High IP3

Low Noise Amplifier

ZRL-2400LN+

50Ω 1000 to 2400 MHz

Generic photo used for illustration purposes only

Case Style: FJ893

Connectors	Model
SMA	ZRL-2400LN+

+RoHS Compliant

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

Features

- High IP3, +39 dBm typ.
- Low Noise figure, 1.2 dB typ.
- Broadband flat gain response
- Internal voltage regulated
- Over-voltage and transient protected

Applications

- PCS, UMTS, GSM, cellular, wireless data
- Defense communications
- Satellite communications

Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		1000		2400	MHz
Noise Figure[3]	1000 - 1400 1400 - 1900 1900 - 2400	— — —	1.2 1.0 1.2	2.0 1.4 1.4	dB
Gain	1000 - 1400 1400 - 1900 1900 - 2400	29 26 24	32 30 28	— — —	dB
Gain Flatness	1000 - 1400 1400 - 1900 1900 - 2400	— — —	±1.1 ±1.3 ±1.6	±2.0 ±2.2 ±2.2	dB
Output Power at 1dB compression	1000 - 1400 1400 - 1900 1900 - 2400	21 23 23	23 24 24	— — —	dBm
Output Power at 3dB compression	1000 - 1400 1400 - 1900 1900 - 2400	— — —	25.3 26.0 26.0	— — —	dBm
Output third order intercept point[1]	1000 - 1400 1400 - 1900 1900 - 2400	— — —	+37 +39 +40	— — —	dBm
Input VSWR	1000 - 1400 1400 - 1900 1900 - 2400	— — —	1.6 1.2 1.2	— — —	:1
Output VSWR	1000 - 1400 1400 - 1900 1900 - 2400	— — —	1.4 1.2 1.2	— — —	:1
Active Directivity	1000 - 1400 1400 - 1900 1900 - 2400	— — —	13 16 16	— — —	dB
DC Supply Voltage[2]		—	12	—	V
Supply Current		—	470	520	mA

1. 1 MHz tonse spacing.
2. Unit is internally voltage regulated for 6.5 to 17VDC input voltage range.
3. 2.2 dB max at frequency 1000-1050 MHz.

Maximum Ratings

Parameter	Ratings
Operating Temperature	-40°C to 80°C case -40°C to 60° ambient
Storage Temperature	-55°C to 100°C
DC Voltage	+17V
Input RF Power (no damage)	+10 dBm

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

Notes
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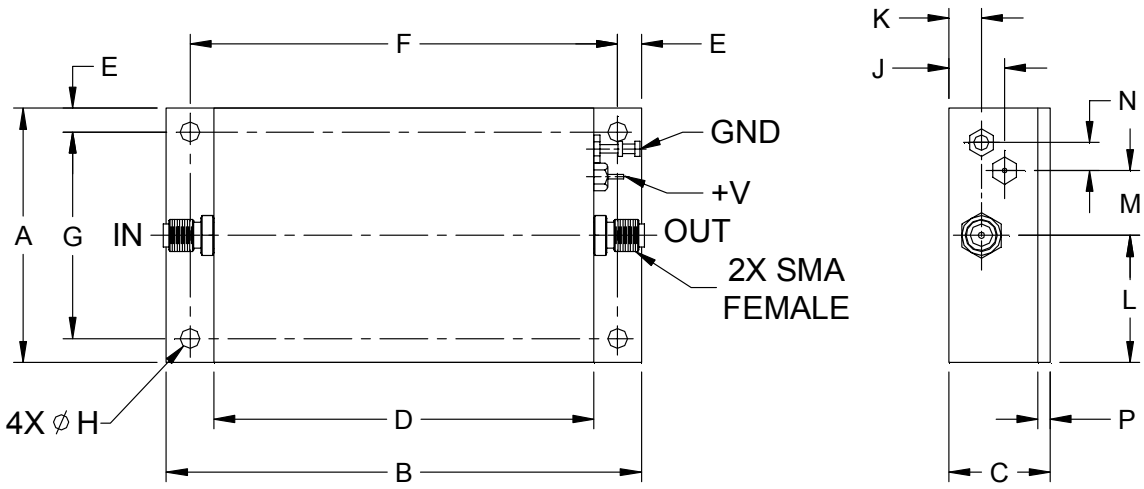
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty 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

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	wt
2.00	3.75	0.80	3.00	0.19	3.374	1.624	0.156	0.44	0.26	1.00	0.51	0.22	0.10	grams
50.80	95.25	20.32	76.20	4.83	85.70	41.25	3.96	11.18	6.60	25.40	12.95	5.59	2.54	135

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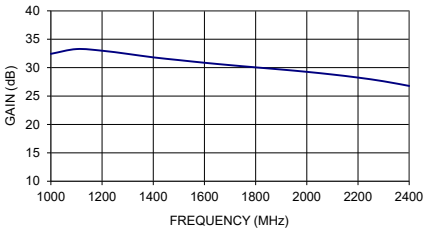
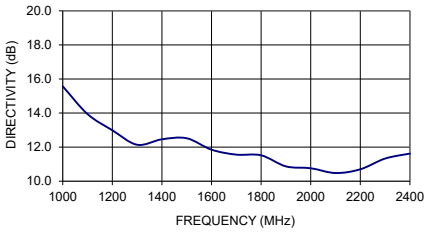
FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		NOISE FIGURE (dB)	POUT at 1dB COMPR. (dBm)	OUTPUT IP3 (dBm)
	12V	12V	IN	OUT	12V	12V	12V
1000.00	32.43	15.57	2.03	1.58	1.49	23.01	37.01
1100.00	33.27	13.94	1.75	1.23	1.01	23.86	37.24
1200.00	32.98	12.99	1.61	1.08	0.91	24.12	37.67
1300.00	32.42	12.14	1.51	1.03	0.79	24.30	38.47
1400.00	31.81	12.46	1.41	1.02	0.65	24.32	39.03
1500.00	31.33	12.52	1.31	1.03	0.67	24.48	39.86
1600.00	30.86	11.85	1.23	1.06	0.70	24.52	40.04
1700.00	30.44	11.56	1.19	1.08	0.75	24.68	40.99
1800.00	30.05	11.52	1.19	1.11	0.78	24.89	41.72
1900.00	29.67	10.87	1.22	1.15	0.74	25.05	43.54
2000.00	29.26	10.76	1.24	1.22	0.71	25.21	41.47
2100.00	28.79	10.48	1.27	1.29	0.77	25.45	42.43
2200.00	28.25	10.70	1.29	1.25	0.78	25.53	42.03
2300.00	27.60	11.33	1.29	1.16	1.11	25.59	41.32
2400.00	26.78	11.62	1.30	1.08	1.03	25.45	40.37

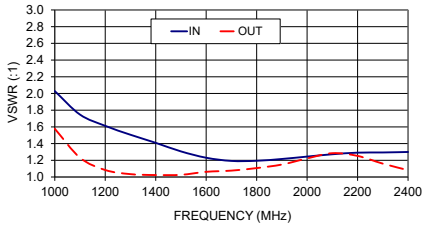
ZRL-2400LN+
GAIN



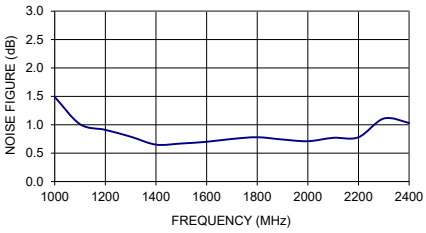
ZRL-2400LN+
DIRECTIVITY



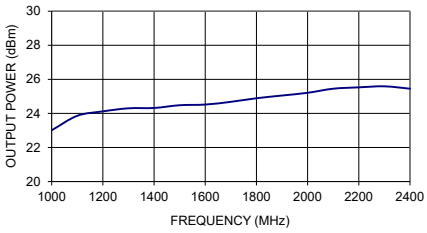
ZRL-2400LN+
VSWR



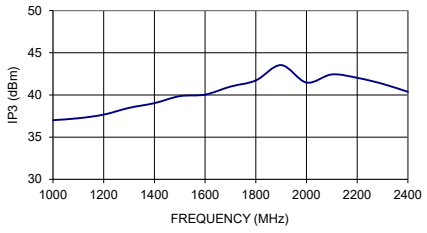
ZRL-2400LN+
NOISE FIGURE



ZRL-2400LN+
OUTPUT POWER AT 1-dB COMPRESSION



ZRL-2400LN+
IP3



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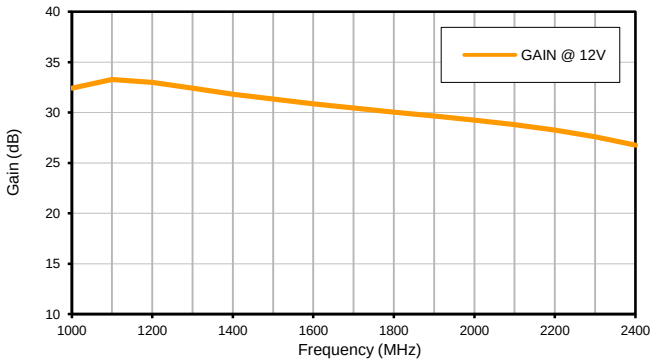
Low Noise Amplifier ZRL-2400LN+

Typical Performance Data

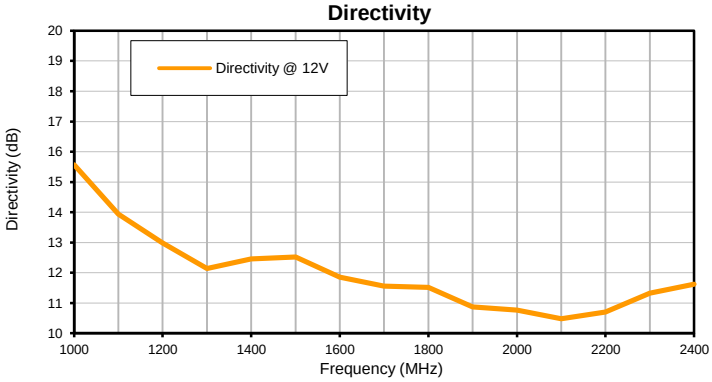
FREQUENCY (MHz)	GAIN (dB) 12V	DIRECTIVITY (dB) 12V	VSWR (:1) IN 12V	VSWR (:1) OUT 12V	NOISE FIGURE (dB) 12V	POUT @ 1 dB COMPRESSION (dBm) 12V	OUTPUT IP3 (dBm) 12V
1000.0	32.43	15.57	2.03	1.58	1.49	23.01	37.01
1100.0	33.27	13.94	1.75	1.23	1.01	23.86	37.24
1200.0	32.98	12.99	1.61	1.08	0.91	24.12	37.67
1300.0	32.42	12.14	1.51	1.03	0.79	24.30	38.47
1400.0	31.81	12.46	1.41	1.02	0.65	24.32	39.03
1500.0	31.33	12.52	1.31	1.03	0.67	24.48	39.86
1600.0	30.86	11.85	1.23	1.06	0.70	24.52	40.04
1700.0	30.44	11.56	1.19	1.08	0.75	24.68	40.99
1800.0	30.05	11.52	1.19	1.11	0.78	24.89	41.72
1900.0	29.67	10.87	1.22	1.15	0.74	25.05	43.54
2000.0	29.26	10.76	1.24	1.22	0.71	25.21	41.47
2100.0	28.79	10.48	1.27	1.29	0.77	25.45	42.43
2200.0	28.25	10.70	1.29	1.25	0.78	25.53	42.03
2300.0	27.60	11.33	1.29	1.16	1.11	25.59	41.32
2400.0	26.78	11.62	1.30	1.08	1.03	25.45	40.37

Typical Performance Curves

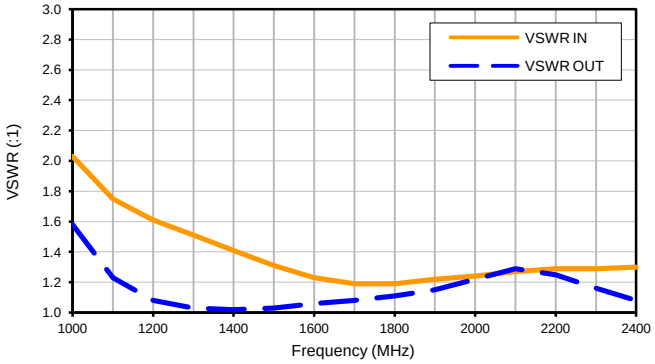
Gain



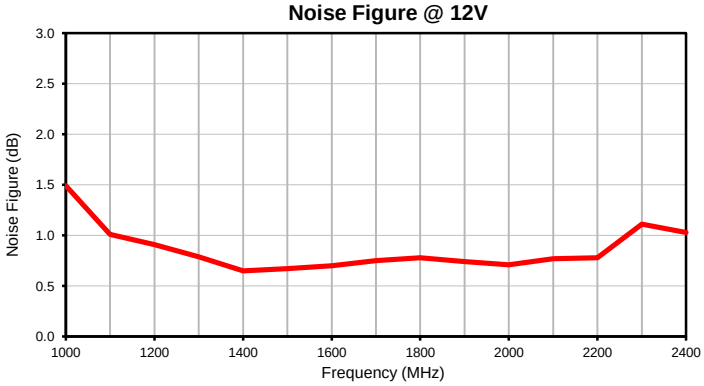
Directivity



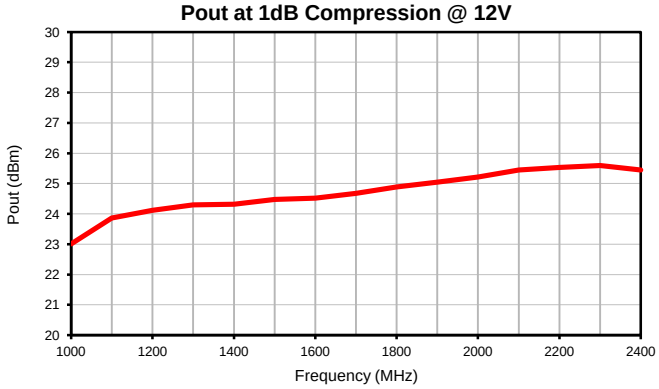
VSWR @ 12V



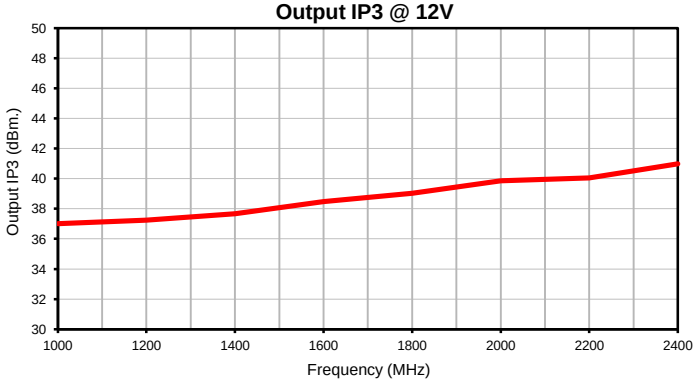
Noise Figure @ 12V



Pout at 1dB Compression @ 12V



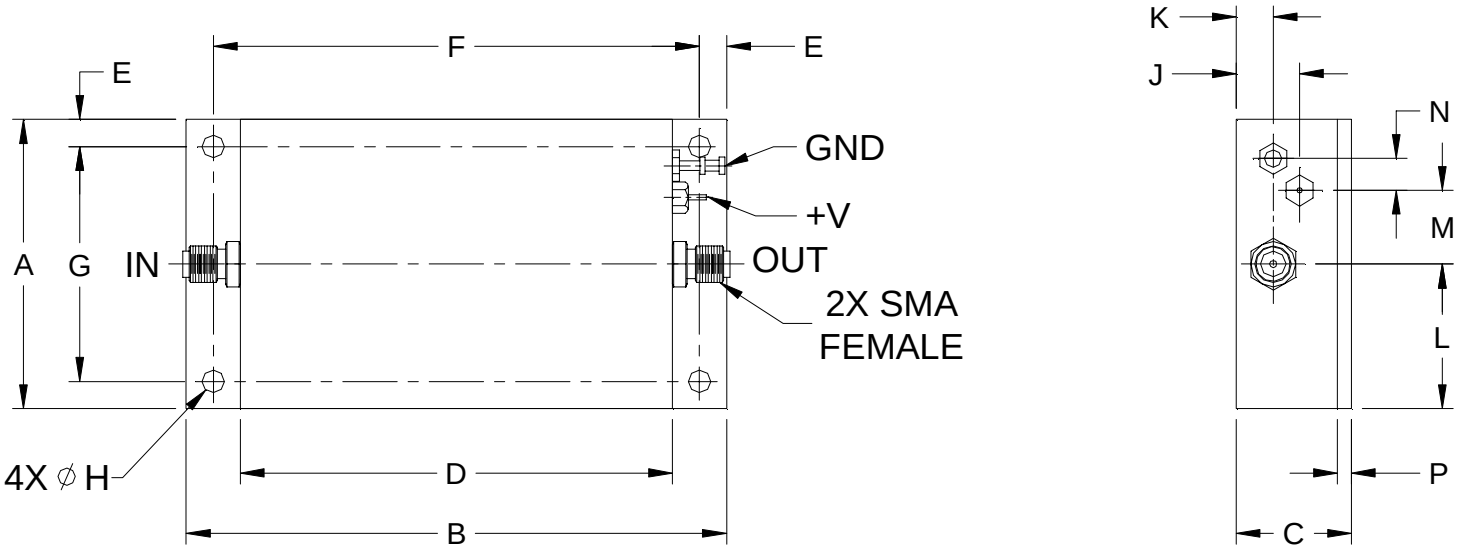
Output IP3 @ 12V



Case Style FJ

Outline Dimensions

FJ893



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N	P	WT. GRAMS
FJ893	2.00 (50.80)	3.75 (95.25)	.80 (20.32)	3.00 (76.20)	.19 (4.83)	3.374 (85.70)	1.624 (41.25)	.156 (3.96)	.44 (11.18)	.26 (6.60)	1.00 (25.40)	.51 (12.95)	.22 (5.59)	.10 (2.54)	135

Dimensions are in inches (mm). Tolerances: 2PL. +/- .03; 3PL. +/- .015

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.

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Environmental Specifications ENV23T7

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	-40° to 60° C Ambient Environment	Individual Model Data Sheet
Operating Temperature	-40° to 80° C Case Temperature	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Stabilization Bake	(non-operating) 125°C, 24 hours	- - -
Burn-in at Elevated Temp.	(DC on) 160 hours at 85° C	MIL-STD-202, Method 108
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, except 100°C

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