C-Band Low Noise Amplifiers

LC-4000 Series

LC-4000 series C-Band Low Noise Amplifiers are specially designed for satellite earth station receiver front ends and other telecommunications applications. Utilizing state-of-the-art HEMT and GaAs FET technology, these amplifiers have been designed for both fixed and transportable applications. High performance models are available in several standard frequency ranges, with noise temperatures of 30, 35, 40 and 45 K. All noise temperature specifications are guaranteed over the full bandwidth of the LNA and are verified by cold load testing.

Features

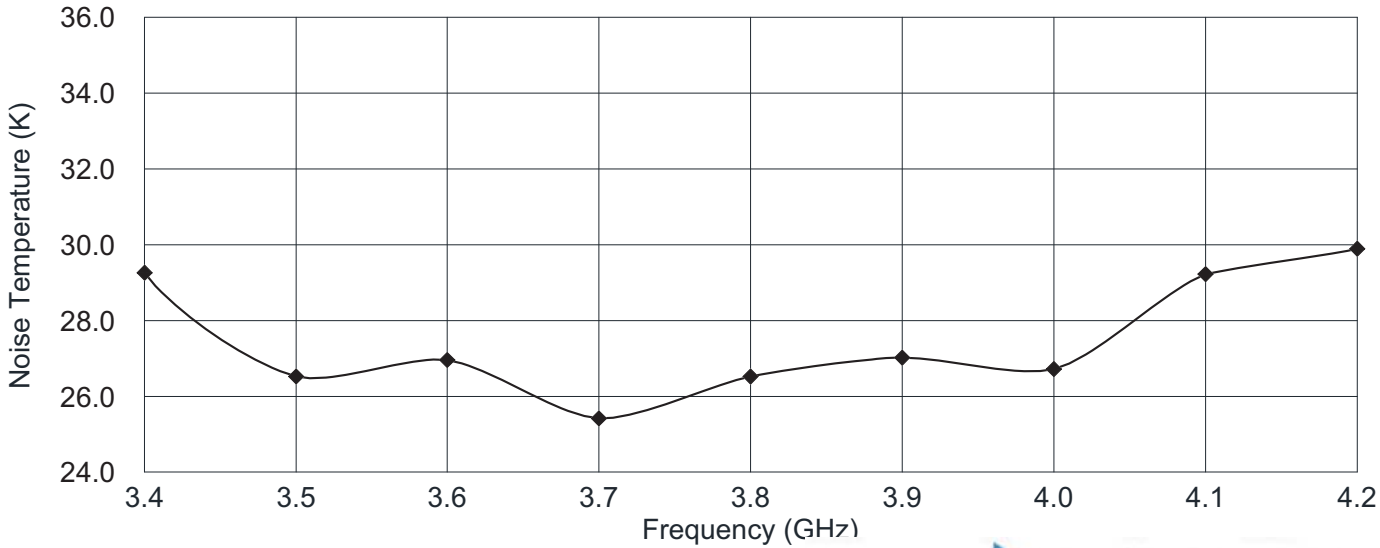
- State-of-the-art noise performance
- HEMT/GaAs FET design
- Weatherproof enclosure
- Internal low-loss input isolator
- Internal regulator
- Internal Form 'C' alarm
- Reverse polarity protection
- Surge and transient protection
- High reliability

Options

- High output power, +20 dBm
- Universal input ac power supply
- Standard or extended band

30 K C-Band LNA, Model LCD4S30-XX

(◆ = Actual Measured Cold-Load Data)



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Parameter	Notes	Min.	Nom./Typ.†	Max.	Units
Frequency Range	Band "C" Band "D"	3.6 3.4		4.2 4.2	GHz GHz
Gain		60	64	66	dB
Gain Flatness	Full band Per 40 MHz			±0.5 ±0.2	dB dB
VSWR	Input Output		1.20 1.20	1.25 1.50	:1 :1
Noise Temperature [A]	At +23 °C Versus temperature		See Table 2	See Table 1	
Power Output at 1 dB compression	Standard Option 2	+10 +20	+15 +22		dBm dBm
3rd Order Output Intercept Point	Standard Option 2	+20 +30	+26 +32		dBm dBm
Group Delay per 40 MHz	Linear Parabolic Ripple			0.01 0.001 0.1	ns/MHz ns/MHz^2 ns p-p
AM/PM Conversion	-5 dBm output power			0.05	°/dB
Gain Stability (Constant Temp)	Short term (10 min) Medium term (24 hrs) Long term (1 week)			±0.1 ±0.2 ±0.5	dB dB dB
Gain Stability	Versus temperature		-0.05		dB per °C
Maximum Input Power	Damage threshold Desens. threshold, 5.825-6.425 GHz			0 -10	dBm dBm
Connectors	Input Output Power		CPR 229G Flange Type N Female MS3112E10-6P (mate supplied)		
Power Requirements	Voltage, standard Current, standard Current, with Option 2	12	15 140 200	24 180 240	V mA mA
Operating Temperature		-40		+70	°C
MTBF (MIL-HDBK-217F)	Ground fixed, +40 °C		296,000		hours

† When there is only one value on a line, the Nom./Typ. column is a nominal value; otherwise it is a typical value. Typical values are intended to illustrate typical performance, but are not guaranteed.

[A] Maximum noise temperature at +23 °C at any frequency in the specified band.

Table 1 – Part Number/Ordering Information

LC□4S□-□□

Frequency Range
- 3.6-4.2 GHz C
- 3.4-4.2 GHz ..... D

Noise Temperature
- 45 K 45
- 40 K 40
- 35 K 35
- 30 K 30

Output Power
- +10 dBm X
- +20 dBm 2

Power Configuration
- +12 to +24 Vdc X
- 90-265 Vac, 47-63 Hz 4

Consult factory for custom configurations.

Table 2 – Noise Temperature vs. Ambient Temperature

Noise temperature vs. ambient temperature can be found from the equation,

$$NT_2/NT_1 = (T_2/T_1)^{1.5}$$

where:

NT_2 = Noise Temperature at T_2

NT_1 = Noise Temperature at T_1

T_2 = Temperature 2 in K

T_1 = Temperature 1 in K

(K = °C + 273)

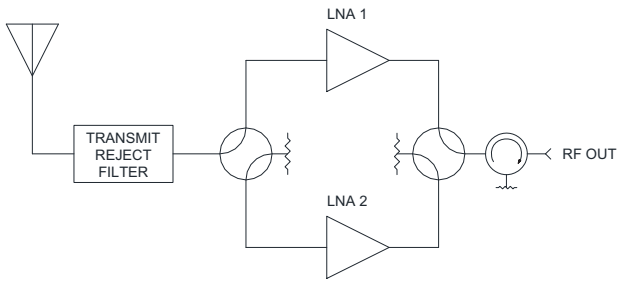
For the case where T_1 = 296 K (+23 °C), the ratio NT_2/NT_1 is shown in the table below:

Ambient Temperature T_2 (°C)	Ratio NT_2/NT_1
0	0.89
+23	1.00
+40	1.09
+50	1.14
+60	1.19

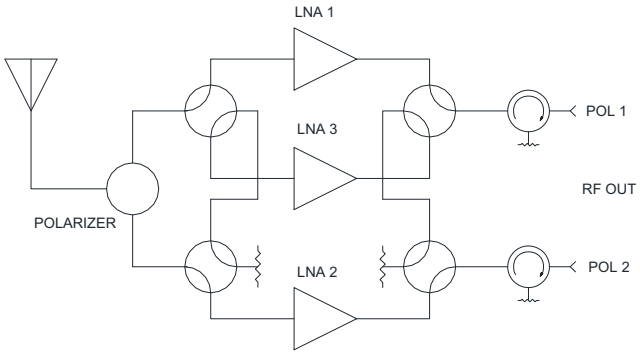
Example: For model LCC4S30-XX, NT_1 = 30 K at +23 °C; what is NT_2 at +50 °C?
From the table, NT_2/NT_1 at 50 °C = 1.14: NT_2 = 1.14 x (30 K) = 34.2 K at 50 °C

Typical Applications

1:1 Redundant Systems

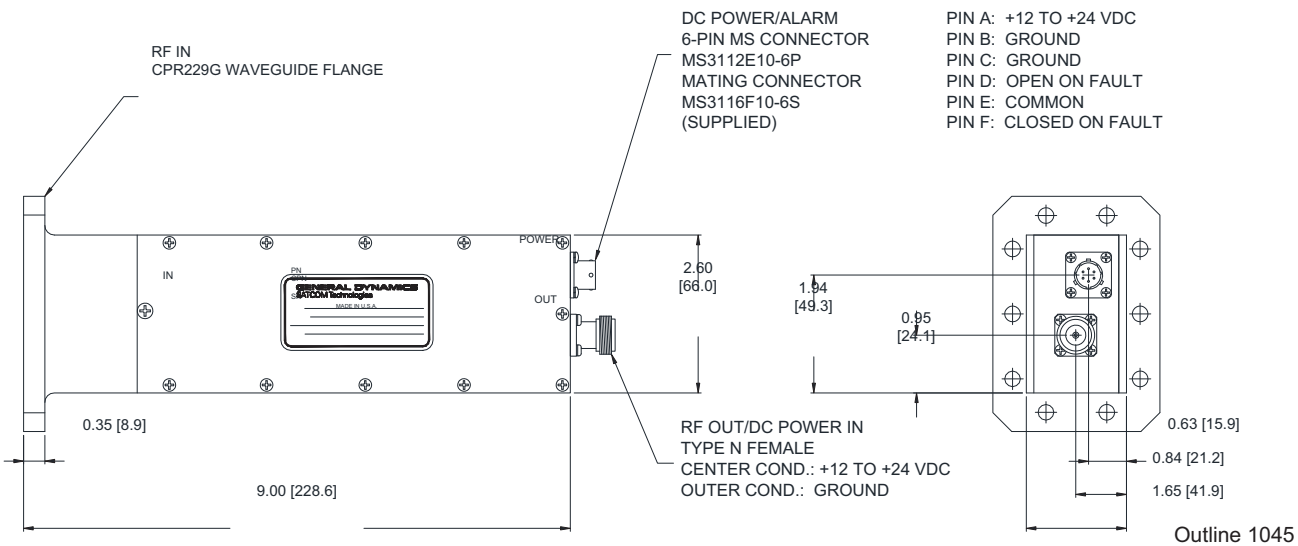


1:2 Redundant Systems



Outline Drawing, Standard LNA

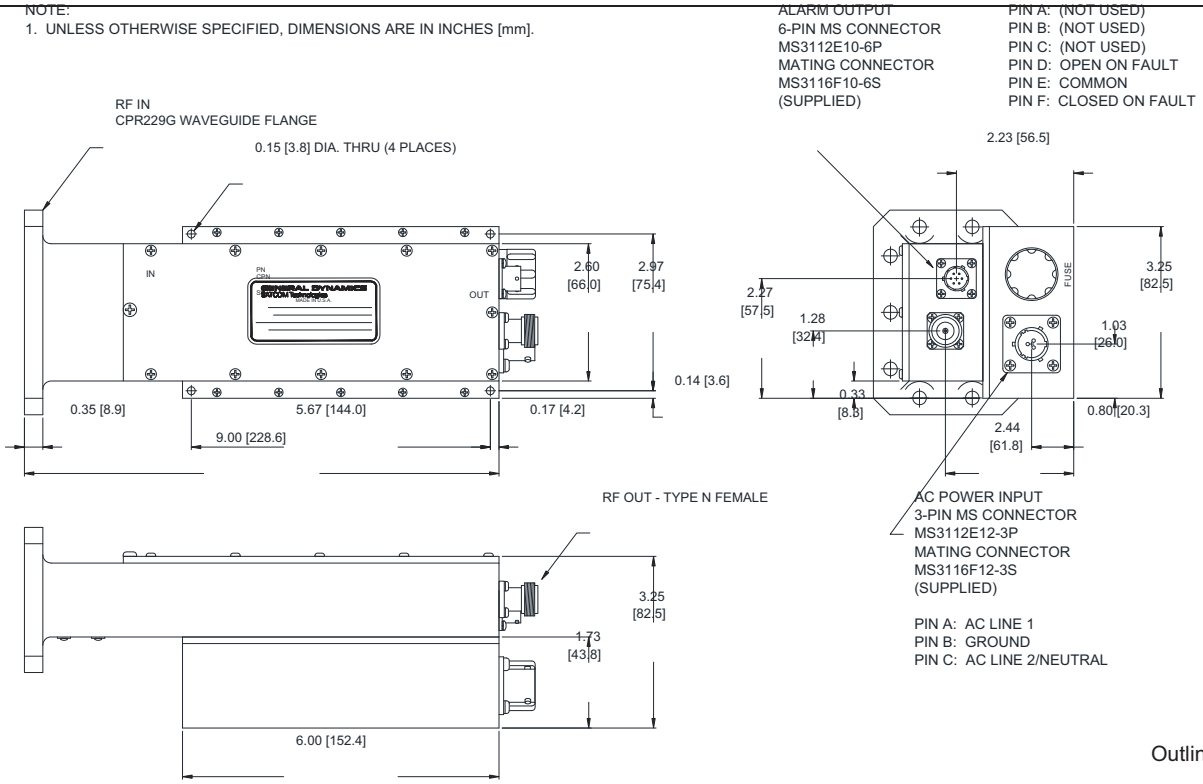
NOTE:
1. UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES [mm].



Outline 1045

Outline Drawing, LNA with AC Power Supply

NOTE:
1. UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES [mm].



Outline 1620

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