

High IP3

Low Noise Amplifier

ZRL-2300+

50Ω

1400 to 2300 MHz

Features

- High IP3, +42 dBm typ.
- Low Noise figure, 2.5 dB typ.
- Broadband flat gain response
- Excellent return loss, 20 dB typ.
- Internal voltage regulated
- Over-voltage and transient protected

Applications

- High dynamic range
- PCS, UMTS, GSM, cellular, wireless data
- Defense and satellite communications
- High linearity driver amplifier



Generic photo used for illustration purposes only

Case Style: FJ893

Connectors	Model
SMA	ZRL-2300+

+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		1400		2300	MHz
Noise Figure	1400 - 2300	—	2.5	3.5	dB
	1650 - 2150	—	2.3	3.5	
Gain	1400 - 2300	21	29	—	dB
	1650 - 2150	22	28	—	
Gain Flatness	1400 - 2300	—	±0.5	±1.0	dB
	1650 - 2150	—	±0.3	±0.8	
Output Power at 1dB compression	1400 - 2300	23	26	—	dBm
	1650 - 2150	23	25	—	
Output Power at 3dB compression	1400 - 2300	—	27	—	dBm
	1650 - 2150	—	26	—	
Output third order intercept point ¹	1400 - 2300	—	+42	—	dBm
	1650 - 2150	—	+42	—	
Input VSWR	1400 - 2300	—	1.2	—	:1
	1650 - 2150	—	1.3	—	
Output VSWR	1400 - 2300	—	1.16	—	:1
	1650 - 2150	—	1.13	—	
Active Directivity	1400 - 2300	—	19	—	dB
	1650 - 2150	—	17	—	
DC Supply Voltage ²		—	12	—	V
Supply Current		—	470	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

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.

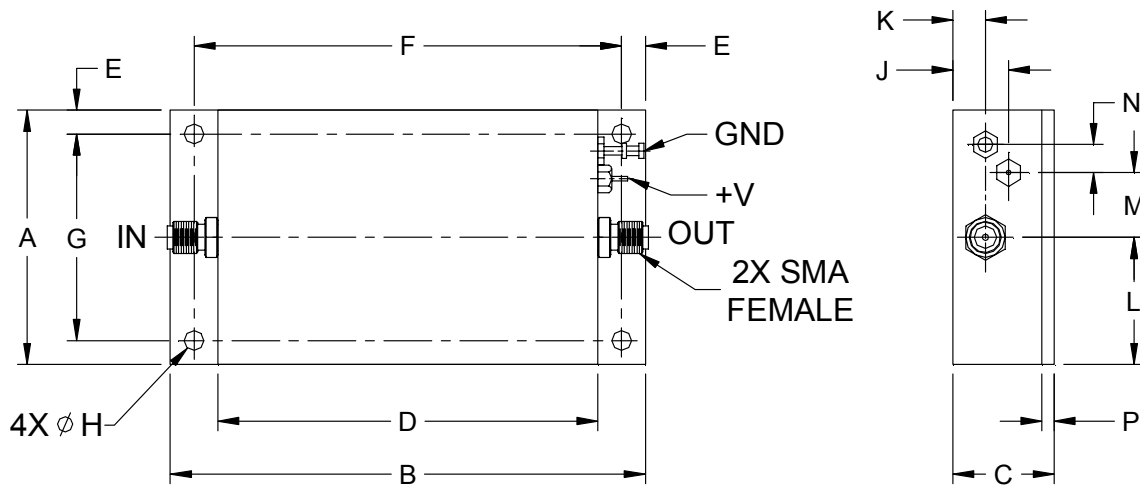
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ZRL-2300+
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Outline Drawing



Outline Dimensions (inch/mm)

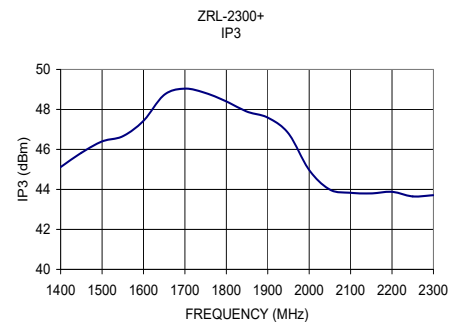
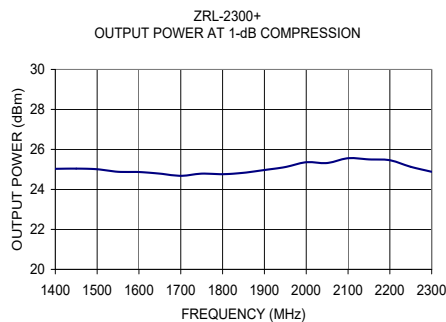
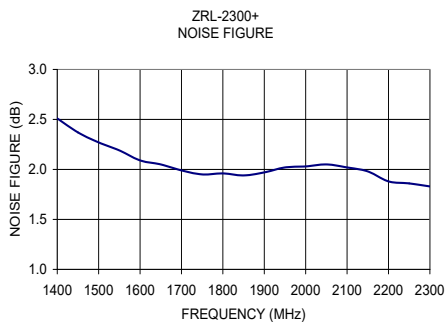
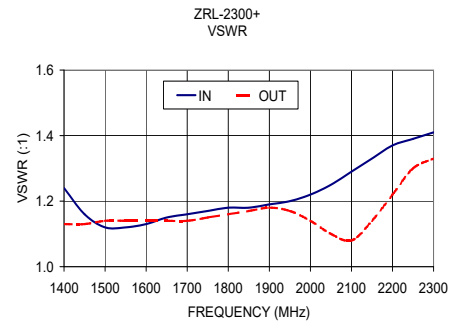
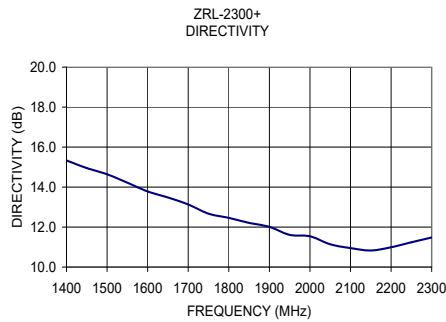
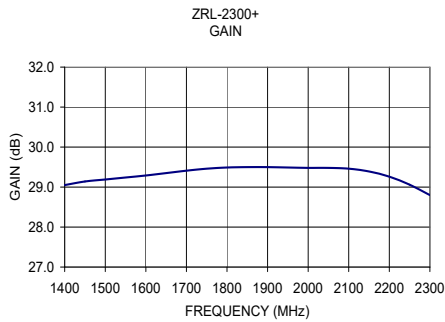
A	B	C	D	E	F	G	H	J	K	L	M	N	P	wt
2.00	3.75	0.80	3.00	0.19	3.374	1.624	0.156	0.44	0.26	1.00	0.51	0.22	0.10	grams
50.80	95.25	20.32	76.20	4.83	85.70	41.25	3.96	11.18	6.60	25.40	12.95	5.59	2.54	135

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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
1400.00	29.05	15.33	1.24	1.13	2.51	25.03	45.12
1450.00	29.14	14.95	1.16	1.13	2.37	25.04	45.83
1500.00	29.19	14.64	1.12	1.14	2.27	25.01	46.40
1550.00	29.24	14.22	1.12	1.14	2.19	24.88	46.66
1600.00	29.29	13.78	1.13	1.14	2.09	24.87	47.43
1650.00	29.35	13.48	1.15	1.14	2.05	24.79	48.73
1700.00	29.41	13.13	1.16	1.14	1.99	24.68	49.04
1750.00	29.46	12.67	1.17	1.15	1.95	24.79	48.82
1800.00	29.49	12.46	1.18	1.16	1.96	24.76	48.40
1850.00	29.50	12.21	1.18	1.17	1.94	24.83	47.89
1900.00	29.50	12.01	1.19	1.18	1.97	24.97	47.59
1950.00	29.49	11.61	1.20	1.17	2.02	25.12	46.80
2000.00	29.48	11.54	1.22	1.14	2.03	25.36	44.97
2050.00	29.48	11.14	1.25	1.10	2.05	25.32	43.99
2100.00	29.46	10.95	1.29	1.08	2.02	25.56	43.83
2150.00	29.39	10.83	1.33	1.14	1.98	25.50	43.80
2200.00	29.26	10.99	1.37	1.22	1.88	25.46	43.88
2250.00	29.06	11.24	1.39	1.30	1.86	25.13	43.65
2300.00	28.80	11.48	1.41	1.33	1.83	24.88	43.71



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Low Noise Amplifier

ZRL-2300+

Typical Performance Data

FREQUENCY (MHz)	GAIN (dB) 12V	DIRECTIVITY (dB) 12V	VSWR (:1)		NOISE FIGURE (dB) 12V	POUT @ 1 dB COMPRESSION (dBm) 12V	OUTPUT IP3 (dBm) 12V
			IN 12V	OUT 12V			
1400.0	29.05	15.33	1.24	1.13	2.51	25.03	45.12
1450.0	29.14	14.95	1.16	1.13	2.37	25.04	45.83
1500.0	29.19	14.64	1.12	1.14	2.27	25.01	46.40
1550.0	29.24	14.22	1.12	1.14	2.19	24.88	46.66
1600.0	29.29	13.78	1.13	1.14	2.09	24.87	47.43
1650.0	29.35	13.48	1.15	1.14	2.05	24.79	48.73
1700.0	29.41	13.13	1.16	1.14	1.99	24.68	49.04
1750.0	29.46	12.67	1.17	1.15	1.95	24.79	48.82
1800.0	29.49	12.46	1.18	1.16	1.96	24.76	48.40
1850.0	29.50	12.21	1.18	1.17	1.94	24.83	47.89
1900.0	29.50	12.01	1.19	1.18	1.97	24.97	47.59
1950.0	29.49	11.61	1.20	1.17	2.02	25.12	46.80
2000.0	29.48	11.54	1.22	1.14	2.03	25.36	44.97
2050.0	29.48	11.14	1.25	1.10	2.05	25.32	43.99
2100.0	29.46	10.95	1.29	1.08	2.02	25.56	43.83
2150.0	29.39	10.83	1.33	1.14	1.98	25.50	43.80
2200.0	29.26	10.99	1.37	1.22	1.88	25.46	43.88
2250.0	29.06	11.24	1.39	1.30	1.86	25.13	43.65
2300.0	28.80	11.48	1.41	1.33	1.83	24.88	43.71



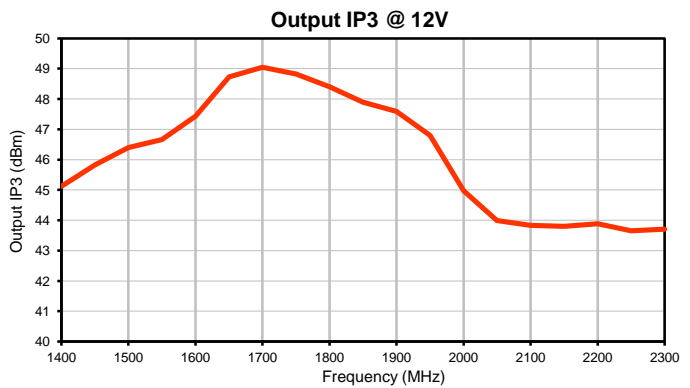
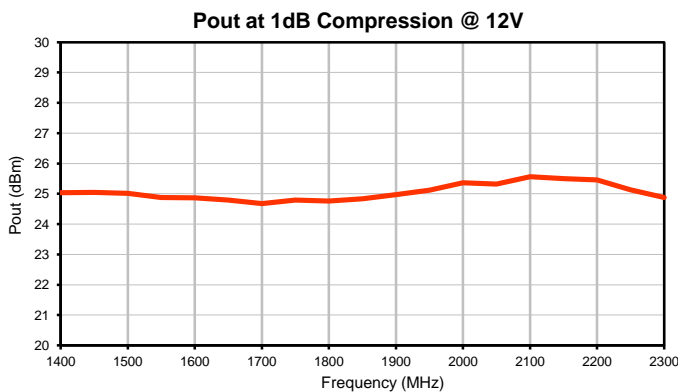
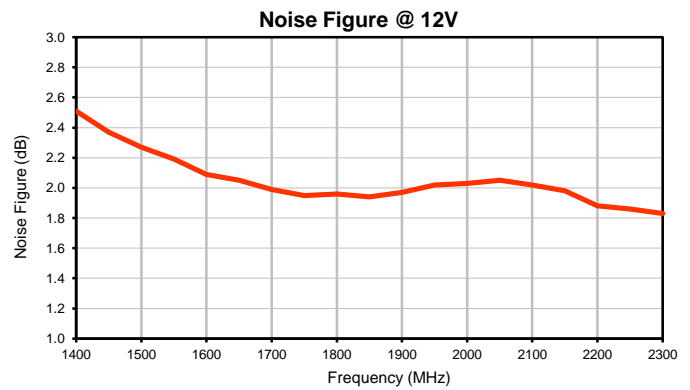
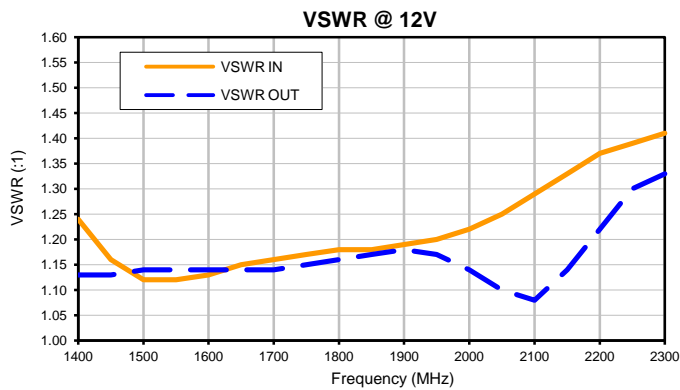
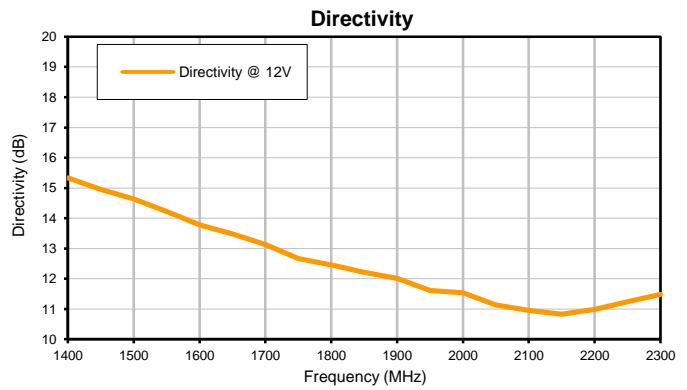
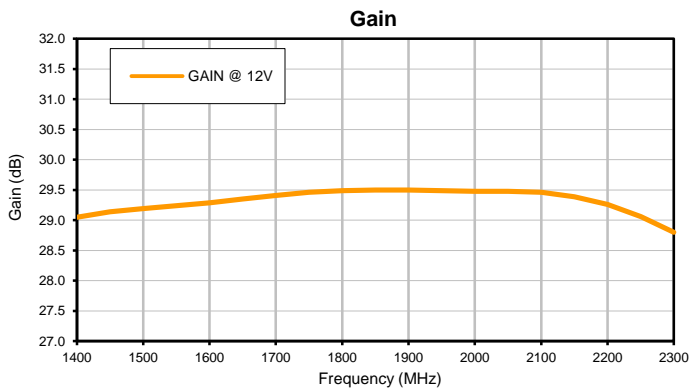
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IF/RF MICROWAVE COMPONENTS

REV. OR
ZRL-2300+
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Typical Performance Curves

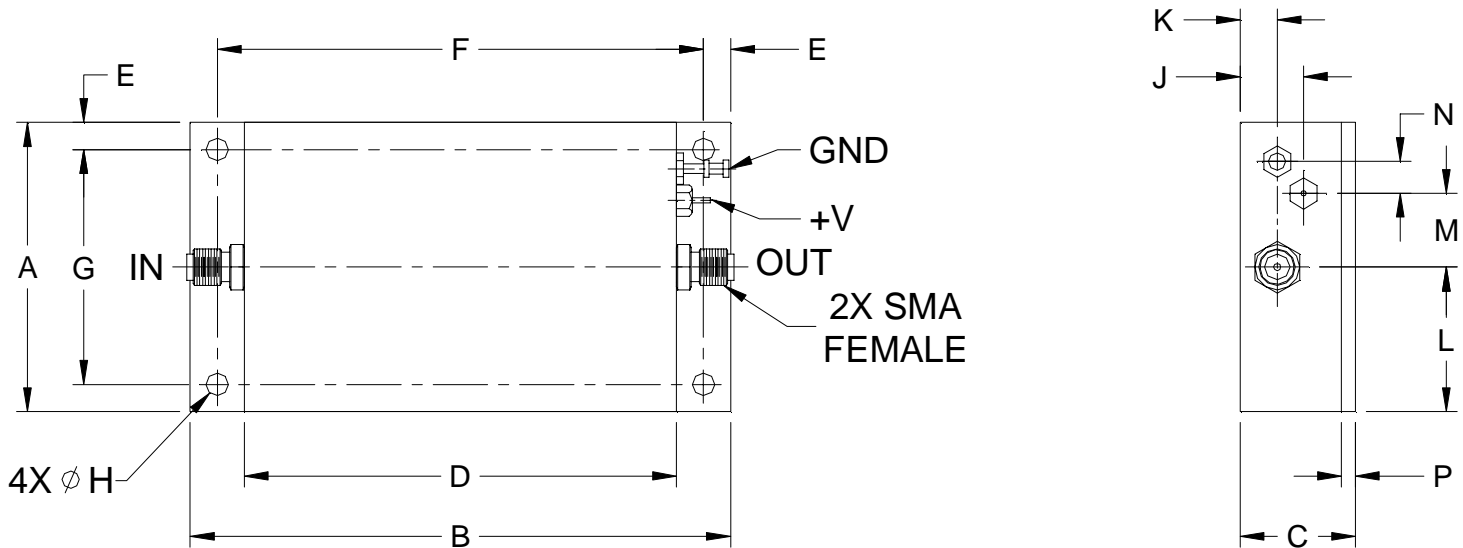


Case Style

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.

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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