



WCA05300A/B

50 - 200 MHz LOW NOISE WIDE BAND AMPLIFIER

REV E
April 2014

Key Features



- 75 Ohm Impedance
- 50 ~ 200 MHz
- 0.45 dB Noise Figure
- +/- 0.2 dB Gain Flatness
- 24.0 dB Gain
- 8.0 dBm P_{1dB}
- 1.45:1 VSWR
- Single Power Supply
- >34 years MTBF
- RoHS Compliant

Product Description

WCA05300A integrates WanTcom proprietary low noise amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum low noise figure, wideband, and high linearity performances together. With single DC voltage operation, the amplifier has optimal input and output matching in the specified frequency range at 75-Ohm impedance system. The amplifier has standard SMA connectorized WP-6 Gold plated housing.

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

Applications

- VHF
- Astronomy
- CATV/DBS
- Defense
- Security System
- Measurement
- Fixed Wireless



Specifications

Summary of the electrical specifications WCA05300A at room temperature

Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S ₂₁	50 – 200 MHz	23	24	25	dB
2	Gain Variation	ΔG	50 – 200 MHz		+/- 0.2	+/-0.3	dB
3	Input VSWR	SWR ₁	50 – 200 MHz		1.4:1	1.5:1	Ratio
4	Output VSWR	SWR ₂	50 – 200 MHz		1.4:1	1.5:1	Ratio
5	Reverse Isolation	S ₁₂	50 – 200 MHz		30		dB
6	Noise Figure	NF	50 – 200 MHz, WCA05300A		0.45	0.6	dB
			50 – 200 MHz, WCA05300B		0.55	0.7	
7	Output Power 1dB Compression Point	P _{1dB}	50 – 200 MHz	7	8		dBm
8	Output-Third-Order Interception Point	IP ₃	Two-Tone, P _{out} +0 dBm each, 1 MHz separation	20	24		dBm
9	Current Consumption	I _{dd}	V _{dd} = +7 V ~ +25 V		40		mA
10	Power Supply Voltage	V _{dd}	WCA05300A	+7.0		+25	V
11	Thermal Resistance	R _{th,c}	Junction to case			220	°C/W
12	Operating Temperature	T _o		-40		+85	°C
13	Maximum CW RF Input Power	P _{IN, MAX}	DC – 6.0 GHz, WCA05300A			5	dBm
			DC – 6.0 GHz, WCA05300B			30	

Absolute Maximum Ratings

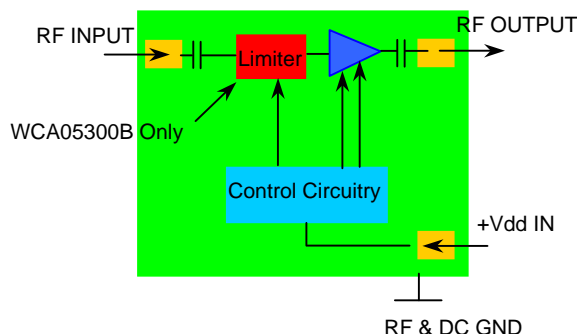
Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, +25
Drain Current	mA	70
Total Power Dissipation	W	1.25
CW RF Input Power	dBm	5, WCA05300A 30, WCA05300B
Channel Temperature	°C	150
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
Thermal Resistance	°C/W	220

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

Ordering Information

Model Number	P _{IN, MAX} , dBm
WCA05300A	5.0
WCA05300B	30.0

Functional Block Diagram



Specifications and information are subject to change without notice.

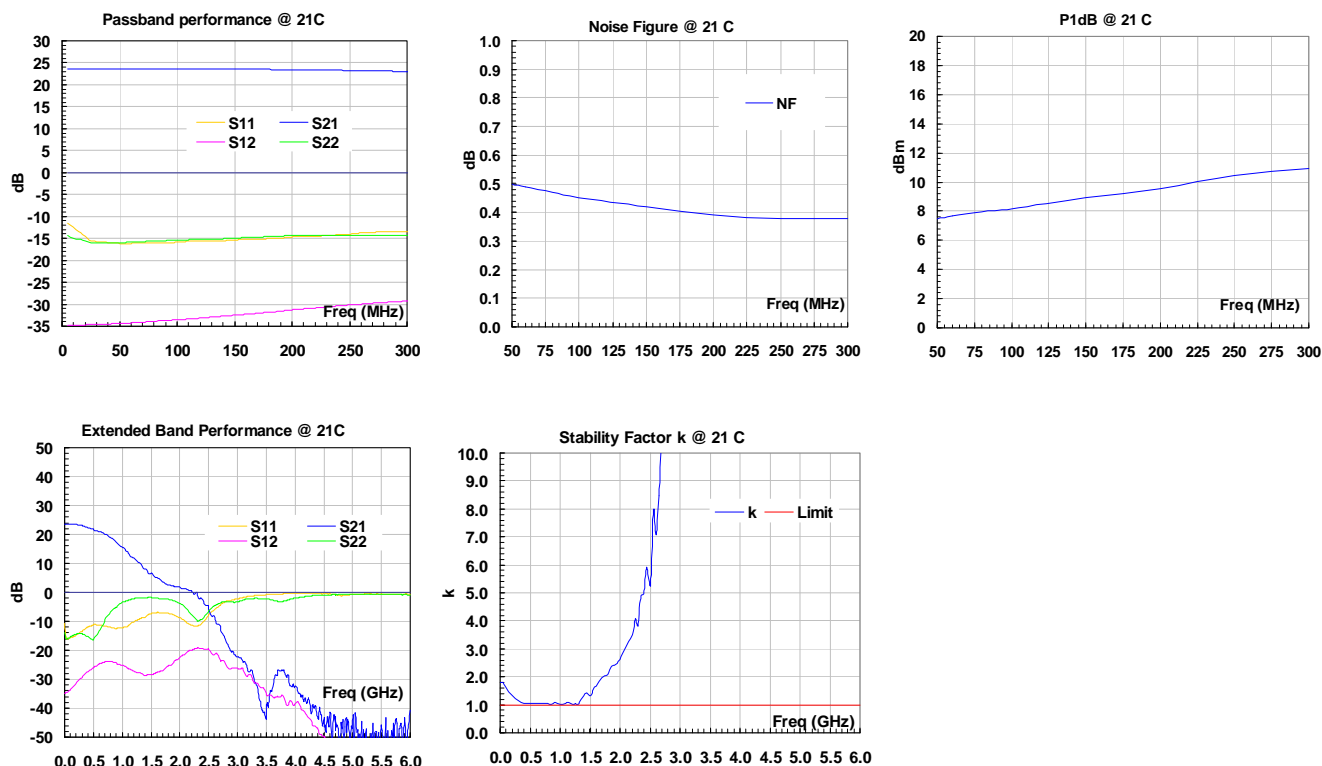


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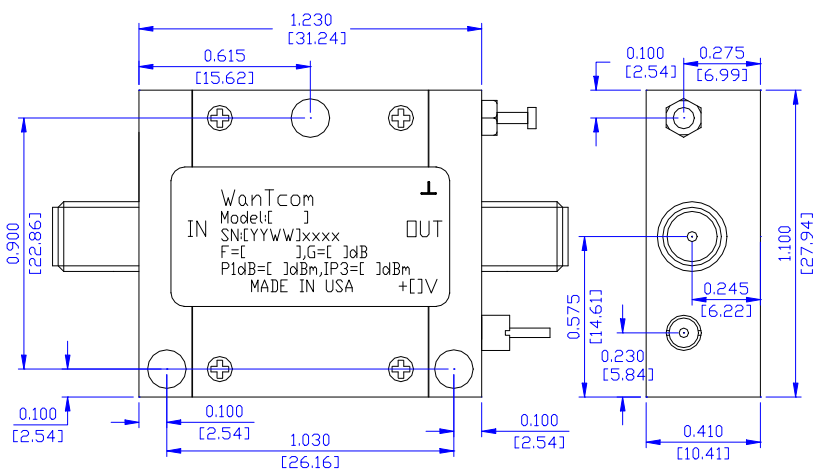
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Typical Data



Outline, WP-6 Housing

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



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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 good 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 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.

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 during the shock and vibration. Always use the appropriate torque setting of the power screwdriver to mount them.
