

RF Instrument Amplifier

TVA-R5-13A+

50Ω

0.50 to 1000 MHz

The Big Deal

- High output power, +34 dBm
- High Gain, 38 dB
- High reverse isolation, 80 dB
- Built-in 110V/220V AC power supply
- Thermally self-protected
- 100% burn-in at +25°C, 48 hrs.



CASE STYLE: PJ2059-2

Product Overview

Mini-Circuits' TVA-R5-13A+ instrument amplifier provides high output power and high gain across the 0.50 to 1000 MHz frequency range, covering popular communications bands including AM, FM, TV, cellular and more. The amplifier features a built-in 110/220V power supply, making it easy to use in most lab environments. This model features thermal self-protection, preventing damage to the amplifier and providing added reliability. It comes housed in a light-weight aluminum alloy case (15.35 x 8.27 x 3.25") ideal for bench-top use with N-Type connectors. 2 N-male to SMA-female adapters come included for the user's convenience.

Feature	Advantages
High output power, +34 dBm at 1 dB compression	Supports high power test applications such as EMI, maximum power handling, and reliability testing.
High gain, 38 dB	38 dB gain allows the TVA-R5-13A+ to be driven to full output power with most commercially available signal generators.
High reverse isolation, 80 dB	Protects signal sources from load, preventing potential damage and performance variation due to load pulling.
Built-in 110V/220V power supply	Operating from a standard AC line power supply, the TVA-R5-13A+ can be powered from 110 to 220V, making the amplifier versatile for use in most lab environments.
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.
CE marked	Meets conformity standards for sale within the European Economic Area (EEA).

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



Coaxial

RF Instrument Amplifier

TVA-R5-13A+

50Ω

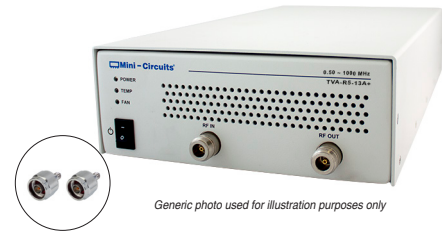
0.50 to 1000 MHz

Features

- Instrument model with built-in power supply, 110V/220V operation
- High output power, 34dBm typ.
- High Gain, 38 dB typ.
- High reverse isolation, 80 dB typ.
- 100% burn-in at +25°C, 48 hrs
- Thermally self-protected, LED indicator
- Protected by US Patent 5,101,171
- CE marked

Applications

- Lab use
- Wideband test instrumentation



Generic photo used for illustration purposes only

CASE STYLE: PJ2059-2

Connectors

N-Type

Model

TVA-R5-13A+

N Male - SMA Female Adapter

NM-SF50+

(2 Included)

+RoHS Compliant

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

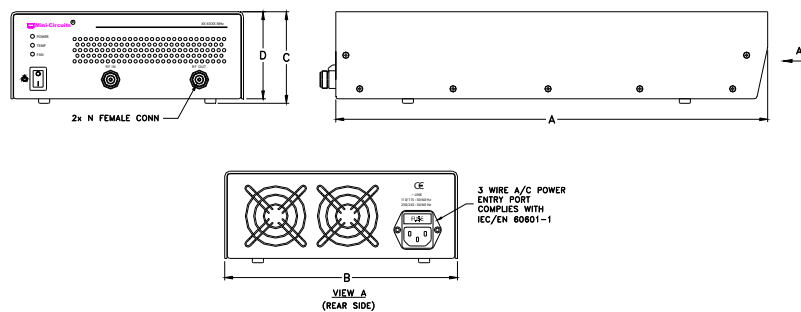
Electrical Specifications at 25°C, unless otherwise noted

Parameter	Condition (MHz)	Min	Typ.	Max.	Units
Frequency Range		0.50	—	1000	MHz
Gain	0.50 - 1000	34	38	—	dB
Gain Flatness	0.50 - 1000	—	±1.4	±2.2	dB
Output Power at 1dB compression	0.50 - 1000	+31	+34	—	dBm
Noise Figure	0.50 - 1000	—	10	—	dB
Output third order intercept point	0.50 - 1000	—	+42	—	dBm
Input VSWR	0.50 - 1000	—	1.5	—	:1
Output VSWR	0.50 - 1000	—	2.5	—	:1
AC Supply	47 - 63 Hz	85	110/220	265	V

Open load is not recommended, potentially can cause damage. With no load derate max input power by 20 dB

Note: Keep area adjacent to the airvents clear to allow free air flow.

Outline Drawing



Maximum Ratings

Parameter	Ratings
Operating Temperature	0°C to 55°C
Storage Temperature	-40°C to 70°C
Input RF Power (no damage)	+7 dBm

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

Outline Dimensions (inch/mm)

A	B	C	D	WT.
15.35	8.27	3.25	3.09	GRAM
389.89	210.06	82.55	78.49	3870

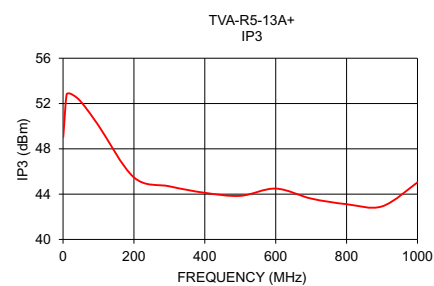
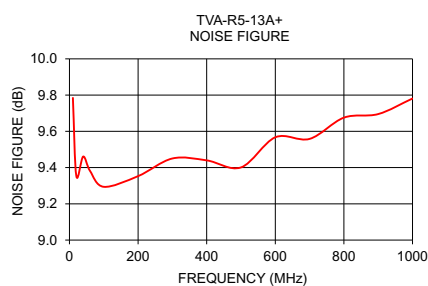
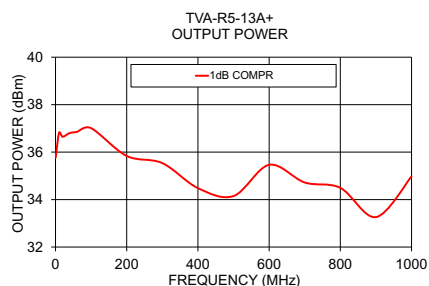
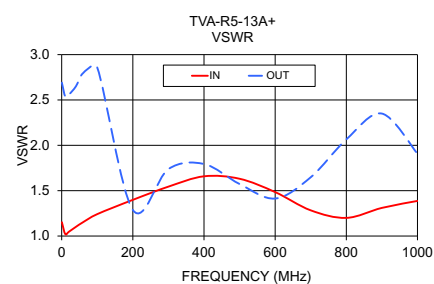
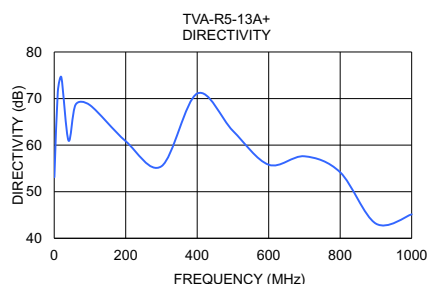
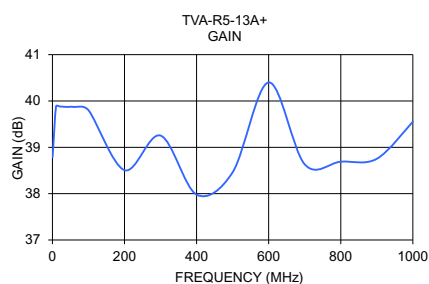
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FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		NOISE FIGURE (dB)	P _{OUT} at 1 dB COMPR. (dBm)	IP ₃ (dBm)
			IN	OUT			
0.5	38.79	53.12	1.15	2.69	—	35.77	49.02
10	39.88	71.43	1.02	2.54	9.78	36.82	52.79
20	39.88	74.56	1.05	2.56	9.35	36.65	52.88
40	39.87	60.97	1.10	2.65	9.46	36.80	52.49
60	39.87	68.71	1.15	2.80	9.38	36.85	51.79
100	39.80	68.58	1.24	2.86	9.29	37.01	50.06
200	38.51	60.84	1.40	1.29	9.35	35.84	45.48
300	39.25	55.46	1.54	1.74	9.45	35.54	44.69
400	37.98	71.07	1.66	1.79	9.44	34.48	44.12
500	38.46	63.06	1.63	1.57	9.40	34.15	43.85
600	40.40	55.79	1.48	1.41	9.57	35.46	44.49
700	38.63	57.61	1.28	1.65	9.56	34.72	43.61
800	38.69	54.17	1.20	2.07	9.68	34.49	43.11
900	38.75	43.15	1.31	2.35	9.70	33.26	42.92
1000	39.55	45.14	1.39	1.91	9.78	34.98	45.04



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RF Instrument Amplifier

TVA-R5-13A+

Typical Performance Data

FREQ. (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		NOISE FIGURE (dB)	POUT @ 1 dB COMPRESSION (dBm)	OUTPUT IP3 (dBm)
	110V/220V	110V/220V	IN 110V/220V	OUT 110V/220V	110V/220V	110V/220V	110V/220V
0.5	38.79	53.12	1.15	2.69	--	35.77	49.02
10	39.88	71.43	1.02	2.54	9.78	36.82	52.79
20	39.88	74.56	1.05	2.56	9.35	36.65	52.88
40	39.87	60.97	1.10	2.65	9.46	36.80	52.49
60	39.87	68.71	1.15	2.80	9.38	36.85	51.79
80	39.86	66.76	1.20	2.91	9.38	37.01	51.04
100	39.80	68.58	1.24	2.86	9.29	37.01	50.06
150	39.39	58.52	1.33	1.91	9.39	36.64	47.40
200	38.51	60.84	1.40	1.29	9.35	35.84	45.48
250	37.76	56.52	1.47	1.57	9.43	35.50	44.76
300	39.25	55.46	1.54	1.74	9.45	35.54	44.69
350	39.66	79.85	1.61	1.84	9.40	35.34	44.39
400	37.98	71.07	1.66	1.79	9.44	34.48	44.12
450	37.80	64.34	1.66	1.68	9.54	33.93	43.69
500	38.46	63.06	1.63	1.57	9.40	34.15	43.85
550	39.38	64.84	1.56	1.49	9.49	34.36	43.94
600	40.40	55.79	1.48	1.41	9.57	35.46	44.49
650	39.94	53.63	1.42	1.46	9.49	34.66	44.08
700	38.63	57.61	1.28	1.65	9.56	34.72	43.61
750	38.26	58.50	1.12	1.83	9.59	35.04	43.68
800	38.69	54.17	1.20	2.07	9.68	34.49	43.11
850	38.99	46.19	1.33	2.31	9.72	33.70	42.65
900	38.75	43.15	1.31	2.35	9.70	33.26	42.92
950	39.11	44.87	1.36	2.24	9.86	33.94	43.89
1000	39.55	45.14	1.39	1.91	9.78	34.98	45.04



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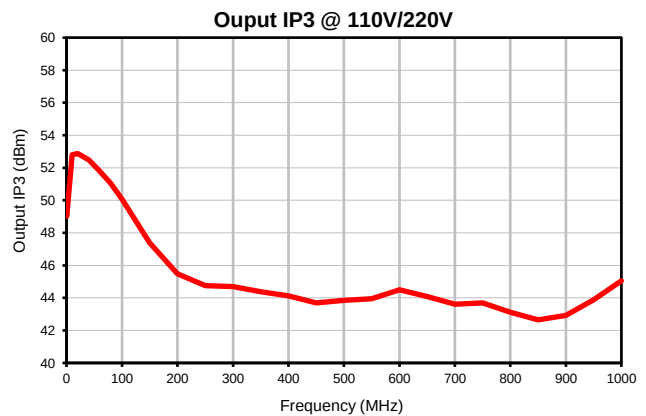
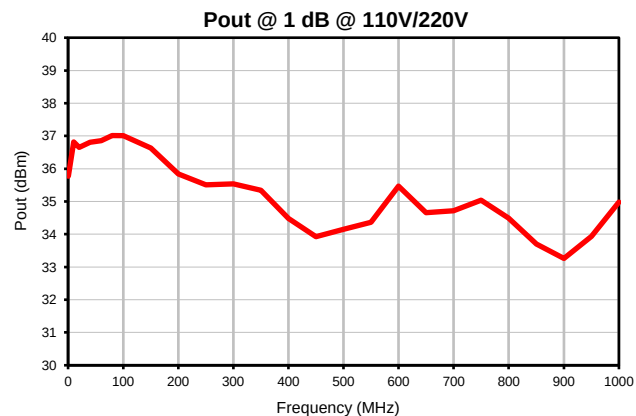
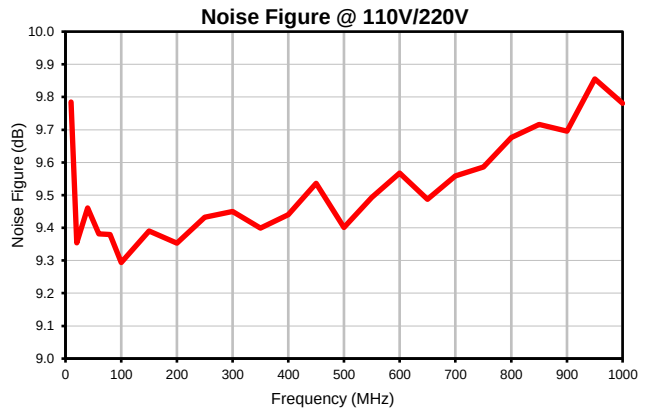
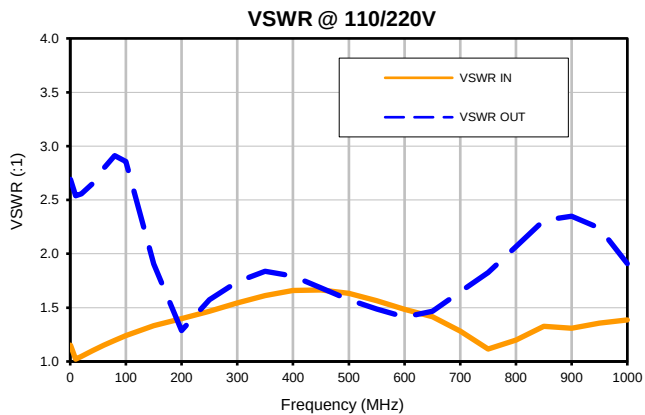
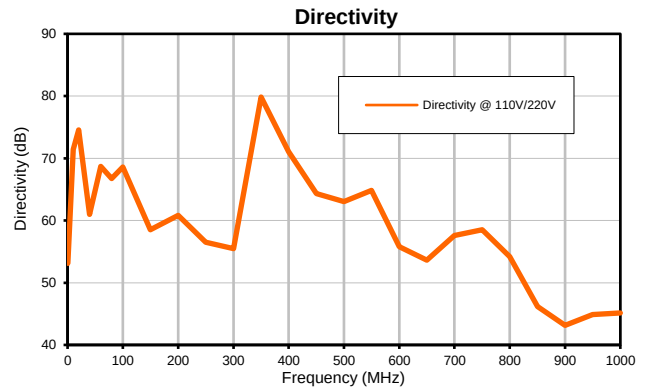
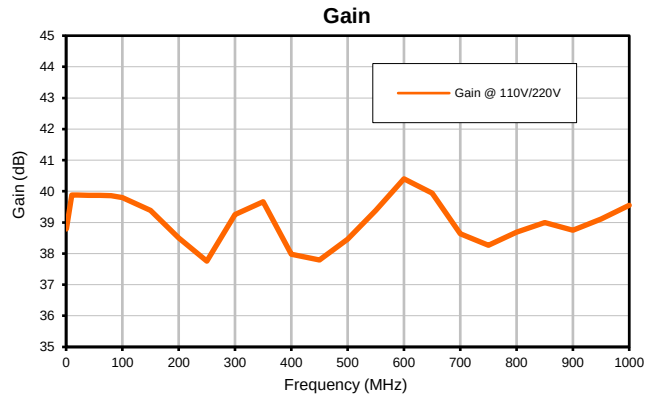
IF/RF MICROWAVE COMPONENTS

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Typical Performance Curves

TVA-R5-13A+



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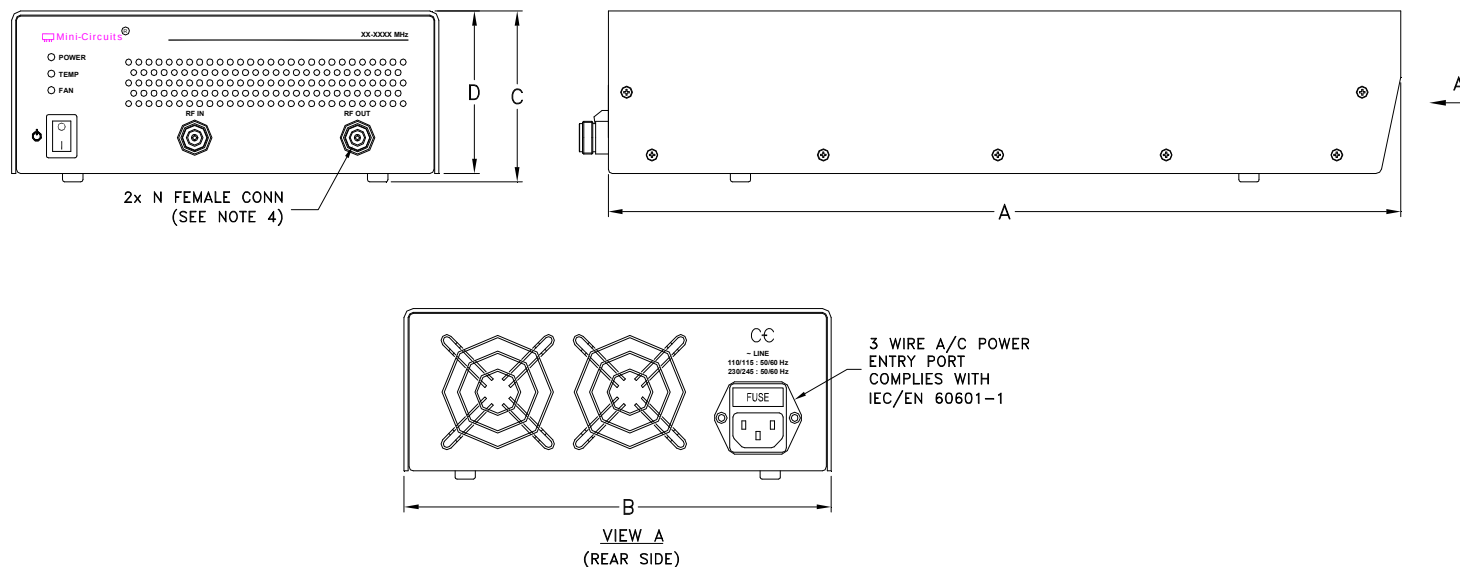


IF/RF MICROWAVE COMPONENTS

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PJ2059-2

Outline Dimensions



CASE#	A	B	C	D	E	WT, GRAM
PJ2059-2	15.35 (390.0)	8.27 (210.0)	3.25 (82.6)	3.09 (78.5)	-- --	3870

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

Notes:

1. Case material: Aluminum alloy.
2. Finish: White paint.
3. Keep area adjacent to airvents clear to allow free air flow. Caution: Do not insert anything, especially conductors or fingers into case opening. Physical injury, shock or death may occur.
4. Connector shape may vary.



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Mini-Circuits ISO 9001 & ISO 14001 Certified



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 55° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-40° to 70° C Ambient Environment	Individual Model Data Sheet