Suzhou Talent Microwave,Inc
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# Cryogenic Low Noise Amplifier

## 4-12GHz/4K Noise temperature/32dB Gain

## Model: TLLA4G12G-32-00-Cryo

TLLA4G12G-32-00-Cryo is a cryogenic low noise amplifier with a typical small signal gain of 32 dB across the frequency range of 4 to 12 GHz. The drain voltage range requirement for the amplifier is 0.7 to 1.4V DC and gate voltage range is from -2 to +2V DC. The input and output port configuration offers coax adapter structure with SMA female.

### Features:

- Frequency range: 4-12GHz
- Gain: 32dB Min
- Capable of operation at 4 K
- Good Power and Gain Flatness
- 50 Ohm Matched Input / Output

### Applications:

- Communication systems

### Electrical Characteristics:

| Parameter | Min | Typ | Max | Units |
|---|---|---|---|---|
| Frequency range | 4 | | 12 | GHz |
| Small Signal Gain | 32 | | | dB |
| Gain Flatness | | ±1.0 | | dB |
| Average Noise Temperature | | 4 | | K |
| Input Return Loss | | | -3 | dB |
| Output Return Loss | | | -10 | dB |
| Drain voltage range | 0.7 | | 1.4 | V |
| Drain current range | | 20 | | mA |
| Gate voltage range | -2 | | +2 | V |
| Power Consumption | | | 26 | mW |
| Impedance | 50 | | | Ohms |

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## Mechanical Specifications:

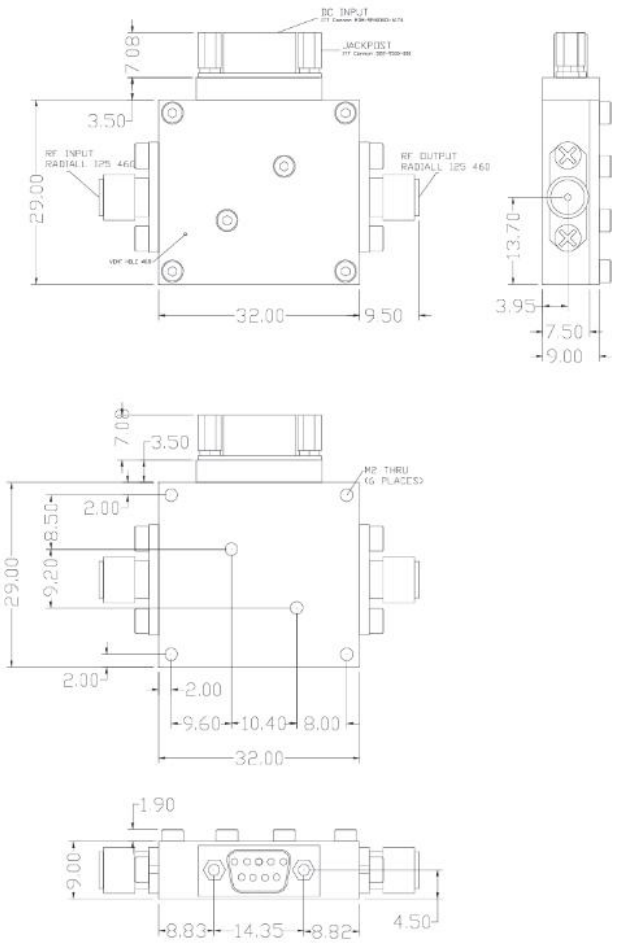
| Parameter | Value | Units |
|---|---|---|
| Input /Output Connector | SMA Female/SMA Female | |
| DC Bias | Micro MDM 9-Pin | |
| Size | 32*29*9 | mm |

## Absolute Maximum Ratings:

| Parameter | Value |
|---|---|
| Drain voltage | +1.4 V |
| Gate voltage | +2 V |
| ESD sensitivity (HBm) | Class 0, passed 150V |

## Outline Drawing:

Unit:mm




ESD Protection: Strictly adhere to ESD precautions to prevent electrostatic damage.

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## Supply Conector:

| Micro MDM Pin | | | |
|---|---|---|---|
| Pin# | 功能Function | Pin# | Function |
| 1 | GND | 5 | VG2 |
| 2 | VD1 | 6 | VD3 |
| 3 | VG1 | 7 | VG3 |
| 4 | VD2 | 8~9 | NC |

## Environmental Conditions:

| Parameter | Min | Typ | Max | Units |
|---|---|---|---|---|
| Relative humidity | | 95 | | % |
| Altitude | 10,000 | | | feet |
| Shock / Vibration(MIL-STD-810F) | 25g rms (15 degree 2KHz) endurance, 1 hour per axis | | | |
| Shock(non operating) | 20G for 11msc half sin wave,3 axis both directions | | | |

## Ordering Information:

| Base Number | Description | Revision |
|---|---|---|
| TLLA4G12G-32-00-Cryo | Cryogenic Low Noise Amplifier, 4-12GHz,<br>Noise temperature: 4K, Gain: 32dB | Rev.1.0 |

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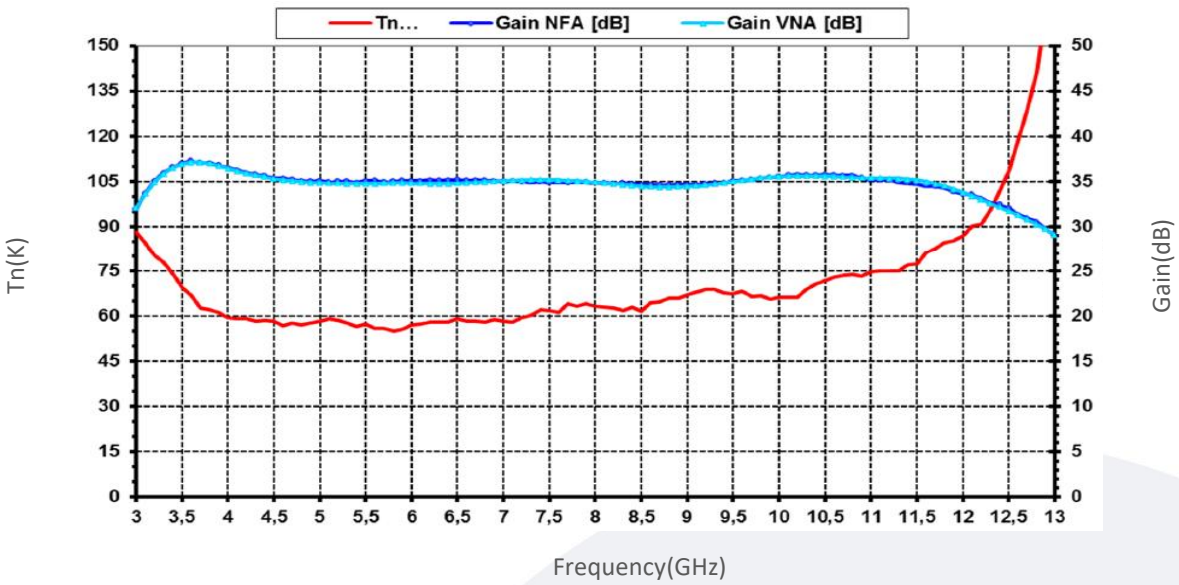
## Typical Performance Data(T=295K):

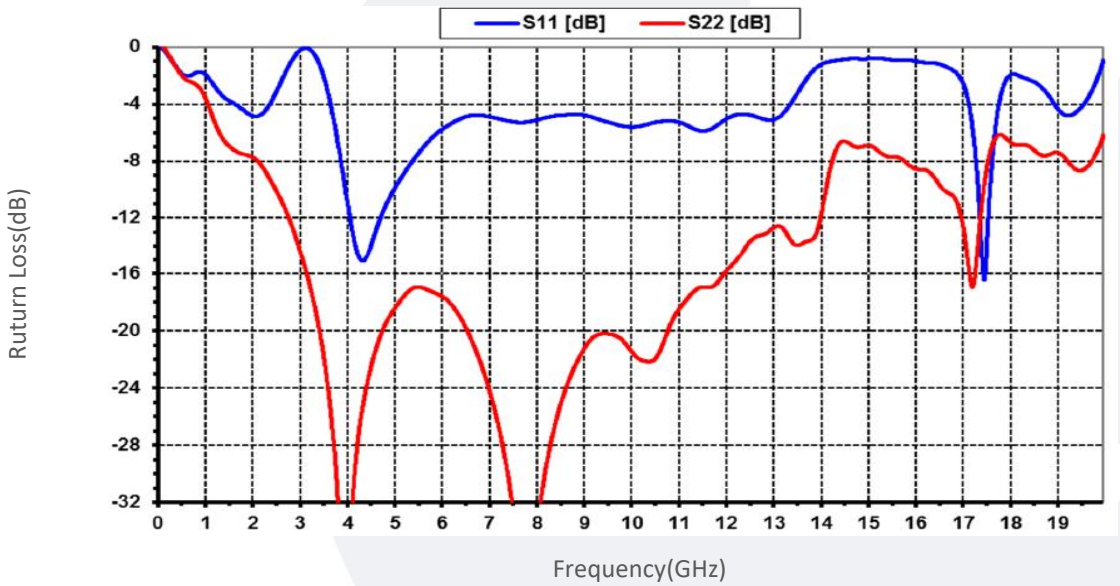
### Gain vs Frequency

**Vd(1,2,3)=1.5V;Id(1,2,3)=10mA:**




### Noise Figure vs Frequency

**Vd(1,2,3)=1.5V;Id(1,2,3)=10mA:**




Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.

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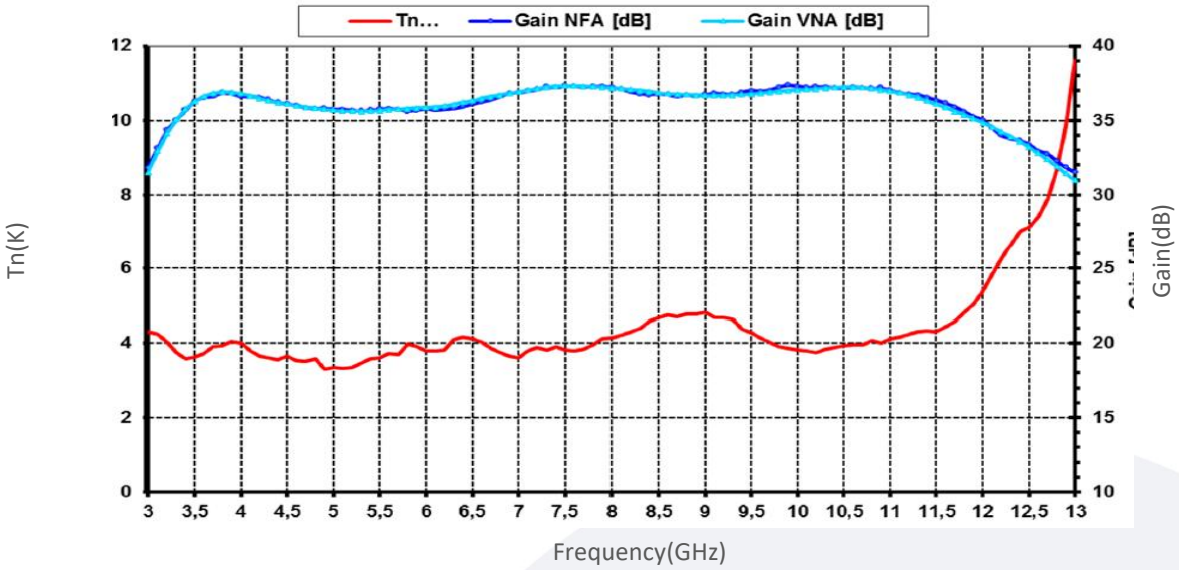
## Typical Performance Data(T=11K):

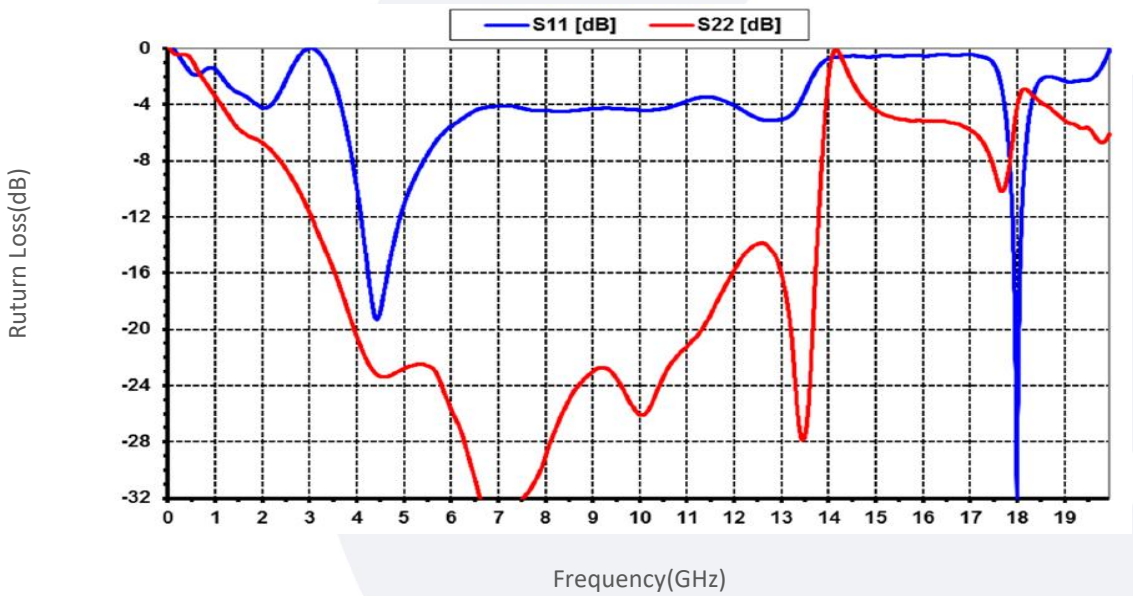
### Gain vs Frequency

**Pd<25mW:**




### Noise Figure vs Frequency

**Pd<25mW:**




Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.