

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

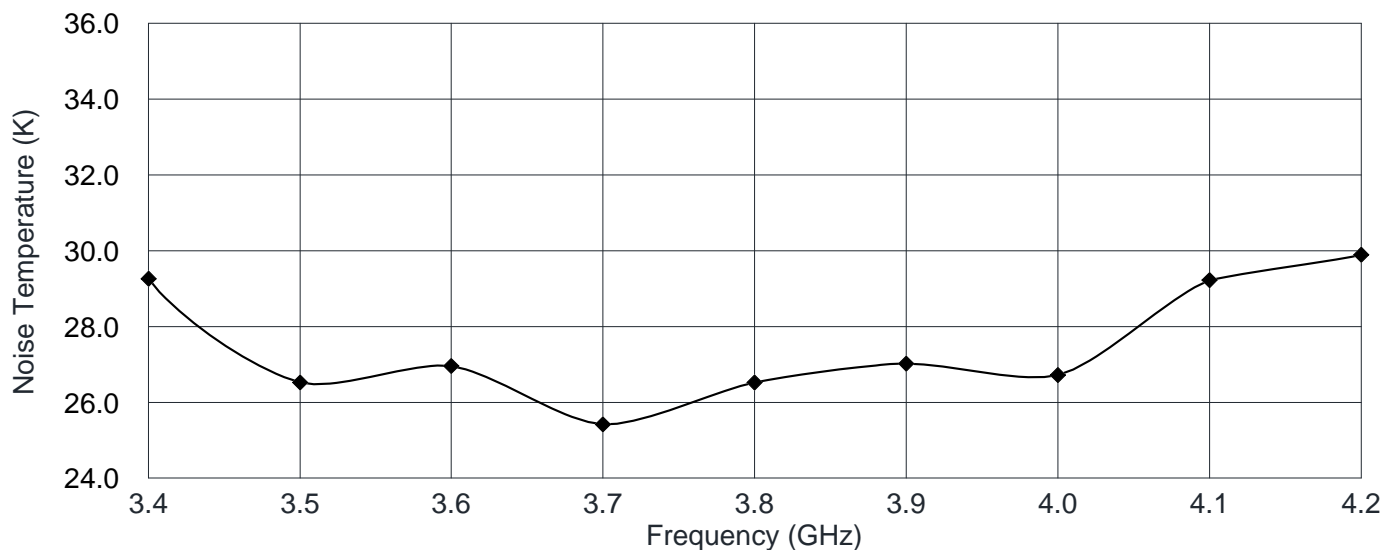


Options

- 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)



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

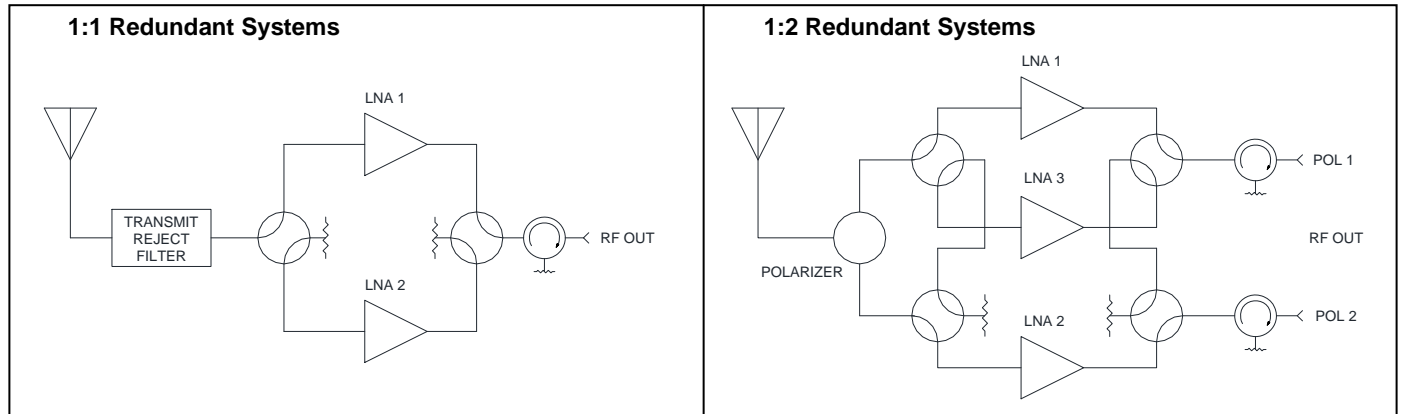
	LC	4S	-		
Frequency Range					
3.6-4.2 GHz.....	C				
3.4-4.2 GHz.....	D				
Noise Temperature					
45 K				45	
40 K				40	
35 K				35	
30 K				30	
Output Power					
+10 dBm				X	
+20 dBm				2	
Power Configuration					
+12 to +24 Vdc.....				X	
90-265 Vac, 47-63 Hz				4	

Consult factory for custom configurations.

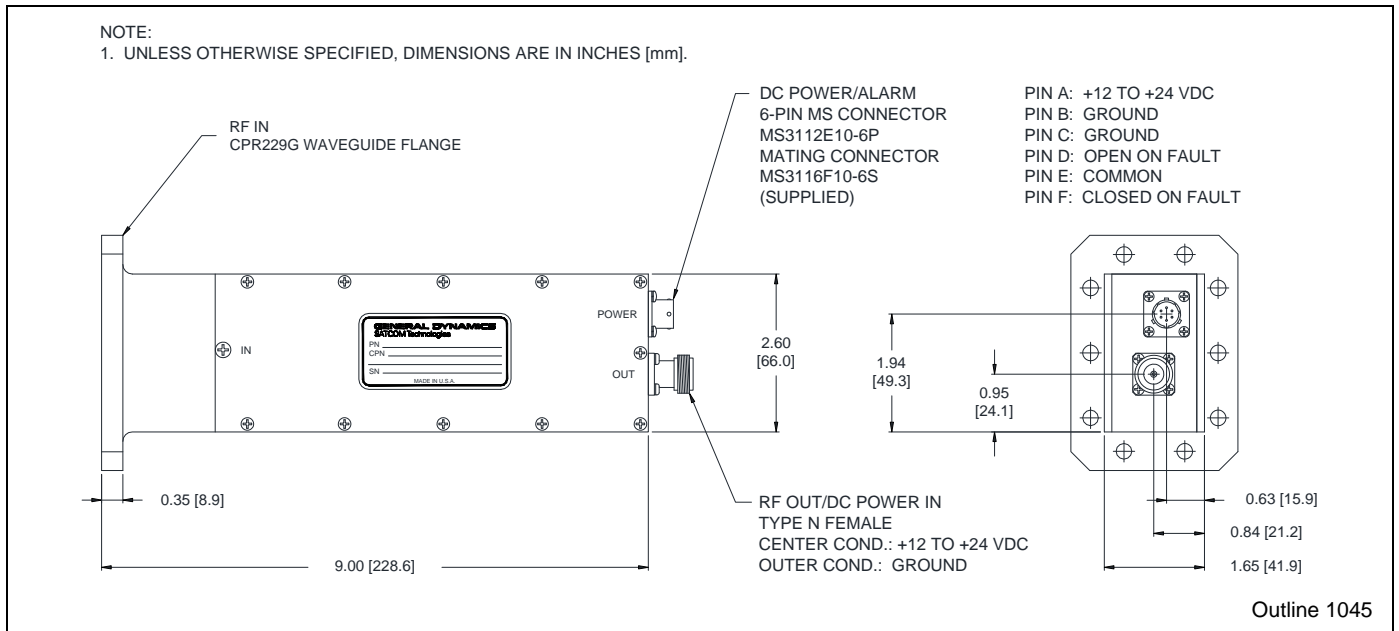
Table 2 – Noise Temperature vs. Ambient Temperature

<p>Noise temperature vs. ambient temperature can be found from the equation,</p> $NT_2/NT_1 = (T_2/T_1)^{1.5}$ <p>where:</p> <ul style="list-style-type: none"> NT₂ = Noise Temperature at T₂ NT₁ = Noise Temperature at T₁ T₂ = Temperature 2 in K T₁ = Temperature 1 in K (K = °C + 273) 	<p>For the case where T₁ = 296 K (+23 °C), the ratio NT₂/NT₁ is shown in the table below:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Ambient Temperature T₂ (°C)</th> <th>Ratio NT₂/NT₁</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0.89</td> </tr> <tr> <td>+23</td> <td>1.00</td> </tr> <tr> <td>+40</td> <td>1.09</td> </tr> <tr> <td>+50</td> <td>1.14</td> </tr> <tr> <td>+60</td> <td>1.19</td> </tr> </tbody> </table> <p>Example: For model LCC4S30-XX, NT₁ = 30 K at +23 °C; what is NT₂ at +50 °C? From the table, NT₂/NT₁ at 50 °C = 1.14: NT₂ = 1.14 x (30 K) = 34.2 K at 50 °C</p>	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
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												

Typical Applications



Outline Drawing, Standard LNA



Outline Drawing, LNA with AC Power Supply

