

Product Features

- DC ~ 500MHz
- GaAs HBT MMIC
- 40dBm Output IP3
- 18dB Gain
- 19.8dBm P1 dB
- Pb Free / RoHS Standard

Application

- CDMA,W-CDMA Medium Power Amplifier
- High Linearity Drive Amplifier



Package Type: SOT-89

Description

AP112 is a gain block amplifier designed with GaAs HBT MMIC in a low cost SOT-89 package. This MMIC amplifier is designed for use as driver devices for infrastructure equipment in the DC~500MHz

ELECTRICAL CHARACTERISTICS**Absolute Minimum and Maximum Ratings**

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

Operating Ranges

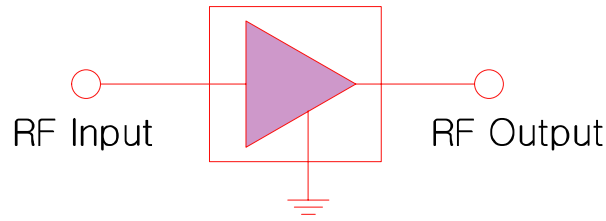
PARAMETER	UNIT	MIN	TYP	MAX
Operating Frequency	MHz	DC		500
Device Voltage	VDC		+5	+5.3
Case Temperature	°C	-40		+85

Electrical Specifications(Ta=+25°C, V_{DD}=+5V, +4.7V, Fc=70 MHz)

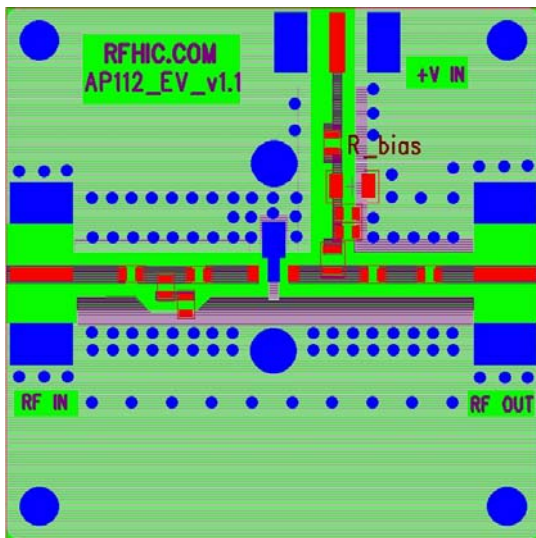
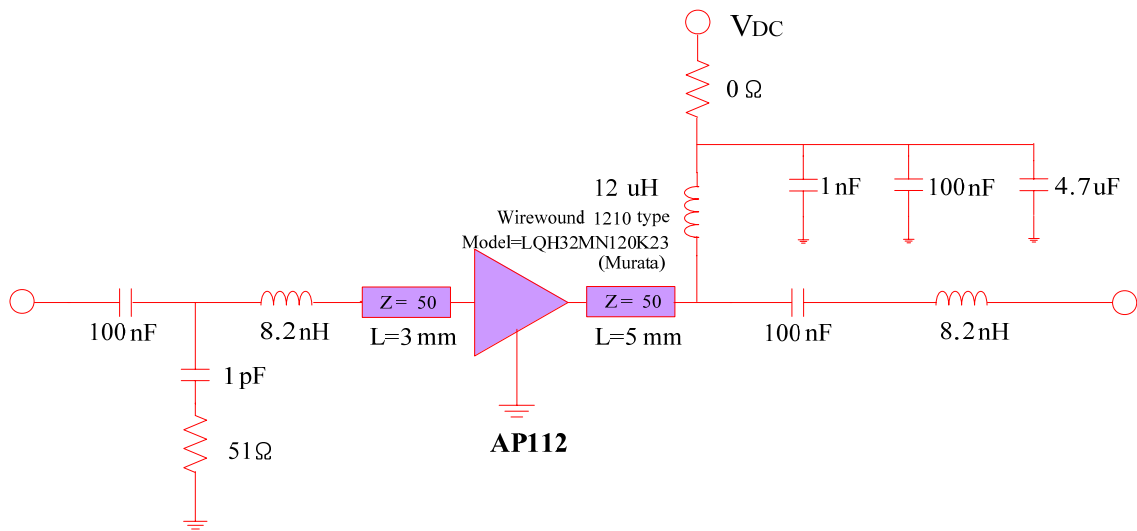
PARAMETER	UNIT	MIN	TYP	MAX	TYP
Gain	dB	17.8	18		17.8
Input Return Loss	dB		-14		-13.6
Output Return Loss	dB		-12		-11.7
Output IP3	dBm	38	40.5		37
1dB Compression Point	dBm		19.8		18.6
Noise Figure	dB		2.9	3.1	2.8
DC Current	mA	90	110	130	75
Supply Voltage	VDC		+5V		+4.7V

OIP3 is measured with two tones, at an output power of 5dBm/tone separated by 1MHz

Block Diagram



Application Circuit



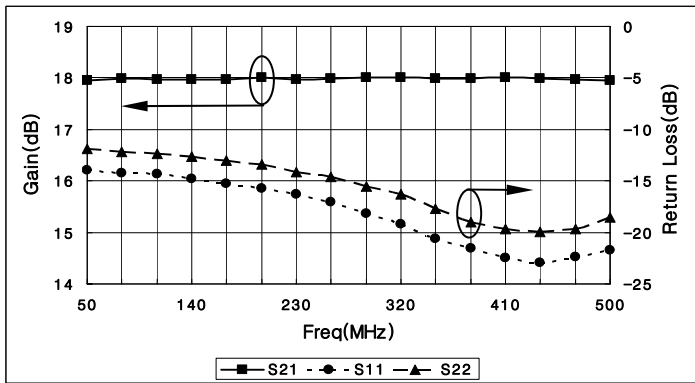
Recommended Bias Resistor Values

Vsupply	Rbias(5V)	Rbias(4.8V)	Rbias(4.5V)
6V	10	15	33
7V	20	28	55
8V	30	41	77
9V	40	53	57

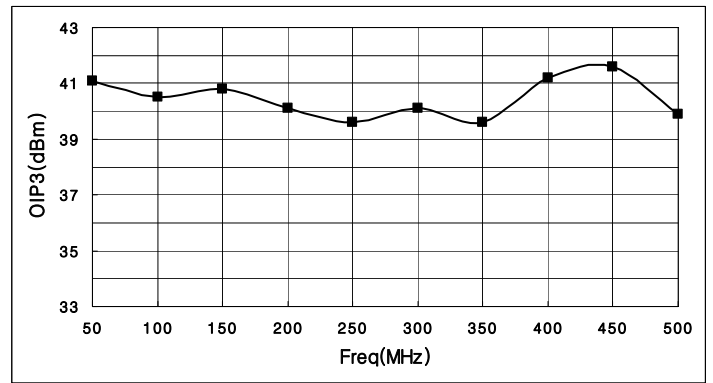
Performance Charts ($V_d=5V, I_d=110mA, T_c=25^\circ C$)

Frequency	MHz	50	100	150	200	250	300	350	400	450	500
Gain	dB	17.96	17.97	17.97	18	17.98	18	18	17.98	17.96	17.96
S11	dB	-13.9	-14.4	-14.9	-15.7	-16.9	-18.4	-19.7	-21.5	-22.2	-20.7
S22	dB	-11.9	-12.3	-12.7	-13.5	-14.5	-15.9	-17.3	-19.1	-19.5	-18.1
OIP3	dBm	41.1	40.5	40.8	40.1	39.6	40.1	39.6	41.2	41.6	39.9
P1dB	dBm	19.8	19.9	19.9	20	20	20	20.1	20.1	19.9	19.8
Noise Figure	dB	2.85	2.94	3.01	3.06	3.11	3.18	3.21	3.26	3.31	3.36

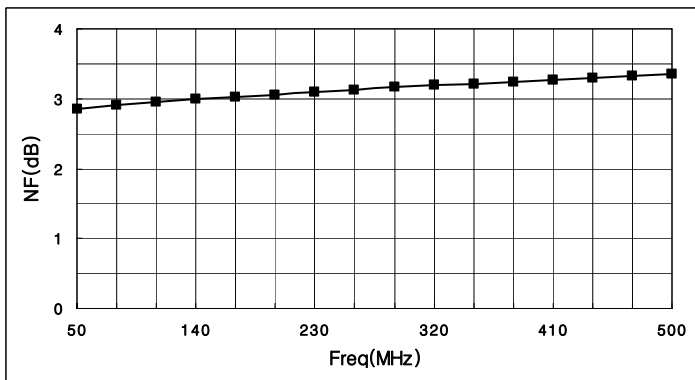
S-Parameter vs. Frequency



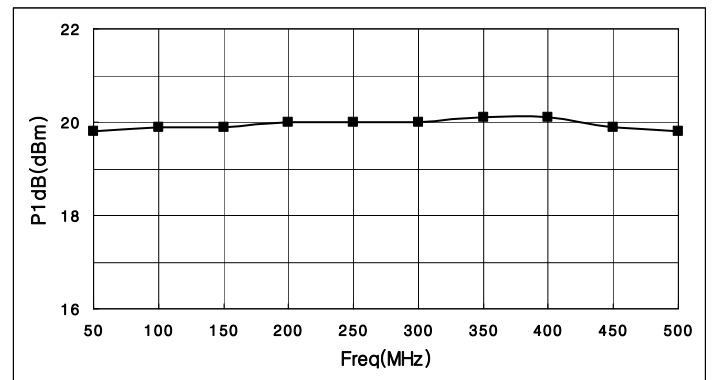
OIP3 vs. Frequency



Noise Figure vs. Frequency



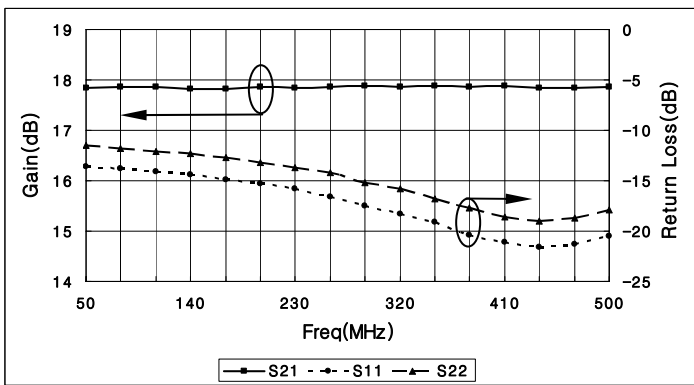
P1dB vs. Frequency



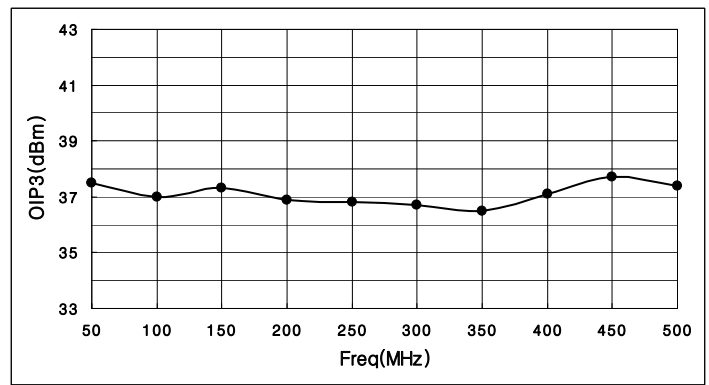
Performance Charts ($V_d=4.7V$, $I_d=75mA$, $T_c=25^\circ C$)

Frequency	MHz	50	100	150	200	250	300	350	400	450	500
Gain	dB	17.84	17.83	17.83	17.85	17.86	17.87	17.88	17.91	17.84	17.86
S11	dB	-13.6	-14	-14.5	-15.3	-16.3	-17.8	-19.1	-20.7	-21.7	-20.5
S22	dB	-11.6	-11.8	-12.4	-13.2	-14.1	-15.4	-16.8	-18.3	-19.1	-17.9
OIP3	dBm	37.5	37	37.3	36.9	36.8	36.7	36.5	37.1	37.7	37.4
P1dB	dBm	18.6	18.6	18.6	18.6	18.8	18.6	18.7	18.7	18.7	18.7
Noise Figure	dB	2.8	2.84	2.92	3	3.04	3.12	3.16	3.23	3.27	3.32

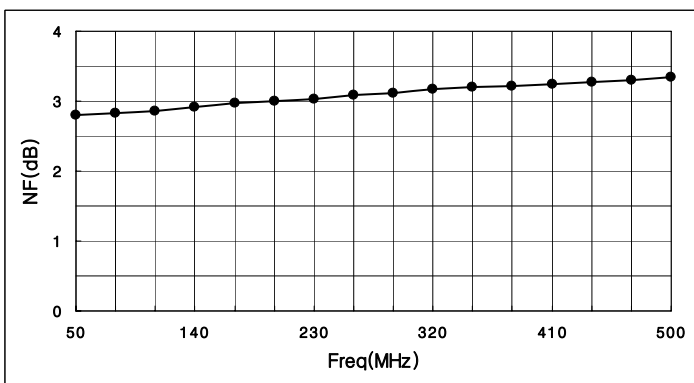
S-Parameter vs. Frequency



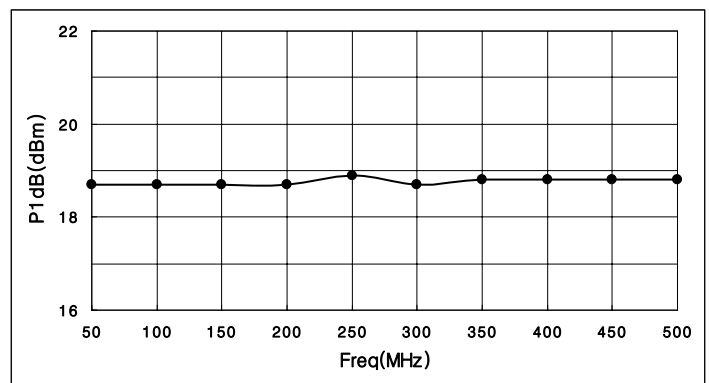
OIP3 vs. Frequency



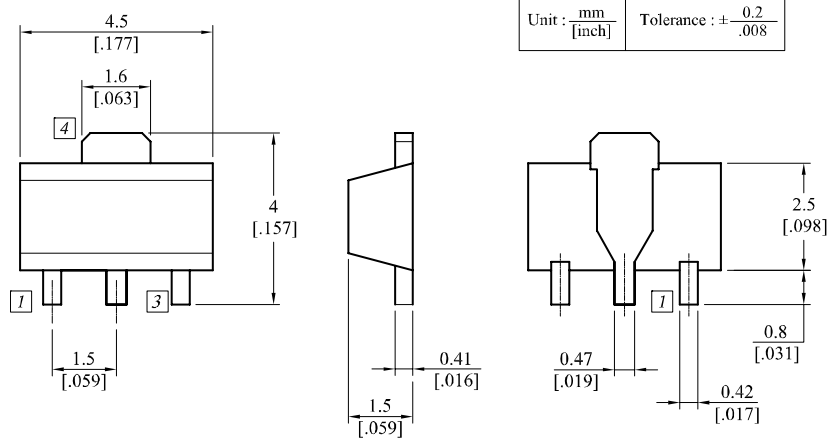
Noise Figure vs. Frequency



P1dB vs. Frequency



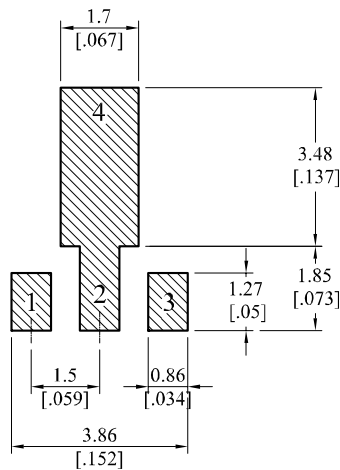
Package Dimensions (Type: SOT-89)



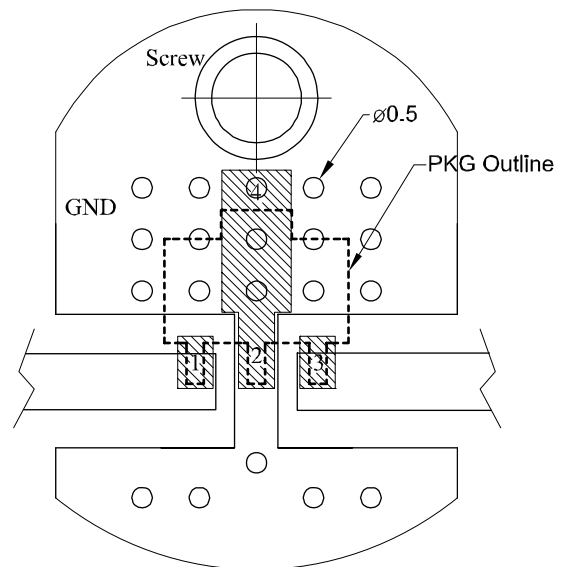
Pin No	Function
1	Input
2	Ground
3	Output/Bias
4	Ground

! ESD sensitive
Observe precautions for handling, testing and packaging.

Recommended Pattern



Recommended Mounting Configuration



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