

Bandpass Filter

SBP-21.4+

50Ω Elliptic Response 19.2 to 23.6 MHz

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5W max.

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

Features

- low insertion loss, 1.5 dB max.
- good selectivity, 1.76 typ. 20 dB / 3dB BW ratio
- rugged shielded case

Applications

- high rejection applications
- image rejection
- IF signal processing



Generic photo used for illustration purposes only

CASE STYLE: FF99

Connectors	Model
SMA	SBP-21.4+

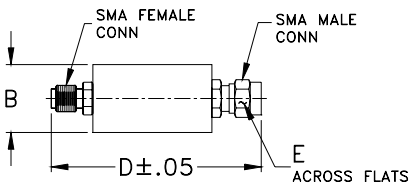
+RoHS Compliant

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

Bandpass Filter Electrical Specifications

CENTER FREQ. (MHz)	PASSBAND (MHz)	3dB BANDWIDTH (MHz)	STOPBANDS		VSWR (:1)	
			(I. loss > 20 dB) at MHz	(I. loss > 35 dB) at MHz	Passband Max.	Stopband Typ.
21.4	19.2-23.6	17.9-25.3	15.5 & 29	3.0 & 80-1000	1.7	16

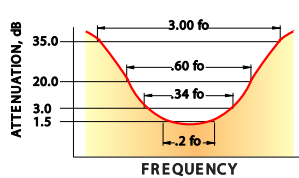
Outline Drawing



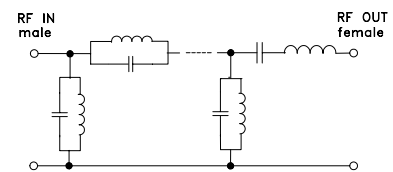
Outline Dimensions (inch/mm)

B	D	E	wt
.67	1.98	.312	grams
17.02	50.29	7.92	42.0

typical frequency response

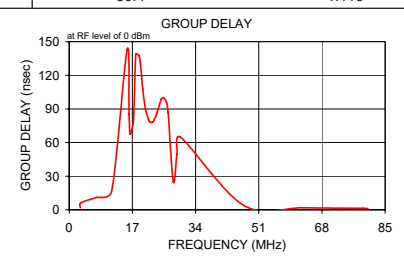
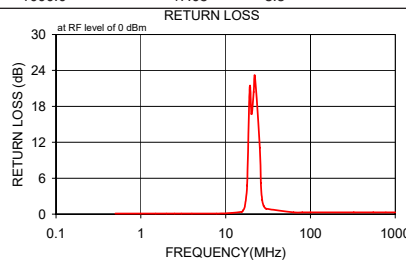
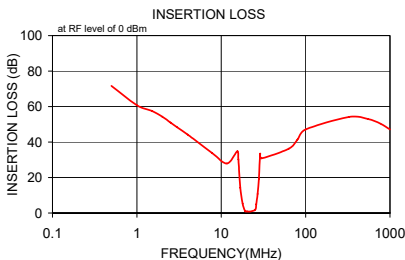


electrical schematic



Typical Performance Data

Frequency (MHz)	Insertion Loss (dB)		Return Loss (dB)	Frequency (MHz)	Group Delay (nsec)
	\bar{x}	σ			
0.5	71.63	9.9	0.1	3.0	1.719
1.0	60.77	9.9	0.1	3.1	6.056
1.5	57.59	9.9	0.1	7.3	11.010
2.0	54.26	9.9	0.1	11.4	16.139
2.5	51.03	9.9	0.1	15.6	142.895
3.0	48.32	9.1	0.1	16.1	85.576
4.0	44.25	7.7	0.1	16.4	67.524
7.8	33.81	4.4	0.1	17.3	80.808
11.7	27.91	1.1	0.2	17.9	138.773
15.5	34.76	8.5	0.4	18.8	137.539
16.0	30.17	9.6	0.6	19.2	129.275
16.8	14.18	4.6	1.2	19.5	118.671
17.9	5.30	3.1	4.8	19.8	107.675
19.2	1.05	0.2	21.1	20.5	90.324
20.2	0.95	0.2	16.7	21.3	80.937
21.4	0.86	0.2	20.4	21.6	78.721
22.2	0.85	0.2	22.9	22.4	78.107
25.3	1.90	0.5	11.1	23.2	82.720
26.0	4.97	2.3	5.2	23.6	86.828
27.0	10.74	4.2	2.4	24.8	98.805
28.0	19.34	5.7	1.4	25.3	100.146
29.0	33.39	7.4	1.1	26.2	95.668
30.0	30.79	2.4	0.9	26.6	87.074
63.3	36.27	0.7	0.3	28.0	25.106
80.0	41.42	0.5	0.3	29.0	49.929
100.0	47.07	1.7	0.3	30.0	64.699
325.0	54.13	8.6	0.3	47.0	3.795
550.0	53.01	7.0	0.3	63.1	1.797
775.0	50.30	4.1	0.3	79.0	1.341
1000.0	47.08	3.5	0.3	80.4	1.116



Notes

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



Coaxial Band Pass Filter (Elliptic Response) SBP-21.4+

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)	FREQUENCY (MHz)	GROUP DELAY (nsec)
0.50	71.63	0.10	3.00	1.719
1.00	60.77	0.10	3.10	6.056
1.50	57.59	0.10	7.30	11.010
2.00	54.26	0.10	11.40	16.139
2.50	51.03	0.10	15.60	142.895
3.00	48.32	0.10	16.10	85.576
4.00	44.25	0.10	16.40	67.524
7.80	33.81	0.10	17.30	80.808
11.70	27.91	0.20	17.90	138.773
15.50	34.76	0.40	18.80	137.539
16.00	30.17	0.60	19.20	129.275
16.80	14.18	1.20	19.50	118.671
17.90	5.30	4.80	19.80	107.675
19.20	1.05	21.10	20.50	90.324
20.20	0.95	16.70	21.30	80.937
21.40	0.86	20.40	21.60	78.721
22.20	0.85	22.90	22.40	78.107
25.30	1.90	11.10	23.20	82.720
26.00	4.97	5.20	23.60	86.828
27.00	10.74	2.40	24.80	98.805
28.00	19.34	1.40	25.30	100.146
29.00	33.39	1.10	26.20	95.668
30.00	30.79	0.90	26.60	87.074
63.30	36.27	0.30	28.00	25.106
80.00	41.42	0.30	29.00	49.929
100.00	47.07	0.30	30.00	64.699
325.00	54.13	0.30	47.00	3.795
550.00	53.01	0.30	63.10	1.797
775.00	50.30	0.30	79.00	1.341
1000.00	47.08	0.30	80.40	1.116

REV. X1
SBP-21.4+
060725
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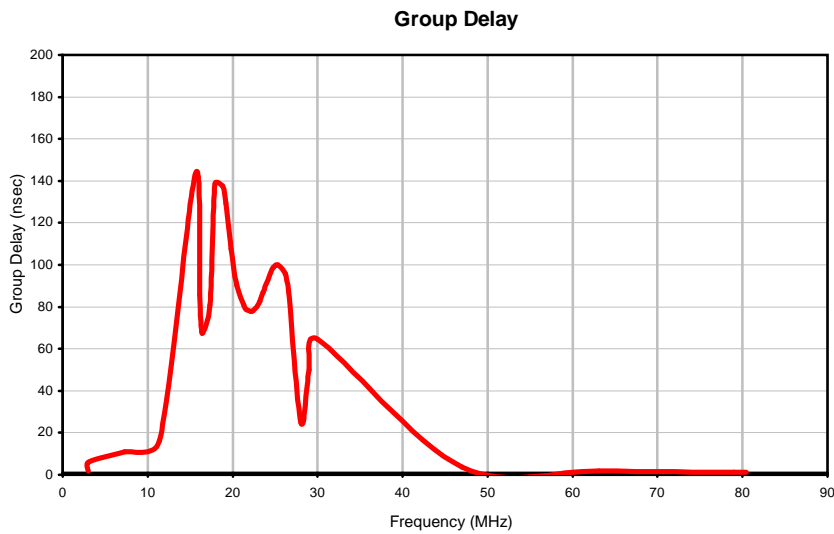
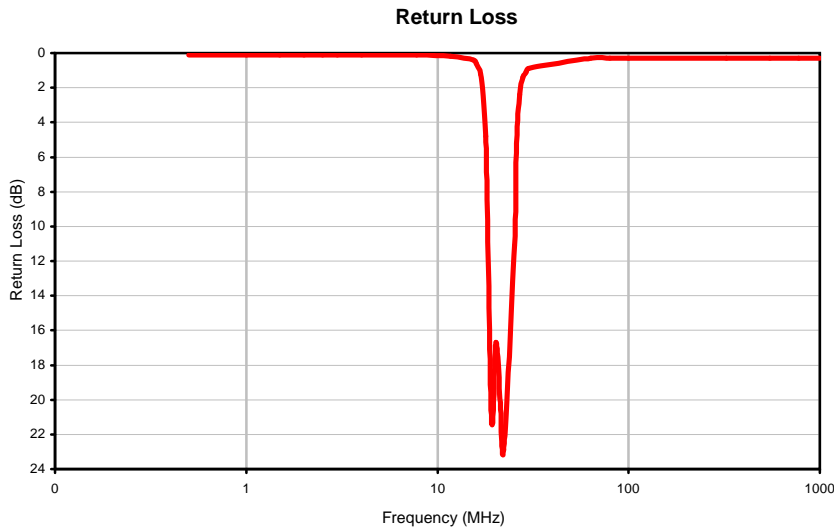
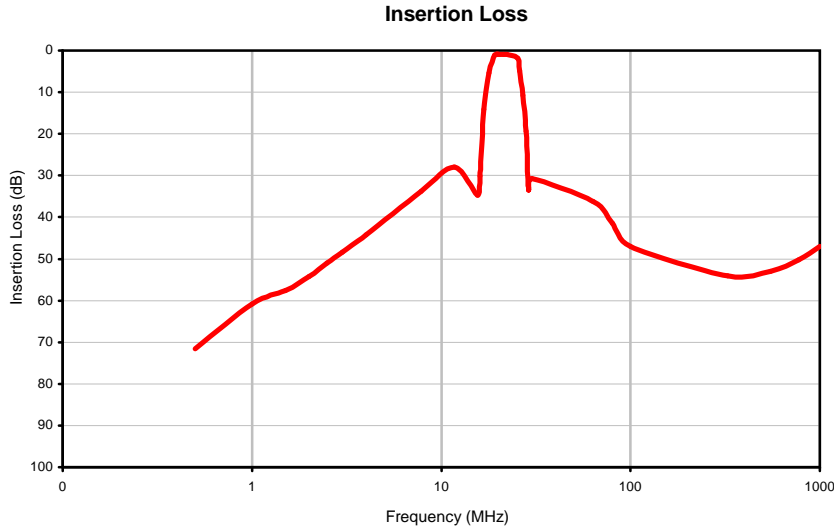


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Coaxial Band Pass Filter (Elliptic Response) SBP-21.4+

Typical Performance Curves



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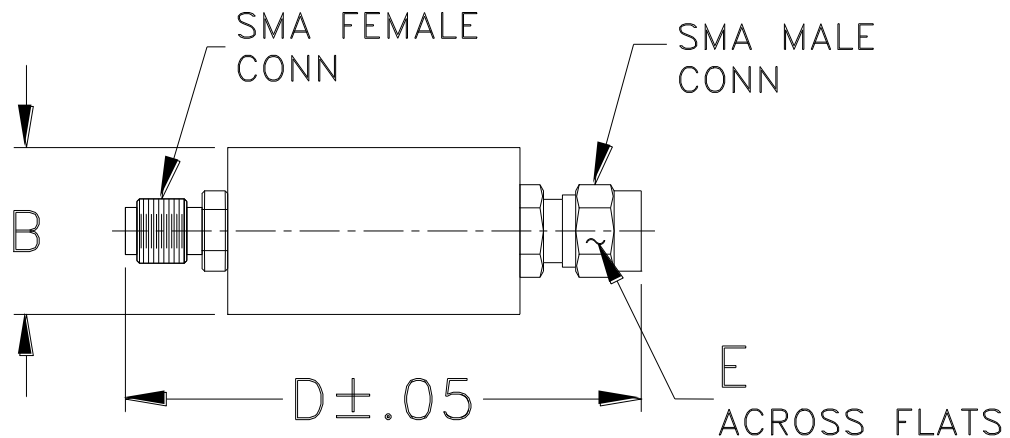


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FF56
FF99

Outline Dimensions



CASE #.	A	B	C	D	E	WT GRAMS
FF56	--	.46 (11.68)	--	1.70 (43.18)	.312 (7.92)	18.0
FF99	--	.70 (17.78)	--	1.98 (50.29)		42.0

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

Notes:

1. Case material: Brass.
2. Case finish: Nickel plate.



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	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I