Coaxial

High Power Amplifier

HPA-50W-63+

50Ω 50W 700 to 6000 MHz

The Big Deal

- High output power at saturation, 50W typ.
- High gain, 56 dB typ.
- Excellent reverse isolation, 97 dB typ.
- Rugged 3U rack mount case style with internal fans
- Operates from AC line power: 85-264V
- Built-in over-temperature protection

CASE STYLE: NG1942

Product Overview

The HPA-50W-63+ is a high power, rack mount amplifier with a self-contained AC power supply which can be used for a wide variety of laboratory testing applications. This rugged amplifier is capable of amplifying signals up to 50W output power over its entire operating bandwidth of 700 – 6000 MHz. Built-in safety features include fans alarms and automatic shut down mechanism to prevent damage in the event of excessive internal temperatures. The amplifier's output stage is further protected in the event of a fault condition, allowing high power operation for up to 5 minutes into an open or short load (refer to the maximum input power specifications).

Key Features

Feature	Advantages
Wideband frequency range	700 – 6000 MHz bandwidth covers popular wireless communications, SATCOM and radar bands in a single instrument, useful for many test applications.
50W output power at saturation	Supports high power test applications such as EMI, max power handling, and reliability testing
High Gain	56 dB typical gain allows the HPA-50W-63+ to be driven to full output power with nearly all commercially available signal generators
High Reverse Isolation	Insulates load reflections to protect sensitive signal sources from potential damage and performance variation due to load pulling
A/C Power	Operating from standard AC line power supply - the HPA-50W-63+ can be powered from 85-264V at 47~63 Hz making this HPA versatile in supporting global markets
Cooling system	Front to back forced air cooling fans makes this ideal for usage in test equipment racks.
Built-in protections	The unit shuts OFF when the internal amplifier reaches a set temperature of 85±5°C, preventing damage to the amplifier and providing added reliability.
CE marked	Meets conformity standards for sale within the European Economic Area (EEA).

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- Rugged 3U rack mount case style with internal fans
- Operates from AC line power: 85-264V
- Built-in over-temperature protection
- CE marked

Applications

- Laboratory test instrument
- RF Power stress test
- EMI and antenna testing
- Reliability testing

CASE STYLE: NG1942

Model No.	Description
HPA-50W-63+	High Power Amplifier w/ N-Type Connectors
Included Accessories	
CBL-3W-XX	AC Power Cord

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Electrical Specifications at 25°C

Parameter	Condition	Min.	Typ.	Max.	Units
Frequency Range		700	—	6000	MHz
Gain	700 - 6000 MHz	49	56	64	dB
Gain Flatness	700 - 6000 MHz	—	±4.0	±5.0	dB
Output Power at 1dB compression[1]	700 - 6000 MHz	—	+43	—	dBm
Saturated Output Power[1]	700 - 6000 MHz	—	+47	—	dBm
Noise Figure	700 - 6000 MHz	—	12	17	dB
Output third order intercept point	700 - 6000 MHz	—	+50	—	dBm
Input VSWR	700 - 6000 MHz	—	2.5	—	:1
Output VSWR	700 - 6000 MHz	—	3.0	—	:1
Isolation	700 - 6000 MHz	—	97	—	dB
Line Supply	47~63 Hz		85/264		V
Power Consumption	110/220V	—	400	600	W

1. Power measured of fundamental tone only. Does not include power contribution of harmonics signals.

Maximum Ratings[2]

Parameter	Ratings
Operating Temperature	0°C to 50°C
Storage Temperature	-20°C to 70°C (non condensing)
Input RF Power (no damage)	+5 dBm[3] -15 dBm[4]

2. Specifications apply to CW signals only permanent damage may occur if any of these limits are exceeded.
3. Into 50 ohm load
4. Into open or short load, for up to 5 minutes.

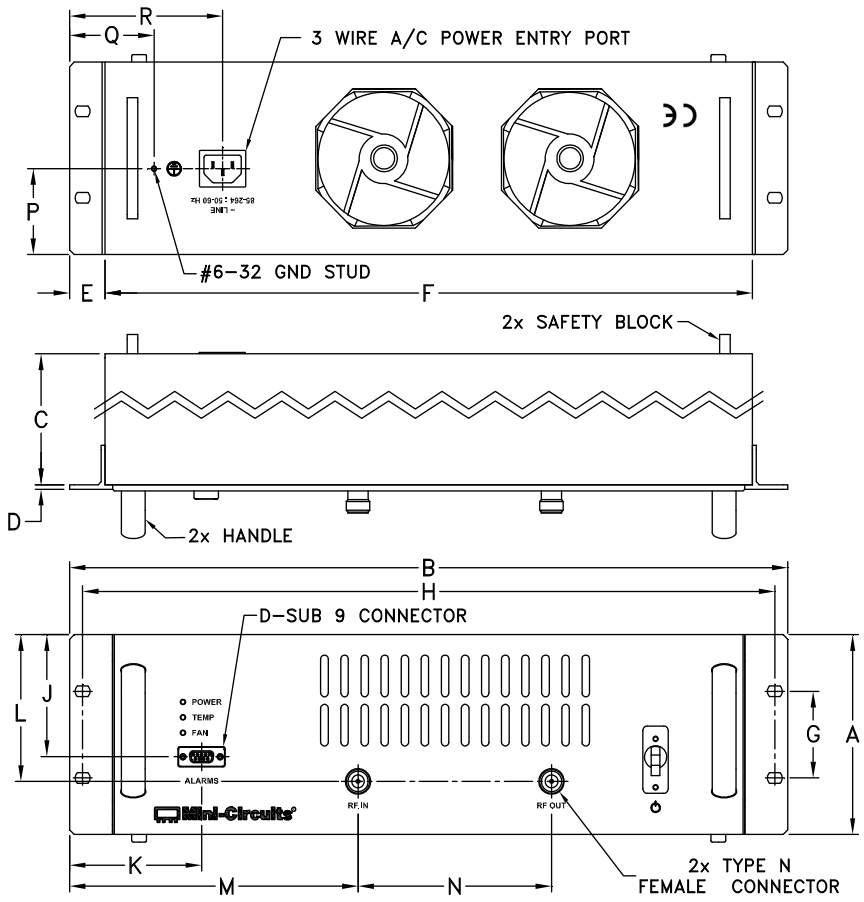
D-Sub Male Connector Pin Functions (Front Panel)

Pin #	Function	TTL Logic Level	
		Low	High
1	Temperature Alarm	Normal	Alarm Shutdown
2	Fan Alarm	Normal	Fault
3	Ground	—	—
4-9	No connection	—	—

LED Indicators (Front Panel)

Name	Color	LED State	
		Off	On
Power	Green	Power off	Power on
Temp	Red	Normal	Alarm Shutdown
Fan	Red	Normal	Fault

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	wt
5.20	19.0	20.0	.13	.94	17.13	2.25	18.31	3.17	3.49	3.82	7.63	5.12	2.23	2.24	4.05	grams
132.08	482.60	508.00	3.30	23.88	435.10	57.15	465.07	80.52	88.65	97.03	193.80	130.05	56.64	56.90	102.87	13610.0

Ordering, Pricing & Availability Information see our web site

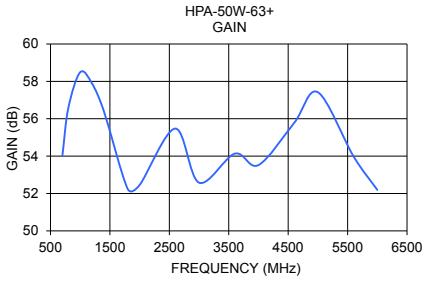
Model	Description
HPA-50W-63+	Rack Mount High Power Amplifier

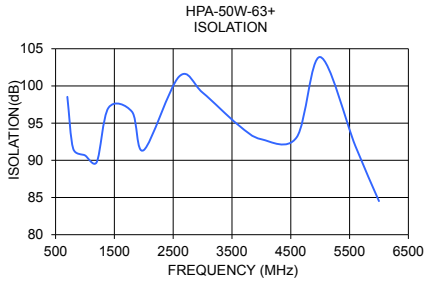
Included Accessories	Description
CBL-3W-XX	AC Power Cord (*Select one power cord from below with each Rack Mount HPA)*

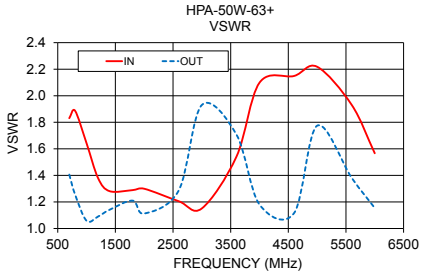
AC Power Cords	Description
CBL-3W-US	US Power Cord
CBL-3W-EU	EU Power Cord
CBL-3W-UK	UK Power Cord

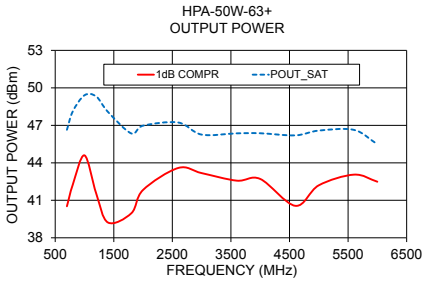
Typical Performance Data

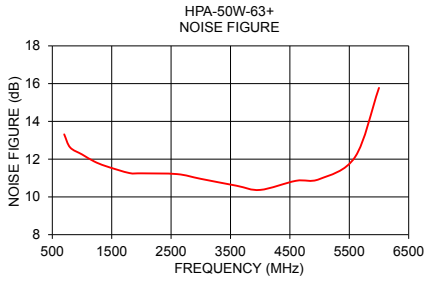
FREQUENCY (MHz)	GAIN (dB)	ISOLATION (dB)	VSWR (:1)		POUT at 1 dB COMPR. (dBm)	POUT at Saturation (dBm)	NOISE FIGURE (dB)	OIP3 (dBm)
			IN	OUT				
700	54.01	98.54	1.83	1.41	40.52	46.64	13.31	44.73
800	56.58	91.56	1.89	1.26	42.25	48.11	12.62	46.81
1000	58.49	90.67	1.64	1.06	44.60	49.41	12.25	51.89
1200	57.88	89.76	1.38	1.09	41.55	49.31	11.89	52.82
1400	56.39	97.07	1.28	1.14	39.23	48.08	11.63	51.13
1800	52.24	96.53	1.29	1.21	39.97	46.35	11.26	51.50
2000	52.46	91.37	1.30	1.11	41.83	46.97	11.25	52.84
2600	55.47	101.25	1.21	1.29	43.59	47.23	11.21	53.89
3000	52.58	99.10	1.15	1.93	43.18	46.26	10.96	50.49
3600	54.13	94.80	1.54	1.71	42.57	46.36	10.59	51.02
4000	53.52	92.83	2.10	1.18	42.71	46.37	10.37	51.48
4600	55.78	93.09	2.15	1.12	40.56	46.20	10.85	50.00
5000	57.42	103.88	2.22	1.77	42.20	46.58	10.95	50.04
5600	53.99	91.89	1.93	1.38	43.05	46.64	12.13	49.73
6000	52.19	84.51	1.57	1.15	42.49	45.49	15.78	48.42

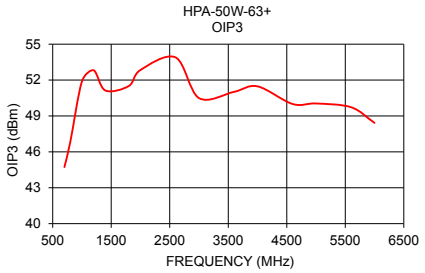












Additional Notes

A. 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.

B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.

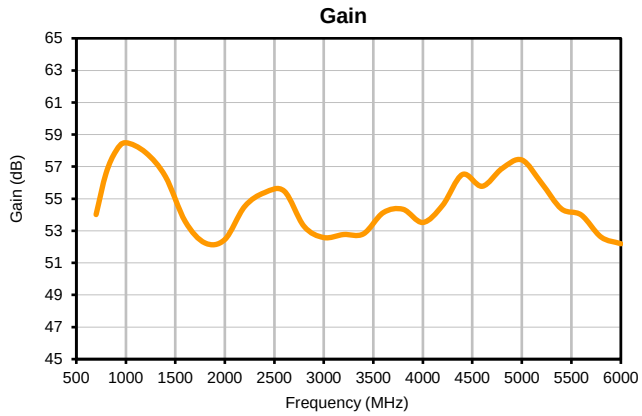
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

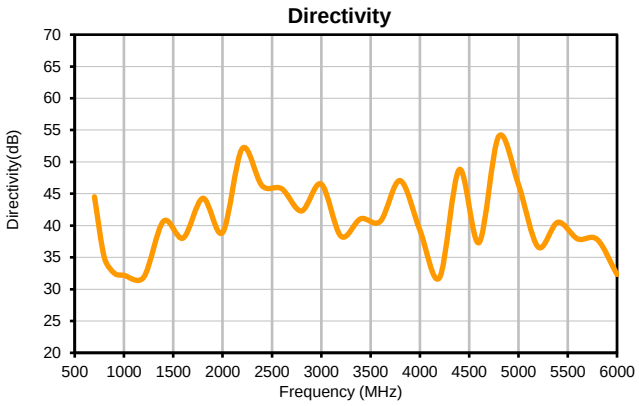
High Power Amplifier HPA-50W-63+

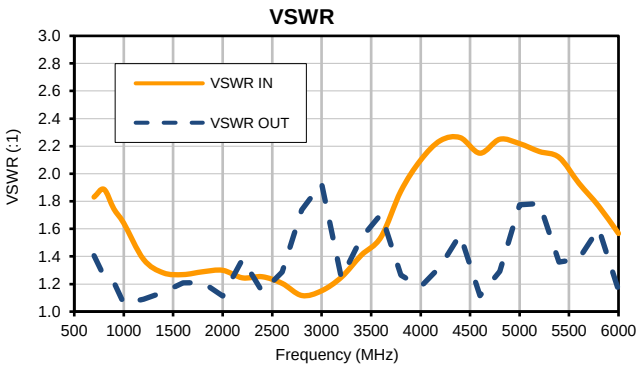
Typical Performance Data

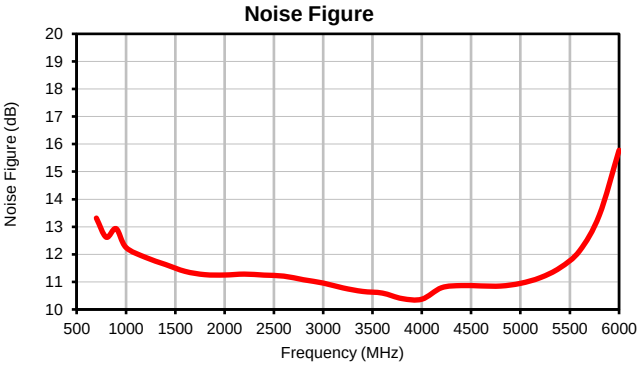
Frequency (MHz)	Gain (dB)	Directivity (dB)	VSWR In (:1)	VSWR Out (:1)	Noise Figure (dB)	Pout at 1dB Compression (dBm)	Pout at Saturation (dBm)	Output IP3 (dBm)
700	54.01	44.52	1.83	1.41	13.31	40.52	46.64	44.73
800	56.58	34.98	1.89	1.26	12.62	42.25	48.11	46.81
900	57.97	32.54	1.75	1.21	12.93	43.52	48.91	49.40
1000	58.49	32.18	1.64	1.06	12.25	44.60	49.41	51.89
1200	57.88	31.88	1.38	1.09	11.89	41.55	49.31	52.82
1400	56.39	40.68	1.28	1.14	11.63	39.23	48.08	51.13
1600	53.58	38.04	1.27	1.21	11.38	38.89	46.80	50.25
1800	52.24	44.29	1.29	1.21	11.26	39.97	46.35	51.50
2000	52.46	38.92	1.30	1.11	11.25	41.83	46.97	52.84
2200	54.51	52.12	1.24	1.38	11.28	42.80	47.32	52.87
2400	55.38	46.26	1.25	1.14	11.24	44.07	47.48	54.42
2600	55.47	45.78	1.21	1.29	11.21	43.59	47.23	53.89
2800	53.28	42.30	1.12	1.74	11.08	42.87	46.58	54.97
3000	52.58	46.53	1.15	1.93	10.96	43.18	46.26	50.49
3200	52.77	38.32	1.25	1.24	10.78	42.72	46.04	47.92
3400	52.81	41.07	1.41	1.53	10.65	41.39	45.79	49.65
3600	54.13	40.67	1.54	1.71	10.59	42.57	46.36	51.02
3800	54.34	47.07	1.87	1.26	10.39	42.81	46.42	51.23
4000	53.52	39.31	2.10	1.18	10.37	42.71	46.37	51.48
4200	54.59	31.81	2.24	1.33	10.79	42.45	46.29	50.93
4400	56.51	48.80	2.26	1.56	10.87	41.35	46.21	50.51
4600	55.78	37.32	2.15	1.12	10.85	40.56	46.20	50.00
4800	56.88	54.01	2.25	1.29	10.85	41.72	46.84	50.77
5000	57.42	46.47	2.22	1.77	10.95	42.20	46.58	50.04
5200	55.96	36.63	2.16	1.79	11.15	42.06	46.92	48.69
5400	54.36	40.52	2.12	1.36	11.51	41.87	46.53	48.74
5600	53.99	37.91	1.93	1.38	12.13	43.05	46.64	49.73
5800	52.61	37.80	1.76	1.60	13.42	42.55	45.80	48.18
6000	52.19	32.32	1.57	1.15	15.78	42.49	45.49	48.42

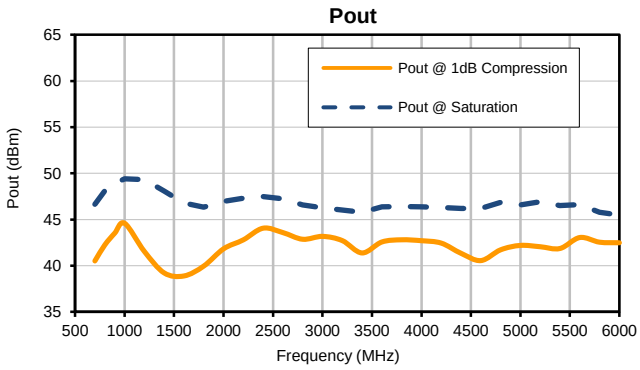
Typical Performance Curves

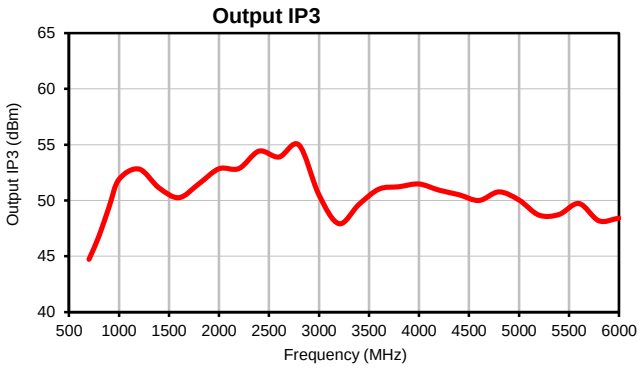








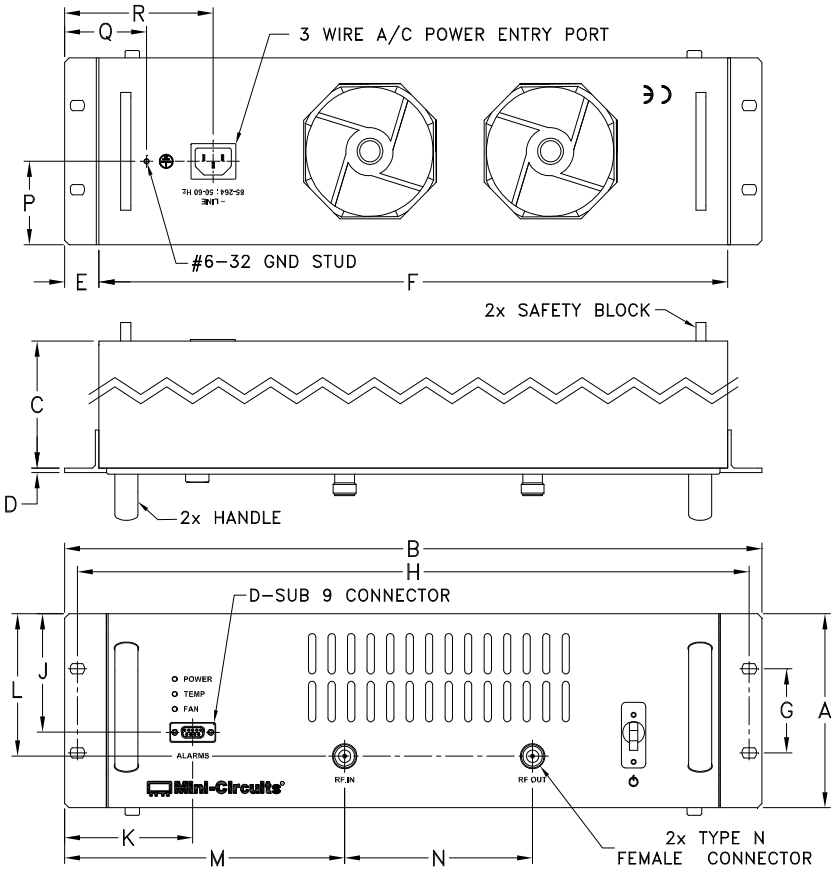




Case Style NG

Outline Dimensions

NG1942



CASE #	A	B	C	D	E	F	G	H	J	K	L
NG1942	5.20 (132.08)	19.00 (482.60)	20.00 (508.00)	.13 (3.30)	.94 (23.88)	17.13 (435.10)	2.25 (57.15)	18.31 (465.07)	3.17 (80.52)	3.49 (88.65)	3.82 (97.03)

CASE #	M	N	P	Q	R	S	T	WT, GRAMS
NG1942	7.63 (193.80)	5.12 (130.05)	2.23 (56.64)	2.24 (56.90)	4.05 (102.87)	-- --	-- --	13610

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015

Note:

1. Case material: Aluminum alloy.
2. Finish: Powder coating, Color: White.

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Mini-Circuits

Environmental Specifications **ENV76**

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-0° to 50° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-20° to 70° C (non condensing)	Individual Model Data Sheet

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