

High IP3

Low Noise Amplifier

ZRL-3500+

50Ω

700 to 3500 MHz

Features

- High IP3, +44 dBm typ.
- Low noise figure, 2.5 dB typ.
- Broadband balanced Amplifier
- Broadband VSWR response
- Internal voltage regulated
- Over voltage and transient protected

Applications

- Low noise
- High dynamic range
- PCS, WLAN, GSM, UMTS, GPS, Cellular and Wireless data
- Defence communications
- Satellite communications
- Lab, Instrumentation
- Test Equipment



Generic photo used for illustration purposes only

Case Style: FJ893

Connectors	Model
SMA	ZRL-3500+

+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		700		3500	MHz
Noise Figure	700 - 1600	—	2.0	3.5	dB
	1600 - 2600	—	2.3	3.2	
	2600 - 3500	—	3.2	4.2	
Gain	700 - 1600	21	26	—	dB
	1600 - 2600	18	22	—	
	2600 - 3500	12	17	—	
Gain Flatness	700 - 1600	—	±2.2	±3.2	dB
	1600 - 2600	—	±2.2	±3.8	
	2600 - 3500	—	±2.4	±4.0	
Output Power at 1dB compression	700 - 3500	21	24	—	dBm
Output Power at 3dB compression	700 - 3500	—	25	—	dBm
Output third order intercept point ¹	700 - 3500	—	+42	—	dBm
Input VSWR	700 - 2600	—	1.4	—	:1
	2600 - 3500	—	1.5	—	
Output VSWR	700 - 2600	—	1.3	—	:1
	2600 - 3500	—	1.5	—	
Active Directivity	700 - 2600	—	18	—	dB
	2600 - 3500	—	14	—	
DC Supply Voltage ²		—	12	—	V
Supply Current		—	540	575	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

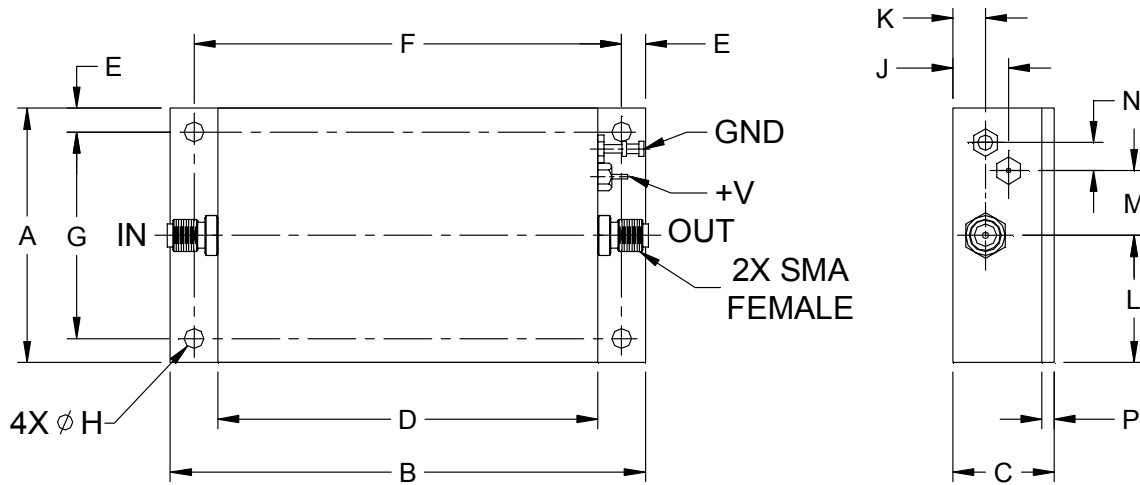
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B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.

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)

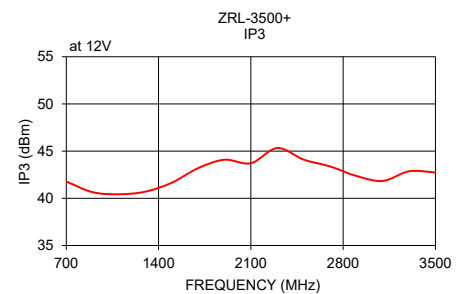
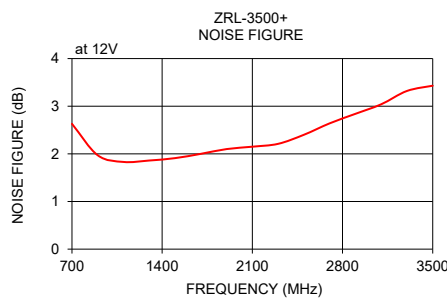
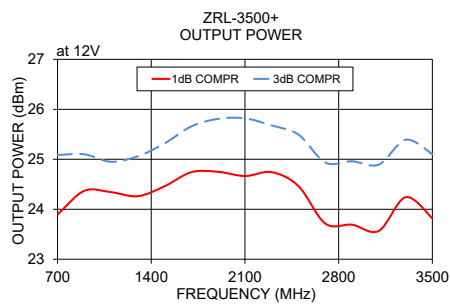
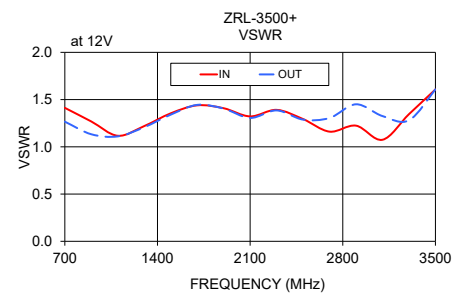
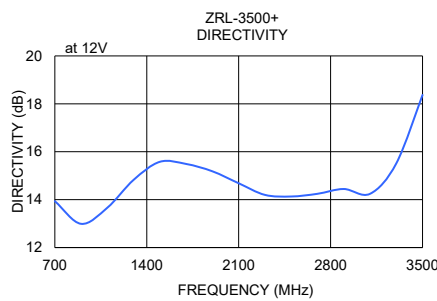
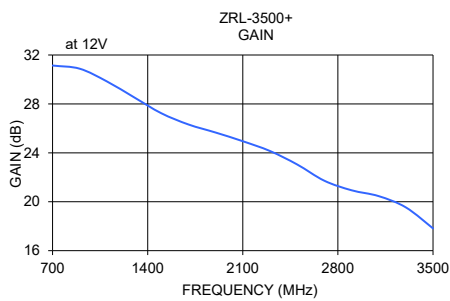
A	B	C	D	E	F	G	H	J	K	L	M	N	P	wt
2.00	3.75	0.80	3.00	0.19	3.374	1.624	0.156	0.44	0.26	1.00	0.51	0.22	0.10	grams
50.80	95.25	20.32	76.20	4.83	85.70	41.25	3.96	11.18	6.60	25.40	12.95	5.59	2.54	135

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FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		POUT at 1dB COMPR. (dBm)	NOISE FIGURE (dB)	OUTPUT IP3 (dBm)
	12V	12V	IN	OUT	12V	12V	12V
700	31.14	13.94	1.41	1.27	23.90	2.63	41.77
900	30.88	12.99	1.27	1.13	24.37	1.97	40.65
1100	29.84	13.66	1.12	1.11	24.34	1.83	40.43
1300	28.54	14.83	1.22	1.21	24.26	1.86	40.70
1500	27.24	15.58	1.35	1.34	24.46	1.91	41.65
1700	26.32	15.49	1.44	1.44	24.74	2.00	43.19
1900	25.66	15.18	1.41	1.40	24.75	2.10	44.09
2100	24.95	14.68	1.32	1.31	24.66	2.15	43.71
2300	24.15	14.20	1.39	1.39	24.74	2.21	45.32
2500	23.05	14.13	1.29	1.29	24.46	2.40	44.10
2700	21.72	14.24	1.16	1.31	23.71	2.64	43.38
2900	20.94	14.44	1.22	1.45	23.69	2.84	42.37
3100	20.46	14.24	1.07	1.33	23.57	3.04	41.84
3300	19.54	15.51	1.35	1.28	24.24	3.32	42.86
3500	17.82	18.37	1.61	1.61	23.82	3.43	42.73



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Low Noise Amplifier

ZRL-3500+

Typical Performance Data

FREQUENCY (MHz)	GAIN (dB) 12V	DIRECTIVITY (dB) 12V	VSWR (:1)		NOISE FIGURE (dB) 12V	POUT @ 1 dB COMPRESSION (dBm) 12V	POUT @ 3 dB COMPRESSION (dBm) 12V	OUTPUT IP3 (dBm) 12V
			IN 12V	OUT 12V				
700	31.14	13.94	1.41	1.27	2.63	23.90	25.09	41.77
800	31.09	13.20	1.36	1.20	2.21	24.15	25.15	41.30
900	30.88	12.99	1.27	1.13	1.97	24.37	25.10	40.65
1000	30.44	13.53	1.16	1.10	1.88	24.46	25.03	40.89
1100	29.84	13.66	1.12	1.11	1.83	24.34	24.95	40.43
1200	29.18	14.30	1.15	1.15	1.81	24.27	24.94	40.65
1300	28.54	14.83	1.22	1.21	1.86	24.26	25.06	40.70
1400	27.87	15.11	1.29	1.27	1.89	24.33	25.14	41.26
1500	27.24	15.58	1.35	1.34	1.91	24.46	25.32	41.65
1600	26.79	15.49	1.40	1.40	1.98	24.62	25.50	42.75
1700	26.32	15.49	1.44	1.44	2.00	24.74	25.66	43.19
1800	25.84	15.54	1.42	1.45	2.08	24.80	25.77	43.17
1900	25.66	15.18	1.41	1.40	2.10	24.75	25.81	44.09
2000	25.27	14.90	1.34	1.34	2.17	24.91	25.88	43.79
2100	24.95	14.68	1.32	1.31	2.15	24.66	25.82	43.71
2200	24.50	14.61	1.35	1.34	2.15	24.60	25.75	43.86
2300	24.15	14.20	1.39	1.39	2.21	24.74	25.68	45.32
2400	23.58	14.22	1.36	1.38	2.29	24.55	25.55	45.08
2500	23.05	14.13	1.29	1.29	2.40	24.46	25.49	44.10
2600	22.53	13.98	1.16	1.19	2.43	24.31	25.33	43.56
2700	21.72	14.24	1.16	1.31	2.64	23.71	24.94	43.38
2800	21.17	14.57	1.23	1.40	2.75	23.90	25.09	43.20
2900	20.94	14.44	1.22	1.45	2.84	23.69	24.96	42.37
3000	20.79	14.20	1.14	1.41	2.93	23.51	24.81	42.02
3100	20.46	14.24	1.07	1.33	3.04	23.57	24.89	41.84
3200	20.10	14.72	1.21	1.26	3.17	23.79	25.01	42.08
3300	19.54	15.51	1.35	1.28	3.32	24.24	25.39	42.86
3400	18.83	16.48	1.44	1.46	3.41	24.14	25.29	43.30
3500	17.82	18.37	1.61	1.61	3.43	23.82	25.10	42.73



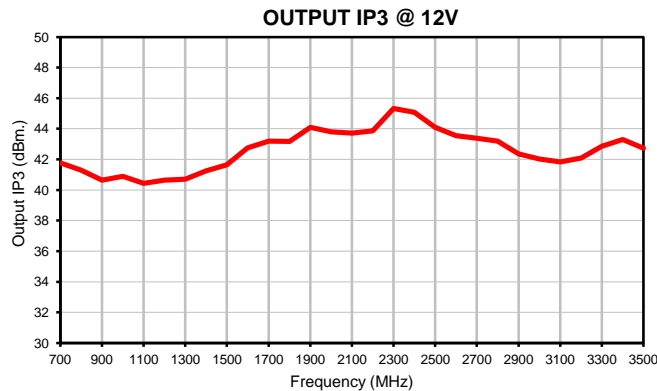
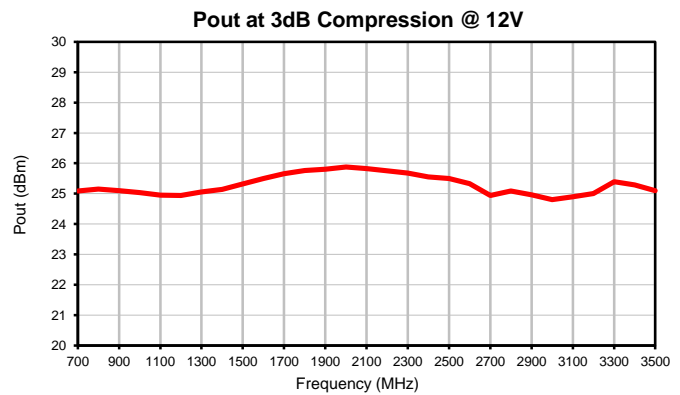
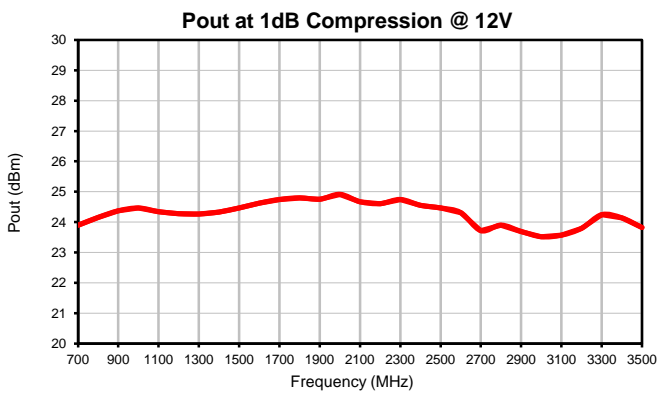
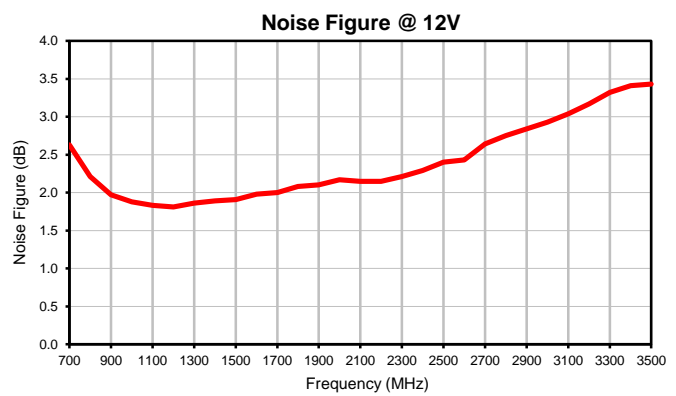
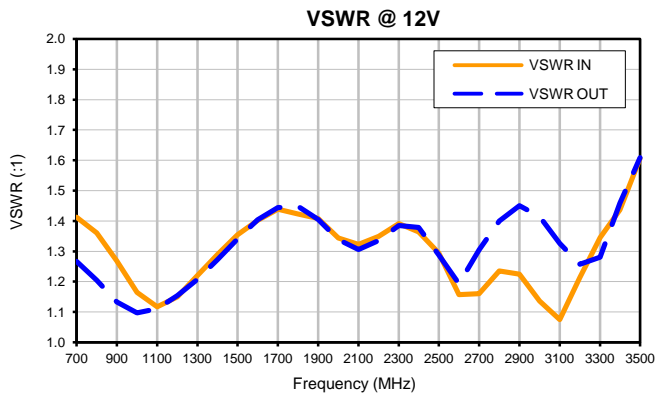
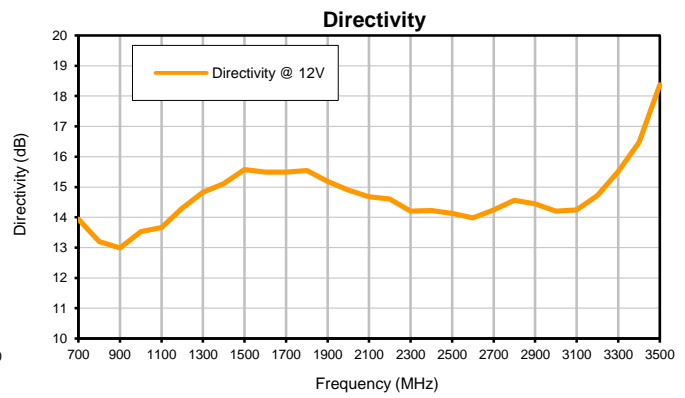
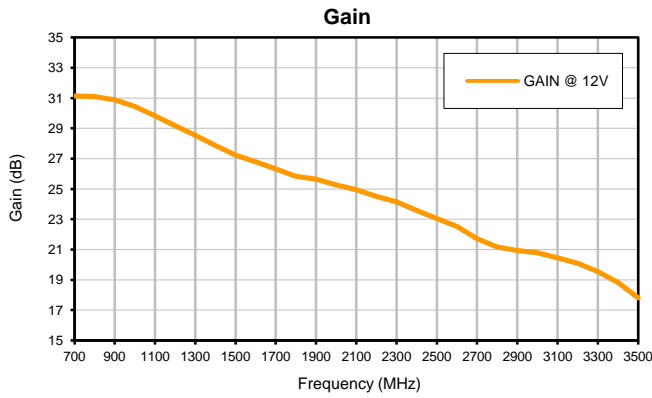
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
 The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com



IF/RF MICROWAVE COMPONENTS

REV. OR
 ZRL-3500+
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Typical Performance Curves

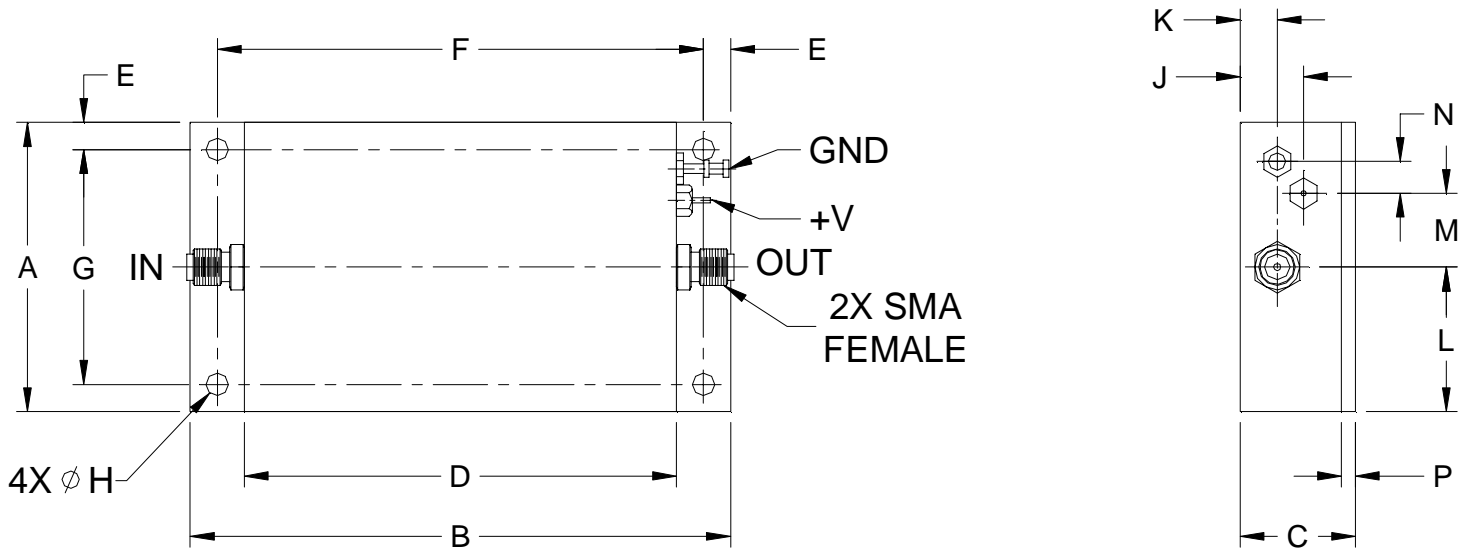


Case Style

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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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	-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