泰莱微波
Talent Microwave

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Cryogenic Low Noise Amplifier

2-14GHz/5K Noise temperature/30dB Gain Model: TLLA2G14G-30-00-Cryo

TLLA2G14G-30-00-Cryo is a cryogenic low noise amplifier with a typical small signal gain of 30 dB across the frequency range of 2 to 14 GHz. The drain voltage range requirement for the amplifier is 0.7 to 4V DC and gate voltage range is from -2 to +2V DC. The input and output port configuration offers coax adapter structure with 2.92mm female.

Features:

- Frequency range: 2-14GHz
- Gain: 30dB Typ
- Noise Temperature: 5K @Temperature≤4K
- Capable of operation at 4 K
- Good Power and Gain Flatness
- 50 Ohm Matched Input / Output

Applications:

- Communication systems

电气特性 Electrical Characteristics:

参数 Parameter	Min	Typ	Max	单位 Units
频率范围 Frequency range	2		14	GHz
小信号增益 Small Signal Gain		30		dB
增益平坦度 Gain Flatness		±1.4		dB
噪声温度 Noise Temperature@TEM≤15K		6	7.1	K
噪声温度 Noise Temperature@TEM≤4K		5	6	K
输入回波损耗 Input Return Loss			-1.5	dB
输出回波损耗 Output Return Loss			-15	dB
漏极电压范围 Drain voltage range	0.7		4	V
漏极电流范围 Drain current range		20		mA
栅极电压范围 Gate voltage range	-2		+2	V
功耗 Power Consumption			36	mW
阻抗 Impedance		50		Ohms

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机械特性 Mechanical Specifications:

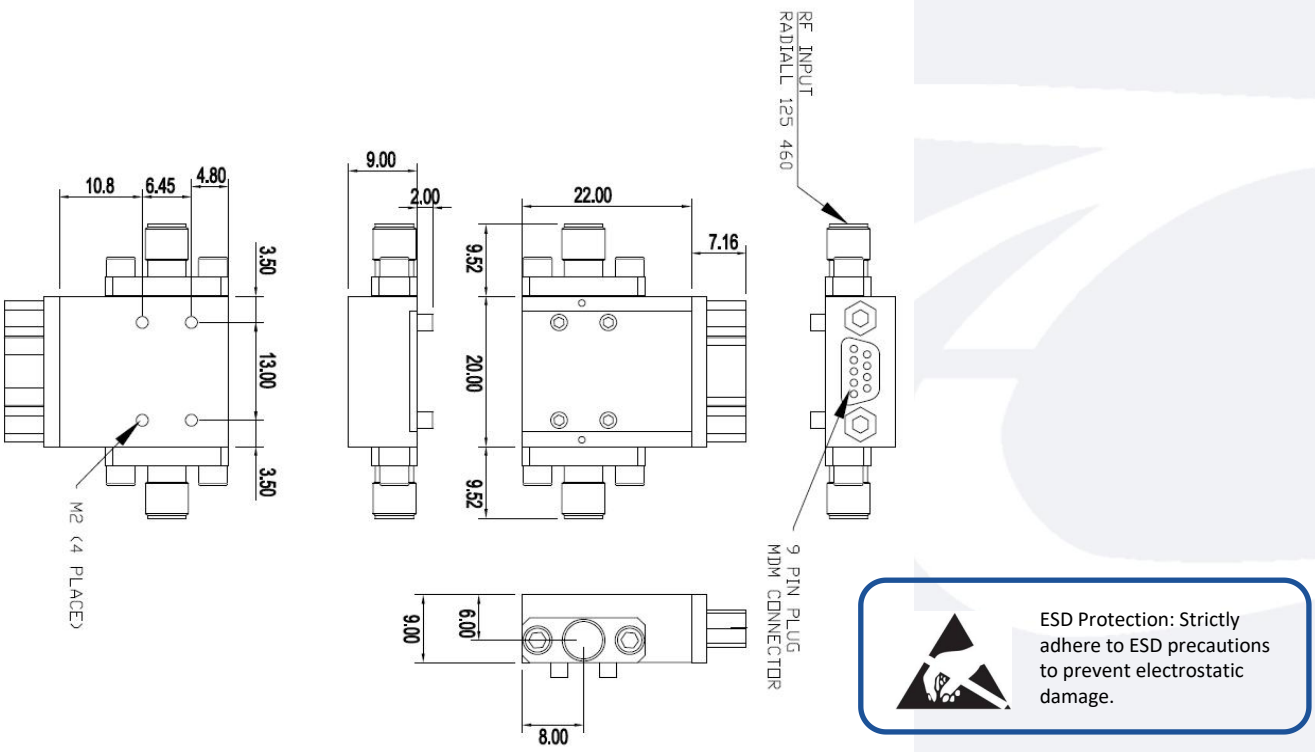
参数 Parameter	指标 Value	单位 Units
输入/输出接口 Input /Output Connector	2.92mm Female/2.92mm Female	
直流偏置 DC Bias	Nano D 9-Pin	
尺寸 Size	46*32.5*9	mm
重量 Weight	65	g

绝对最大值 Absolute Maximum Ratings:

参数 Parameter	指标 Value
漏极电压 Drain voltage	+4 V
栅极电压 Gate voltage	±2 V
ESD灵敏度 ESD sensitivity (HBm)	Class 0, passed 150V

外形图 Outline Drawing:

Unit:mm(±0.1mm)



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

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加电接口 Power Supply Conector:

Nano D 9Pin			
引脚 Pin#	功能 Function	引脚 Pin#	功能 Function
1	GND	5	VG2(-2~+2V)
2	VD1(+0.7~+4V)	6	VD3(+0.7~+4V)
3	VG1(-2~+2V)	7	VG3(-2~+2V)
4	VD2(+0.7~+4V)	8~9	NC

温度环境 Environmental Conditions:

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

订货信息 Ordering Information:

标准型号 Base Number	描述 Description	版本号 Revision
TLLA2G14G-30-00-Cryo	Cryogenic Low Noise Amplifier, 2-14GHz, Noise temperature: 5K, Gain: 30dB	Rev.1.0

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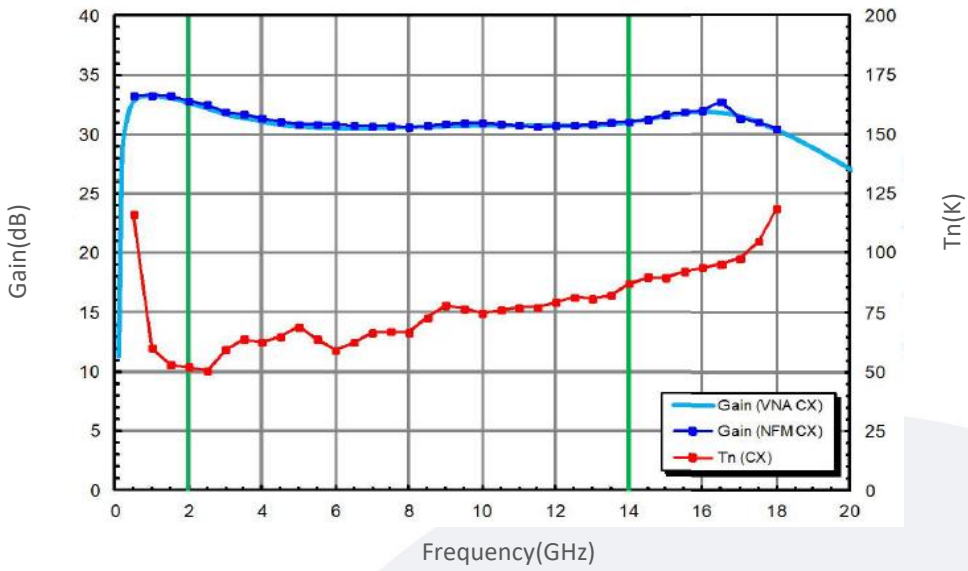
典型曲线 Typical Performance Data:

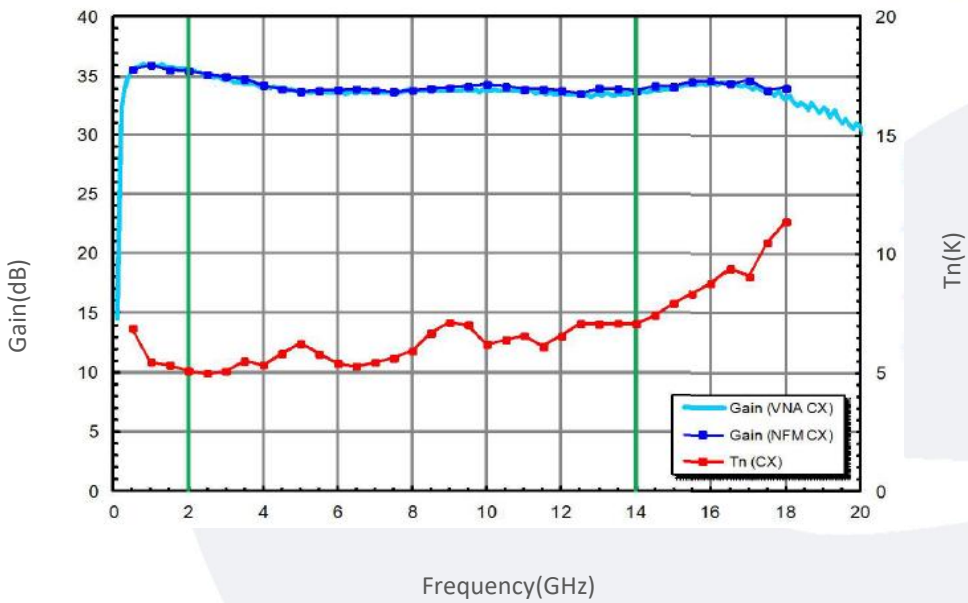
Gain vs Frequency

Vd(1,2,3)=(4,2,2)V; Id(1,2,3)=(20,10,10)mA; T=297.6K:



Gain vs Frequency

Vd(1,2,3)=(2.4,1.2,1.2)V; Id(1,2,3)=(10,5,5)mA; T=13.6K:



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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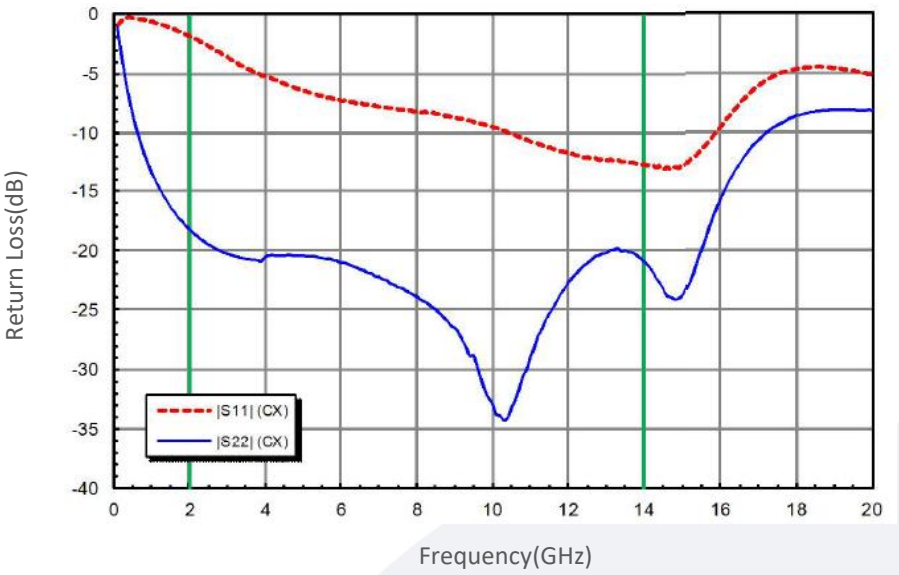
典型曲线 Typical Performance Data:

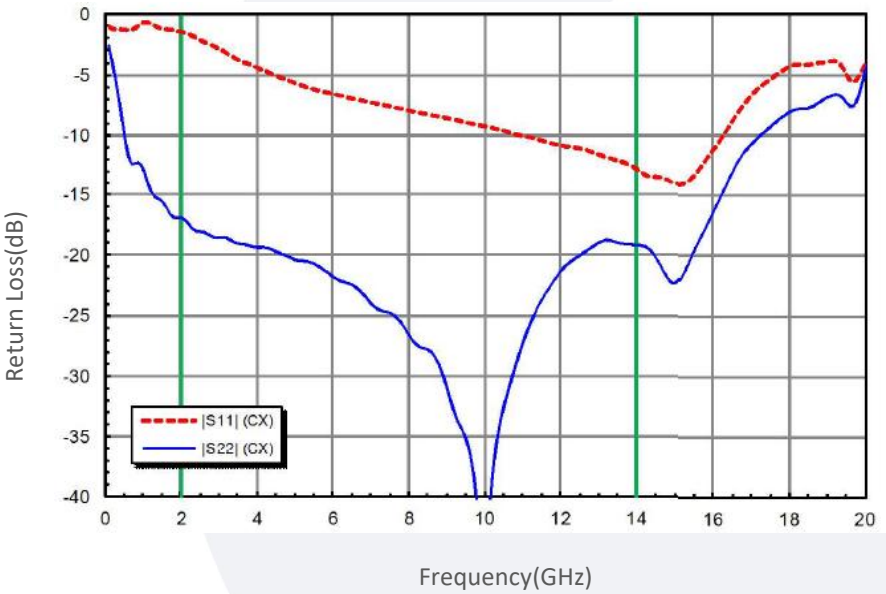
Return Loss vs Frequency

Vd(1,2,3)=(4,2,2)V; Id(1,2,3)=(20,10,10)mA; T=300K:



Return Loss vs Frequency

Vd(1,2,3)=(2.4,1.2,1.2)V; Id(1,2,3)=(10,5,5)mA; T=19K:



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