



WBA60120A

6.0 – 12.0 GHz LOW NOISE WIDE BAND AMPLIFIER

REV C
December 2016

Key Features



- 50 Ohm Impedance
- 6.0 ~ 12.0 GHz
- 1.6 dB Noise Figure
- 10.0 dBm Output IP₃
- 29.0 dB Gain
- +/-1.0 dB Gain Flatness
- 2.0 dBm P_{1dB}
- 1.5:1 VSWR
- Single DC Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

Product Description

WBA60120A 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.

CAUTION:



ELECTROSTATIC DISCHARGE SENSITIVE

Applications

- Mobile Infrastructures
- ISM Band
- C-Band
- X-Band
- Ku-Band
- Fixed Wireless



Specifications

Summary of the electrical specifications WBA60120A at room temperature

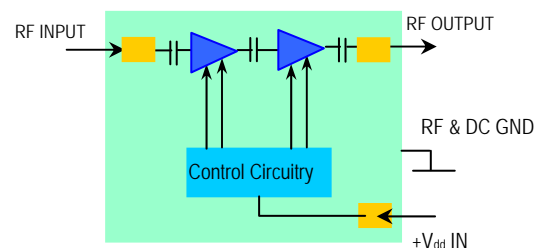
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S ₂₁	6 – 12 GHz, WBA60120A		29		dB
			6 – 12 GHz, WBA60120B		33		
2	Gain Variation	ΔG	6 – 12 GHz			+/- 1.0	dB
3	Input VSWR	SWR ₁	6 – 12 GHz		1.5:1	2:1	Ratio
4	Output VSWR	SWR ₂	6 – 12 GHz		1.5:1	2.1:1	Ratio
5	Reverse Isolation	S ₁₂	6 – 12 GHz		30		dB
6	Noise Figure	NF	6 – 12 GHz		1.6	2.0	dB
7	Output 1dB Gain Compression Point	P _{1dB}	6 – 12 GHz, WBA60120A		2	5	dBm
			6 – 12 GHz, WBA60120B	6	8		
8	Output-Third-Order Interception Point	IP ₃	Two-Tone, P _{out} +0 dBm each, 1 MHz separation		10		dBm
9	Current Consumption	I _{dd}	V _{dd} = +5 V, WBA60120A		30		mA
			V _{dd} = +5 V, WBA60120B		50		
10	DC Power Supply Voltage	V _{dd}			+5		V
11	Thermal Resistance, Junction to Case	R _{thc}	Last stage transistor V _{ds} = 3.0V, I _{ds} = 20 mA,			220	°C/W
12	Operating Temperature	T _o		-40		+85	°C
13	Maximum Input CW RF Power	P _{IN, MAX}	6 – 12 GHz			10	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, 6
Drain Current	mA	80
Total Power Dissipation	mW	400
Input CW RF Power	dBm	10
Junction 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

Function	P1dB = 2 dBm	P1dB = 8 dBm

Specifications and information are subject to change without notice.



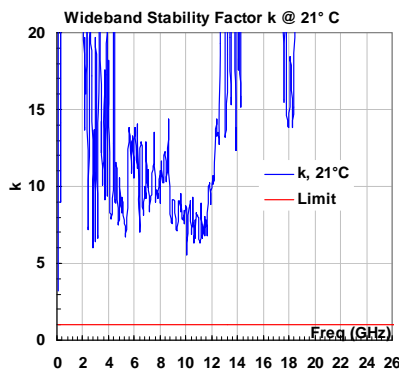
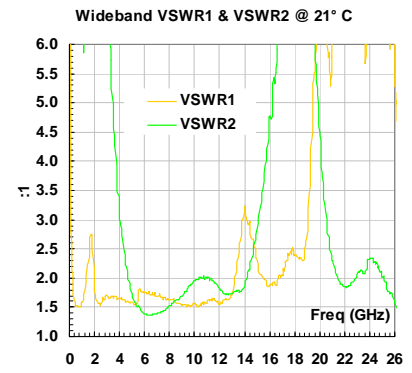
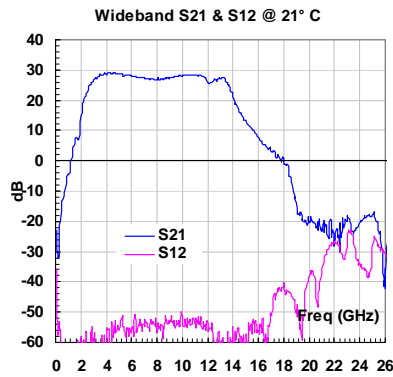
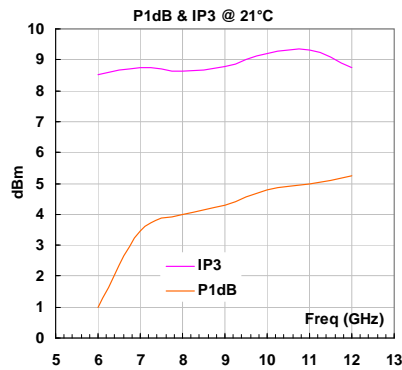
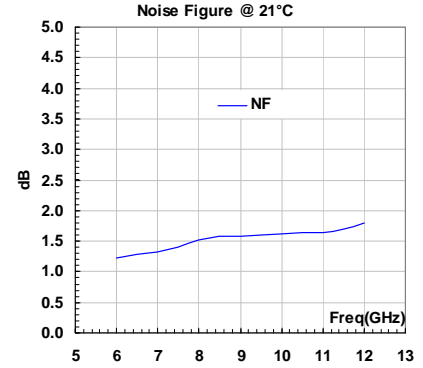
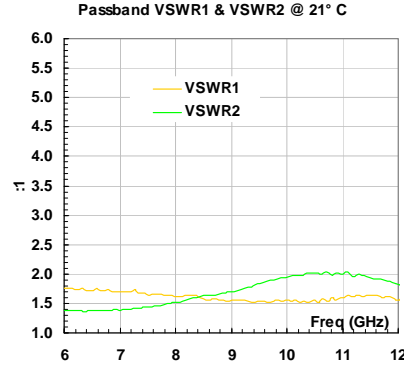
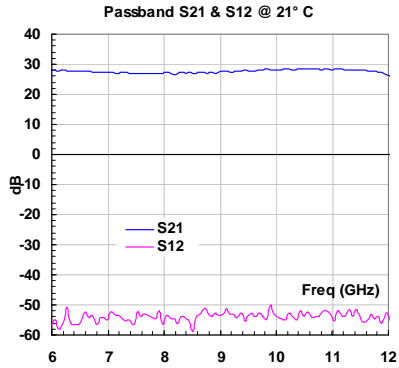
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Model Number	WBA60120A	WBA60120B
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Typical Data

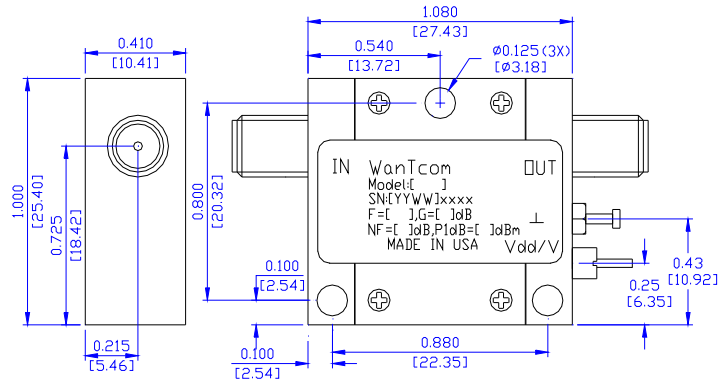


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Outline, WP-5 Housing

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

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.
