

High IP3

Low Noise Amplifier

ZRL-1150LN+

50Ω

650 to 1400 MHz

Features

- High IP3, +40 dBm typ.
- Low Noise figure, 0.8 dB typ.
- Broadband flat gain response
- Internal voltage regulated
- Over-voltage and transient protected

Applications

- Very low noise, preamplifier
- Analog/digital cellular
- PCS, GSM, TDMA, CDMA
- GPS and MAS
- Aeronautical and defense communications



Generic photo used for illustration purposes only

Case Style: FJ893

Connectors Model

SMA ZRL-1150LN+

+RoHS Compliant

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

Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		650		1400	MHz
Noise Figure	650 - 1400	—	1.1	1.7	dB
	685 - 1000	—	0.8	1.4	
Gain	650 - 1400	25	32	—	dB
	685 - 1000	27	34	—	
Gain Flatness	650 - 1400	—	±2.0	—	dB
	685 - 1000	—	±0.5	±1.0	
Output Power at 1dB compression	650 - 1400	22	25	—	dBm
	685 - 1000	22	25	—	
Output Power at 3dB compression	650 - 1400	—	26.3	—	dBm
	685 - 1000	—	26.0	—	
Output third order intercept point ¹	650 - 1400	—	+41	—	dBm
	685 - 1000	—	+41	—	
Input VSWR	650 - 1400	—	1.25	—	:1
	685 - 1000	—	1.20	—	
Output VSWR	650 - 1400	—	1.20	—	:1
	685 - 1000	—	1.25	—	
Active Directivity	650 - 1400	—	14	—	dB
	685 - 1000	—	15	—	
DC Supply Voltage ²		—	12	—	V
Supply Current		—	400	500	mA

1. 1 MHz tone spacing.

2. Unit is internally voltage regulated for 6.5 to 17VDC input voltage range.

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

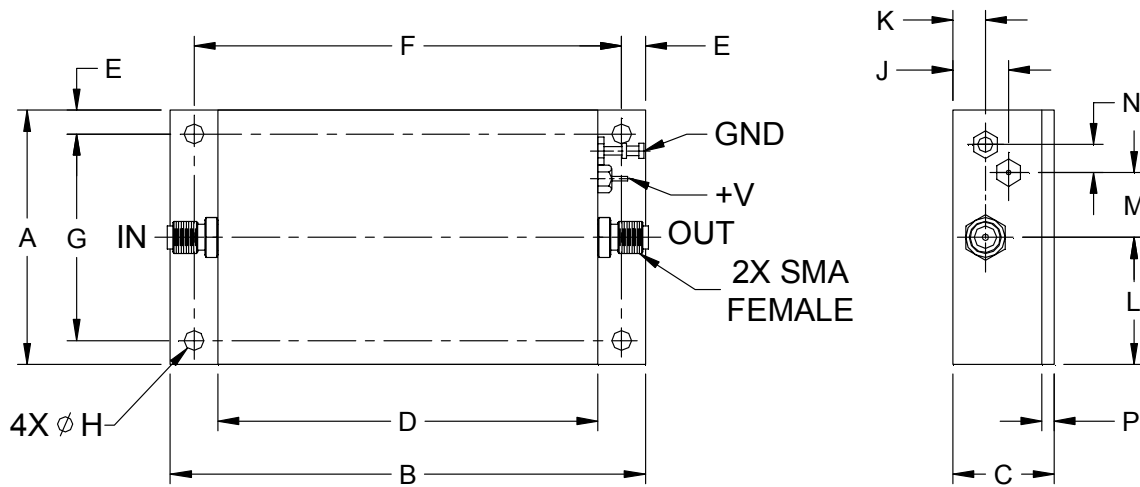
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B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.

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)

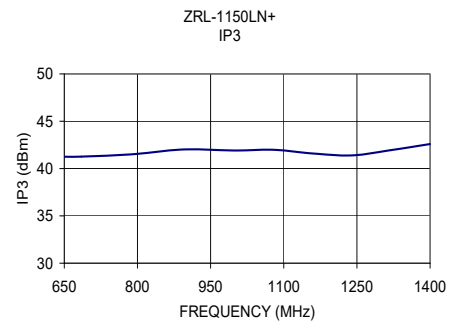
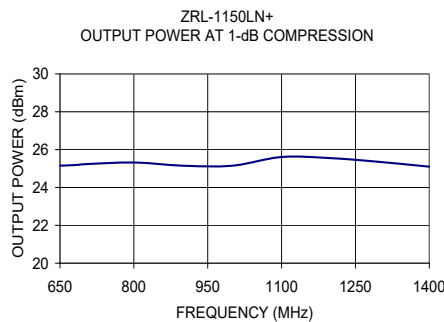
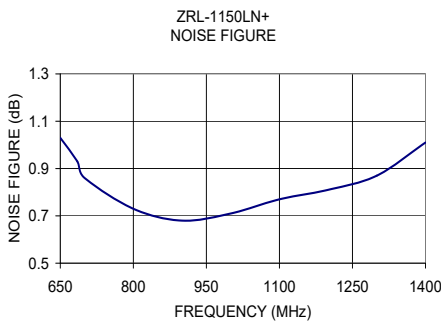
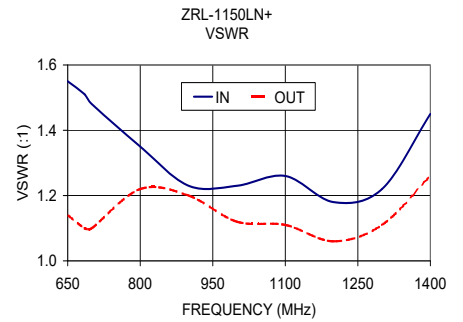
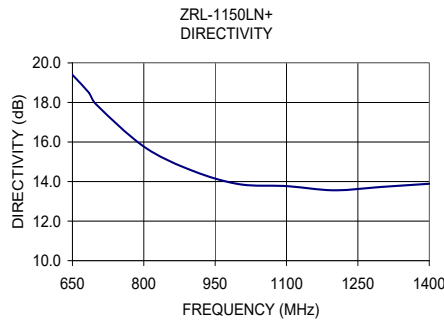
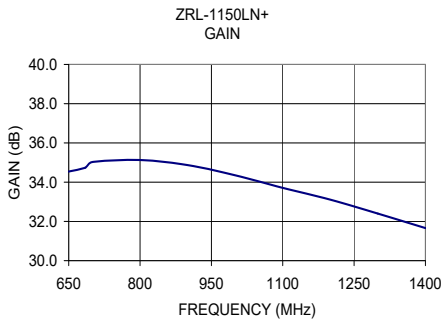
A	B	C	D	E	F	G	H	J	K	L	M	N	P	wt
2.00	3.75	0.80	3.00	0.19	3.374	1.624	0.156	0.44	0.26	1.00	0.51	0.22	0.10	grams
50.80	95.25	20.32	76.20	4.83	85.70	41.25	3.96	11.18	6.60	25.40	12.95	5.59	2.54	135

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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
650.00	34.54	19.40	1.55	1.14	1.03	25.15	41.25
685.00	34.74	18.48	1.51	1.10	0.93	25.19	41.26
700.00	35.03	17.90	1.48	1.10	0.86	25.23	41.51
800.00	35.13	15.77	1.35	1.22	0.73	25.32	42.02
900.00	34.87	14.57	1.23	1.20	0.68	25.15	41.91
1000.00	34.35	13.87	1.23	1.12	0.71	25.15	41.98
1100.00	33.71	13.77	1.26	1.11	0.77	25.61	41.59
1200.00	33.11	13.56	1.18	1.06	0.81	25.55	41.39
1300.00	32.40	13.73	1.22	1.11	0.87	25.35	41.95
1400.00	31.66	13.89	1.45	1.26	1.01	25.10	42.59



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Low Noise Amplifier

ZRL-1150LN+

Typical Performance Data

FREQUENCY (MHz)	GAIN (dB) 12V	DIRECTIVITY (dB) 12V	VSWR (:1)		NOISE FIGURE (dB) 12V	POUT @ 1 dB COMPRESSION (dBm) 12V	FREQUENCY (MHz)	OUTPUT IP3 (dBm) 12V
			IN 12V	OUT 12V				
650.0	34.54	19.40	1.55	1.14	1.03	25.15	650.0	41.25
685.0	34.74	18.48	1.51	1.10	0.93	25.19	657.0	41.33
700.0	35.03	17.90	1.48	1.10	0.86	25.23	664.0	41.55
725.0	35.01	17.37	1.39	1.12	0.80	25.23	671.0	41.32
750.0	34.87	17.22	1.35	1.15	0.76	25.29	678.0	41.46
775.0	35.07	16.35	1.37	1.18	0.74	25.43	685.0	41.26
800.0	35.13	15.77	1.35	1.22	0.73	25.32	790.0	41.51
825.0	34.93	15.55	1.26	1.25	0.68	25.32	895.0	42.02
850.0	35.01	15.01	1.23	1.22	0.69	25.24	1000.0	41.91
875.0	35.03	14.87	1.24	1.19	0.70	25.22	1080.0	41.98
900.0	34.87	14.57	1.23	1.20	0.68	25.15	1160.0	41.59
925.0	34.71	14.34	1.22	1.21	0.72	25.14	1240.0	41.39
950.0	34.74	14.24	1.20	1.18	0.67	25.16	1320.0	41.95
975.0	34.63	13.75	1.19	1.12	0.69	25.11	1400.0	42.59
1000.0	34.35	13.87	1.23	1.12	0.71	25.15		
1025.0	34.23	14.08	1.27	1.17	0.73	25.28		
1050.0	34.21	13.76	1.28	1.18	0.76	25.47		
1075.0	33.94	13.63	1.25	1.14	0.78	25.54		
1100.0	33.71	13.77	1.26	1.11	0.77	25.61		
1125.0	33.67	13.70	1.29	1.16	0.76	25.61		
1150.0	33.47	13.68	1.30	1.18	0.80	25.66		
1175.0	33.19	13.70	1.24	1.13	0.78	25.64		
1200.0	33.11	13.56	1.18	1.06	0.81	25.55		
1225.0	32.97	13.54	1.21	1.06	0.81	25.52		
1250.0	32.72	13.55	1.23	1.09	0.80	25.44		
1275.0	32.48	13.73	1.22	1.09	0.83	25.50		
1300.0	32.40	13.73	1.22	1.11	0.87	25.35		
1325.0	32.22	13.77	1.23	1.08	0.87	25.38		
1350.0	31.91	13.85	1.28	1.08	0.91	25.30		
1375.0	31.71	13.98	1.38	1.19	0.99	25.27		
1400.0	31.66	13.89	1.45	1.26	1.01	25.10		



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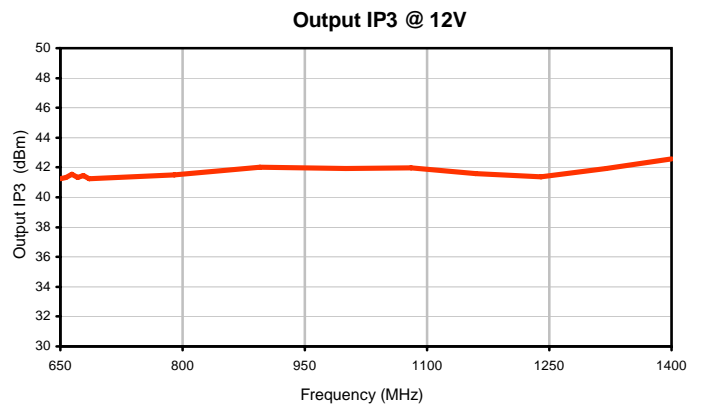
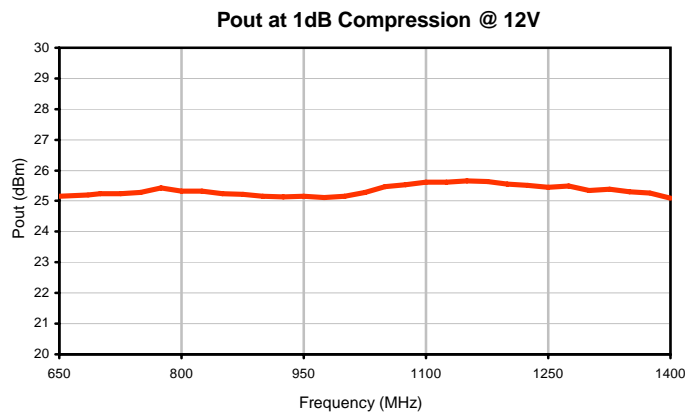
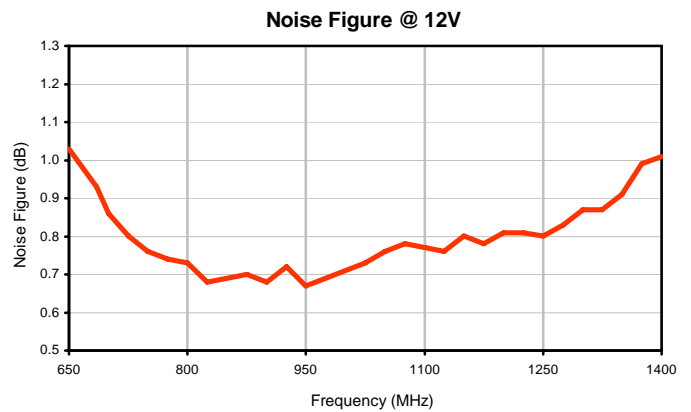
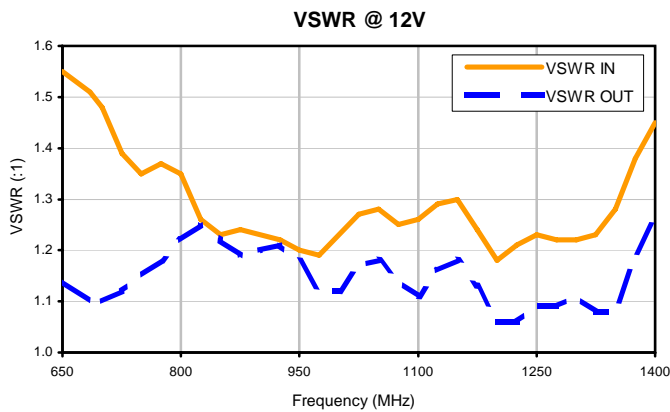
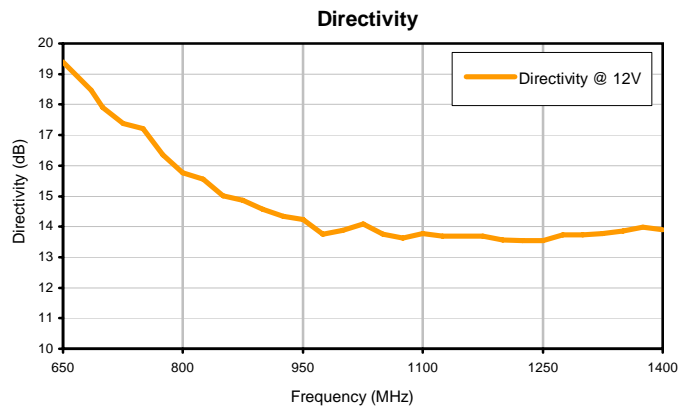
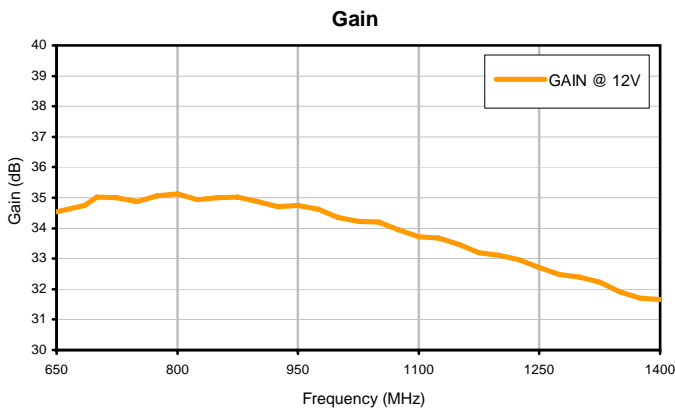


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IF/RF MICROWAVE COMPONENTS

REV. X2
ZRL-1150LN+
5/31/2011
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Typical Performance Curves

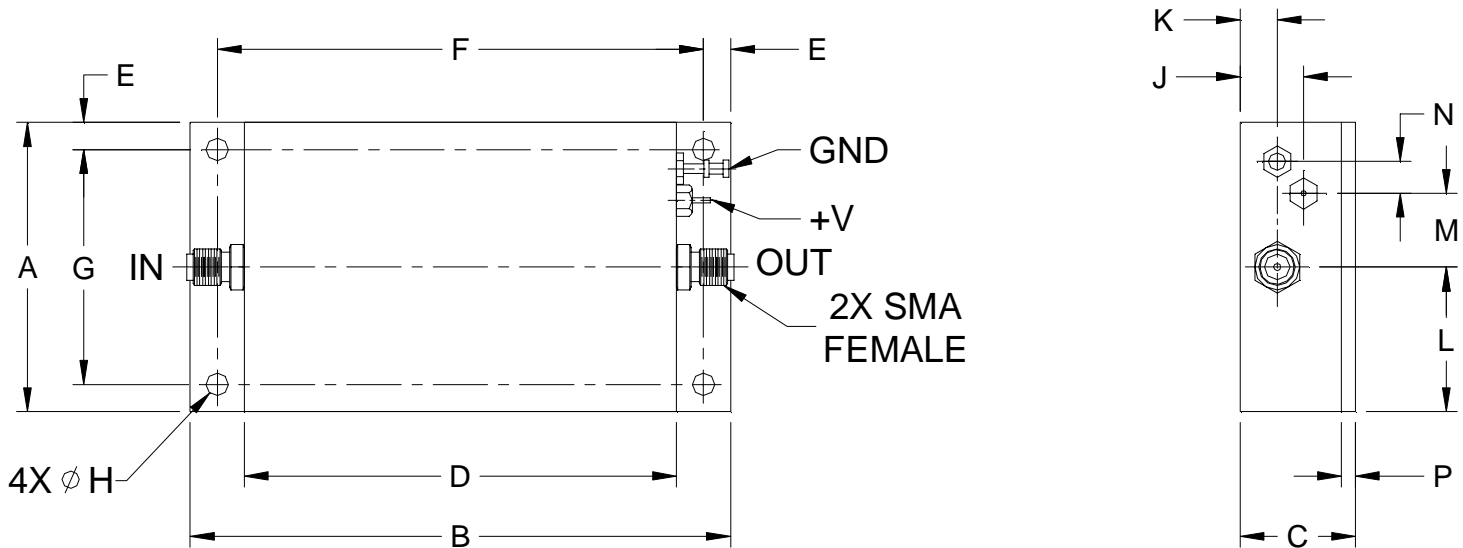


Case Style

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.

Mini-Circuits®

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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