



WBA2026A

2.0- 2.6 GHz LOW NOISE WIDE BAND AMPLIFIER

REV A
April 2008

Key Features



- 2.0 ~ 2.6 GHz
- 0.65 dB noise figure
- 24.0 dBm output IP₃
- 26.0 dB Gain
- +/-0.75 dB Gain Flatness
- 13.0 dBm P_{1dB}
- 1.25:1 VSWR
- Single Power Supply
- >68 Years MTBF
- Unconditional Stable
- RoHS Compliant

Product Description

WBA2026A integrates WanTcom proprietary low noise amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum low noise figure, wideband, high linearity, and unconditional stable performances together. With single DC power 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

- Mobile Infrastructures
- WiMAX
- 3G
- Defense
- Security System
- Measurement
- Fixed Wireless



Specifications

Summary of the electrical specifications WBA2026A at room temperature

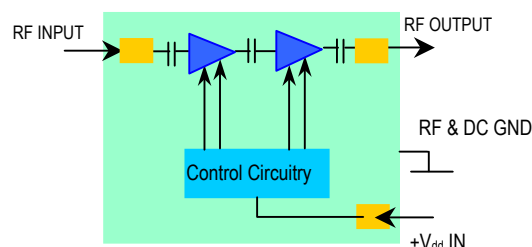
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S ₂₁	2.0 – 2.6 GHz	24	26	27	dB
2	Gain Variation	ΔG	2.0 – 2.6 GHz		+/- 0.75	+/-1	dB
3	Input VSWR	SWR ₁	2.0 – 2.6 GHz		1.25:1	1.4:1	Ratio
4	Output VSWR	SWR ₂	2.0 – 2.6 GHz		1.25:1	1.4:1	Ratio
5	Reverse Isolation	S ₁₂	2.0 – 2.6 GHz	35			dB
6	Noise figure	NF	2.0 – 2.6 GHz		0.60	0.80	dB
7	Output Power 1dB compression Point	P _{1dB}	2.0 – 2.6 GHz	11	13		dBm
8	Output-Third-Order Interception point	IP ₃	Two-Tone, P _{out} +0 dBm each, 1 MHz separation	23	25		dBm
9	Current Consumption	I _{dd}	V _{dd} = +5 V		60		mA
10	Power Supply Voltage	V _{dd}	WBA2026A	+4.7	+5	+5.3	V
			WBA2026B	+7.0		+16	
11	Thermal Resistance	R _{th,c}	Junction to case			220	°C/W
12	Operating Temperature	T _o		-40		+85	°C
13	Maximum Average RF Input Power	P _{IN, MAX}	DC – 13.0 GHz			10	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	7.0 (+16V for WBA2026B)
Drain Current	mA	90
Total Power Dissipation	mW	500
RF Input Power	dBm	10
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.

Functional Block Diagram



Ordering Information

Model Number	Feature
WBA2026A	V _{dd} = +5.0V
WBA2026B	V _{dd} = +7.0 ~ +16.0V

Specifications and information are subject to change without notice.

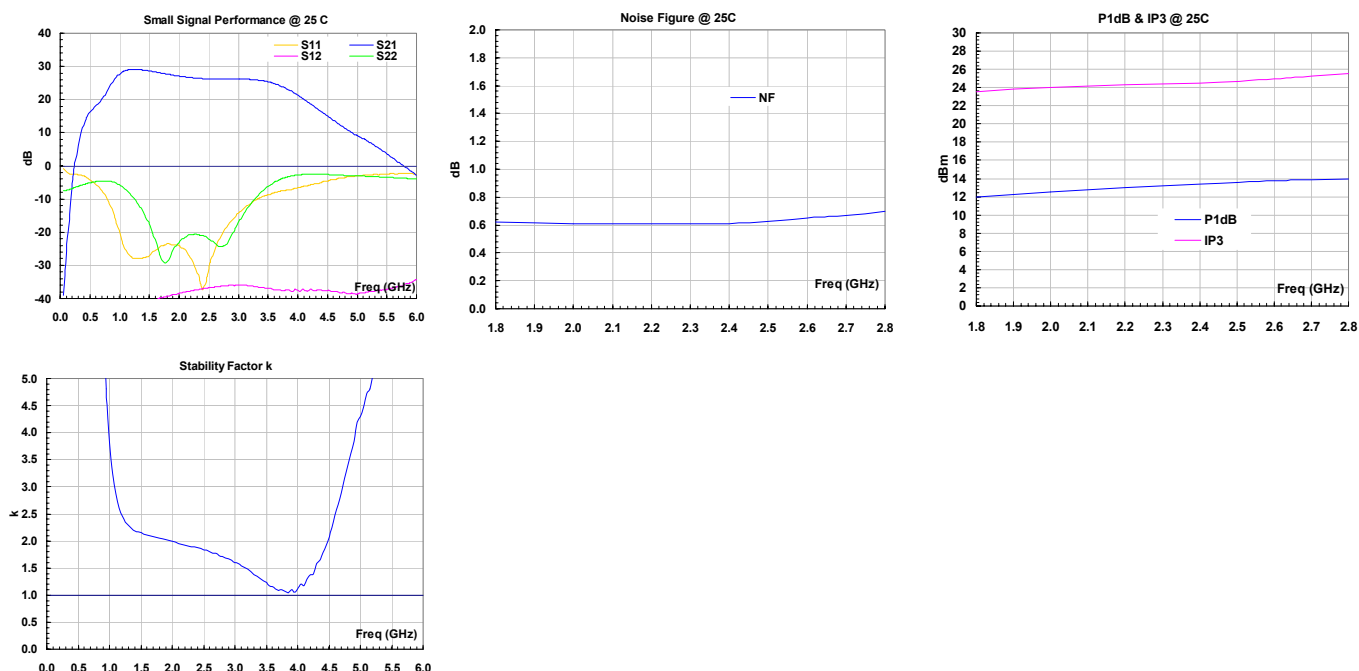


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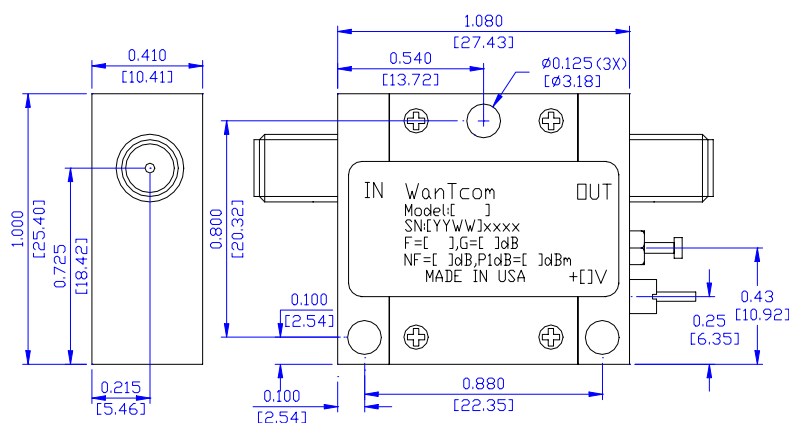
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Typical Data



Outline, WP-5 Housing

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



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**WBA2026A****2.0- 2.6 GHz LOW NOISE WIDE BAND AMPLIFIER****REV A**
April 2008**Small Signal S-Parameters:**! WBA2026A, +25C, S-parameters at $V_{dd}=5V$, $I_{dd}=60mA$. Last updated 4/16/08.

GHz s MA R 50

!Freq(GHz)	MAGS11	ANGS11	MAGS21	ANGS21	MAGS12	ANGS12	MAGS22	ANGS22
0.05	0.917	-21.1	0.007	-88.1	0.000084	123.9	0.412	-6.2
0.1	0.869	-31.5	0.059	-97.3	0.000068	143.9	0.412	-10.3
0.2	0.827	-57	0.475	-134.9	0.000019	-55.3	0.415	-21.2
0.3	0.813	-86.9	1.496	-178	0.000034	163.3	0.417	-32
0.4	0.767	-121.4	2.539	148.3	0.0001	-150.6	0.419	-43.2
0.5	0.707	-161.5	4.142	140.8	0.00009	-122.6	0.419	-54.1
0.6	0.608	149.2	9.458	118.6	0.00039	-95.6	0.429	-64.6
0.7	0.463	92.1	16.534	78.6	0.001068	-128.2	0.45	-77.4
0.8	0.338	36.2	21.853	38.8	0.001933	-159.8	0.462	-93.1
0.9	0.262	-11.9	24.666	4.1	0.002795	173.6	0.454	-109.7
1	0.217	-50.8	25.946	-25.9	0.003641	153.4	0.429	-126.3
1.1	0.184	-81.7	26.427	-52.5	0.004412	135.1	0.396	-142.6
1.2	0.154	-106.2	26.333	-76.4	0.005226	119.3	0.353	-159.1
1.3	0.129	-126.8	25.845	-98.4	0.006055	103.6	0.303	-175.1
1.4	0.105	-145.2	25.261	-118.6	0.00672	90	0.25	169.7
1.5	0.083	-161.3	24.608	-137.4	0.007356	77.6	0.198	156.3
1.6	0.06	-170.3	23.891	-155.2	0.007932	65.6	0.148	143.7
1.7	0.043	-170.3	23.093	-172.1	0.00859	55.8	0.101	136.1
1.8	0.039	-161.4	22.242	171.6	0.00914	45.8	0.069	136.8
1.9	0.046	-160.8	21.477	156	0.009888	36.2	0.047	149.6
2	0.054	-170	20.807	141	0.01	26.5	0.042	174.8
2.1	0.061	173.2	20.156	126.4	0.011	17.7	0.06	-170.3
2.2	0.071	156.7	19.532	112	0.012	8.9	0.076	-172.7
2.3	0.084	135.1	19.015	98	0.012	0.1	0.091	179.7
2.4	0.097	115.1	18.576	84.1	0.013	-8.3	0.104	168.8
2.5	0.112	93.1	18.195	70.5	0.014	-17.3	0.112	155.8
2.6	0.133	71.4	17.815	56.9	0.014	-26.1	0.114	142.4
2.7	0.156	51.4	17.482	43.3	0.015	-35.1	0.116	128.4
2.8	0.184	33	17.198	29.7	0.016	-44.1	0.115	112.1
2.9	0.218	14.1	16.961	16	0.017	-53.1	0.108	92.7
3	0.25	-2.1	16.767	2.4	0.017	-62.4	0.1	72.8
3.1	0.289	-19	16.555	-11.3	0.017	-70.7	0.092	50.7
3.2	0.326	-34.9	16.367	-24.9	0.018	-79.4	0.087	22.5
3.3	0.363	-49.9	16.166	-38.5	0.018	-88.2	0.085	-8.2
3.4	0.407	-65	15.92	-52.3	0.018	-96.3	0.094	-37.9
3.5	0.448	-80.2	15.704	-66.1	0.018	-104.8	0.115	-65.8
3.6	0.485	-95	15.462	-79.7	0.018	-113.8	0.14	-90.9
3.7	0.518	-108.3	15.198	-93.3	0.018	-122.1	0.168	-112.3
3.8	0.552	-122.3	14.946	-107	0.018	-128.9	0.203	-130
3.9	0.581	-135.7	14.647	-120.7	0.017	-137.5	0.241	-147.1
4	0.605	-149	14.309	-134.2	0.017	-148.5	0.282	-163.5
4.1	0.625	-161.9	13.878	-148.3	0.017	-155.4	0.321	-179.3
4.2	0.644	-174.4	13.411	-162.5	0.016	-160.4	0.364	165.3
4.3	0.655	172.8	12.937	-176.7	0.015	-167.7	0.407	150.2
4.4	0.656	160.9	12.419	169	0.014	-175.8	0.449	134.9
4.5	0.66	149.3	11.788	154.9	0.013	-179.9	0.488	120
5	0.624	95.7	8.903	83.6	0.011	170.7	0.634	48
5.5	0.578	55.3	5.698	7.1	0.015	157.1	0.662	-21.6
6	0.599	15.1	3.242	-57.4	0.02	124.5	0.611	-81.3

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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 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 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.
