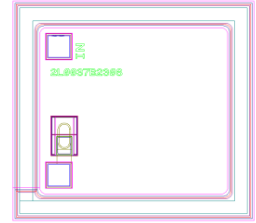


AMT1221
0.1 – 4GHz Low Noise Amplifier Chip

Key Features :



- Frequency range : 0.1 – 4GHz
- Typical gain : 15dB
- Input standing wave : 1.3
- Output standing wave : 1.3
- Noise figure : 3dB
- P-1 : 15dBm @ +5V/40mA
- Chip dimensions : 0.5mm x 0.45mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT1221 chip is a Gallium Arsenide (GaAs) high performance Low Noise Amplifier, it covers 0.1 – 4GHz frequency range. It uses +5V single voltage operation, noise figure is 3dB, and 15dB typical gain. This chip is designed with ground through metal vias on the back technology.

Absolute Maximum Ratings (Ta = 25°C)

| Symbol | Parameter | Value | Remark |
|--------|-----------------------|--------------|--------------------------------|
| Vd | Drain Voltage | +7V | |
| Pin | Input Signal Power | 17dBm | |
| Tch | Operating Temperature | 150°C | |
| Tm | Sintering Temperature | 310°C | 30s, N ₂ protection |
| Tstg | Storage Temperature | -65 ~ +150°C | |

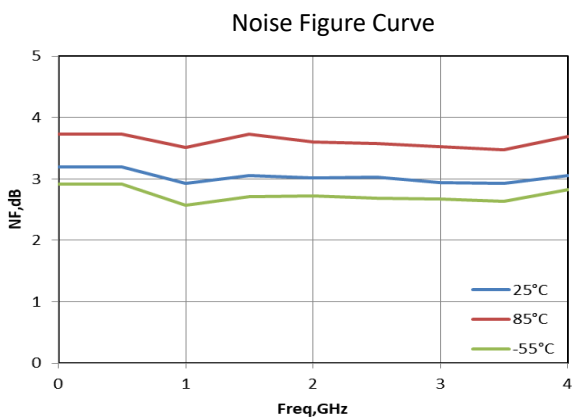
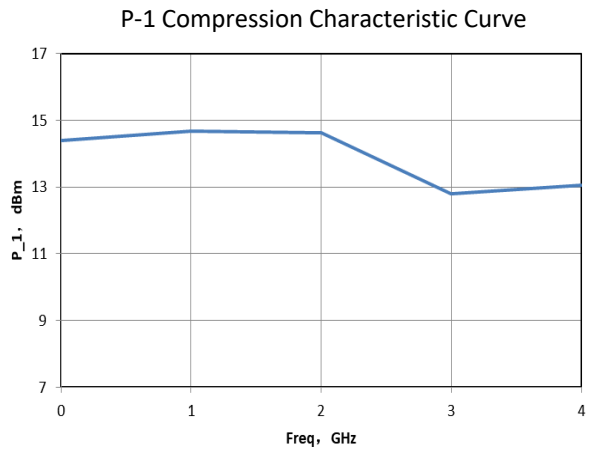
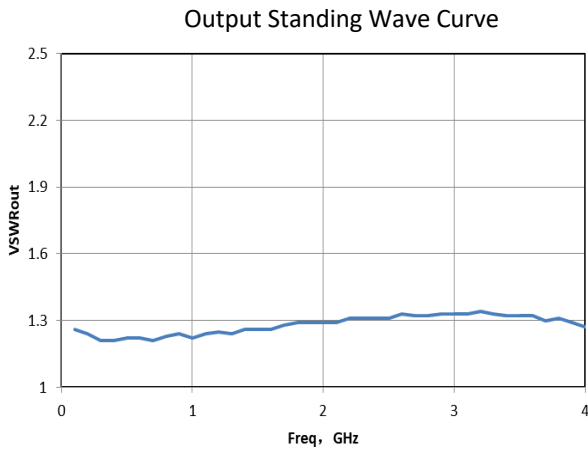
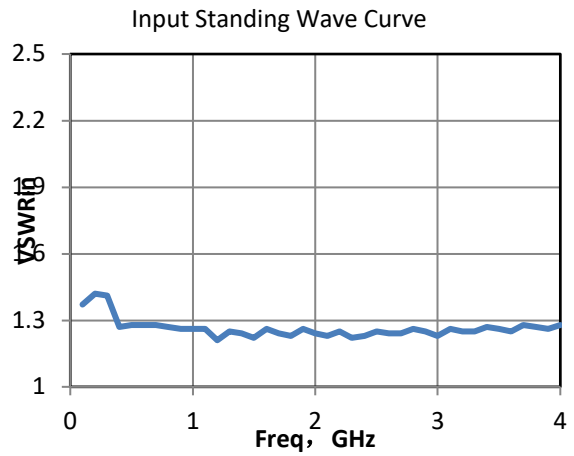
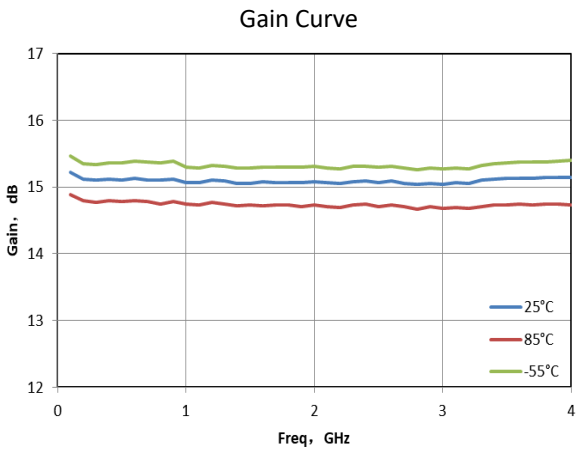
[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

Electrical Characteristics (Ta = 25°C)

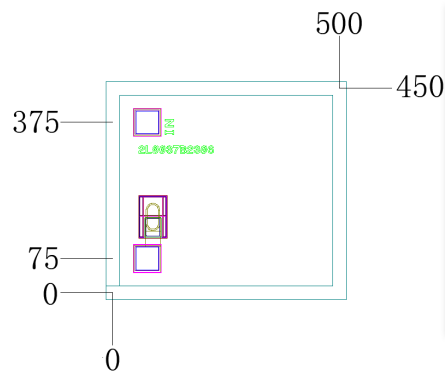
| Symbol | Parameter | Test Conditions | Value | | | Unit |
|----------|---------------------------|----------------------------|-------|---------|-----|------|
| | | | Min | Typical | Max | |
| G | Gain | Vd = +5V F : 0.1 ~ 4GHz | - | 15 | - | dB |
| NF | Noise Figure | | - | 3 | - | dB |
| Id | Static Current | | - | 40 | - | mA |
| VSWR_in | Input Standing Wave | | - | 1.3 | - | - |
| VSWR_out | Output Standing Wave | | - | 1.3 | - | - |
| P-1 | Output Power at 1dB point | | - | 14 | - | dBm |

AMT1221
0.1 – 4GHz Low Noise Amplifier Chip

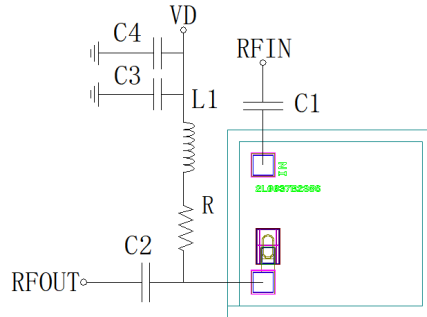
Typical Performance



Chip Dimensions (Unit : μm)



Chip Layout Diagram



| Frequency | 100MHz | 1GHz | 2GHz |
|------------------------|------------|------|------|
| L1(nH) | 270 | 47 | 22 |
| C1, C2(pF) | 200 | 20 | 10 |
| C3/C4(μF) | 0.001/0.01 | | |
| R(Ω) | 48 | | |

Pad Definition

| Symbol | Function Description | Dimensions |
|--------|---|---------------------------------|
| RFIN | RF signal input port, connecting to external 50Ω system, need to add DC blocking capacitor. | $50\mu\text{m} * 50\mu\text{m}$ |
| RFOUT | RF signal output port, connecting to external 50Ω system, need to add DC blocking capacitor. | $50\mu\text{m} * 50\mu\text{m}$ |

Please see Appendix A for details.