WLPA15-3040A

1.2- 1.6 GHz LOW NOISE WIDE BAND POWER AMPLIFIER

REV C
November 2017

Key Features

- 50 Ohm Impedance
- 1.2 ~ 1.6 GHz
- 0.55 dB Noise Figure
- 40.0 dBm Output IP_3
- 31.0 dB Gain
- +/-0.2 dB Gain Flatness
- 23.0 dBm P_{sat}
- 18.0 dB Return Losses
- Single DC Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

Product Description

CAUTION: ELECTROSTATIC DISCHARGE SENSITIVE

WLPA15-3040A 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, wide bandwidth, high linearity, and unconditional stable 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-202g.

Applications

- Mobile Infrastructures
- GPS
- Astronomy
- Defense
- Security System
- Measurement
- Fixed Wireless

Specifications

Summary of the electrical specifications WLPA15-3040A at room temperature

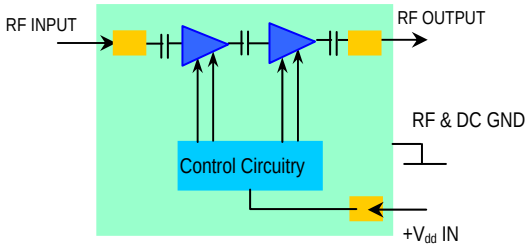
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	1.2 – 1.6 GHz	30.5	31	31.5	dB
2	Gain Variation	ΔG	1.2 – 1.6 GHz		+/- 0.2	+/-0.5	dB
3	Input Return Loss	S_{11}	1.2 – 1.6 GHz	16			dB
4	Output Return Loss	S_{22}	1.2 – 1.6 GHz	16			dB
5	Reverse Isolation	S_{12}	1.2 – 1.6 GHz	45	48		dB
6	Noise Figure	NF	1.2 – 1.6 GHz		0.55	0.70	dB
7	Output Saturated Power	P_{sat}	1.2 – 1.6 GHz		23	25	dBm
8	Output Third Order Interception Point	IP_3	Two-tone, P_{out}=+10 dBm each, 1 MHz sep.	38	40		dBm
9	2^{nd} Order Interception Point	IP_2	1.2 – 1.6 GHz, P_{in} = -10 dBm	30			dBm
10	Current Consumption	I_{dd}	V_{ds} = +5 V		180		mA
11	Power Supply Voltage	V_{dd}		+4.7	+5.0	+5.3	V
12	Thermal Resistance, Junction to Case	$R_{th,c}$	Last stage transistor V_{ds} = 4.5V, I_{ds} =125 mA,		35	50	°C/W
13	Operating Temperature	T_o	--	-40		+85	°C
14	Maximum Input CW RF Power	$P_{IN, MAX}$	DC – 6 GHz			13	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, +6
Drain Current	A	0.20
Total Power Dissipation	W	1.2
Input CW RF Power	dBm	13
Junction Temperature	°C	170
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
Thermal Resistance	°C/W	50

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

Functional Block Diagram



Ordering Information

Model	WLPA15-3040A

Additional heat sink is required for continuous operation!

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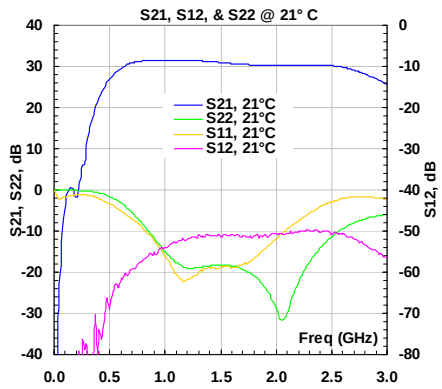
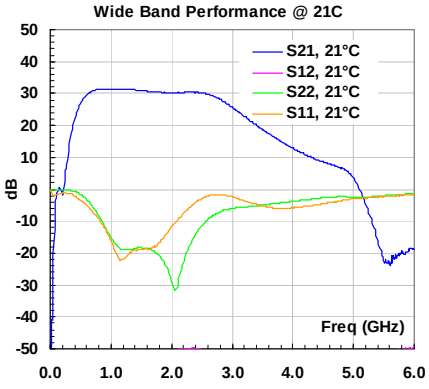
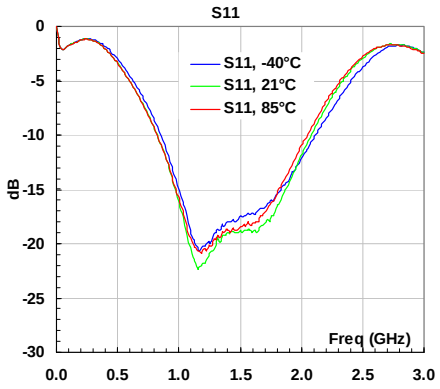
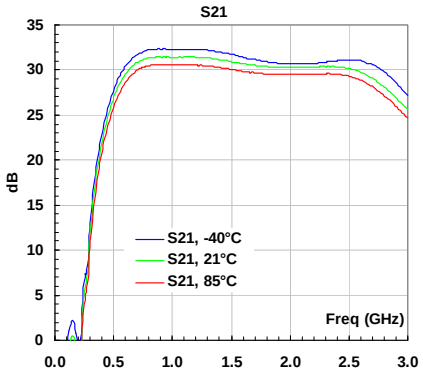
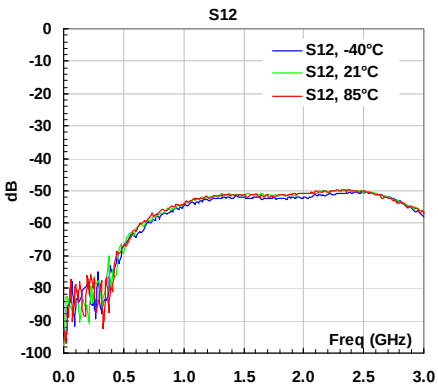
Typical Data

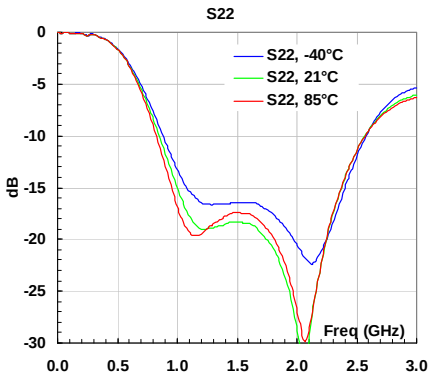


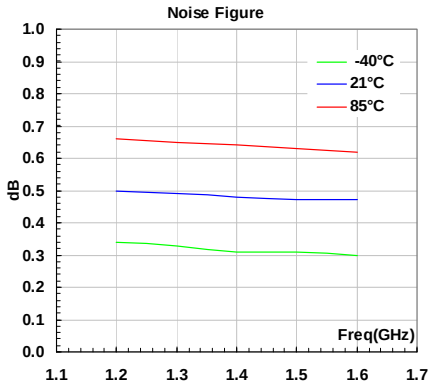


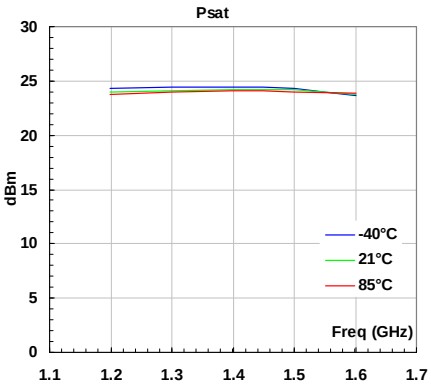


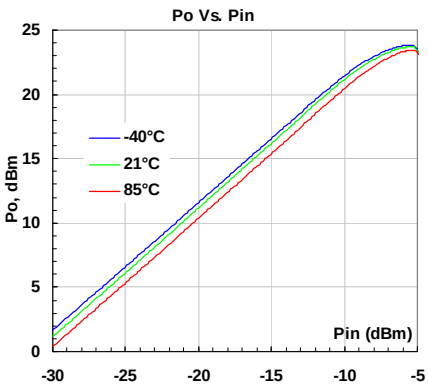












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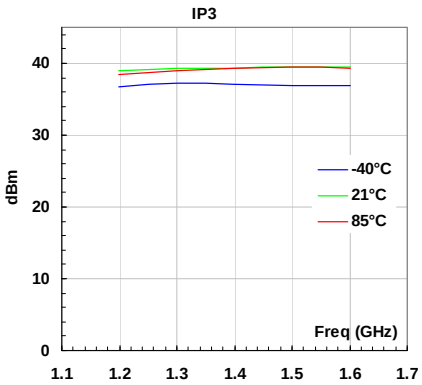
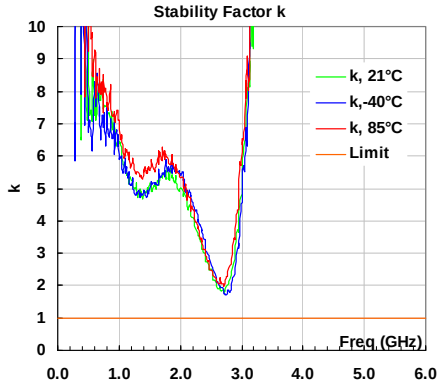
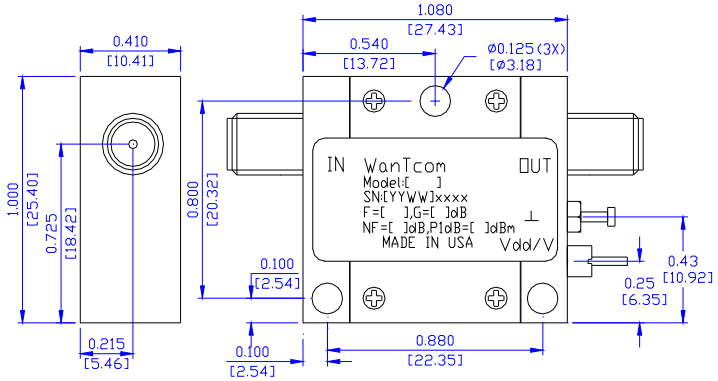




Outline, WP-5 Housing

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



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 connectors. 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 length should be around 0.100" to 0.200". The 24 ~ 26 American Wire Gauge wire is suitable. Wound the stripped 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 joint by a 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. 0.010" size tip with 750 degree Fahrenheit temperature setting is suitable for the soldering works.

Repeat the process to solder the DC return wire on the ground turret. Higher temperature and larger tip can be used for this ground soldering.

C. Mounting the Amplifier

Additional heat sink is required. For heat sink design, refers to AN-155 at http://wantcominc.com/Application_Notes/AN-155.pdf . A 1.0" x 1.0" T-gon film is needed between the bottom of the PA and the heat sink for maximum thermal dissipation. Fail to do this may result the PA overheated and damaged. 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 screws.

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