Coaxial

Bandpass Filter

SBP-100+

50Ω 87 to 117 MHz

Generic photo used for illustration purposes only

CASE STYLE: FF99

The Big Deal

- Very good rejection
- Good VSWR 1.3:1 typ in passband
- Connectorized package

Product Overview

SBP-100+ is a 50Ω bandpass filter in a connectorized package. The bandpass filter covers from 87 to 117 MHz, offering good matching within the passband. It uses miniature high Q capacitors and wire welded inductors for high reliability. It has repeatable performance across production lots and consistent performance across temperature.

Key Features

Feature	Advantages
Very good rejection	Rejects unwanted spurious signals.
Good VSWR, 1.3:1 typical in passband	This provides well matched input and output ports.
Connectorized package	Connectorized package is easy to interface with other devices and well suited for test setups.

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50Ω 87 to 117 MHz

SBP-100+

Generic photo used for illustration purposes only

CASE STYLE: FF99

Connectors	Model
SMA	SBP-100+

Features

- Very good rejection, 40 dB typ
- Good VSWR, 1.3:1 typical in passband
- Connectorized package

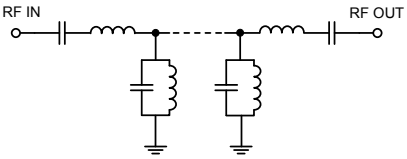
Applications

- Transmitters / Receivers
- Harmonic rejection
- Test equipment
- Military radio

Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	F1-F2	87 - 117	-	2.2	3.0	dB
	VSWR	F1-F2	87 - 117	-	1.3	1.7	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 55	40	49	-	dB
		F3-F4	55 - 66	20	29	-	dB
	VSWR	DC-F4	DC - 66	-	20	-	:1
Stop Band, Upper	Insertion Loss	F5-F6	143 - 175	20	28	-	dB
		F6-F7	175 - 1500	40	50	-	dB
	VSWR	F5-F7	143 - 1500	-	20	-	:1

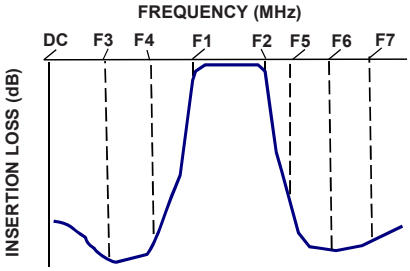
Functional Schematic



Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.25 W max.

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

Typical Frequency Response

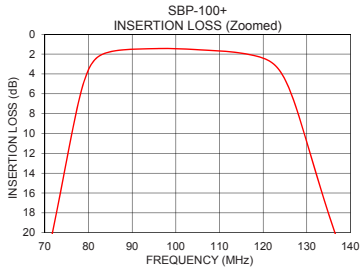


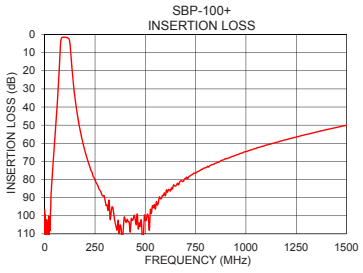
+RoHS Compliant

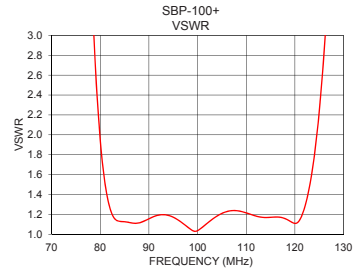
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

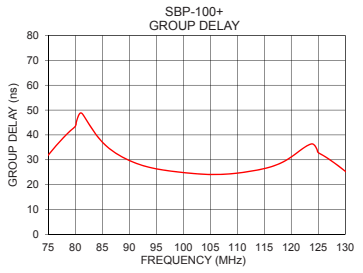
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1	115.39	13721.78	87	33.40
5	105.34	18693.40	88	31.99
8	107.35	16070.10	89	30.78
10	102.17	22155.06	90	29.74
55	50.05	248.88	91	28.83
66	31.54	66.12	92	28.04
71	21.63	28.65	93	27.39
80	3.56	1.94	94	26.84
87	1.62	1.11	95	26.39
100	1.45	1.04	96	26.00
117	2.06	1.17	97	25.67
123	3.25	1.48	98	25.37
137	20.75	16.65	99	25.12
143	27.78	24.09	100	24.89
175	52.20	52.12	111	24.92
200	64.28	66.55	112	25.24
300	91.49	91.82	113	25.59
500	102.53	89.40	115	26.47
1000	64.57	52.59	116	27.04
1500	50.06	28.68	117	27.73









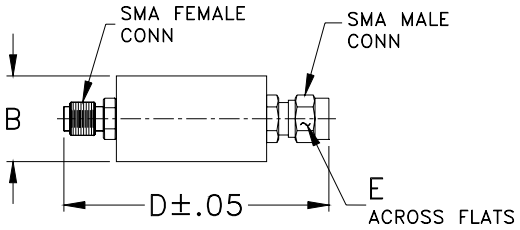
Notes

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.
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

Coaxial Connections

PORT - 1	SMA-Male
PORT - 2	SMA-Female

Outline Drawing



Outline Dimensions (inch / mm)

B	D	E	Wt.
.70	**1.98**	**.312**	grams
17.78	50.29	7.92	42.0

Note: Please refer to case style drawing for details

Coaxial Band Pass Filter SBP-100+

Typical Performance Data

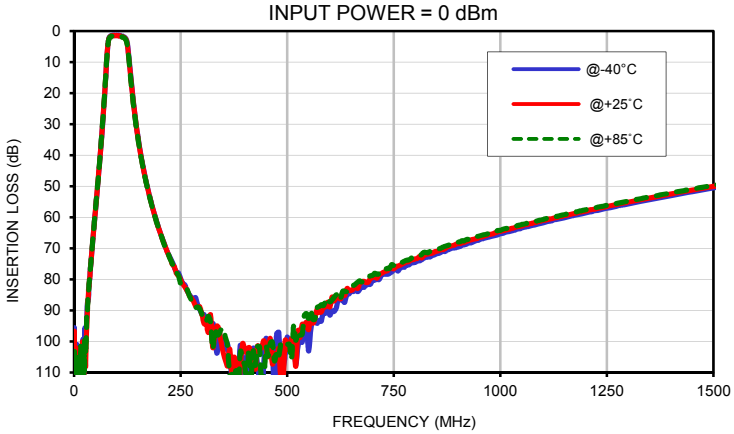
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	111.84	115.39	105.80	0.00	0.00	0.00	0.00	0.00	0.00
2	103.66	108.42	111.50	0.00	0.00	0.00	0.00	0.00	0.00
3	111.18	107.48	105.25	0.00	0.00	0.00	0.00	0.00	0.00
4	106.85	104.80	110.02	0.00	0.00	0.00	0.00	0.00	0.00
10	104.24	102.17	105.94	0.00	0.00	0.00	0.00	0.00	0.00
20	111.38	100.51	104.78	0.00	0.00	0.00	0.00	0.00	0.00
25	96.00	104.94	100.37	0.00	0.00	0.01	0.00	0.00	0.00
30	91.56	95.46	90.31	0.00	0.01	0.01	0.00	0.00	0.01
35	81.92	82.35	81.33	0.00	0.01	0.01	0.01	0.01	0.01
40	74.09	73.51	73.52	0.01	0.01	0.02	0.01	0.01	0.02
45	65.80	65.56	65.46	0.02	0.03	0.03	0.02	0.02	0.02
50	58.02	57.81	57.71	0.03	0.04	0.05	0.03	0.04	0.04
55	50.28	50.05	49.85	0.06	0.07	0.08	0.05	0.06	0.07
56	48.70	48.46	48.28	0.07	0.08	0.08	0.06	0.07	0.07
57	47.12	46.89	46.70	0.08	0.09	0.10	0.06	0.07	0.08
59	43.90	43.66	43.44	0.09	0.11	0.12	0.08	0.09	0.10
60	42.27	42.01	41.79	0.11	0.12	0.13	0.09	0.10	0.11
61	40.60	40.35	40.12	0.12	0.14	0.15	0.10	0.11	0.13
65	33.66	33.38	33.12	0.20	0.23	0.25	0.16	0.18	0.21
66	31.84	31.54	31.28	0.23	0.26	0.29	0.18	0.21	0.24
70	24.04	23.72	23.44	0.44	0.50	0.55	0.34	0.39	0.44
71	21.95	21.63	21.34	0.53	0.61	0.67	0.41	0.47	0.53
75	12.97	12.69	12.44	1.43	1.62	1.80	1.11	1.26	1.41
80	3.48	3.56	3.63	9.07	9.88	10.62	7.32	7.80	8.24
81	2.95	3.06	3.16	11.27	12.20	13.02	9.01	9.48	9.91
87	1.48	1.62	1.73	25.69	25.60	25.44	38.64	39.49	40.15
100	1.34	1.45	1.55	33.58	34.95	30.63	25.12	25.89	25.61
110	1.56	1.68	1.79	20.51	20.24	20.00	19.28	19.69	19.93
117	1.91	2.06	2.20	21.76	22.07	22.20	21.90	21.88	21.77
120	2.21	2.41	2.58	24.99	25.69	25.35	23.14	22.54	21.81
122	2.60	2.86	3.09	20.46	18.56	17.38	19.71	17.84	16.75
130	10.26	10.87	11.34	2.63	2.54	2.49	2.85	2.76	2.72
137	20.29	20.75	21.11	1.03	1.04	1.05	1.17	1.19	1.20
140	24.02	24.43	24.75	0.83	0.85	0.86	0.95	0.97	0.98
143	27.42	27.78	28.07	0.70	0.72	0.73	0.81	0.83	0.84
175	52.04	52.20	52.33	0.31	0.33	0.35	0.36	0.38	0.39
180	54.80	54.96	55.06	0.29	0.31	0.33	0.33	0.35	0.37
190	59.78	59.93	59.95	0.26	0.28	0.30	0.30	0.32	0.33
200	64.11	64.28	64.37	0.24	0.26	0.28	0.27	0.29	0.31
250	79.80	80.15	81.53	0.18	0.21	0.22	0.20	0.23	0.25
300	91.22	91.49	91.41	0.16	0.19	0.21	0.18	0.21	0.23
350	99.68	103.85	95.95	0.15	0.19	0.21	0.17	0.20	0.22
400	117.13	102.28	107.67	0.14	0.18	0.21	0.16	0.20	0.22
450	99.14	102.21	102.01	0.14	0.19	0.21	0.16	0.20	0.22
500	98.63	102.53	101.00	0.14	0.19	0.22	0.16	0.21	0.23
550	103.12	96.27	92.64	0.14	0.20	0.23	0.16	0.21	0.23
600	91.55	88.92	87.28	0.15	0.21	0.25	0.17	0.22	0.24
650	83.85	83.62	82.10	0.15	0.22	0.26	0.17	0.23	0.26
700	80.49	79.46	78.74	0.16	0.24	0.28	0.18	0.24	0.27
750	76.99	76.62	75.51	0.17	0.25	0.29	0.18	0.25	0.28
800	74.58	73.43	72.65	0.18	0.26	0.31	0.19	0.26	0.30
850	71.78	71.02	70.28	0.19	0.28	0.33	0.20	0.27	0.31
900	69.52	68.45	68.06	0.20	0.30	0.35	0.21	0.29	0.33
950	67.35	66.54	66.07	0.21	0.31	0.38	0.22	0.30	0.35
1000	65.29	64.57	64.24	0.22	0.33	0.40	0.23	0.32	0.37
1050	63.53	62.86	62.31	0.24	0.35	0.42	0.24	0.34	0.39
1200	58.64	57.99	57.61	0.30	0.42	0.50	0.29	0.40	0.46
1300	55.72	55.13	54.84	0.34	0.47	0.56	0.33	0.44	0.51
1400	53.06	52.50	52.18	0.39	0.54	0.63	0.37	0.50	0.57
1500	50.58	50.06	49.75	0.46	0.61	0.71	0.42	0.56	0.64

Typical Performance Data

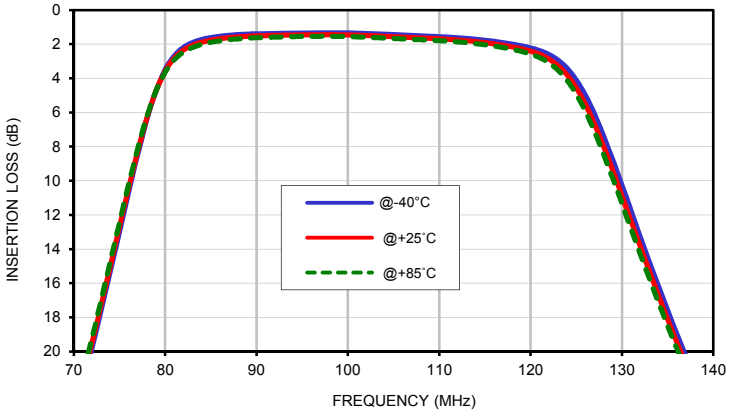
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
87.0	33.69	33.40	33.15
87.2	33.38	33.10	32.85
88.0	32.23	31.99	31.77
88.2	31.98	31.74	31.53
89.0	30.98	30.78	30.61
89.2	30.75	30.56	30.39
90.0	29.89	29.74	29.60
90.4	29.49	29.36	29.23
91.0	28.93	28.83	28.72
91.2	28.76	28.66	28.56
91.4	28.58	28.49	28.40
92.0	28.12	28.04	27.97
92.4	27.83	27.77	27.71
93.0	27.42	27.39	27.34
93.2	27.30	27.27	27.23
94.0	26.85	26.84	26.81
94.2	26.74	26.74	26.71
95.0	26.38	26.39	26.36
95.6	26.13	26.14	26.13
96.0	25.99	26.00	25.98
96.2	25.92	25.92	25.91
97.0	25.66	25.67	25.66
97.2	25.60	25.61	25.59
98.0	25.38	25.37	25.37
98.6	25.22	25.22	25.20
99.0	25.12	25.12	25.11
99.8	24.94	24.93	24.90
100.0	24.90	24.89	24.86
100.4	24.81	24.79	24.76
101.0	24.69	24.67	24.62
101.8	24.53	24.51	24.47
102.0	24.49	24.47	24.43
102.4	24.42	24.40	24.36
103.0	24.33	24.31	24.27
103.4	24.26	24.24	24.21
104.0	24.19	24.18	24.16
104.8	24.11	24.11	24.10
105.0	24.10	24.11	24.09
105.2	24.09	24.10	24.09
106.4	24.08	24.11	24.12
107.0	24.09	24.14	24.15
107.8	24.17	24.22	24.25
108.0	24.18	24.24	24.27
109.0	24.34	24.42	24.46
110.0	24.55	24.64	24.71
111.0	24.81	24.92	25.00
112.0	25.12	25.24	25.33
113.0	25.46	25.59	25.70
114.0	25.84	26.01	26.12
115.0	26.28	26.47	26.61
117.0	27.46	27.73	27.93

Typical Performance Curves

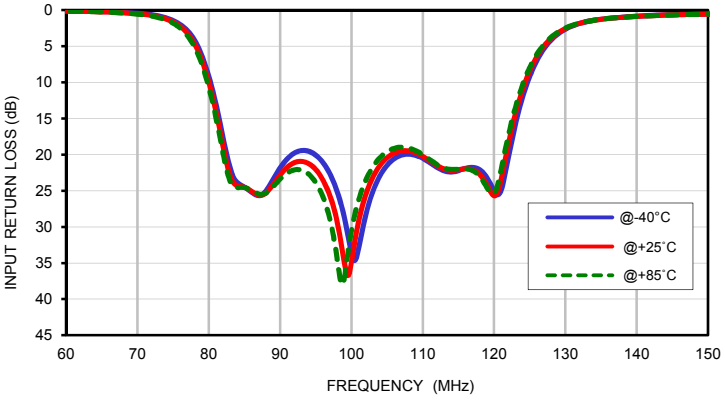
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



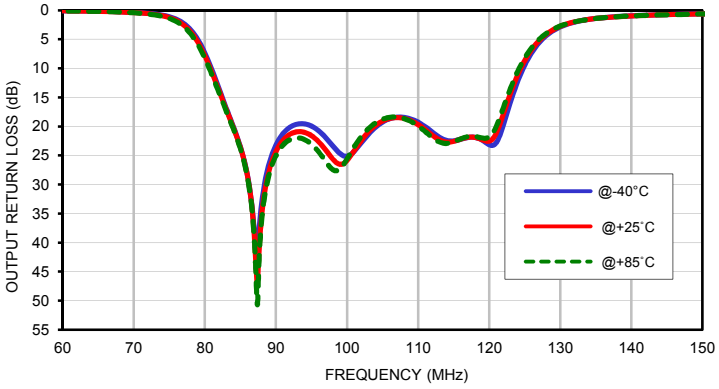
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



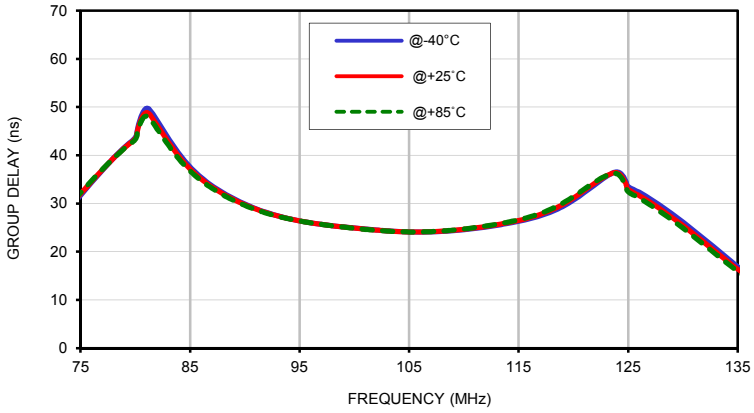
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm

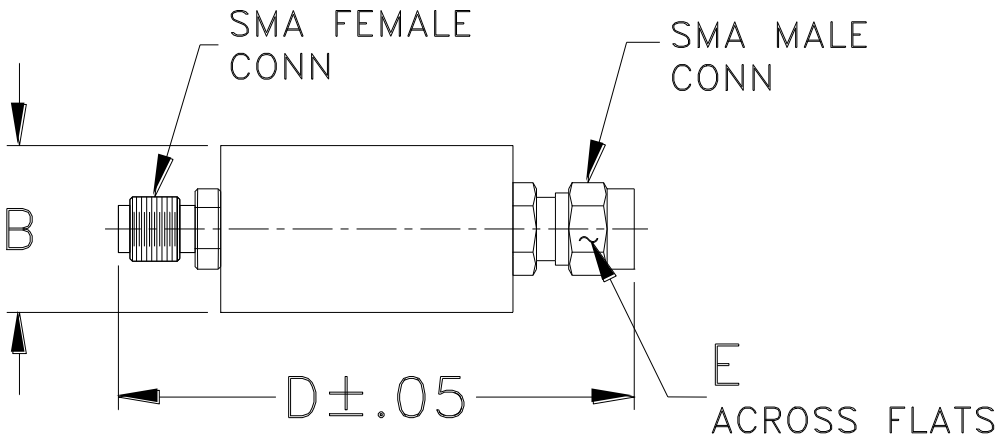


GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



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.

Mini-Circuits

Environmental Specifications **ENV105**

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 85° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C