WLLA1045A
1.0 – 4.2 GHz LOW NOISE WIDE BAND LIMITER AMPLIFIER

Key Features

RoHS

- 50 Ohm Impedance
- 1.0 ~ 4.2 GHz
- 1.30 dB Noise Figure
- **30.0 dBm Max P_{IN}**
- 26.0 dBm Output IP_3
- 26.0 dB Gain
- 15.0 dBm P_{1dB}
- 1.5:1 VSWR Fully Matched
- Unconditional Stable, *k*>1
- Single Power Supply
- >68 Years MTBF
- RoHS Compliant

Product Description

CAUTION:
ELECTROSTATIC DISCHARGE SENSITIVE

WLLA1045A is integrated with WanTcom proprietary low noise amplifier technologies, high frequency micro electronic assembly techniques, and high reliability designs to realize optimum low noise figure, wideband, and high performances together. With single DC voltage 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-5 Gold plated housing.

The amplifier is designed to meet the rugged standard of MIL-STD-883g.

Applications

- Mobile Infrastructures
- GPS
- Satellite
- WiMAX
- Defense
- Security System
- Measurement
- Fixed Wireless

Specifications

Summary of the key electrical specifications at room temperature

Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	1.0 – 4.2 GHz	24	26		dB
2	Gain Variation	ΔG	1.0 – 4.2 GHz		+/-0.5	+/- 0.8	dB
3	Input VSWR	SWR_1	1.0 – 4.2 GHz	1.5:1		1.6:1	Ratio
4	Output VSWR	SWR_2	1.0 – 4.2 GHz	1.5:1		1.6:1	Ratio
5	Reverse Isolation	S_{12}	1.0 – 4.2 GHz	40	45		dB
6	Noise Figure	NF	1.0 – 4.2 GHz		1.3	1.6	dB
7	Output Power 1dB Compression Point	P_{1dB}	1.0 – 4.2 GHz	11	15		dBm
8	Output-Third-Order Interception Point	IP_3	Two-Tone, P_{out} = 0 dBm each, 1 MHz separation	24	26		dBm
9	Current Consumption	I_{dd}	V_{dd}= +5.0 V (V_{dd} = 7 ~ 25V for WLLA1045B)			55	mA
10	Power Supply Operating Voltage	V_{dd}	WLLA1045A	+4.7	+5	+5.3	V
			WLLA1045B	+7.0		+25	
11	Thermal Resistance	$R_{th,c}$	Junction to case			215	^{o}C/W
12	Operating Temperature	T_o		-40		+85	^{o}C
13	Maximum CW RF Input Power	$P_{IN, MAX}$	DC – 6.0 GHz			30	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, 7.0 (25V for WLLA1045B)
Drain Current	mA	80
Total Power Dissipation	mW	400
CW RF Input Power	dBm	30
Channel Temperature	°C	150
Storage Temperature	°C	-65 ~ 150
Operating Temperature	°C	-55 ~ +100
Thermal Resistance	°C/W	215

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

Functional Block Diagram
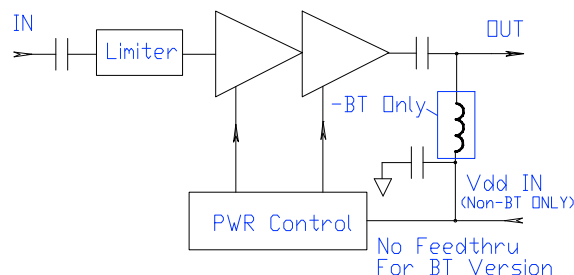
Ordering Information

Model Number	Without Output Bias-T	With Output Bias-T
V_{dd} = +5.0 V	WLLA1045A	WLLA1045ABT
V_{dd} = +7.0 ~ +25.0 V	WLLA1045B	WLLA1045BBT

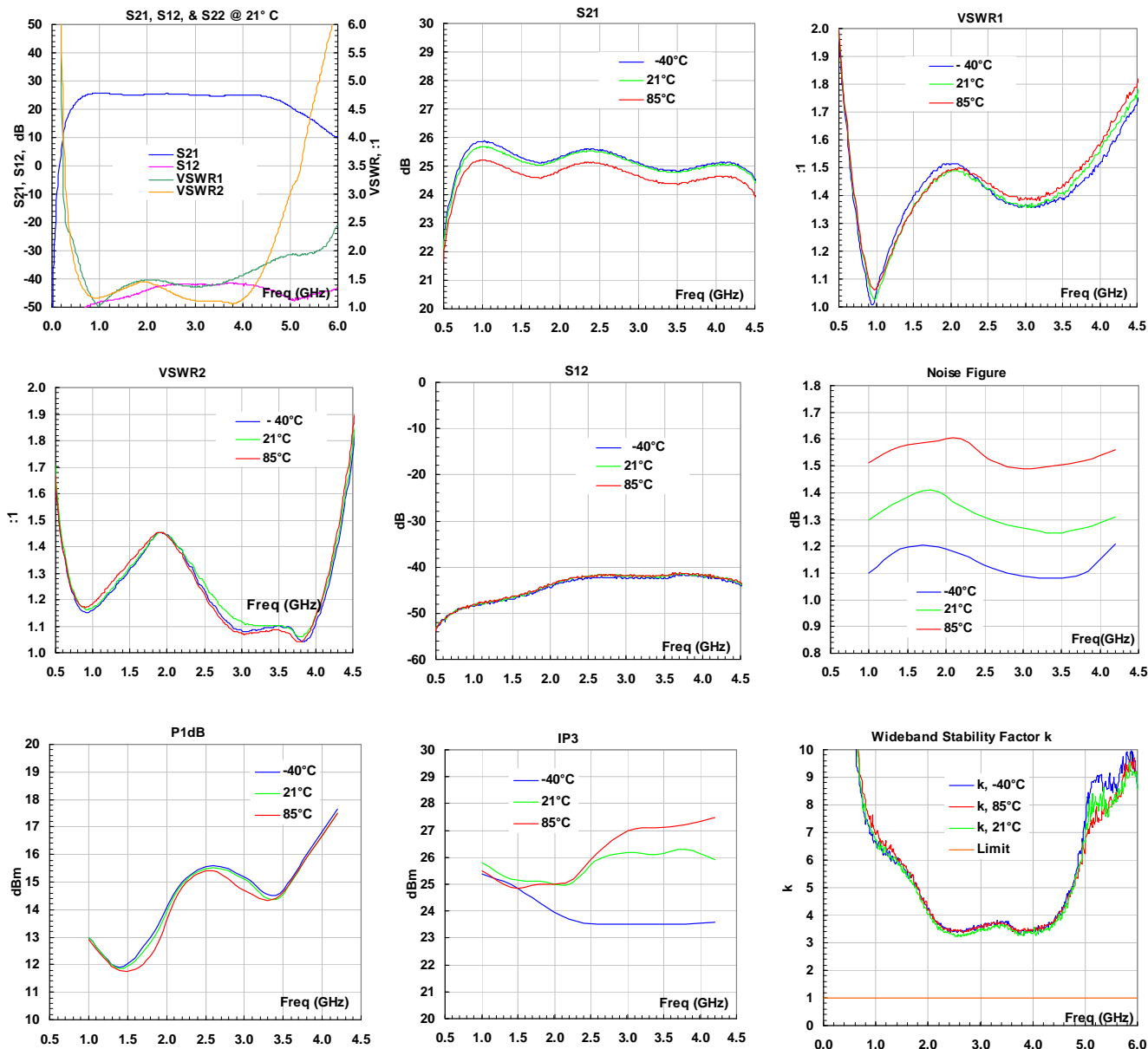Specifications and information are subject to change without notice.

WanTcom, Inc ∗ Phone 01 952 448 6088 ∗ FAX: 01 952 4487188∗ e-mail: sales@wantcominc.com ∗ Web site: www.wantcominc.com

Typical Data

S21, S12, & S22 @ 21° C
S21
S12
VSWR1
VSWR2

S21
-40°C
21°C
85°C

VSWR1
- 40°C
21°C
85°C

VSWR2
- 40°C
21°C
85°C

S12
-40°C
21°C
85°C

Noise Figure
-40°C
21°C
85°C

P1dB
-40°C
21°C
85°C

IP3
-40°C
21°C
85°C

Wideband Stability Factor k
k, -40°C
k, 85°C
k, 21°C
Limit

Specifications and information are subject to change without notice.

Outline, WP-5 Housing

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

WLLA1045A/B
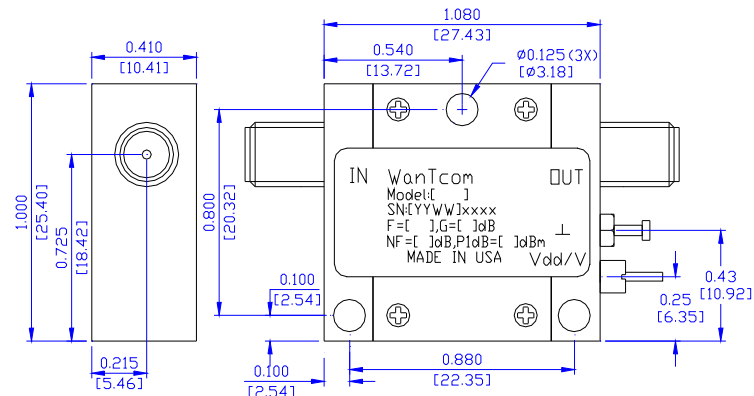
WLLA1045ABT/BBT
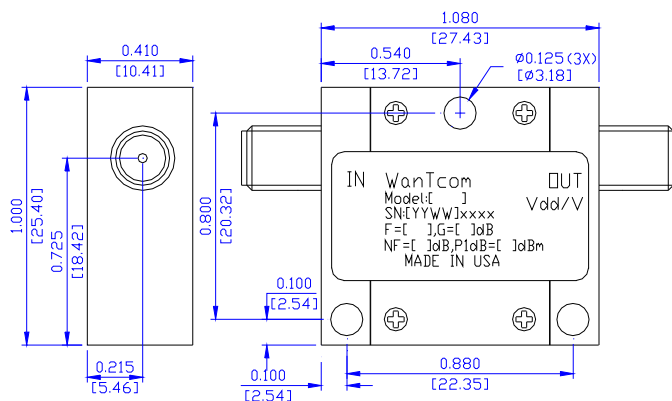
Application Notes:

A. 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.

B. 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 3/4 to 1 turn 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.

Do not use large soldering iron tip with more than 750 degree Fahrenheit to solder the wire and feed thru pin. Damage may occur to the feed thru.

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

C. 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. Always use the appropriate torque setting of the power screwdriver to mount them.

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