

Product Features

- Small size
- NO matching circuit needed
- High efficiency
- Dual supply voltage
- Higher linearity
- Higher productivity
- Lower manufacturing cost
- GaAs MMIC
- 3MHz – 2150MHz
- -63dBc CSO 135 Channels@ output Level +37dBmV
- -60dBc CTB 135 Channels@ output Level +37dBmV
- -70dBc CSO 8 Channels@ output Level +45dBmV
- -73dBc CTB 8 Channels@ output Level +45dBmV

Applications

- Satellite
- Repeater
- Base Station
- Converter
- CATV
- SMATV



Package : SOIC-8

Descriptions

The power amplifier is designed for base stations and repeater systems.

GaAs MMIC is used and attached on a copper carrier of 8 pin air cavity package with dual supply voltage

Operating Ranges

PARAMETER	UNIT	MIN	TYP	MAX
Device Voltage	VDC		+5	+5.3
Case Temperature	°C	-40	-	+85

Absolute Minimum and Maximum Ratings

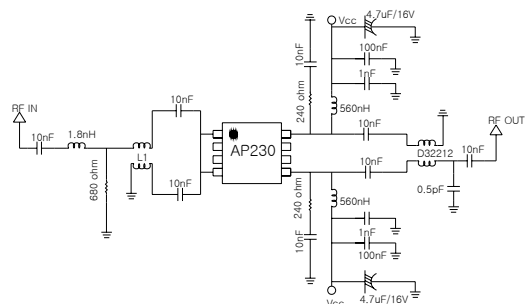
PARAMETER	UNIT	MIN	MAX
Device Voltage	VDC		+5.5
Device Current	mA		+320
RF Input Power	dBm		+10
Storage Temperature	°C	-40	+150

Specifications

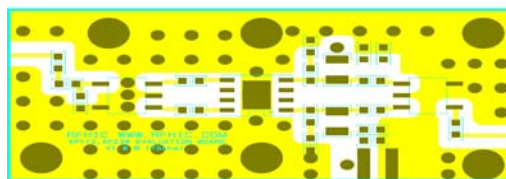
T=25°C, Vcc=5.0V, 75Ω system

Parameter	Units	Minimum	Typical	Maximum	Condition
Frequency Range	MHz		3MHz~2.15GHz		
Supply Voltage	V		5		Vcc=5V
Single Ended CATV Evaluation Circuit					
Current	mA	200	220	250	
S21-Gain	dB		16		3MHz
S21-Gain	dB		15		50MHz
S21-Gain	dB		14		2150MHz
Reverse (3 ~ 200MHz)					
S11-Input Return Loss	dB		-16		
S22-Output Return Loss	dB		-16		
Noise Figure			5.5		
OIP3	dBm		43		+5dBm/2 tone separated by 1MHz
OIP1	dBm		21		At 100MHz
Forward (50 ~ 870MHz)					
S11-Input Return Loss	dB		-11		
S22-Output Return Loss	dB		-11		
OIP3	dBm		37		+5dBm/2 tone separated by 1MHz
OIP1	dBm		21		At 800MHz
Noise Figure	dB		4		
CSO	50 - 870MHz	dBc	-63		135 channels,+37dBmV/ch,Single
CTB		dBc	-60		135 channels,+37dBmV/ch,Single
XMD		dBc	-55		135 channels,+37dBmV/ch,Single
CSO	3 - 150MHz	dBc	-70		8 channels,+45dBmV/ch,Single
CTB		dBc	-73		8 channels,+45dBmV/ch,Single
XMD		dBc	-70		8 channels,+45dBmV/ch,Single

Application 1 : Forward (50MHz ~ 2150MHz)

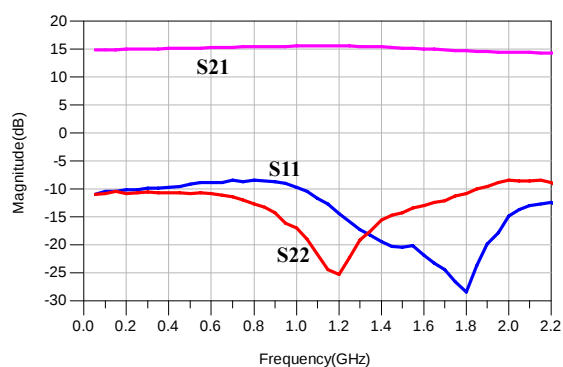


Evaluation Board Layout 50-870MHz

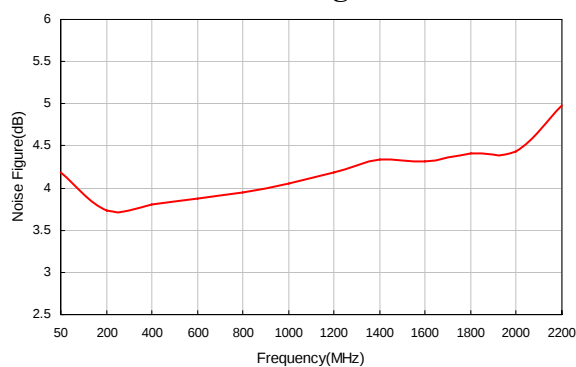


The transformers L1 and L2, used on the RFHIC evaluation board are hand wound baluns with following spec[L1=3.5turn, ferrite core (Ferronics 12-340-k), L2=3.5 turn, ferrite core(TDK,L6 RID 3*3*3 H1.2)] was used. $\phi 0.12$ 1UEW wire was used. An SMT transformer (D32212,D31766), can also be used.

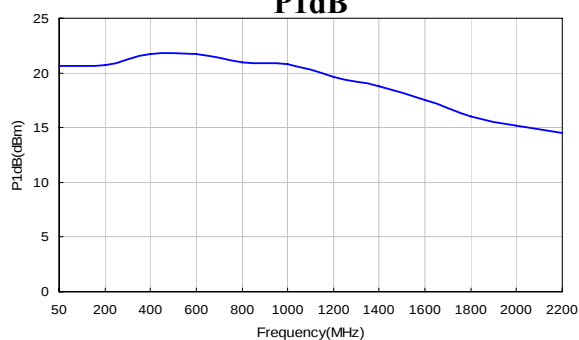
S-Parameters



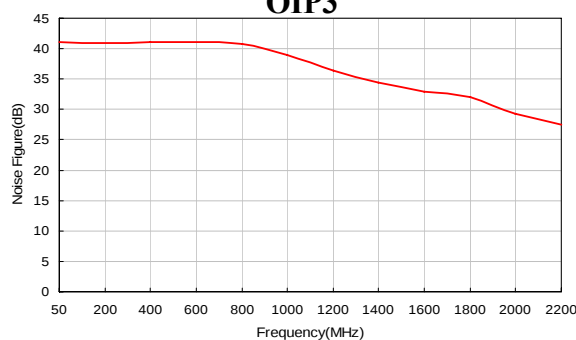
Noise Figure



P1dB

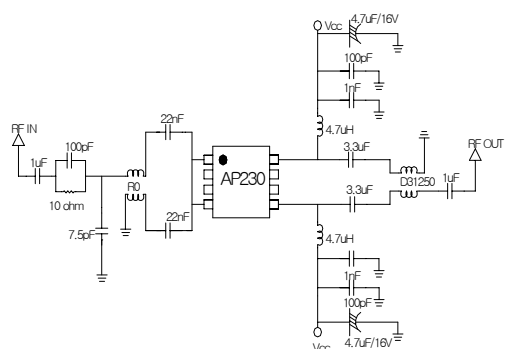


OIP3

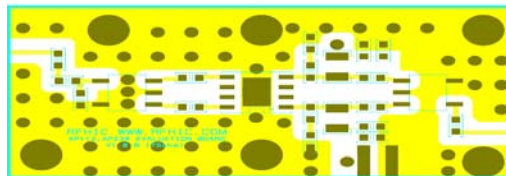


Level: +37dBmV		Tilt: 135CH FLAT								
FRQ	XMD(NCTA)	CTB_RAW	CTB_COR	N-FLR	CSU_RAW	CSU_COR	CSU_FRQ	CSL_RAW	CSL_COR	CSL_FRQ
55.25	59.8	69.4	69.5	84.7	83.8	88.1	56	68.7	68.8	54
77.25	59.9	68.7	68.8	85.1	69.3	69.5	78	84.5	88.8	76.51
109.25	60.1	66.4	66.4	84.9	82.9	87.2	109.99	69.1	69.2	107.99
211.25	60.4	66.2	66.2	83.8	80.9	83.9	212.49	68.7	68.8	209.99
331.25	60.4	65.6	65.6	82.7	76.9	78.2	332.49	69.3	69.5	329.99
445.25	61.2	66.2	66.2	83.4	76.5	77.6	446.5	71.7	72	443.99
547.25	62.9	66.7	66.8	81.7	74.8	75.7	548.5	72.5	73	545.98
637.25	63.4	66.2	66.3	82.3	75.4	76.5	638.5	75.2	76.2	635.99
745.25	64.5	65.5	65.6	81.4	73.4	74.2	746.49	76.1	77.5	743.98
859.25	64.8	65.1	65.3	80.3	72	72.8	860.49	75.8	78	857.99

Application 2 : Reverse (3MHz ~ 200MHz)

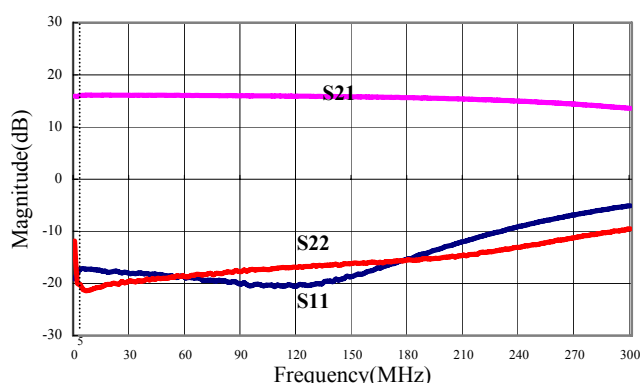


Evaluation Board Layout 5-200MHz

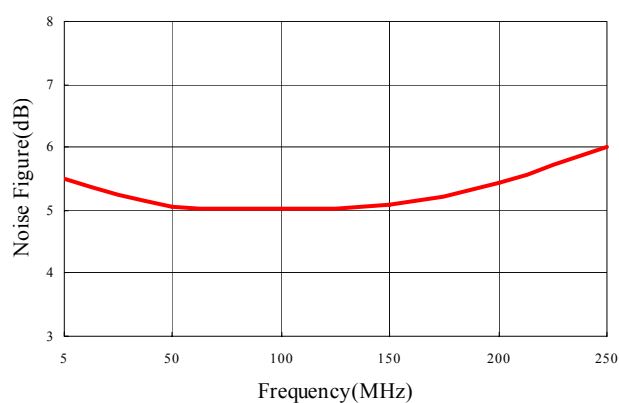


The transformers L1 and L2, used on the RFHIC evaluation board are hand wound baluns with following spec[L1=6 turn, ferrite core (TAIYO-YUDEN BF56 1.9*3.4*2.0), L2=3.5 turn, ferrite core(TDK,L6 RID 3*3*3 H1.2)] was used. $\phi 0.12$ 1UEW wire was used. An SMT transformer (D31044,D31766), can also be used.

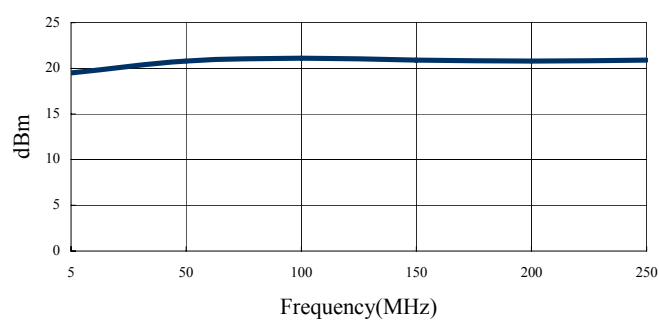
S-Parameters



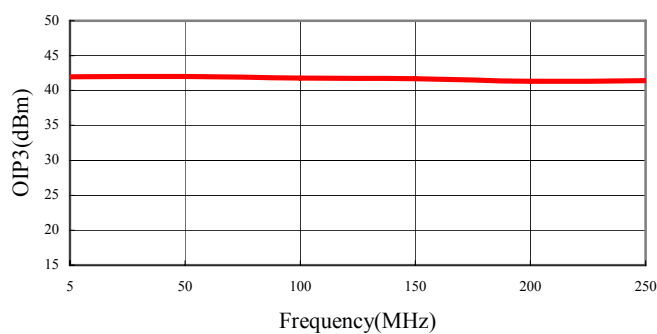
Noise Figure



P1dB



OIP3



Level: +45dBmV		Tilt: 8CH FLAT								
FRQ	XMD(NCTA)	CTB_RAW	CTB_COR	N-FLR	CSU_RAW	CSU_COR	CSU_FRQ	CSL_RAW	CSL_COR	CSL_FRQ
7	72.2	79.9	80.1	93.6	92.4	96.7	7.63	71.7	71.7	5.99
31	72.8	78.6	78.8	92.1	78.1	78.4	32	76.6	76.8	29.99
49	72.1	79.8	80.1	91.8	78.2	78.4	49.99	90.5	94.8	48.31

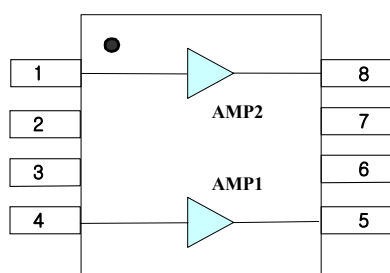
ESD Protection

For a safe use in all situations, it is recommended to have proper ESD control techniques while the device is being handled. Here are some recommended precautions;

- Person at a workbench should be earthed via a wrist strap and a resistor.
- All mains-powered equipment should be connected to the mains via an earth-leakage switch.
- Equipment cases should be grounded.
- Relative humidity should be maintained between 40% and 50%.
- An ionizer is recommended.
- Keep static materials, such as plastic envelopes and plastic trays etc. away from the workbench

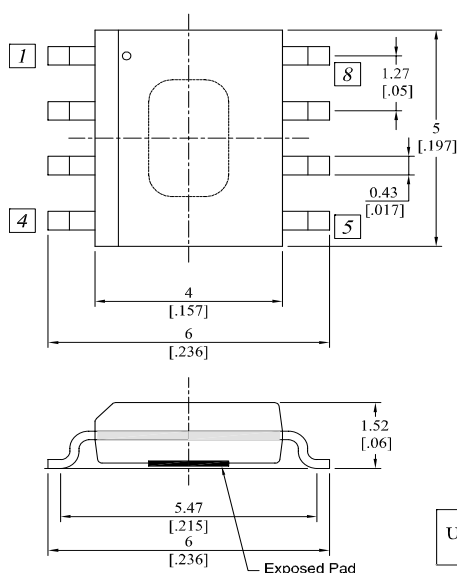
Package : SOIC-8 Type

Block Diagram

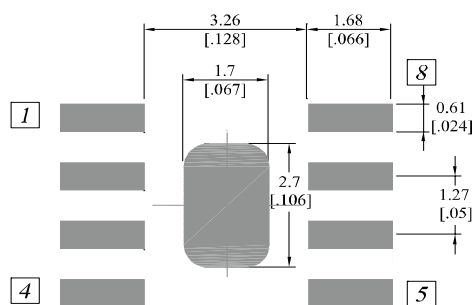


PIN No	Description
1	RF IN(2)
5	RF OUT(1)
4	RF IN(1)
8	RF OUT(2)
2, 3, 6, 7	GND
Exposed slug	GND

Package Dimensions (Type: SOIC-8)



Recommended Pattern



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