



## 8.0 – 13.0 GHz LOW NOISE AMPLIFIER WBA80130A<sup>1</sup>

WBA80130A LNA is a low noise figure, wideband, and excellent gain flatness amplifier with very compact design. The amplifier offers the 2.0 dB noise figure, 22.0 dB gain, and 10.0 dB P<sub>1dB</sub> at the frequency range from 8.0 GHz to 13.0 GHz.

WBA80130A is designed to meet the rugged standards of MIL-STD-202, and MIL-STD-883.



# Preliminary

### Key Features:

Impedance:	50 Ohm
Low Noise:	2.0 dB
Gain:	22.0 dB
Gain Flatness:	+/-1.0 dB
Input Return Loss:	12.0
Output Return Loss:	12.0
P <sub>1dB</sub> :	10.0 dBm
Single Power Supply:	60 mA, @ +5.0 V
Frequency Range:	8 ~ 13 GHz
Operating Temperature:	-40 ~ +85 °C
Input & output Connector:	SMA Female
+5.0V DC PWR:	Feed Thru

### Absolute Maximum Ratings<sup>2</sup>:

Symbol	Parameters	Units	Absolute Maximum
V <sub>dd</sub>	DC Power Supply Voltage	V	6.0
I <sub>dd</sub>	Drain Current	mA	80
P <sub>diss</sub>	Total Power Dissipation	mW	500
P <sub>In,Max</sub>	RF Input Power	dBm	10
T <sub>ch</sub>	Channel Temperature	°C	150
T <sub>STG</sub>	Storage Temperature	°C	-65 ~ 150
T <sub>O,MAX</sub>	Maximum Operating Temperature	°C	-55 ~ 100

<sup>1</sup> Specifications are subject to change without notice.

<sup>2</sup> Operation of this device above any one of these parameters may cause permanent damage.



**Specifications:**

a) **Table 1** Summary of the electrical specifications of WBA80130A at room temperature

Index	Testing Item	Symbol	Test Constraints	Nom (RT)	Min	Max	Unit
1	Gain	$S_{21}$	8 - 13 GHz	22			dB
2	Gain Variation	$\Delta G$	8 - 13 GHz	+/- 0.5		+/-1.0	dB
3	Input Return Loss	$S_{11}$	8 - 13 GHz	12	10		dB
4	Output Return Loss	$S_{22}$	8 - 13 GHz	12	10		dB
5	Reverse Isolation	$S_{12}$	8 - 13 GHz	40	30		dB
6	Noise figure	NF	8 - 13 GHz	2.0		2.5	dB
7	Output $P_{1dB}$ compression	$P_{1dB}$	8 - 13 GHz	10.0	9		dBm
8	Current Consumption	$I_{dd}$	$V_{dd} = +5 V$	60	55	65	mA
9	Power Supply Voltage	$V_{dd}$		5.0	4.80	5.20	V
10	Operating Temperature	$T_o$			-40	+85	°C
11	Maximum Average RF Input Power	$P_{IN, MAX}$	8 - 13 GHz			10	dBm
12	Weight			20		25	Gram

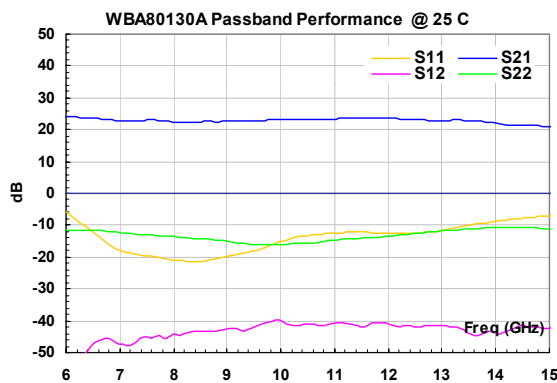
As shown in **Figure 1**, the typical gain of the WBA80130A is 22.0 dB across 8.0 GHz to 13.0 GHz. The typical input and output return losses are 12 dB, respectively.

The noise figure of WBA80130A, as shown in **Figure 2**, is 2.0 dB at room temperature. WBA80130A offers typical 10.0 dBm  $P_{1dB}$ .

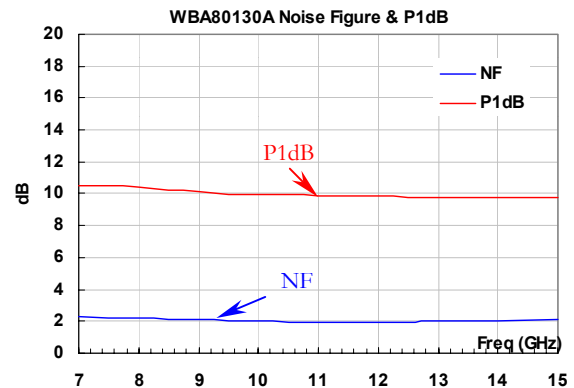
**Figure 3** demonstrates the stability factor  $k$  of the amplifier.  $k$  is less than 1 in some frequency ranges thus the amplifier is conditional stable.

**Figure 4** is the block diagram of internal circuit of WBA80130A. It is a two-stage amplifier with the DC block capacitors at the input and output RF ports. All the RF matching networks, DC bias circuitries, and temperature compensation circuits are built in.

**Figure 5** shows the mechanical outline of WBA80130A. The package is Wan7com's standard gold plated housing, WP-10E. All the RF ports are equipped with field replaceable SMA female connectors. The +5.0V DC power supply is applied through the feed thru.



**Fig. 1** Small signal performance of WBA80130A



**Fig. 2** Noise figure and  $P_{1dB}$  vs. frequency

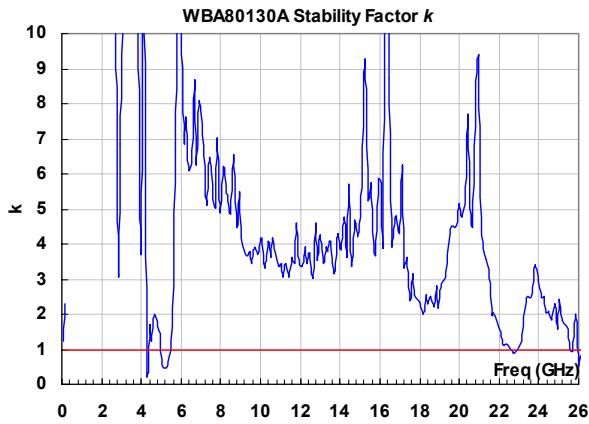


Fig. 3 Stability factor  $k$

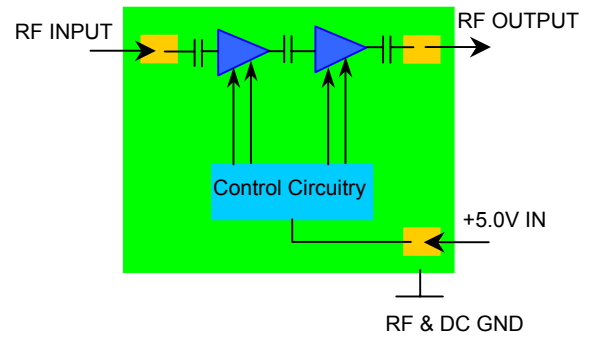


FIG. 4 Internal block diagram of WBA80130A

**WBA80130A MECHANICAL OUTLINE: WP-10E**

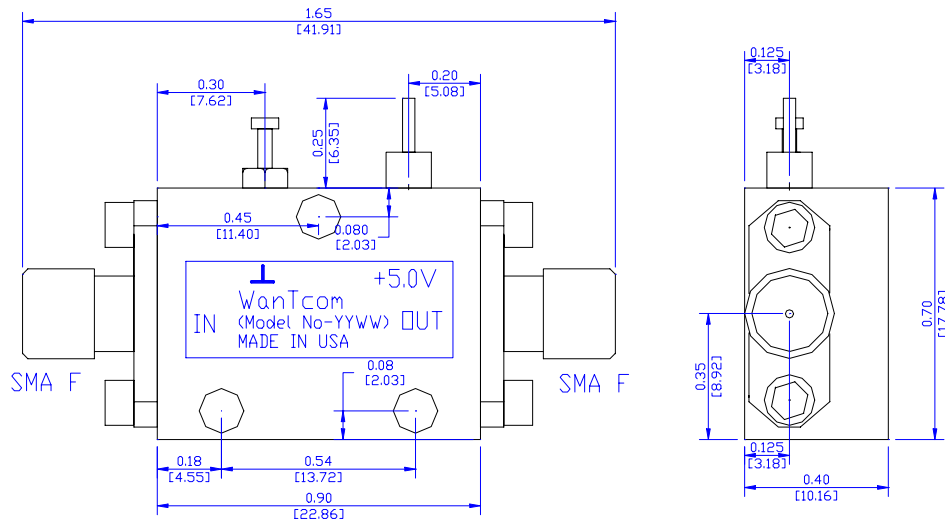


FIG. 1 WP-10E Outline

**ORDERING INFORMATION**

<b>Model Number:</b>	WBA80130A
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