

# Coaxial Bandpass Filter

## SBP-35A+

50Ω      30 to 40 MHz



*Generic photo used for illustration purposes only*  
CASE STYLE: FF99

### The Big Deal

- Excellent rejection
- Narrow bandwidth
- Good VSWR (1.2:1 typical)
- Fast roll-off
- Connectorized package

### Product Overview

SBP-35A+ is a 50Ω bandpass filter in a connectorized package. This bandpass filter covers from 30 to 40 MHz, these units offer good matching within the passband and high rejection. This unit uses a 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
Excellent rejection	This enables the filter attenuate spurious signals and reject harmonics for broad frequency band.
Good VSWR, 1.2:1 typical over 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.

#### 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](http://www.minicircuits.com/MCLStore/terms.jsp)



# Coaxial Bandpass Filter

50Ω 30 to 40 MHz

## SBP-35A+



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CASE STYLE: FF99

Connectors	Model
SMA	SBP-35A+

### Features

- Excellent rejection
- Good VSWR, 1.2:1 typical @ passband
- Connectorized package

### Applications

- FM Radio rejection
- Receivers / Transmitters
- Professional mobile radio / Public Access mobile radio (PMR/ PAMR)

### Electrical Specifications at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	-	-	35	-	MHz
	Insertion Loss	F1-F2	30 - 40	0.6	1.0	dB
	VSWR	F1-F2	30 - 40	-	1.2	1.5
Stop Band, Lower	Insertion Loss	DC-F3	DC - 19	30	40	dB
	VSWR	F3-F4	19 - 21	20	27	dB
	VSWR	DC-F4	DC - 21	-	20	-
Stop Band, Upper	Insertion Loss	F5-F6	60 - 65	20	30	dB
	VSWR	F6-F7	65 - 1350	30	36	dB
	VSWR	F5-F7	60 - 1350	-	20	-

### Maximum Ratings

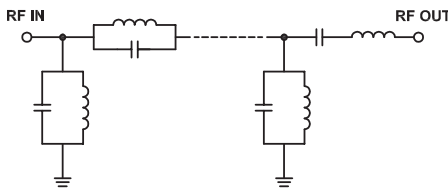
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5 W max.

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

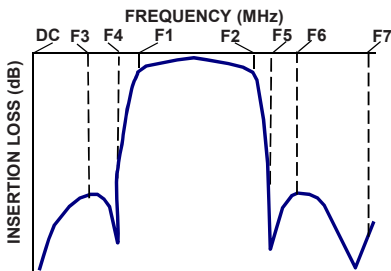
### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1.00	87.83	220.19	30.0	58.99
10.00	47.53	326.39	30.5	55.11
19.00	48.78	106.38	31.0	51.95
20.75	31.40	78.66	31.5	49.39
21.00	29.77	74.84	32.0	47.27
22.50	21.17	50.76	32.5	45.55
26.50	3.43	4.07	33.0	44.14
30.00	0.64	1.11	33.5	42.97
35.00	0.59	1.21	34.0	42.02
40.00	0.66	1.05	34.5	41.24
45.50	3.29	3.59	35.0	40.62
53.75	20.35	45.87	35.5	40.17
58.75	30.01	78.77	36.0	39.82
60.00	32.38	85.47	36.5	39.59
65.00	42.66	109.66	37.0	39.49
100.00	50.88	163.76	37.5	39.50
500.00	55.12	66.32	38.0	39.63
600.00	48.17	34.38	38.5	39.90
1000.00	49.36	62.32	39.0	40.31
1350.00	41.26	45.16	40.0	41.64

### Functional Schematic

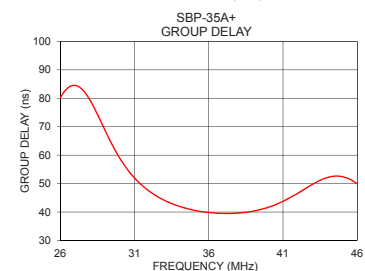
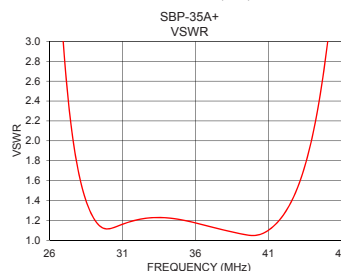
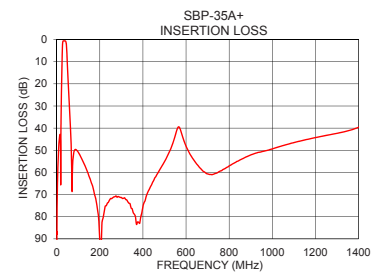
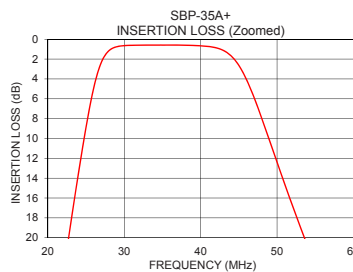


### Typical Frequency Response



**+RoHS Compliant**

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



### Notes

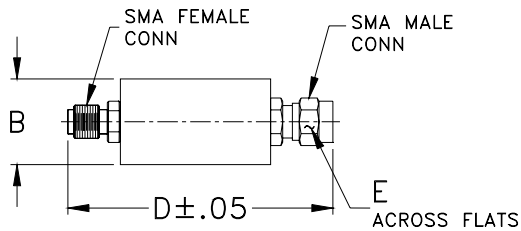
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**Coaxial Connections**

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

**Outline Drawing**



**Outline Dimensions (  $\frac{\text{inch}}{\text{mm}}$  )**

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*

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*Typical Performance Data*

FREQ.  (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1.0	86.51	87.83	86.82	0.09	0.08	0.07	0.01	0.01	0.01
5.0	59.30	59.36	59.39	0.01	0.02	0.02	0.01	0.01	0.01
10.0	47.58	47.53	47.52	0.05	0.05	0.06	0.01	0.01	0.02
12.0	44.80	44.79	44.75	0.06	0.07	0.08	0.02	0.02	0.02
13.0	43.79	43.78	43.77	0.07	0.08	0.09	0.02	0.02	0.02
14.0	43.11	43.10	43.10	0.08	0.09	0.10	0.02	0.03	0.03
19.0	49.33	48.78	48.53	0.15	0.16	0.17	0.09	0.10	0.11
20.5	33.34	33.12	33.02	0.20	0.21	0.22	0.13	0.15	0.16
21.0	29.97	29.77	29.68	0.22	0.23	0.25	0.15	0.17	0.19
22.0	24.05	23.88	23.80	0.28	0.29	0.31	0.22	0.25	0.27
22.5	21.34	21.17	21.09	0.32	0.34	0.36	0.28	0.31	0.33
23.0	18.71	18.55	18.47	0.39	0.41	0.44	0.35	0.38	0.42
24.0	13.70	13.54	13.47	0.63	0.67	0.71	0.62	0.67	0.72
25.0	9.00	8.86	8.81	1.25	1.31	1.38	1.28	1.37	1.45
26.0	5.02	4.92	4.91	2.79	2.92	3.03	2.90	3.06	3.20
26.5	3.49	3.43	3.44	4.17	4.36	4.50	4.35	4.56	4.73
28.0	1.14	1.15	1.20	11.62	12.00	12.24	12.00	12.39	12.64
30.0	0.61	0.64	0.69	25.50	25.35	25.28	24.08	23.66	23.42
35.0	0.55	0.59	0.63	20.91	20.57	20.34	20.61	20.28	20.07
38.0	0.57	0.60	0.65	26.23	26.38	26.56	23.90	24.01	24.07
40.0	0.62	0.66	0.71	32.46	32.58	33.06	26.60	26.24	26.14
42.0	0.79	0.86	0.93	19.65	19.05	18.66	18.26	17.53	17.07
45.5	3.15	3.29	3.44	5.01	4.96	4.94	4.74	4.65	4.59
50.0	12.28	12.40	12.53	0.83	0.86	0.89	0.78	0.79	0.82
53.8	20.26	20.35	20.45	0.36	0.38	0.40	0.36	0.37	0.39
55.0	22.76	22.83	22.94	0.30	0.32	0.34	0.31	0.32	0.34
58.8	29.96	30.01	30.09	0.20	0.22	0.23	0.23	0.24	0.26
60.0	32.33	32.38	32.46	0.18	0.20	0.21	0.22	0.23	0.24
63.0	38.27	38.29	38.37	0.15	0.17	0.18	0.19	0.20	0.22
65.0	42.70	42.66	42.75	0.14	0.16	0.16	0.18	0.19	0.20
80.0	50.41	50.60	50.67	0.10	0.12	0.12	0.14	0.15	0.16
100.0	50.76	50.88	50.96	0.09	0.11	0.10	0.12	0.13	0.14
540.0	46.18	46.43	46.46	0.54	0.60	0.65	0.10	0.14	0.17
560.0	39.51	40.15	40.50	2.20	2.24	2.29	0.10	0.15	0.17
580.0	41.81	42.62	43.23	1.27	1.28	1.25	0.11	0.15	0.18
600.0	47.51	48.17	48.58	0.45	0.51	0.52	0.11	0.15	0.18
620.0	51.39	52.02	52.38	0.29	0.34	0.36	0.11	0.16	0.18
640.0	54.39	54.94	55.21	0.24	0.29	0.31	0.11	0.16	0.19
660.0	57.03	57.47	57.45	0.21	0.26	0.28	0.11	0.16	0.19
680.0	59.25	59.52	59.08	0.20	0.25	0.28	0.11	0.17	0.20
700.0	61.13	60.63	59.84	0.19	0.25	0.27	0.12	0.17	0.20
720.0	62.14	61.02	59.91	0.19	0.24	0.26	0.12	0.18	0.21
740.0	61.93	60.36	59.10	0.19	0.24	0.27	0.12	0.18	0.21
760.0	61.14	59.31	58.15	0.18	0.23	0.26	0.12	0.18	0.21
780.0	59.86	58.26	57.10	0.18	0.23	0.26	0.12	0.19	0.22
800.0	58.70	57.05	55.92	0.18	0.24	0.27	0.13	0.19	0.23
820.0	57.34	55.94	54.97	0.18	0.23	0.26	0.13	0.19	0.23
840.0	56.11	54.93	53.93	0.18	0.24	0.27	0.13	0.20	0.23
860.0	55.16	53.91	53.04	0.19	0.25	0.28	0.13	0.20	0.24
880.0	54.09	52.94	52.20	0.19	0.25	0.29	0.14	0.21	0.25
900.0	53.17	52.10	51.45	0.20	0.27	0.31	0.14	0.21	0.26
920.0	52.31	51.38	50.80	0.22	0.28	0.32	0.15	0.22	0.26
1000.0	50.20	49.36	48.79	0.22	0.28	0.32	0.16	0.24	0.29
1125.0	46.63	45.94	45.47	0.19	0.27	0.32	0.19	0.29	0.34
1130.0	46.53	45.83	45.36	0.19	0.27	0.32	0.19	0.29	0.35
1230.0	44.30	43.68	43.27	0.21	0.30	0.36	0.23	0.34	0.40
1250.0	43.95	43.28	42.89	0.22	0.31	0.37	0.24	0.35	0.41
1270.0	43.56	42.93	42.52	0.23	0.32	0.38	0.25	0.36	0.43
1300.0	43.02	42.35	41.90	0.24	0.34	0.41	0.27	0.38	0.45
1350.0	42.05	41.26	40.74	0.28	0.38	0.46	0.31	0.43	0.51

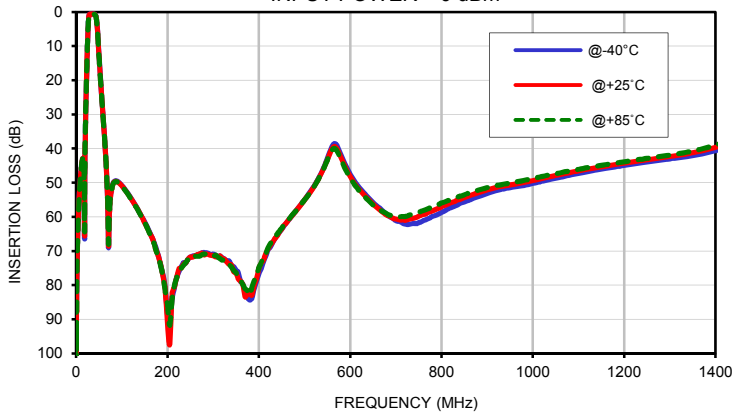


*Typical Performance Data*

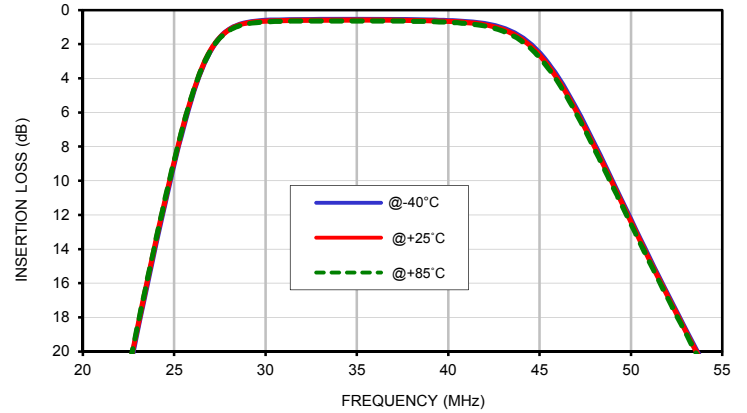
FREQ.  (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
30.00	59.35	58.99	58.76
30.25	57.28	56.95	56.76
30.50	55.42	55.11	54.95
30.75	53.70	53.44	53.29
31.00	52.20	51.95	51.82
31.25	50.81	50.60	50.48
31.50	49.59	49.39	49.29
31.75	48.46	48.28	48.18
32.00	47.44	47.27	47.19
32.25	46.52	46.38	46.30
32.50	45.70	45.55	45.49
32.75	44.94	44.81	44.73
33.00	44.26	44.14	44.09
33.25	43.63	43.51	43.47
33.50	43.06	42.97	42.91
33.75	42.56	42.47	42.42
34.00	42.11	42.02	41.98
34.25	41.68	41.62	41.58
34.50	41.31	41.24	41.22
34.75	40.96	40.91	40.89
35.00	40.67	40.62	40.60
35.25	40.42	40.37	40.36
35.50	40.19	40.17	40.15
35.75	40.00	39.98	39.97
36.00	39.84	39.82	39.83
36.25	39.70	39.68	39.70
36.50	39.60	39.59	39.61
36.75	39.52	39.53	39.56
37.00	39.48	39.49	39.52
37.25	39.46	39.48	39.53
37.50	39.48	39.50	39.54
37.75	39.51	39.55	39.59
38.00	39.59	39.63	39.69
38.25	39.70	39.76	39.83
38.50	39.83	39.90	39.97
38.75	40.01	40.08	40.16
39.00	40.23	40.31	40.39
39.25	40.49	40.58	40.66
39.50	40.81	40.89	40.99
39.75	41.13	41.25	41.34
40.00	41.54	41.64	41.74
40.25	41.97	42.08	42.20
40.50	42.47	42.59	42.70
40.75	43.04	43.14	43.26
41.00	43.64	43.75	43.86
41.25	44.30	44.41	44.52
41.50	45.01	45.10	45.20
41.75	45.76	45.84	45.94
42.00	46.54	46.62	46.69
42.25	47.35	47.41	47.48
43.00	49.80	49.77	49.76

## Typical Performance Curves

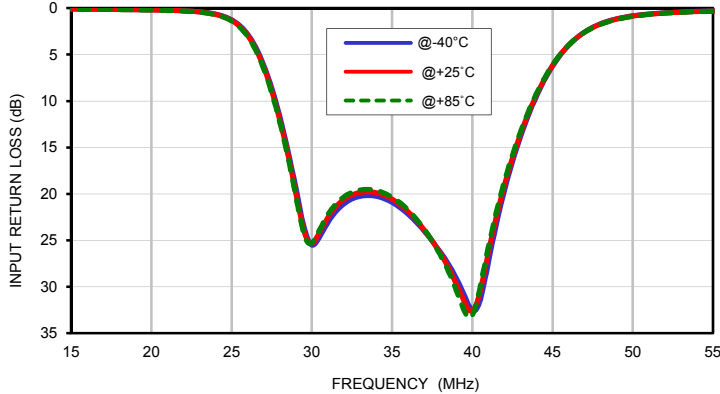
**INSERTION LOSS vs. TEMPERATURE**  
INPUT POWER = 0 dBm



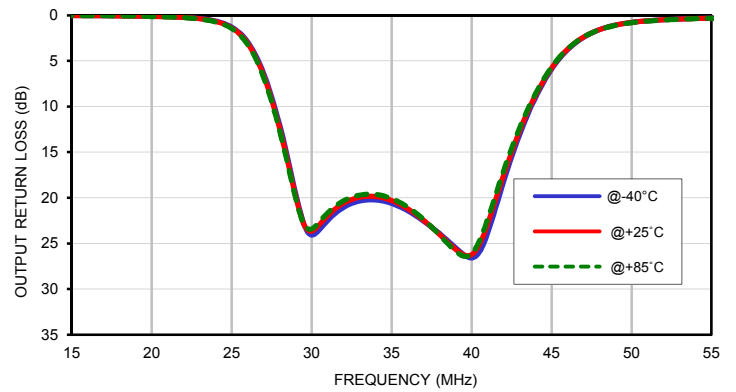
**INSERTION LOSS vs. TEMPERATURE (Zoomed)**  
INPUT POWER = 0 dBm



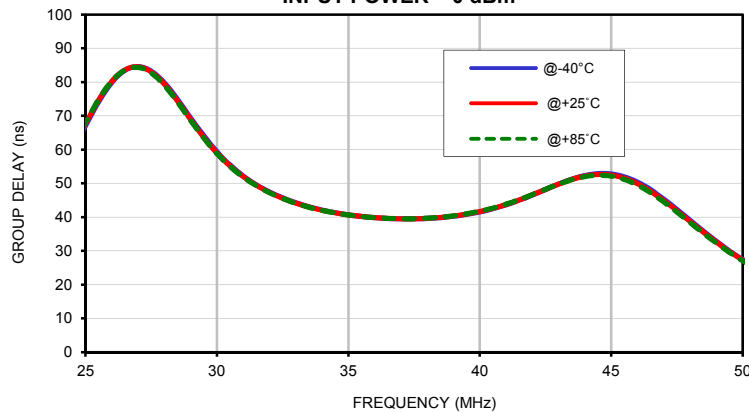
**INPUT RETURN LOSS vs. TEMPERATURE**  
INPUT POWER = 0 dBm



**OUTPUT RETURN LOSS vs. TEMPERATURE**  
INPUT POWER = 0 dBm

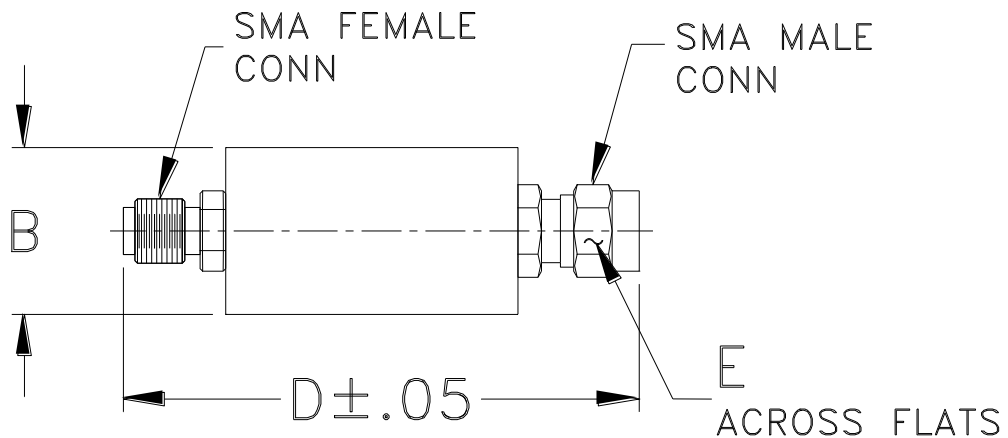


**GROUP DELAY vs. TEMPERATURE**  
INPUT POWER = 0 dBm



## Outline Dimensions

**FF56**  
**FF99**



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	-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