



WMA50A

50 Ohm LOW NOISE AMPLIFIER FOR MRI APPLICATIONS

REV B

December 2009

Key Features



- 50 Ohm
- 0.45 dB noise figure
- 26.0 dBm output IP₃
- 26.0 dB Gain
- 12.0 dBm P_{1dB}
- Single Power Pupply
- >34 years MTBF
- Unconditional Stable
- RoHS compliant

Product Description

WMA50A series 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 together. With single +7.0V ~ +13.0V 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-5 gold plated housing.

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

Applications

- Radio Imaging
- VHF
- Security System
- Measurement
- Fixed Wireless



Specifications

Summary of the electrical specifications WMA50A Series at room temperature

Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S ₂₁	48 – 65 MHz /120 – 130 MHz		26		dB
2	Gain Variation	ΔG	48 – 65 MHz /120 – 130 MHz		+/- 0.2	+/-0.4	dB
3	Input VSWR	SWR ₁	48 – 65 MHz /120 – 130 MHz			1.8:1	Ratio
4	Output VSWR	SWR ₂	48 – 65 MHz /120 – 130 MHz			1.3:1	Ratio
5	Reverse Isolation	S ₁₂	48 – 65 MHz /120 – 130 MHz		30		dB
6	Noise figure	NF	48 – 65 MHz /120 – 130 MHz		0.45	0.55	dB
7	Output Power 1dB compression Point	P _{1dB}	48 – 65 MHz /120 – 130 MHz		12		dBm
8	Output-Third-Order Interception point	IP ₃	Two-Tone, P _{out} +0 dBm each, 1 MHz separation	22	26		dBm
9	Current Consumption	I _{dd}			40		mA
10	Power Supply Voltage	V _{dd}		+7.0	+10	+13	V
11	Operating Temperature	T _o		-40		+85	°C
12	Maximum Average RF Input Power	P _{IN, MAX}	DC – 6 GHz			10	dBm

Absolute Maximum Ratings

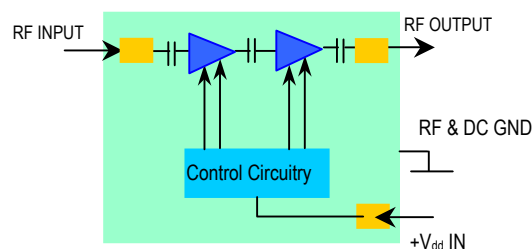
Parameters	Units	Ratings
DC Power Supply Voltage	V	+16V
Drain Current	mA	50
RF Input Power	dBm	10
Channel Temperature	°C	150
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85

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

Ordering Information

Model Number	Feature
WMA50A1R5	48 – 65 MHz
WMA50A3R	120 – 130 MHz

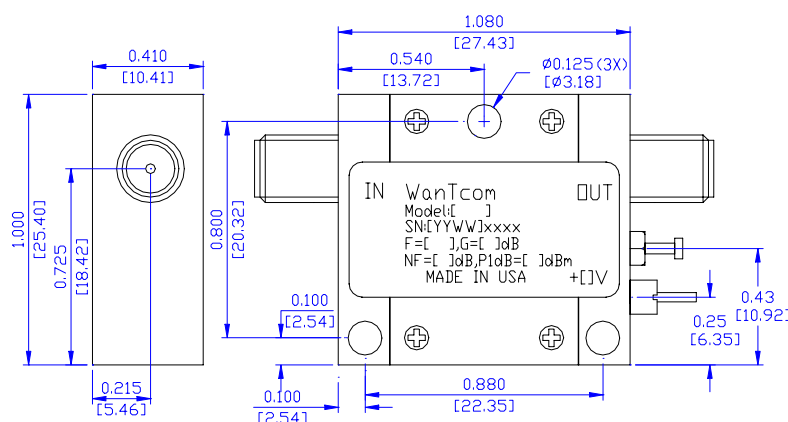
Functional Block Diagram



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



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.
