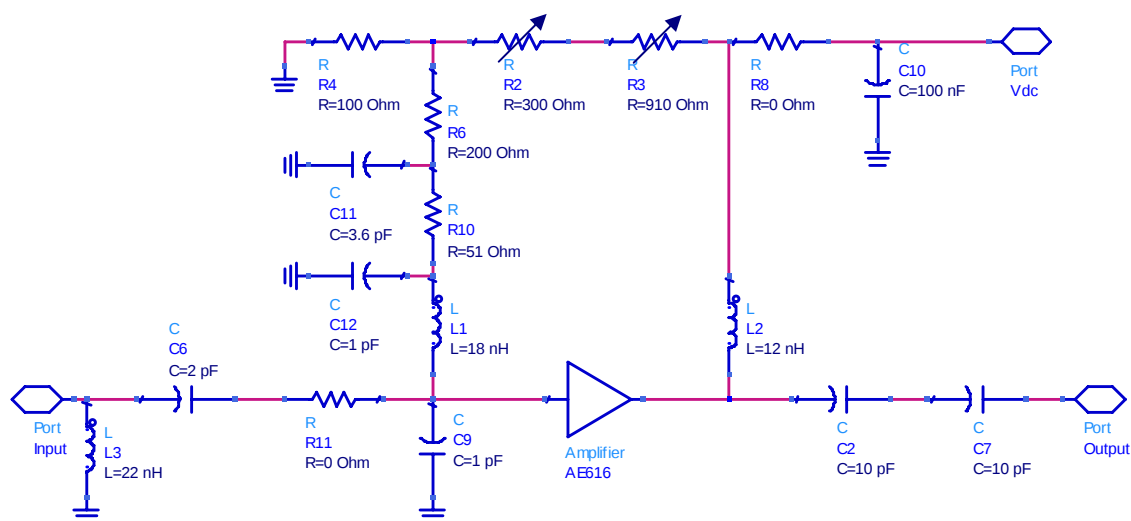
Items	Data			Remarks MHz	Items	Data			Remarks MHz
	Min	Typ	Max			Min	Typ	Max	
Gain		20dB		824~896	NF		2.7dB	3.1dB	824~896
OIP3	35dBm	37dBm		824~896	P1dB	22dBm	24dBm		824~896
CDMA 1FA		18dBm		880					



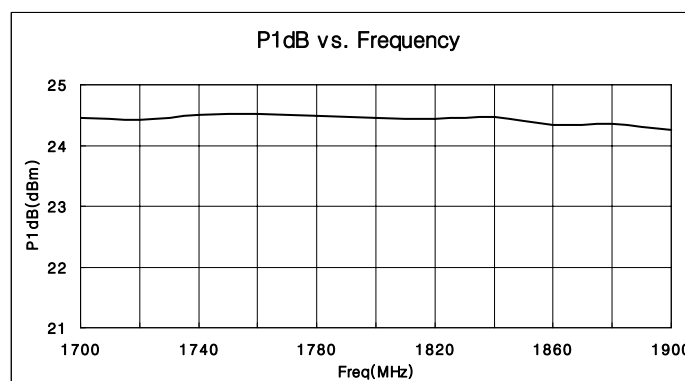
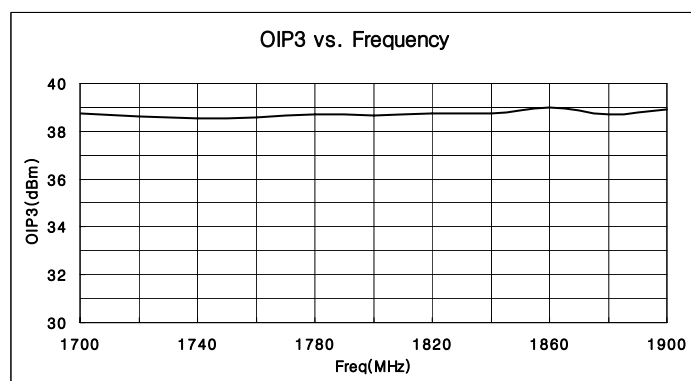
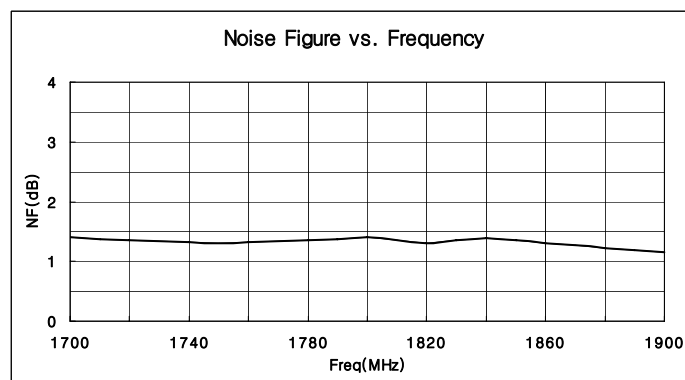
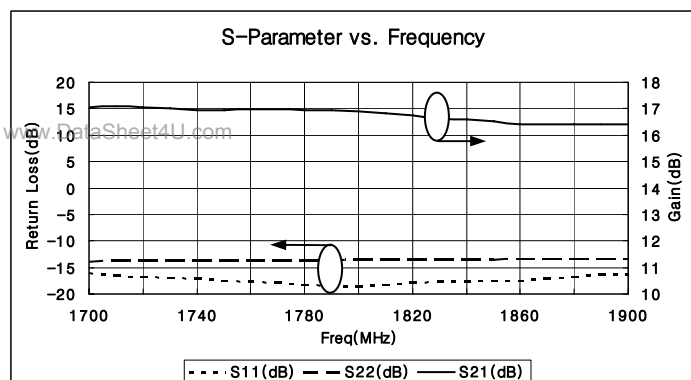
Application Circuit : 880~960MHz**GSM, TDMA (880~960MHz) Performance Data ($V_d=5V$, $T_c=25^\circ C$)**

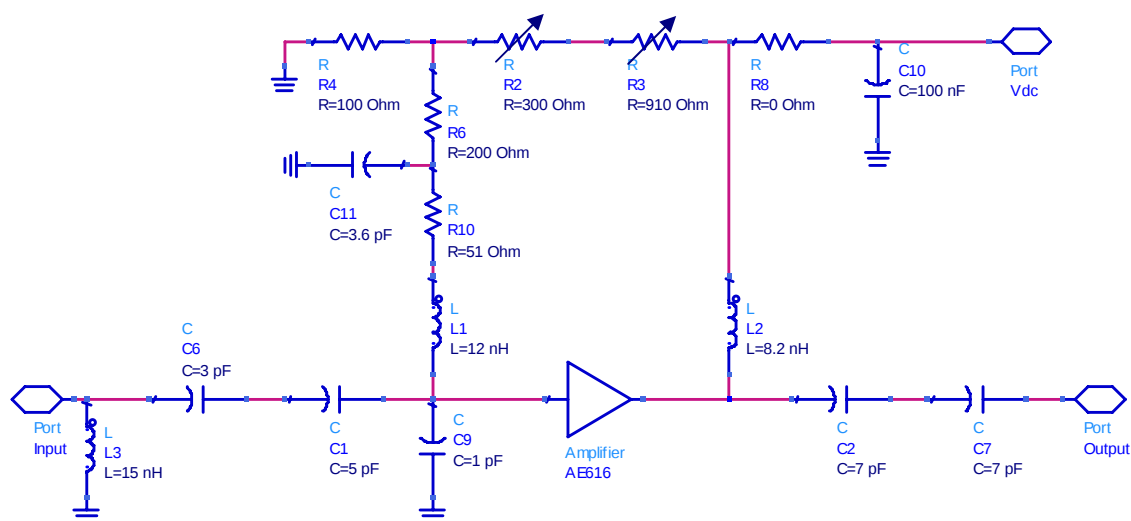
Items	Data			Remarks MHz	Items	Data			Remarks MHz
	Min	Typ	Max			Min	Typ	Max	
Gain		19dB		880~960	NF		2.9dB	3.4dB	880~960
OIP3	35dBm	37dBm		880~960	P1dB	22dBm	24dBm		880~960



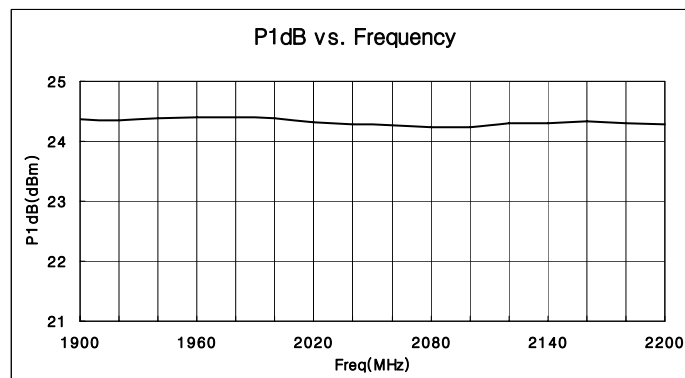
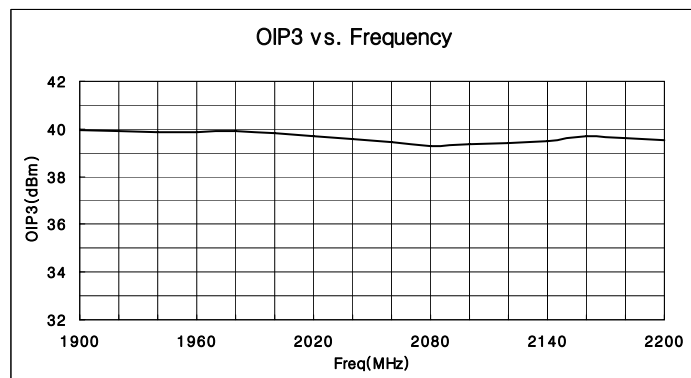
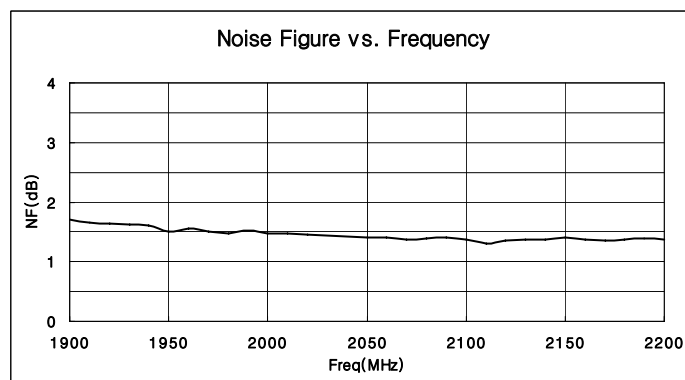
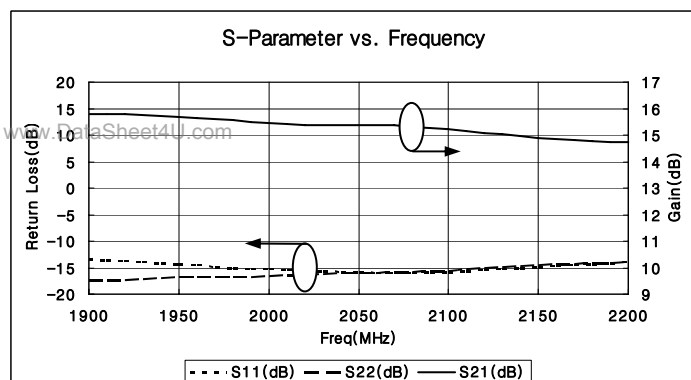
Application Circuit : 1700~1900MHz**PCS, DCS, CDMA (1700~1900MHz) Performance Data ($V_d=5V$, $T_c=25^\circ C$)**

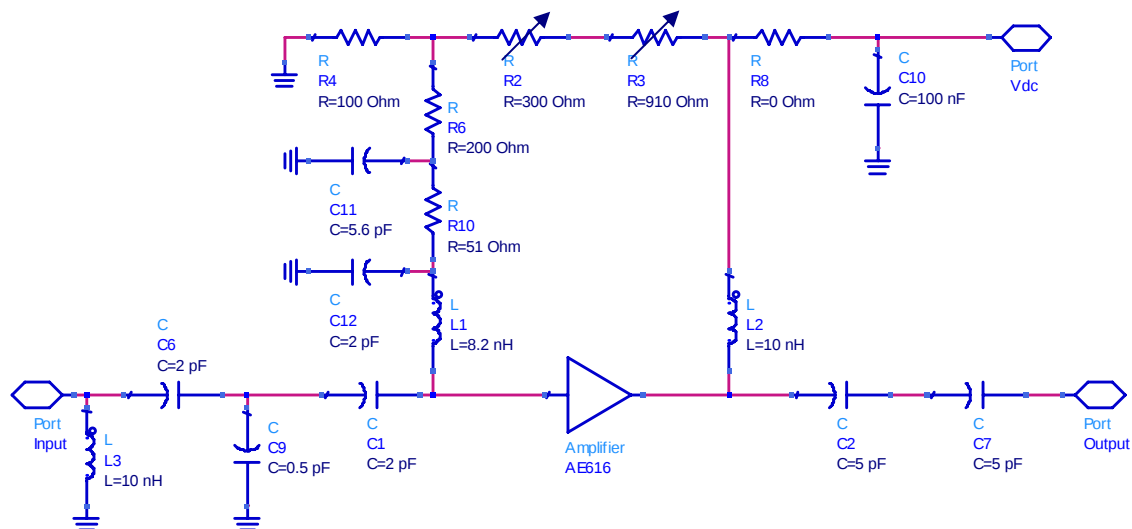
Items	Data			Remarks MHz	Items	Data			Remarks MHz
	Min	Typ	Max			Min	Typ	Max	
Gain		16dB		1700~1900	NF		1.3dB	2dB	1700~1900
OIP3	36dBm	38dBm		1700~1900	P1dB	22dBm	24dBm		1700~1900
CDMA 1FA		20dBm		1850					



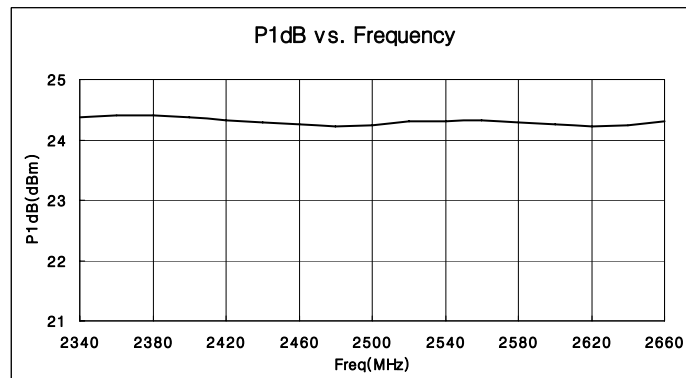
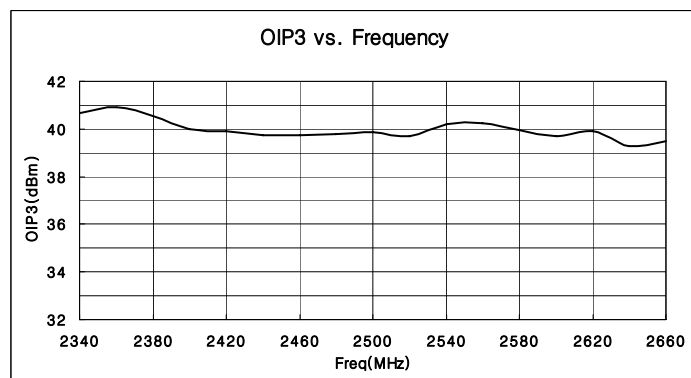
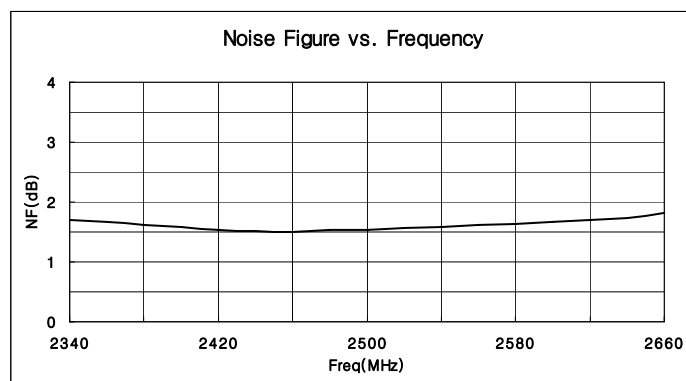
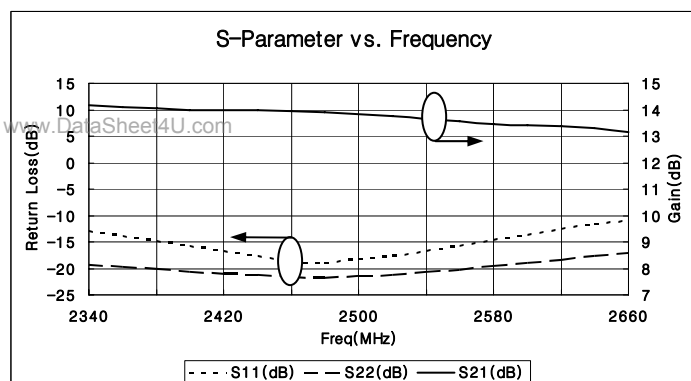
Application Circuit : 1900~2200MHz**IMT, UMTS, WCDMA (1900~2200MHz) Performance Data ($V_d=5V$, $T_c=25^\circ C$)**

Items	Data			Remarks MHz	Items	Data			Remarks MHz
	Min	Typ	Max			Min	Typ	Max	
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					

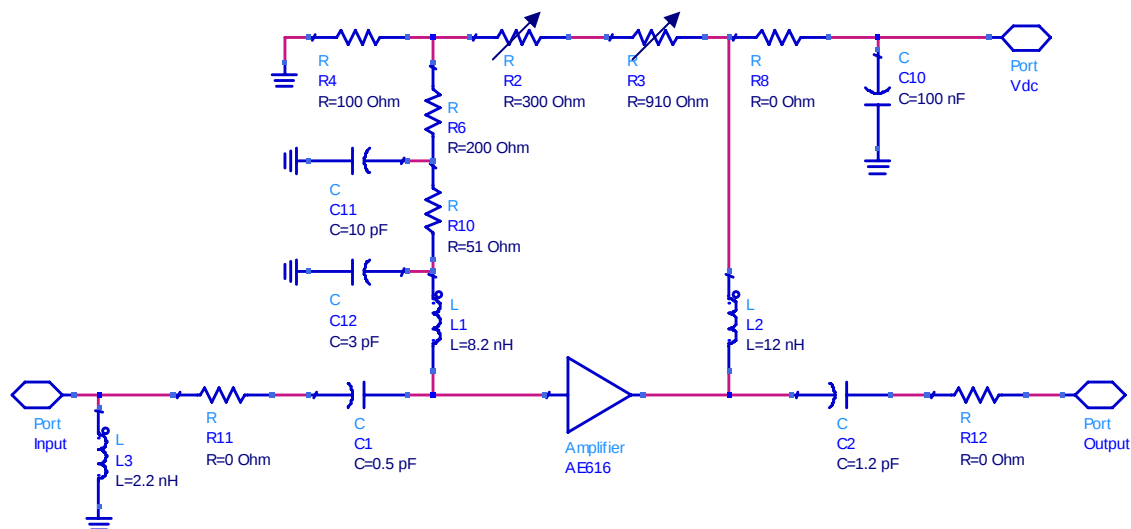


Application Circuit : 2350~2650MHz**Wibro, OFDM (2350~2650MHz) Performance Data ($V_d=5V$, $T_c=25^\circ C$)**

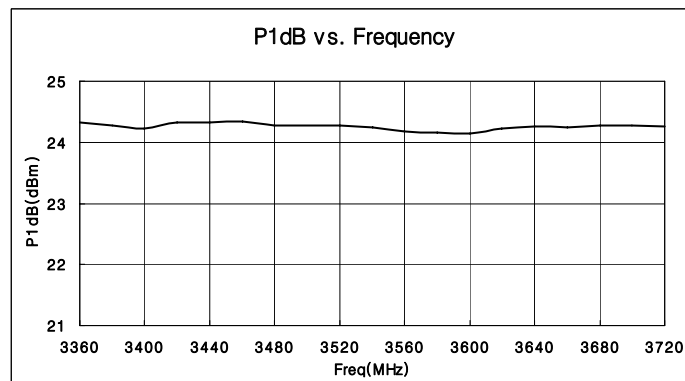
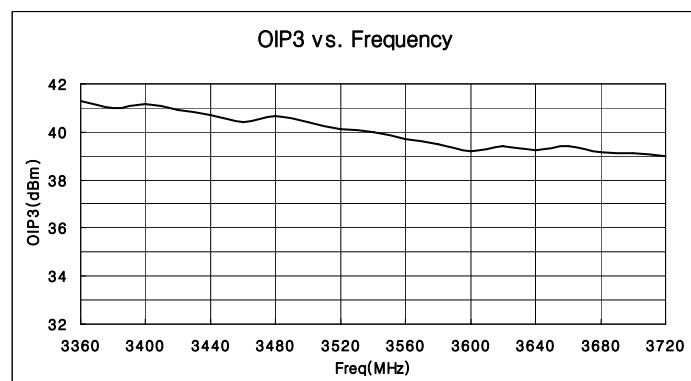
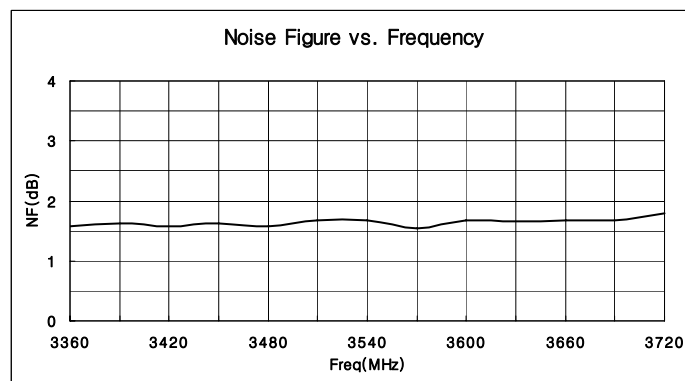
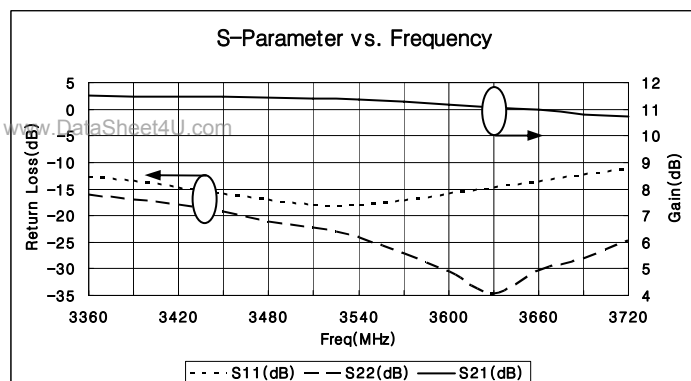
Items	Data			Remarks MHz	Items	Data			Remarks MHz
	Min	Typ	Max			Min	Typ	Max	
Gain		13dB		2350~2650	NF		1.6dB	2dB	2350~2650
OIP3	37dBm	39dBm		2350~2650	P1dB	22dBm	24dBm		2350~2650

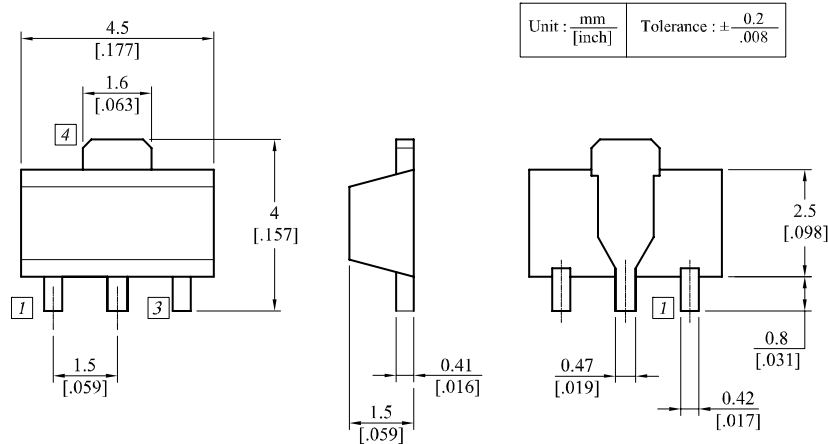
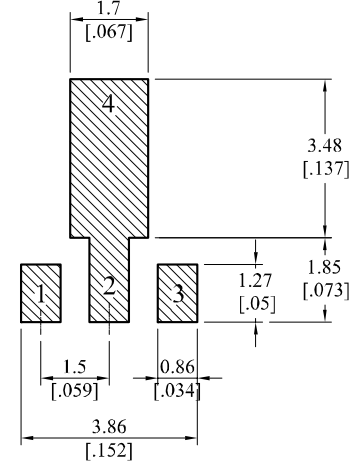


Application Circuit : 3400~3600MHz

Wimax (3400~3600MHz) Performance Data ($V_d=5V$, $T_c=25^\circ C$)

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

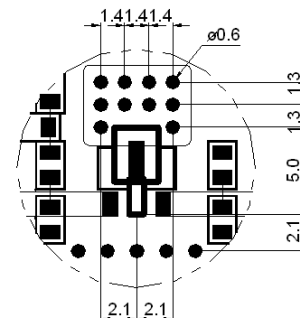
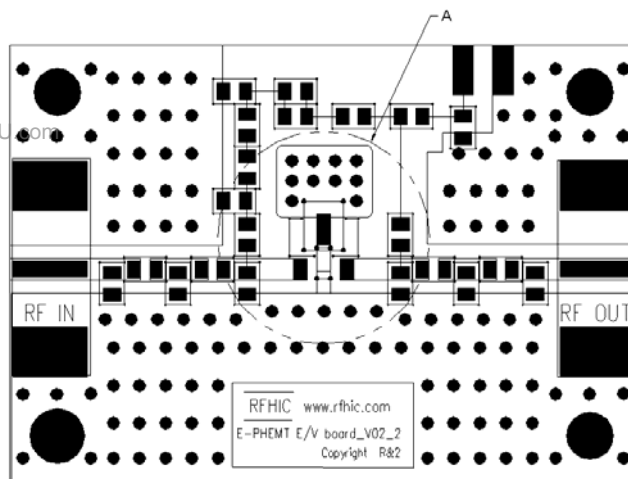


E-pHEMT**AE616****RFHIC****Package Dimensions (Type: SOT-89)****Recommended Pattern**

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*DETAIL A*PCB material (FR4), PCB thickness (0.8t), Via hole ($\phi 0.6$)

RFHIC Corporation (RFHIC) reserves the right to make changes to any products herein or to discontinue any product at any time without notice. RFHIC do not assume any liability for the suitability of its products for any particular purpose, and disclaims any and all liability, including without limitation consequential or incidental damages. The product specifications herein expressed have been carefully checked and are assumed to be reliable. However, RFHIC disclaims liability for inaccuracies and strongly recommends buyers to verify that the information they are using is current before placing purchase orders. RFHIC products are not intended for use in life support equipment or application where malfunction of the product can be expected to result in personal injury or death. Buyer uses or sells such products for any, such unintended or unauthorized application, buyer shall indemnify, protect and hold RFHIC and its directors, officers, stockholders, employees, representatives and distributors harmless against any and all claims arising out of such use. RFHIC's liability under or arising out of damages, claims of whatsoever kind and nature which RFHIC products could cause shall be limited in amount to the net purchase price of the products sold to buyer by RFHIC.