

Product Features

- 50 ~ 3000MHz
- GaAs MMIC
- 43dBm Output IP3
- 13.7dB Gain
- 24dBm P1 dB
- Single +9V Supply
- SOT-89 SMT Package

Applications

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



Package Type: SOT-89

Description

AP209 is a high linearity amplifier designed with GaAs MMIC in a low cost SOT-89 package. It is designed for applications such as GSM, CDMA, W-CDMA drive devices which require high IP3.

Absolute Maximum Ratings

PARAMETER	UNIT	MIN	MAX
Device Voltage	VDC		+12
RF Input Power(Continuous)	dBm		+10
Storage Temperature	°C	-40	+150

Operating Ranges

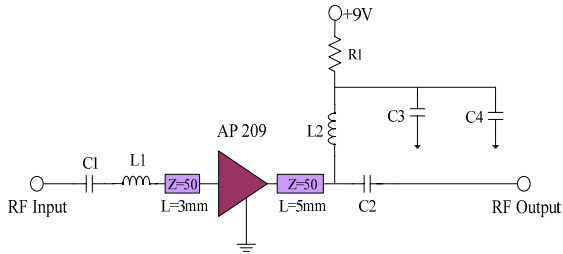
PARAMETER	UNIT	MIN	TYP	MAX
Operating Frequency	MHz	50		3000
Device Voltage	VDC		+9	+10
Case Temperature	°C	-40		+85

Electrical Specifications(Ta=+25 °C, V_{DD}=+9V&+7V, Test Freq=900 MHz)

PARAMETER	Units	Min	Typ	Max	Typ
Gain (S ₂₁)	dB	12	13.7		13.3
Input Return Loss (S ₁₁)	dB		-21		-20
Output Return Loss (S ₂₂)	dB		-17		-17
Output 3 rd Order Intercept Point (OIP3)	dBm	39	44		42
Output 1dB compression Point (P ₁ dB)	dBm		24		23
Noise Figure	dB		2.5		2.5
DC Operating Current	mA	90	120	140	117
Supply Voltage	Vdc		+9V		+7V
Thermal Resistance (R _{th})	°C/W			40	

OIP3 is measured with two tones, at an output power of +10dBm/tone separated by 1MHz.

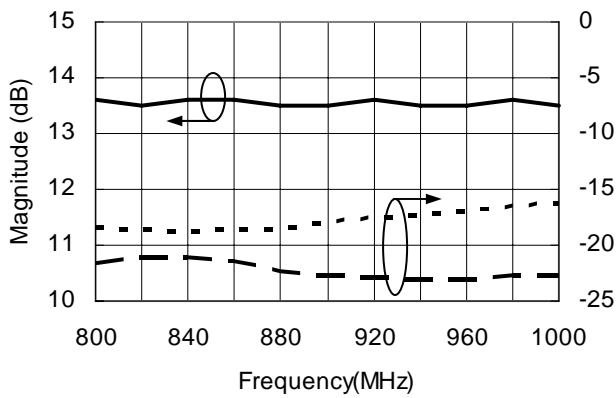
Application Circuit (900MHz, Vdc=+9V)



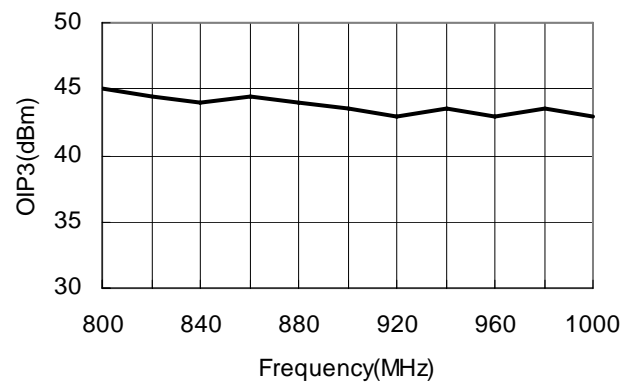
Bill of Material

Parameter		Parameter	
C1	100 pF	L1	3.9 nH
C2	6.0 pF	L2	18 nH
C3	100 pF	R1	0 Ω
C4	0.1 uF		

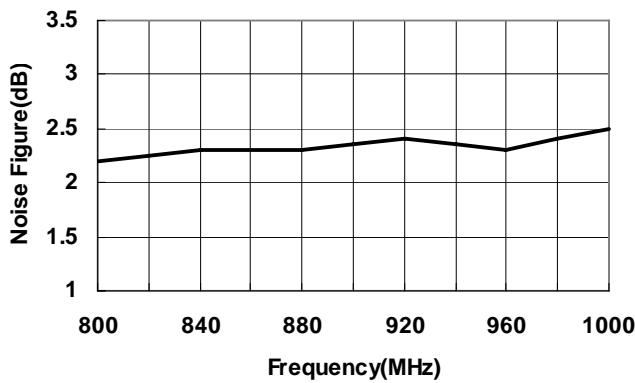
S-Parameter vs. Frequency



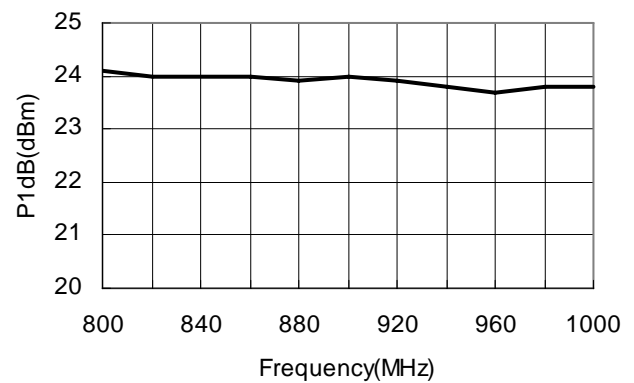
OIP3 vs. Frequency



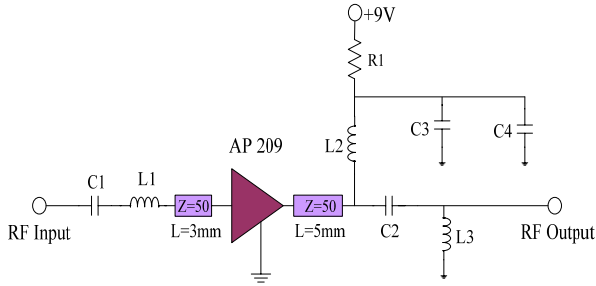
Noise Figure vs. Frequency



P1dB vs. Frequency



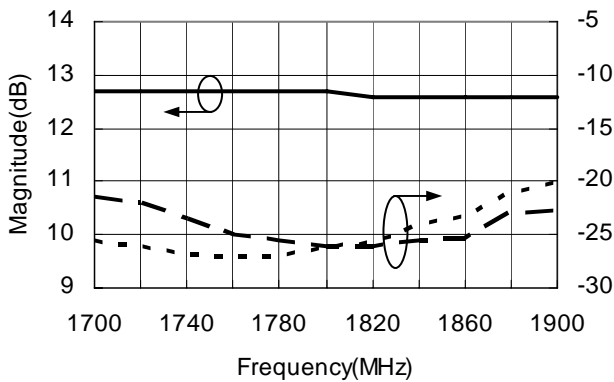
Application Circuit (1800MHz, Vdc=+9V)



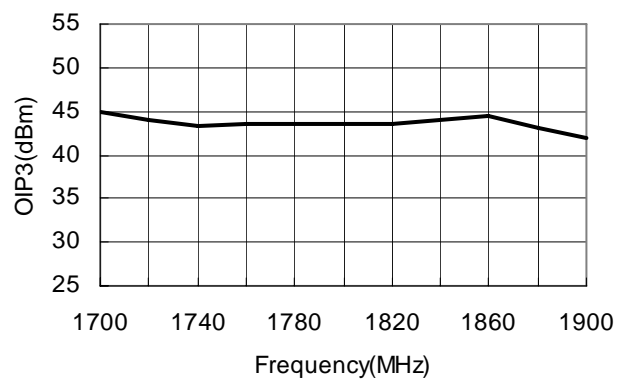
Bill of Material

Parameter		Parameter	
C1	2.0 pF	L1	3.9 nH
C2	6.0 pF	L2	18 nH
C3	100 pF	L3	4.7 nH
C4	0.1 uF	R1	0 Ω

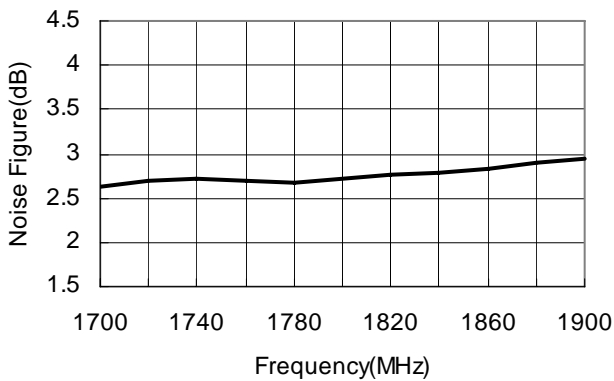
S-Parameter vs. Frequency



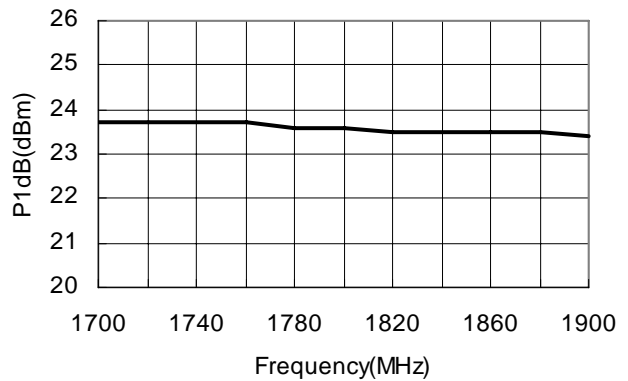
OIP3 vs. Frequency



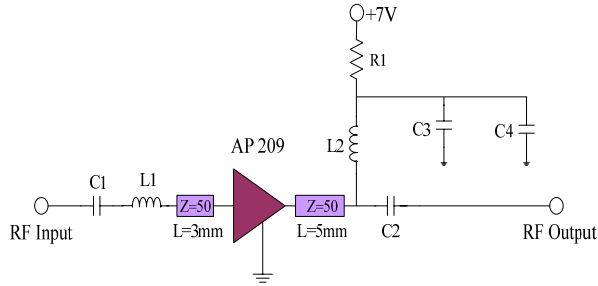
Noise Figure vs. Frequency



P1dB vs. Frequency



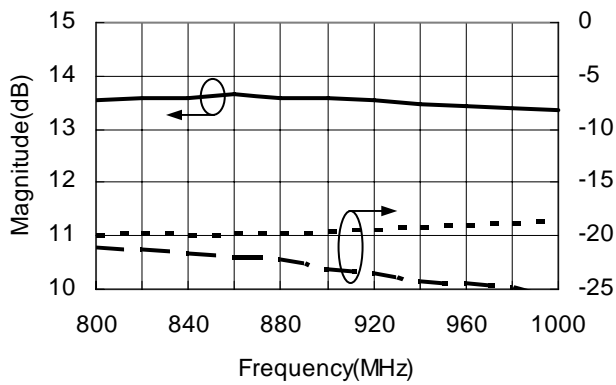
Application Circuit (900MHz, Vdc=+7V)



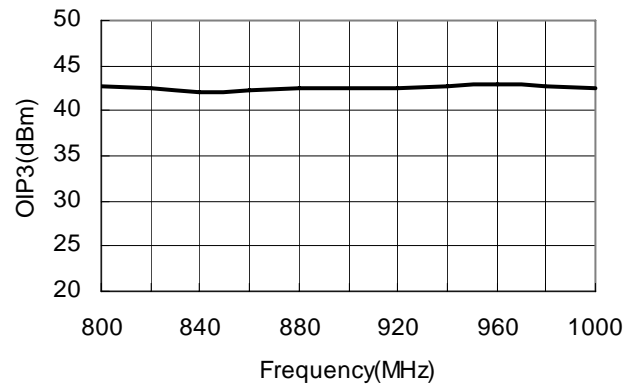
Bill of Material

Parameter		Parameter	
C1	100 pF	L1	3.9 nH
C2	6.0 pF	L2	18 nH
C3	100 pF	R1	0 Ω
C4	0.1 uF		

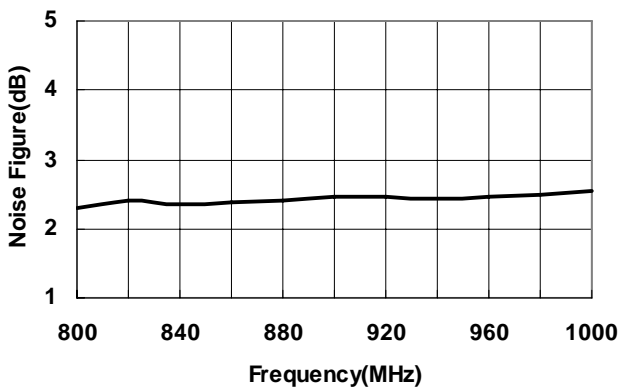
S-Parameter vs. Frequency



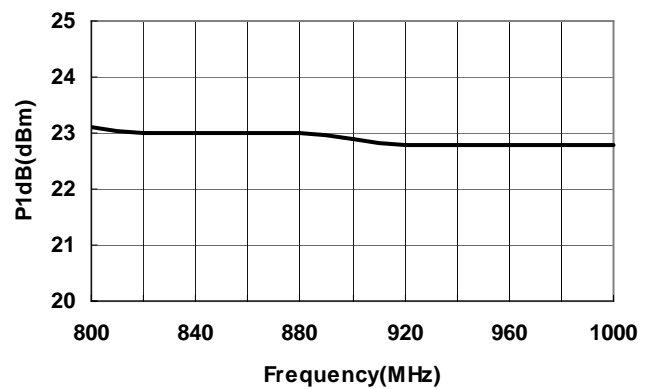
OIP3 vs. Frequency



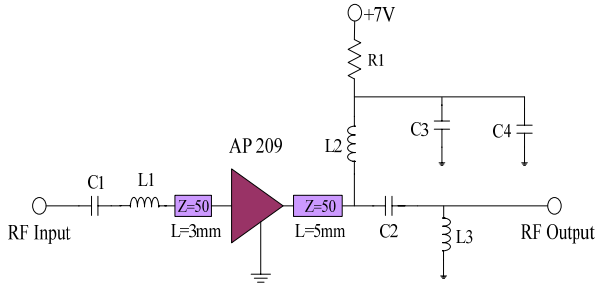
Noise Figure vs. Frequency



P1dB vs. Frequency



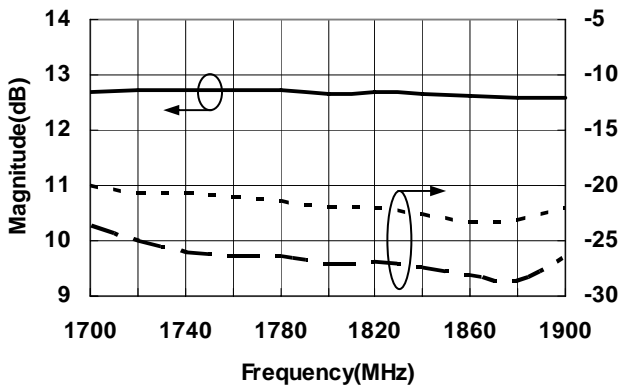
Application Circuit (1800MHz, Vdc=+7V)



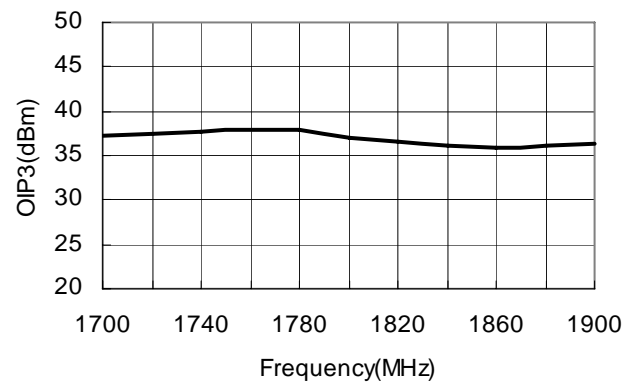
Bill of Material

Parameter		Parameter	
C1	2.0 pF	L1	3.9 nH
C2	6.0 pF	L2	18 nH
C3	100 pF	L3	4.7 nH
C4	0.1 uF	R1	0 Ω

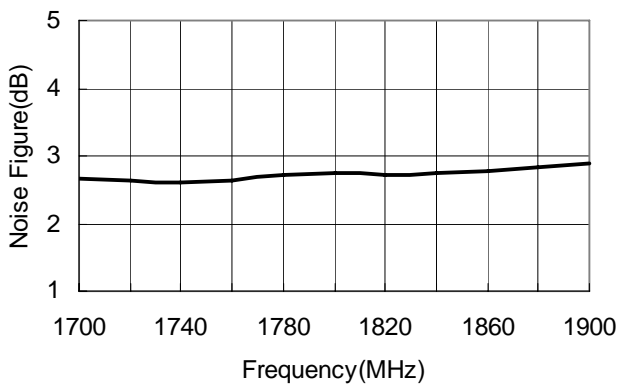
S-Parameter vs. Frequency



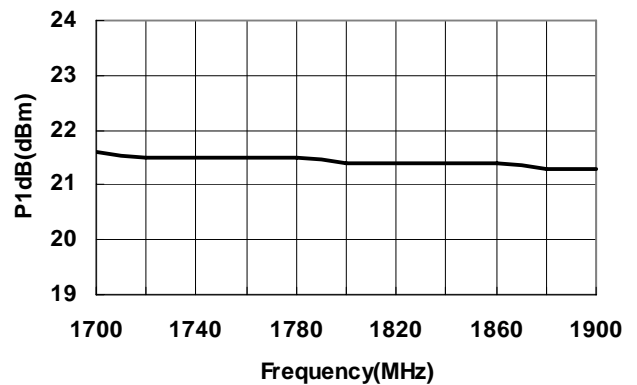
OIP3 vs. Frequency



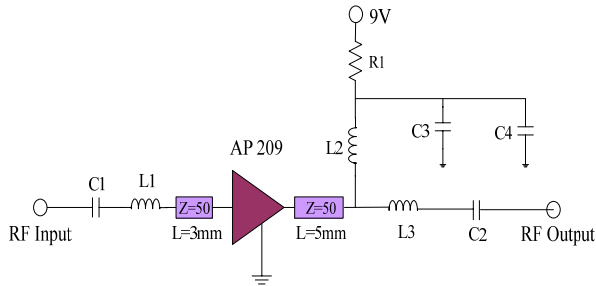
Noise Figure vs. Frequency



P1dB vs. Frequency



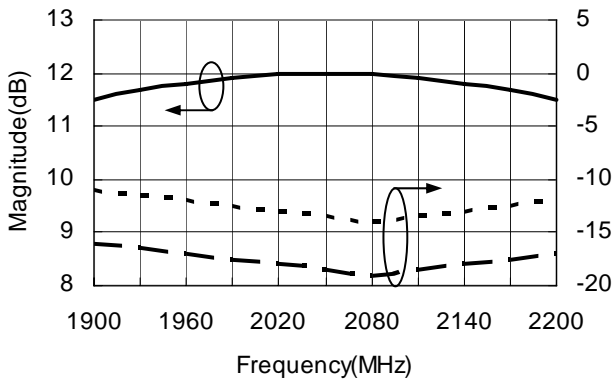
Application Circuit (2100MHz, Vdc=+9V)



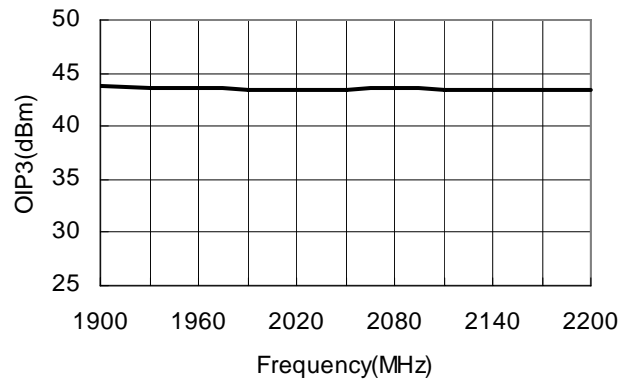
Bill of Material

Parameter		Parameter	
C1	1.2 pF	L1,L3	3.9 nH
C2	1.5 pF	L2	18 nH
C3	100 pF	R1	0 Ω
C4	0.1 uF		

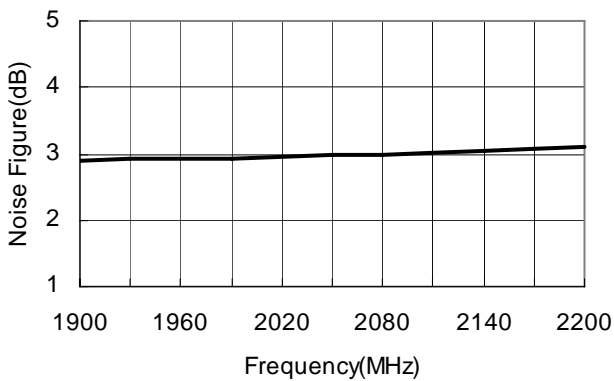
S-Parameter vs. Frequency



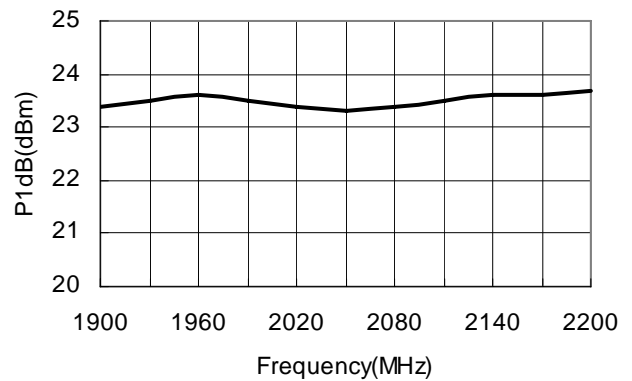
OIP3 vs. Frequency



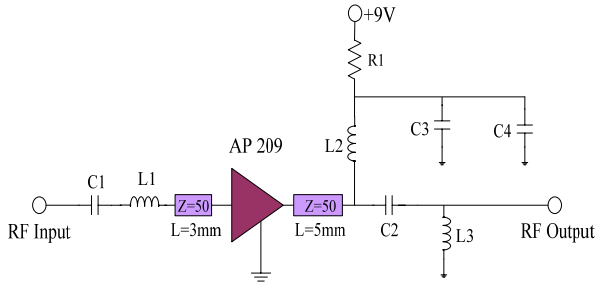
Noise Figure vs. Frequency



P1dB vs. Frequency



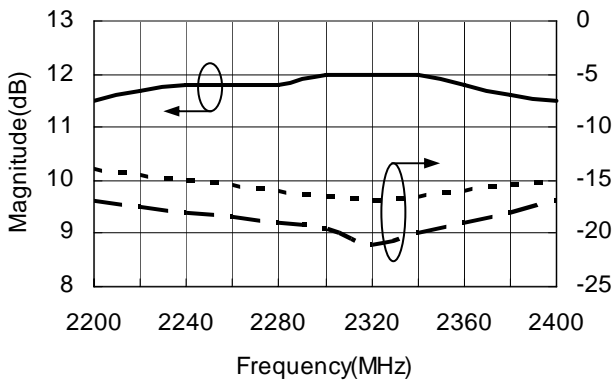
Application Circuit (2300MHz, Vdc=+9V)



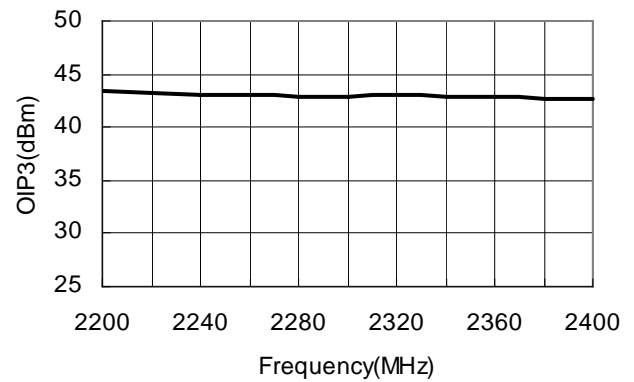
Bill of Material

Parameter		Parameter	
C1	0.75 pF	L1	3.9 nH
C2	2.7 pF	L2	18 nH
C3	100 pF	L3	2.7 nH
C4	0.1 uF	R1	0 Ω

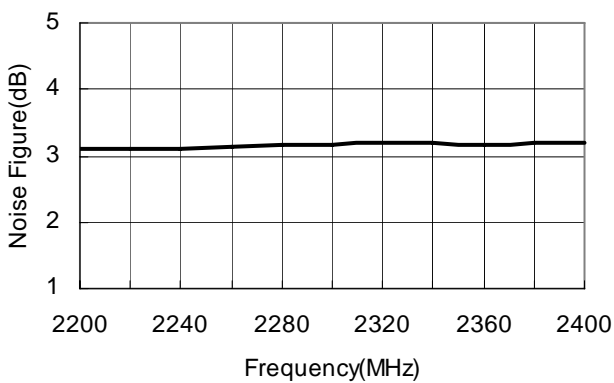
S-Parameter vs. Frequency



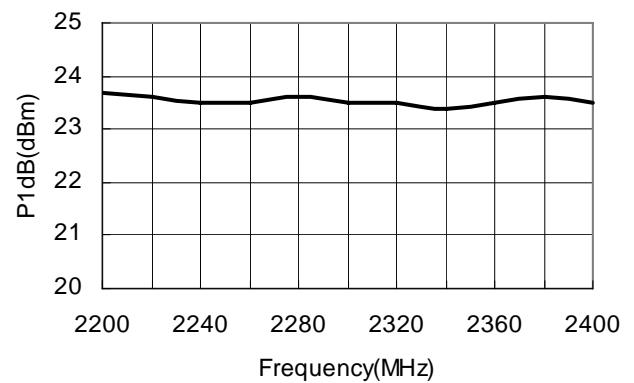
OIP3 vs. Frequency



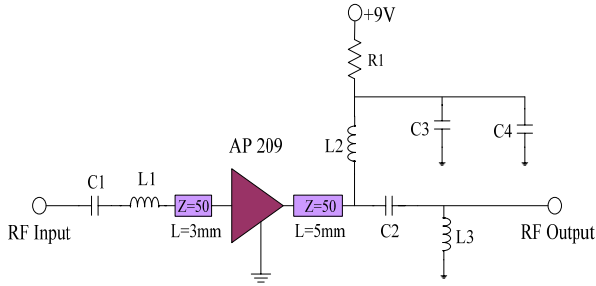
Noise Figure vs. Frequency



P1dB vs. Frequency



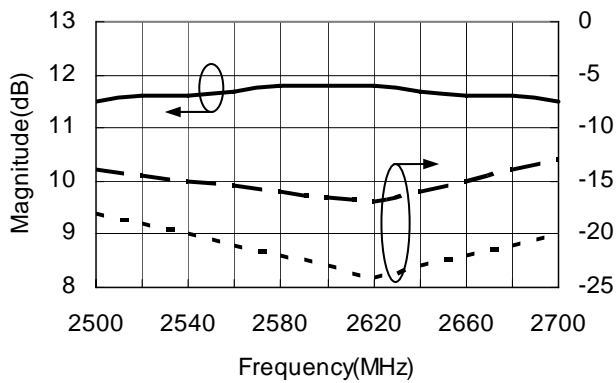
Application Circuit (2600MHz, Vdc=+9V)



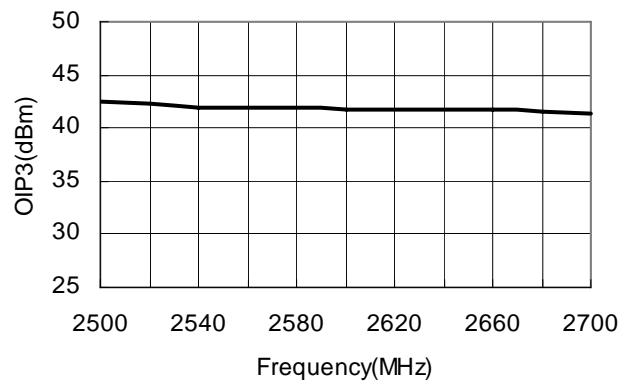
Bill of Material

Parameter		Parameter	
C1	0.75 pF	L1	2.7 nH
C2	2.0 pF	L2	18 nH
C3	100 pF	L3	1.8 nH
C4	0.1 uF	R1	0 Ω

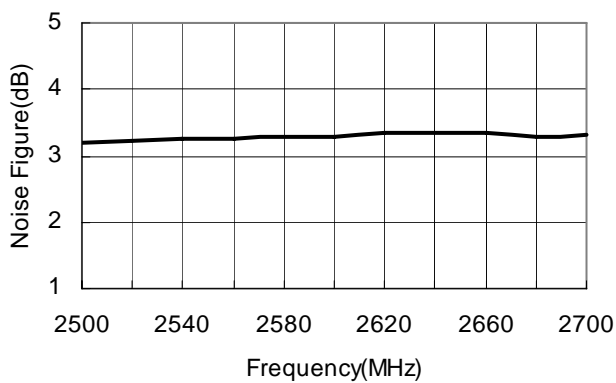
S-Parameter vs. Frequency



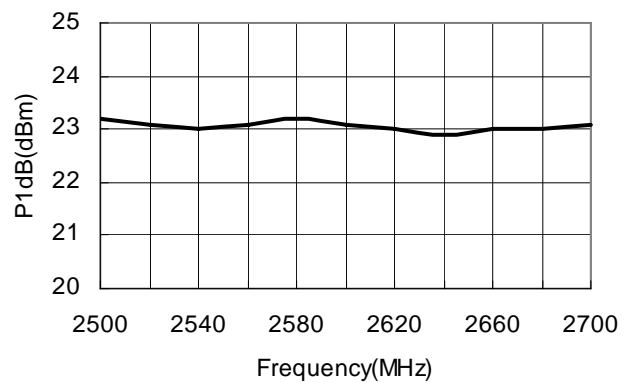
OIP3 vs. Frequency



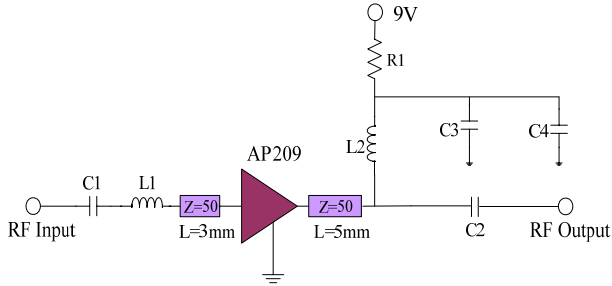
Noise Figure vs. Frequency



P1dB vs. Frequency



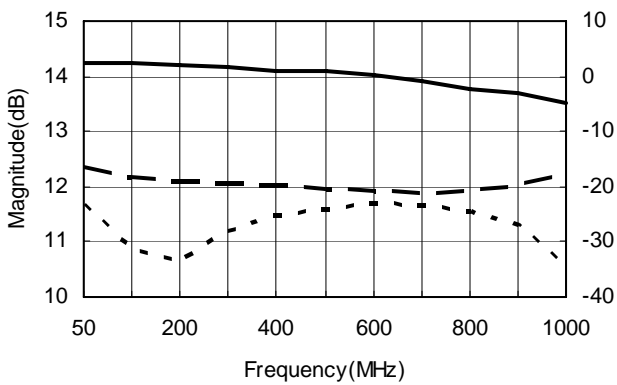
Application Circuit (50~1000MHz, Vdc=+9V)



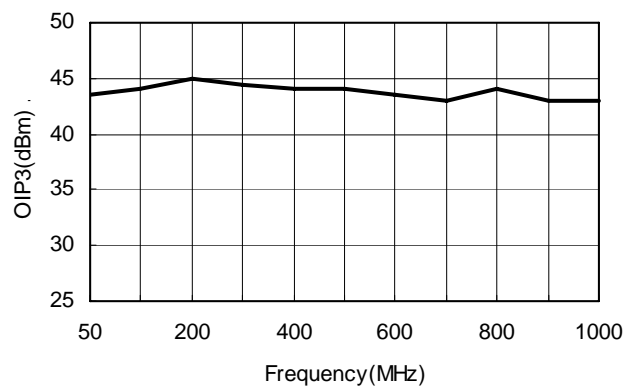
Bill of Material

Parameter		Parameter	
C1	1 nF	L1	6.8 nH
C2	1 nF	L2	1 uH Wirewound 2520Type
C3	100 pF		
C4	100 nF	R1	0 Ω

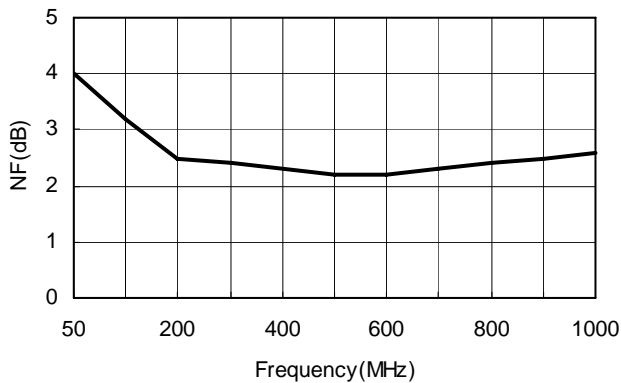
S-Parameter vs. Frequency



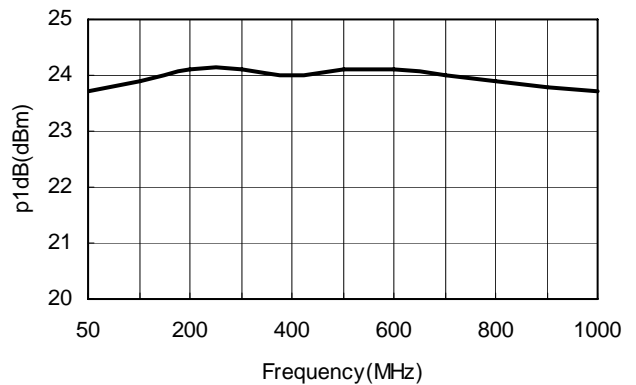
OIP3 vs. Frequency



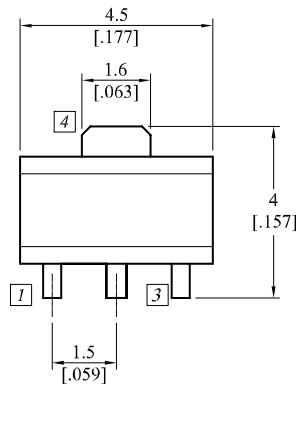
Noise Figure vs. Frequency



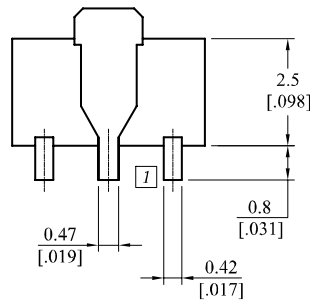
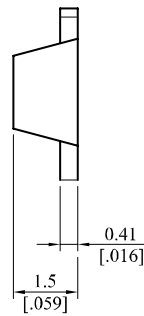
P1dB vs. Frequency



Package Dimensions (Type: SOT-89)



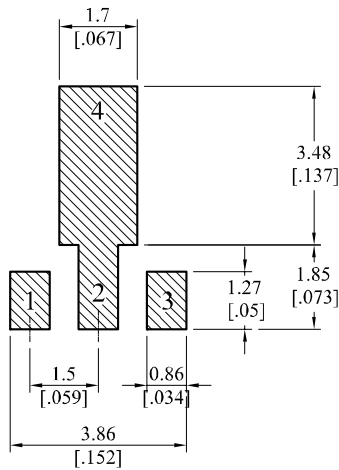
Unit : mm [inch]	Tolerance : ± 0.2 [.008]
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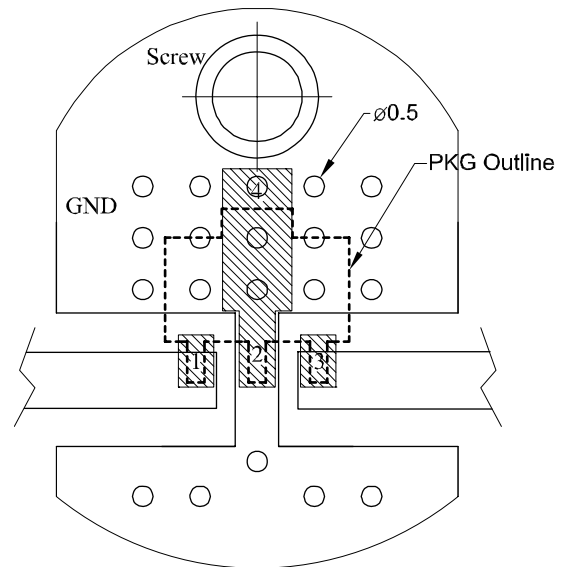
Pin No	Function
1	Input
2	Ground
3	Output/Bias
4	Ground

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

Recommended Pattern



Recommended Mounting Configuration



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