



COAXIAL

RF Instrument Amplifier

HPA-0M51G02W5+

50Ω 0.5 to 1000 MHz 3 W N-type Female

THE BIG DEAL

- High Gain, 40 dB Typ.
- High P1dB, +35 dBm Typ.
- High OIP3, +44 dBm Typ.
- Thermally Self-Protected, LED Indicators
- Built-in 110/220 AC Power Supply

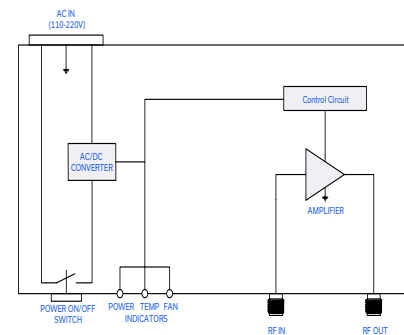


Generic photo used for illustration purposes only

APPLICATIONS

- Laboratory Test Instrument
- RF Power Stress Test
- EMI and Antenna Testing
- Industrial, Scientific, Medical Amplifier

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

The HPA-0M51G02W5+ is an instrument amplifier operating over the 0.5 to 1000 MHz frequency band providing more than 3 W of output power with a typical small signal gain of 40 dB.

The amplifier uses state-of-the-art semiconductor technology and can be used in a wide range of applications. The amplifier runs on a built-in 110/220 V power supply, making it easy to use in most lab environments. It features thermal self-protection, preventing damage to the amplifier and providing added reliability. It is housed in a lightweight aluminum alloy case (8.27" × 15.35" × 3.25") with N-type connectors, ideal for bench-top use.

KEY FEATURES

Features	Advantages
Broadband, Useable from 0.5 to 1000 MHz	One single amplifier that covers the entire frequency band delivering rated power.
High Gain, 40 dB Typ.	High gain allows low drive levels to achieve rated output power which can be obtained from many standard lab generators.
High OIP3, +44 dBm Typ.	High OIP3 makes the amplifier suitable for applications requiring high linearity such as digitally modulated signals.
Thermally Self-Protected	A built-in sensing feature signals the unit to power off when the amplifier reaches its maximum rated operating temperature, preventing damage to the equipment and providing added reliability.
Built-in 110V/220V Power Supply	Operating from a standard AC line power supply, the amplifier can be powered from 110 to 220 V, making it versatile for use in most lab environments.



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ELECTRICAL SPECIFICATIONS, +25°C

Parameter	Symbol	Condition (MHz)		Min.	Typ.	Max.	Units
Frequency Range	f	-		0.5	-	1000	MHz
Gain	G_{SS}	$P_{IN} = -30$ dBm	0.5 - 1000	34	40	-	dB
Gain Flatness	$G_{SS-FLAT}$	$P_{IN} = -30$ dBm	0.5 - 1000	-	±1.5	±2.2	dB
Output Power at 1 dB Compression	P_{1dB}	0.5 - 1000		+32	+35	-	dBm
Noise Figure	NF	$P_{IN} = -30$ dBm	0.5 - 1000	-	9	14	dB
Output 3 rd Order Intercept Point	OIP3	$P_{OUT} = +30$ dBm/tone	0.5 - 1000	+38	+44	-	dBm
Input Return Loss	I-RL	$P_{IN} = -30$ dBm	0.5 - 1000	9.5	17.5	-	dB
Output Return Loss	O-RL	$P_{IN} = -30$ dBm	0.5 - 1000	-	21	-	dB
AC Supply Voltage	V_{AC}	-		85	110 / 220	265	V

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	$T_{AMBIENT}$: 0°C to +55°C
Storage Temperature	-55°C to +100°C
RF Input Power (no damage)	+7 dBm

Permanent damage may occur if any of these limits are exceeded.





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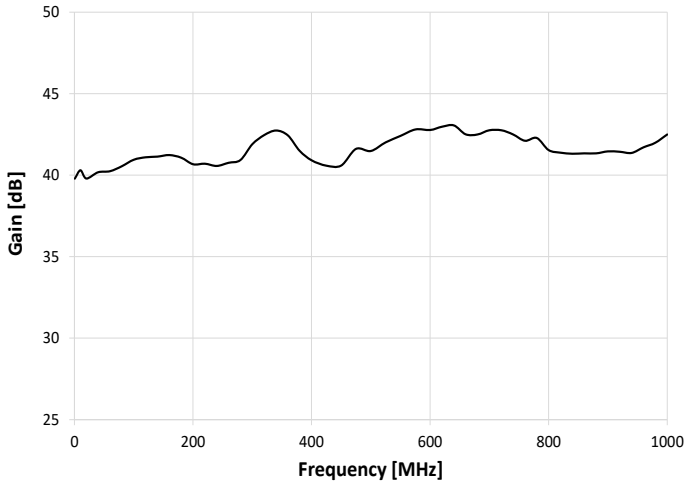
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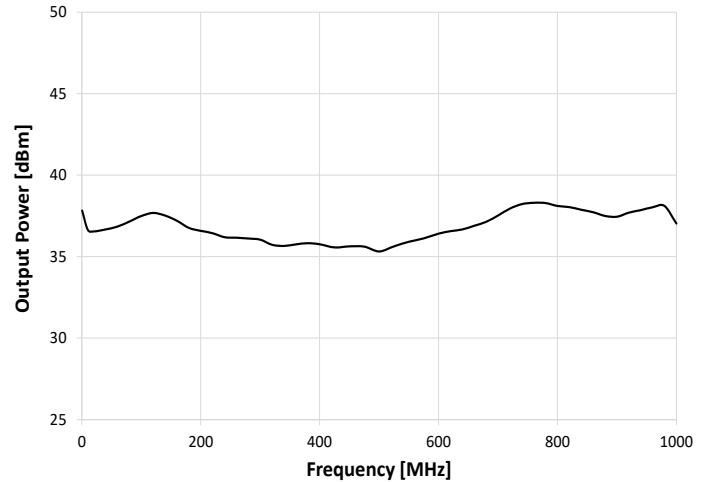
50Ω 0.5 to 1000 MHz 3 W N-type Female

TYPICAL PERFORMANCE GRAPHS, +25°C

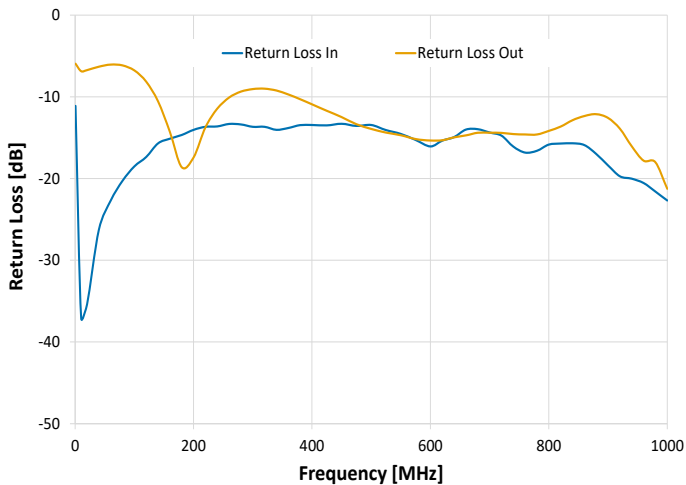
Small Signal Gain vs. Output Frequency



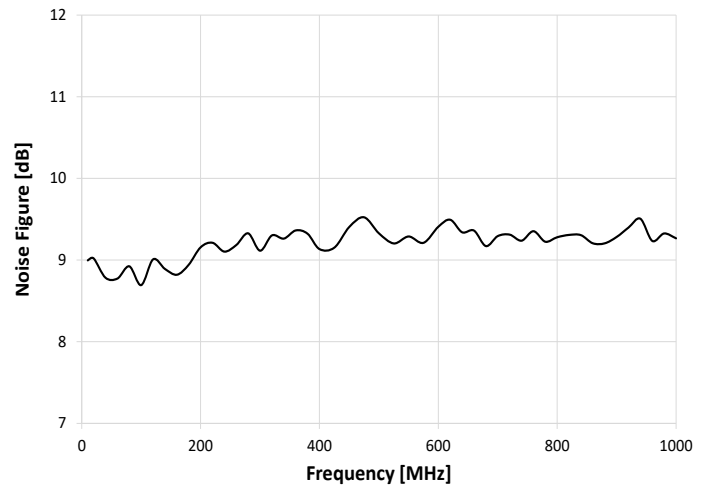
Output Power at 1dB Compression vs. Output Frequency



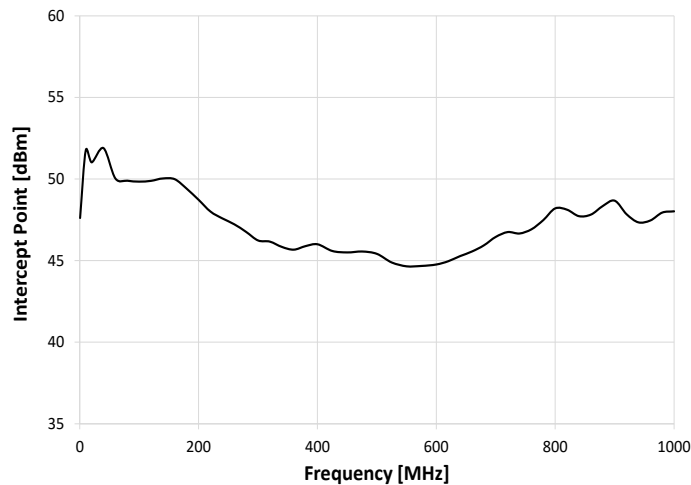
Return Loss vs. Output Frequency



Noise Figure vs. Output Frequency



3rd Order Intercept Point vs. Output Frequency



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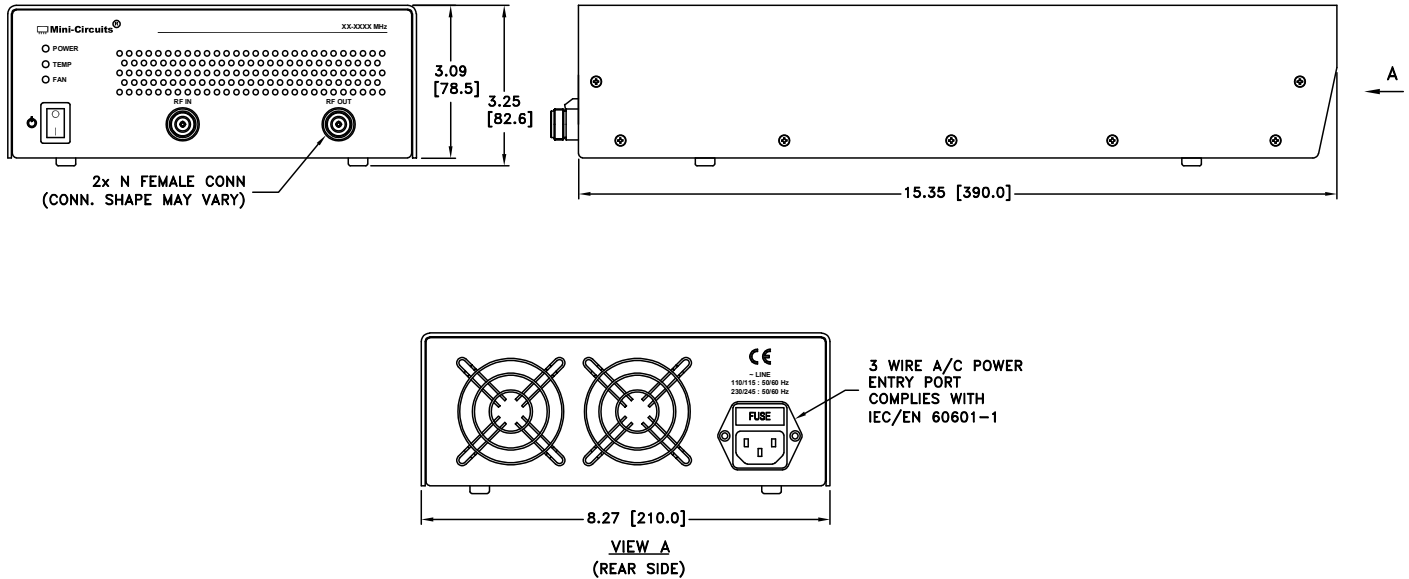
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CASE STYLE DRAWING (PJ2059-2)



Notes:

1. Case material: Aluminum alloy.
2. Case finish: White paint.
3. Weight: 3870 grams.
4. Dimensions: Inches [mm].
Tolerances: 2 Pl. ± 0.03 inch; 3 Pl. ± 0.015 inch.
5. Connector shape may vary.
6. Keep area adjacent to airvents clear to allow free air flow.
Caution: Do not insert anything, especially conductors or fingers, into case opening.

COAXIAL CONNECTIONS

Port	Connector
RF IN	N-type Female
RF OUT	N-type Female

ALARM LED INDICATORS

Parameter	LED Color
Power	Green at normal operation
Temperature Shutdown	Red at temperature shutdown ($85 \pm 5^\circ\text{C}$)
Fan	Red at fan failure (#1 or #2)





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DETAILED MODEL INFORMATION IS AVAILABLE ON OUR WEBSITE

[CLICK HERE](#)

Performance Data	Table
	Graphs
	S-Parameter (S2P Files) Data Set (.zip file)
RoHS Status	Compliant
Environmental Ratings	ENV76

ORDERING INFORMATION

Model No. Links	HPA-0M51G02W5+
Case Style	PJ2059-2
Connector	IN (N-type Female) / OUT (N-type Female)

NOTES:

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html

