

## C-band Cryogenic Low Noise Amplifier

4-8GHz, Noise temperature:1.5 K, Gain:40 dB

Model: TLLA4G8G-39-00-Cryo

TLLA4G8G-39-00-Cryo is cryogenic InP HEMT amplifier for C-band(4 to 8 GHz) which is able to be used for 4K delivers high gain and extreme low noise figure properties.LNAs are tested at both 300 K and 4 K by using cryogenic RF measurement system, and provided with a performance report.

### Features:

- Frequency range:4-8 GHz
- Gain: 40dB Typ
- Average Noise temperature: 1.5 K @4K
- Technology:InP HEMT
- Compact size & Lightweight

### Electrical Characteristics:

| Parameter                     | Min                        | Typ | Max | Units |
|-------------------------------|----------------------------|-----|-----|-------|
| Frequency range               | 4                          |     | 8   | GHz   |
| Gain@4K                       |                            | 40  |     | dB    |
| Gain Flatness @4K             |                            | ±1  |     | dB    |
| Average Noise temperature @4K |                            | 1.5 |     | K     |
| Input Return Loss             |                            | -10 |     | dB    |
| Output Return Loss            |                            | -15 |     | dB    |
| DC power (typical) @4K        | Vds = 0.41 V, Ids = 6.75mA |     |     | V DC  |
| Power Consumption             |                            | 2.8 |     | mW    |
| Impedance                     | 50                         |     |     | Ohms  |

### Mechanical Specifications:

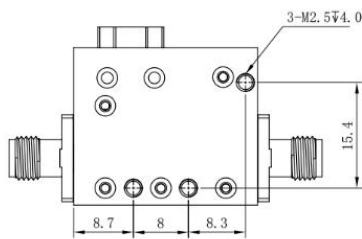
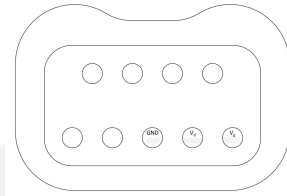
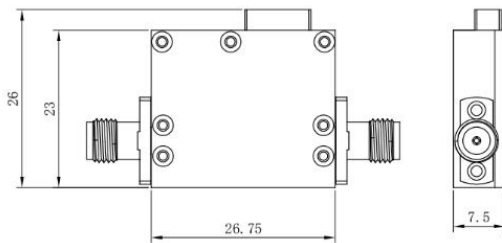
| Parameter               | Value                 | Units |
|-------------------------|-----------------------|-------|
| Input /Output Connector | SMA Female/SMA Female |       |
| DC Bias                 | Nano D connector      |       |
| Size                    | 26.75*26*7.5          | mm    |

## Absolute Maximum Ratings:

| Parameter             | Value                |
|-----------------------|----------------------|
| Drain voltage Vd      | +1.5V                |
| Drain current Id      | 100mA                |
| Gate voltage Vg       | -0.9V to +0.9V       |
| RF Input Power        | -10 dBm              |
| ESD sensitivity (HBm) | Class 0, passed 150V |

## Outline Drawing:

Unit:mm



**Nano D connector seen from outside the LNA**

| Pin #       | Function |
|-------------|----------|
| 3           | GND      |
| 4           | VD       |
| 5           | VG       |
| 1,2,6,7,8,9 | NC       |



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

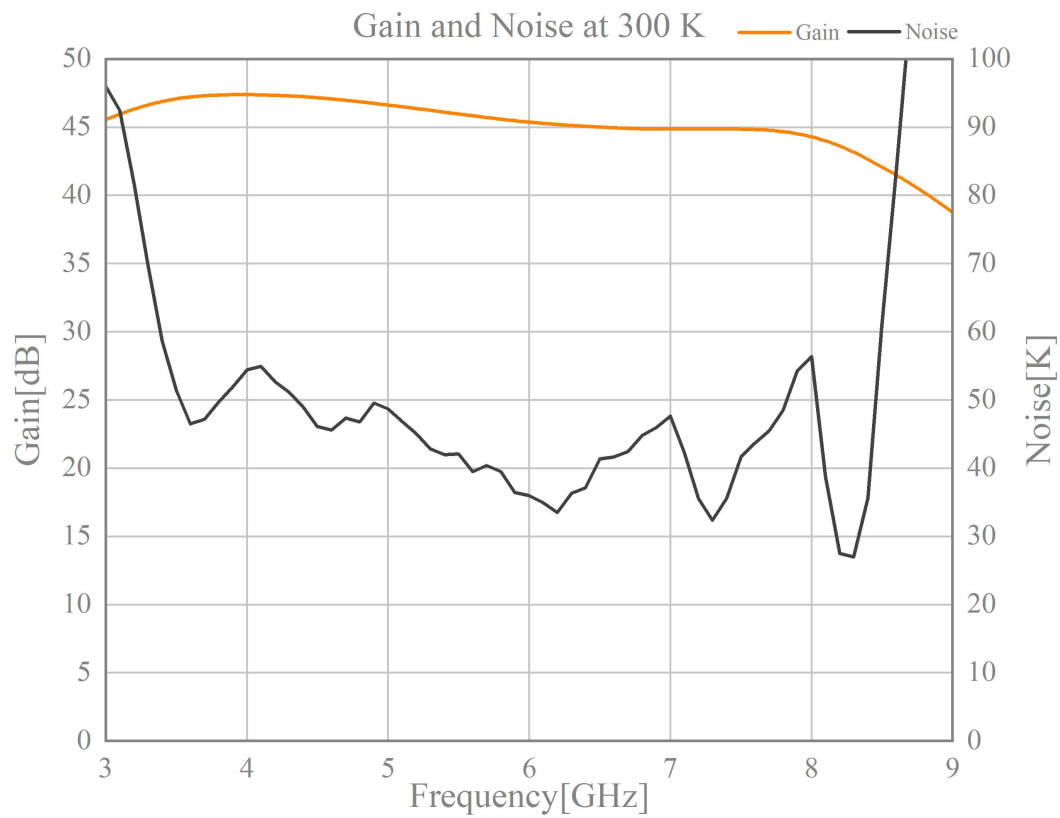
## Environmental Conditions:

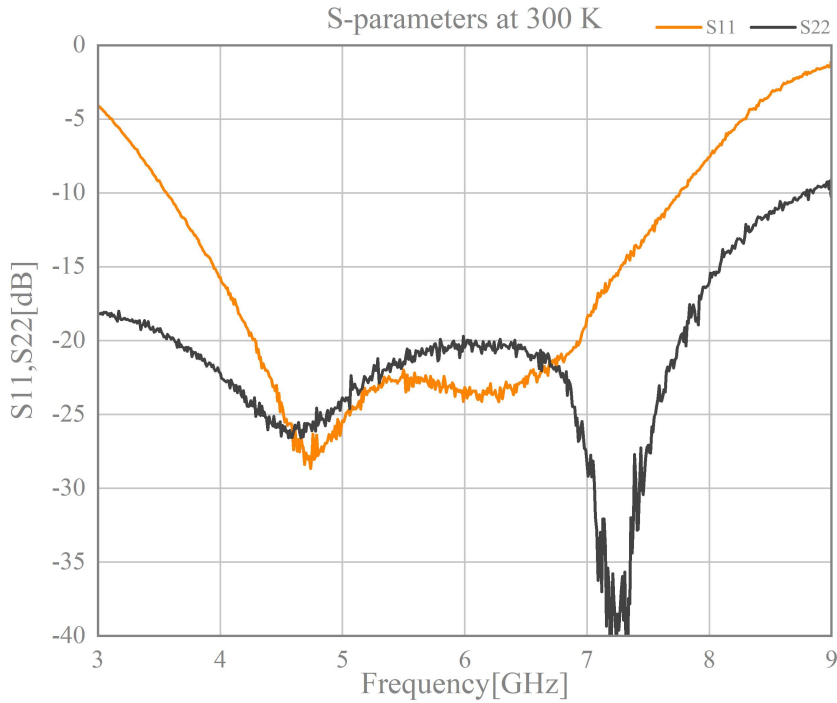
| Parameter                       | Min                                                 | Typ | Max | Units |
|---------------------------------|-----------------------------------------------------|-----|-----|-------|
| Operating Temperature           | 3                                                   |     | 313 | K     |
| Non-operating Temperature       | 0                                                   |     | +85 | °C    |
| 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 |
|---------------------|------------------------------------------------------------------------------------|----------|
| TLLA4G8G-39-00-Cryo | C-band Cryogenic Low Noise Amplifier<br>4-8GHz, Noise temperature:1.5K, Gain:40 dB | Rev.1.1  |

Measured data, Tamb = 300 K





## Measured data, Tamb=4 K:

