WLA120-25A

11.7- 12.8 GHz LOW NOISE WIDE BAND AMPLIFIER

REV B
February 2017

Key Features

- 11.7 ~ 12.8 GHz
- 1.0 dB Noise Figure
- Field Replaceable SMA
- 24.0 dB Gain
- +/-0.50 dB Gain Flatness
- 10.0 dBm P_{1dB}
- 1.5:1 VSWR
- Single Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

Product Description

CAUTION: ELECTROSTATIC DISCHARGE SENSITIVE

WLA120-25A is integrated with WanTcom proprietary low noise amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum low noise figure, wideband, high linearity, and unconditional stable performances together. With single +3.0V DC operation, the amplifier has optimal input and output matching in the specified frequency range at 50-Ohm impedance system. The amplifier has standard SMA connectorized WP-10E Gold plated housing.

The amplifier is designed to meet the rugged standard of MIL-STD-202g.

Applications

- Ku-Band Communication
- Satellite
- Direct Broadcast
- Security System
- Measurement
- Fixed Wireless

Specifications

Summary of the electrical specifications WLA120-25A at room temperature

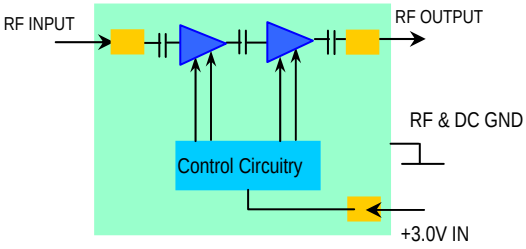
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	11.7 – 12.8 GHz		24		dB
2	Gain Variation	ΔG	11.7 – 12.8 GHz		+/- 0.5	+/-1.0	dB
3	Input VSWR	SWR_1	11.7 – 12.8 GHz		1.5:1	2:1	Ratio
4	Output VSWR	SWR_2	11.7 – 12.8 GHz		1.5:1	2:1	Ratio
5	Reverse Isolation	S_{12}	11.7 – 12.8 GHz		40		dB
6	Noise Figure	NF	11.7 – 12.8 GHz		1.0	1.2	dB
7	Output 1dB Gain Compression Point	P_{1dB}	11.7 – 12.8 GHz		10		dBm
8	Current Consumption	I_{dd}	V_{dd}= +3.0 V		35		mA
9	Power Supply Voltage	V_{dd}		+2.7	+3	+3.3	V
10	Thermal Resistance	$R_{th,c}$	Junction to case			220	°C/W
11	Operating Temperature	T_o		-40		+85	°C
12	Maximum Input CW RF Power	$P_{IN, MAX}$	DC – 26 GHz			10	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, 5.0
Drain Current	mA	70
Total Power Dissipation	mW	350
Input CW RF Power	dBm	10
Channel Temperature	°C	150
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
Thermal Resistance	°C/W	220

Operation of this device above any one of these parameters may cause permanent damage.

Functional Block Diagram

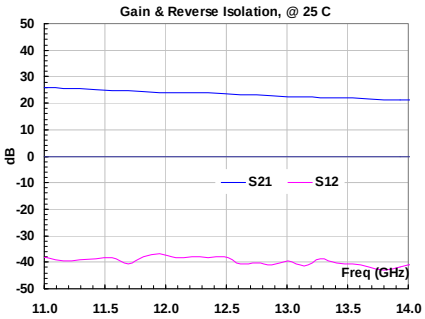


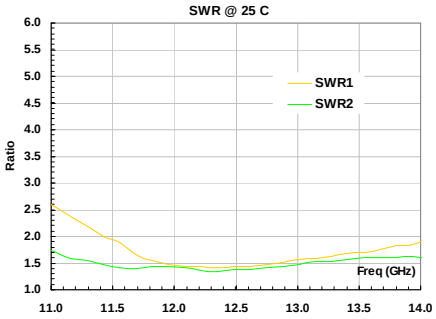
Ordering Information

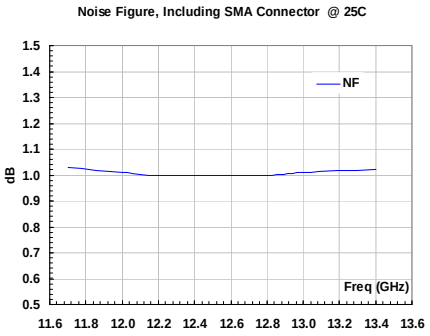
Model Number	WLA120-25A

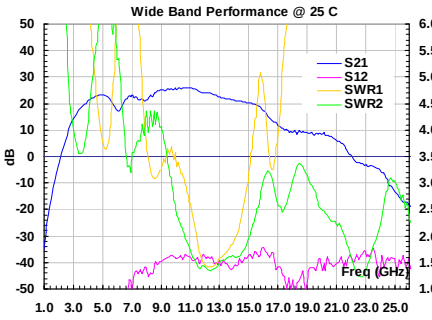
WanTcom, Inc ∗ Phone 01 952 448 6088 ∗ FAX: 01 952 448 7188 ∗ e-mail: sales@wantcominc.com ∗ Web site: www.wantcominc.com

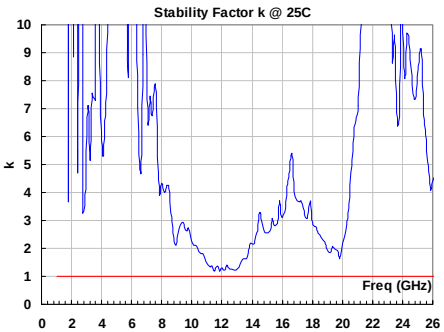
Typical Data





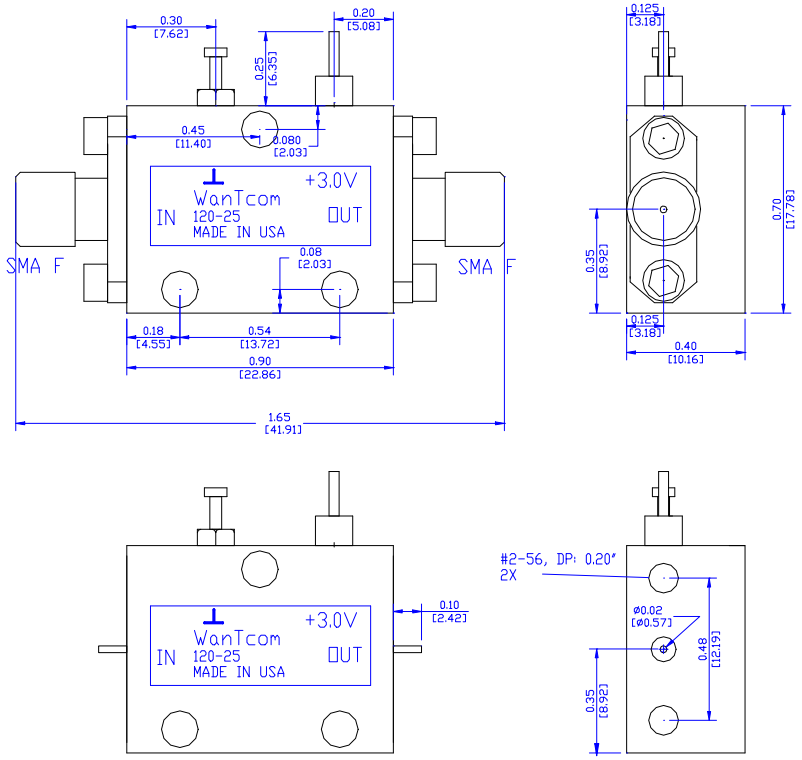






Outline, WP-10E

UNITS:	INCH [mm]
BODY:	Brass
Finish:	Gold Plating
RF Connector:	SMA F Gold Field Replaceable
V_{dd} PWR:	Feed through



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Application Notes:

Field Replaceable SMA Connectors

It is very critical to use good performance field replaceable SMA connectors for maintaining LNA performance. For cost effective supper SMA connector, for example, LSMAFR1G, from LiConn, can be used. For brand named connector, Southwest Microwave can be considered.

The mounting screws for the connectors are #2-56 with length of 3/8". The SMA connector should take 0.018" to 0.020" diameter of the center pins.

SMA Torque Wrench Selection

Always use a torque wrench with 5 ~ 6 inch-lb coupling torque setting for mating the SMA cables to the amplifier. Never use torque more than 8 inch-lb wrench for tightening the mating cable to the connector. Otherwise, the permanent damage will occur to the SMA connectors of the amplifier. 8710-1582 (5 inch-lb) is one of the ideal torque wrench choice from Agilent Technology.

DC Power Line Connection

Strip the insulation layer at the end of DC power supply wire. The stripped distance should be in the range of 0.100" to 0.200". The 24 ~ 26 American Wire Gauge wire is suitable. Wound the stripped terminal wire about 1 to 2 turns on the DC feed thru center pin. Solder the wounded wire and the center pin together. Clean the soldering area by Q-tip with alcohol to remove the flux and residue.

Repeat the process to solder the DC return wire on the ground turret.

Mounting the Amplifier

Use three pieces of #4-40 with longer than 9/16" screws for mounting the amplifier on a metal-based chase. Flat and spring washers are needed to prevent the screw loosening during the shock and vibration. Always use the appropriate torque setting of the power screwdriver to mount them.

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