



100 – 500 MHz 1.5-WATT POWER AMPLIFIER WBPA0105A¹

WBPA0105A is a high power and high linearity connectorized amplifier with unconditional stable design. The amplifier offers typical 17.0 dB gain, 32 dBm P_{1dB} , and 50.0 dBm output IP_3 at the frequency range from 100 MHz to 500 MHz band. WBPA0105A is most suitable for VHF wireless data communications, tower top amplifiers, last-mile wireless communication systems, and wireless measurement applications.

WBPA0105A is designed to meet the rugged standards of MIL-STD-202 and MIL-STD-883.

Preliminary

Additional heat sink required for the normal continuous operation!

Key Features:

Impedance:	50 Ohm
MTBF ² :	>300,000 hrs (34 Years)
Output IP_3 :	50.0 dBm
Gain:	17.0 dB
P_{1dB} :	32.0 dBm
Single Power Supply:	0.42 A @ +12.0V
Frequency Range:	100 - 500 MHz
Case Operating Temperature:	-40 ~ +85 °C
Input VSWR:	1.6:1
Output VSWR:	1.5:1
RF IN/OUT:	SMA Female
Built-In Functions:	DC blocks at input and output, DC-DC converter, sequencing biases, temperature compensation circuits, and auto DC biases.

Absolute Maximum Ratings³:

Symbol	Parameters	Units	Absolute Maximum
V_{dd}	DC Power Supply Voltage	V	12.5
I_{dd}	Drain Current	mA	500
P_{diss}	Total Power Dissipation	W	6
$P_{in,Max}$	RF Input Power	dBm	24
T_{ch}	Channel Temperature	°C	160
T_{STG}	Storage Temperature	°C	-55 ~ 125
$T_{O,MAX}$	Maximum Operating Temperature	°C	-40 ~ 85

¹ Specifications are subject to change without notice.

² MTBF: Mean Time Between Failure, Per TR-NWT-000332, ISSUE 3, SEPTEMBER, 1990, T=40°C

³ Operation of this device above any one of these parameters may cause permanent damage.



Specifications:

a) Table 1 Summary of the electrical specifications WBPA0105A at room temperature

Index	Testing Item	Symbol	Test Constraints	Nom	Min	Max	Unit
1	Gain	S_{21}	100 – 500 MHz	17.0	15.5	18.5	dB
2	Gain Variation	ΔG	100 – 500 MHz	+/- 0.5		+/- 0.75	dB
3	Input VSWR	$VSWR_1$	100 – 500 MHz	1.6:1		1.8:1	Ratio
4	Output VSWR	$VSWR_2$	100 – 500 MHz	1.5:1		1.8:1	Ratio
5	Reverse Isolation	S_{12}	100 – 500 MHz	35	30		dB
6	Noise figure	NF	100 – 500 MHz	4.5		5.0	dB
7	Output Power 1dB Compression Point	P_{1dB}	100 – 500 MHz	32	31.0		dBm
8	Output-Third-Order Interception point	IP_3	Two-Tone, $P_{out} = +20$ dBm each, 5 MHz separation	50	48.0		dBm
9	Current Consumption	I_{dd}	$V_{dd} = +12$ V	0.425			A
10	Power Supply Voltage	V_{dd}		+12	+11.5	+12.5	V
11	Thermal Resistance	$R_{th,c}$	Junction to case			18	°C/W
12	Operating Temperature	T_o			-40	+85	°C
13	Maximum Average RF Input Power	$P_{IN,MAX}$	DC – 6000 MHz			24	dBm

b) Frequency Response

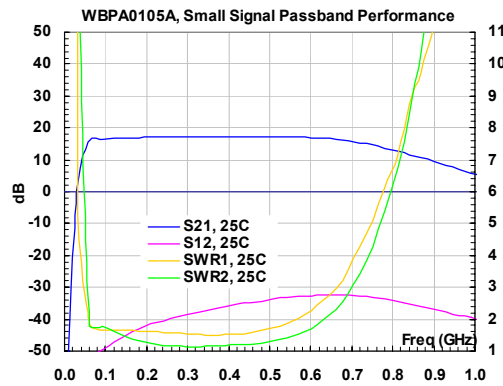


FIG. 1 Small signal passband performance.

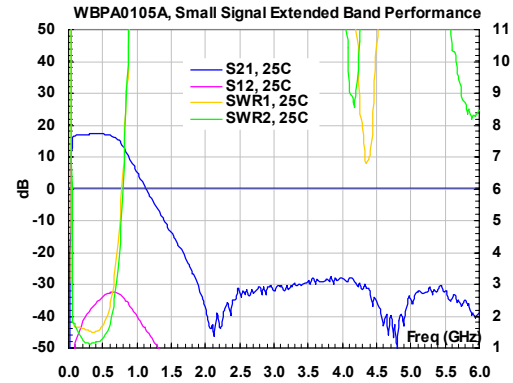


FIG. 2 Performance at the extended frequency band

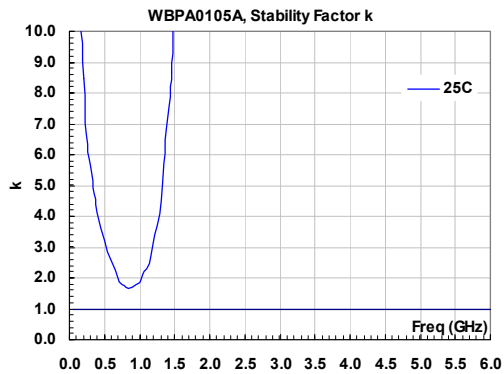


FIG. 3 Stability factor k

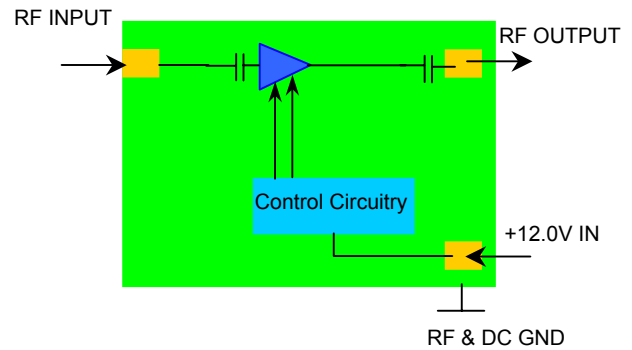


FIG. 4 Block diagram

c) WBPA0105A Mechanical Outline: WP-5

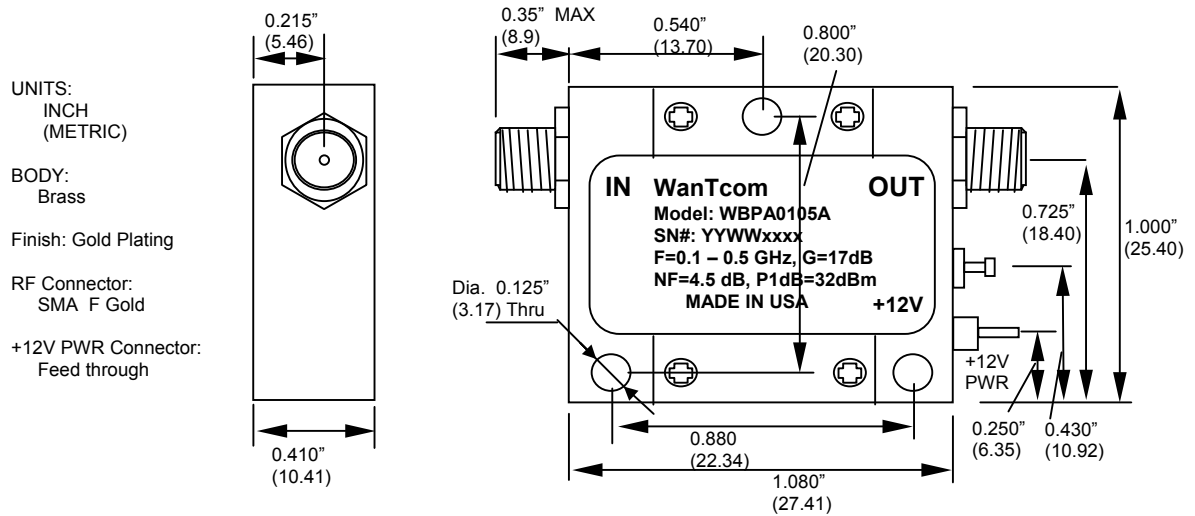


FIG. 5 WBPA0105A outline

Ordering Information

Model Number	WBPA0105A.
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