Coaxial

Bandpass Filter

SBP-150+

50Ω 140 to 160 MHz

Generic photo used for illustration purposes only

CASE STYLE: FF99

The Big Deal

- High rejection
- Good VSWR, 1.3:1 typ.@ passband
- Rugged unibody construction
- Connectorized package

Product Overview

SBP-150+ is a 50Ω bandpass filter in a connectorized package. This bandpass filter covers from 140 to 160 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
High rejection	This enables the filter to attenuate spurious signals and reject harmonics for broad frequency band.
Good VSWR, 1.3:1 typ.@ 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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CASE STYLE: FF99

Connectors	Model
SMA	SBP-150+

Features

- High rejection
- Good VSWR, 1.3:1 typ.@ passband
- Rugged unibody construction
- Connectorized package

Applications

- Fixed applications
- Amateur satellite
- Mobile communication

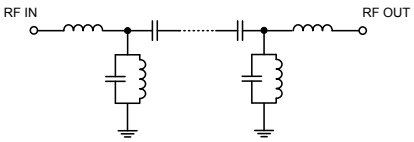
Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center frequency	-	-	-	150	-	MHz
	Insertion Loss	F1-F2	140 - 160	-	2.2	3.0	dB
	VSWR	F1-F2	140 - 160	-	1.3	1.8	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 100	40	53	-	dB
		F3-F4	100 - 120	20	27	-	dB
Stop Band, Upper	Insertion Loss	F5-F6	190 - 250	20	32	-	dB
		F6-F7	250 - 2000	40	55	-	dB

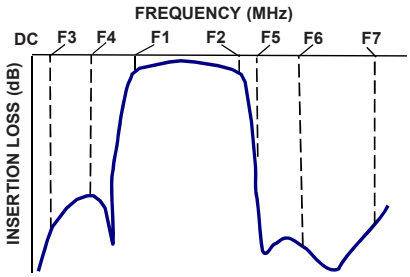
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5 W max.

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

Functional Schematic



Typical Frequency Response

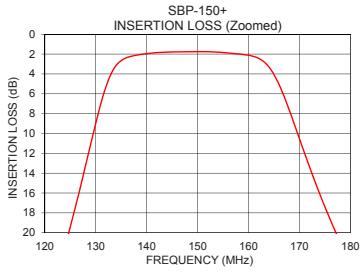


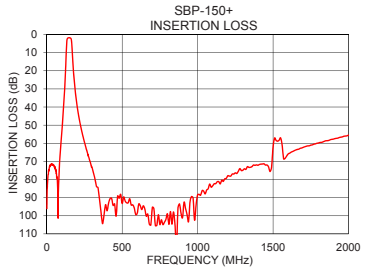
+RoHS Compliant

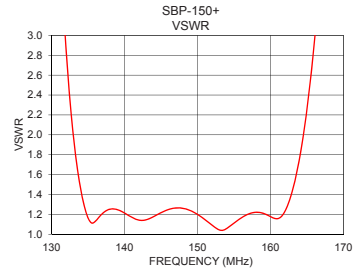
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

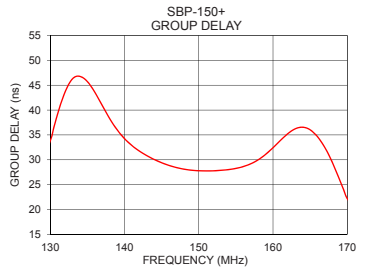
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1	96.06	43.68	140	34.25
10	77.22	38.82	141	32.86
100	53.87	100.21	142	31.75
118	31.39	52.98	143	30.84
120	28.26	43.79	144	30.06
124	21.31	26.10	145	29.41
134	3.14	1.45	146	28.87
140	1.96	1.21	147	28.43
145	1.79	1.22	148	28.12
150	1.75	1.20	149	27.91
155	1.85	1.11	150	27.80
160	2.12	1.18	151	27.77
164	3.31	1.77	152	27.79
178	20.98	18.53	153	27.88
190	31.93	33.19	154	28.03
250	59.36	91.76	155	28.27
500	93.20	235.95	156	28.64
1000	88.44	209.34	157	29.19
1500	62.14	126.54	158	30.00
2000	55.51	86.66	160	32.42









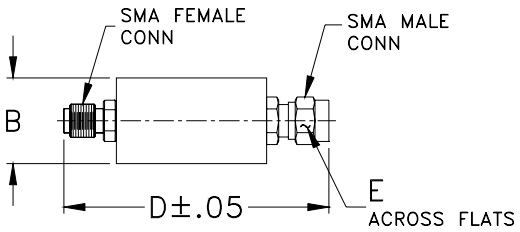
Notes

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-150+

Typical Performance Data

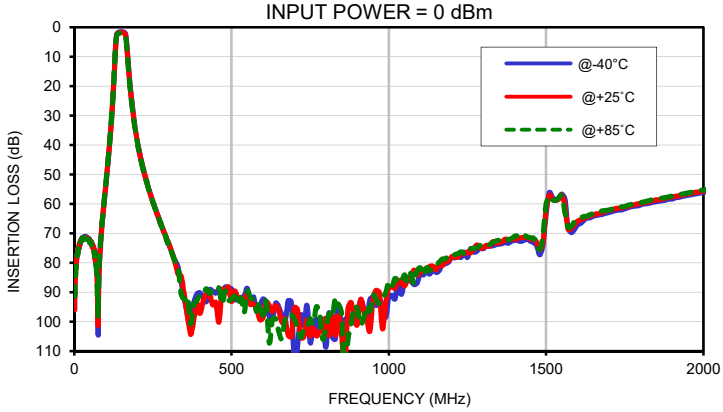
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	95.66	96.06	91.20	0.30	0.40	0.48	0.22	0.31	0.40
5	82.26	82.05	82.29	0.33	0.43	0.51	0.25	0.35	0.43
10	77.33	77.22	76.93	0.36	0.45	0.52	0.27	0.36	0.44
11	76.36	77.07	77.43	0.36	0.45	0.52	0.27	0.36	0.45
12	75.97	75.02	76.48	0.36	0.45	0.52	0.27	0.37	0.45
50	73.33	73.10	73.01	0.28	0.32	0.34	0.23	0.27	0.30
85	71.41	71.05	71.13	0.16	0.19	0.20	0.15	0.17	0.19
100	54.08	53.87	53.61	0.14	0.17	0.19	0.14	0.16	0.18
110	42.64	42.30	42.00	0.17	0.21	0.23	0.16	0.20	0.23
112	40.13	39.76	39.46	0.18	0.22	0.25	0.18	0.22	0.25
114	37.49	37.11	36.79	0.20	0.25	0.28	0.20	0.24	0.27
115	36.13	35.74	35.40	0.21	0.26	0.30	0.21	0.25	0.29
118	31.82	31.39	31.02	0.27	0.33	0.37	0.25	0.31	0.36
120	28.71	28.26	27.87	0.32	0.40	0.45	0.30	0.38	0.43
124	21.81	21.31	20.87	0.54	0.67	0.77	0.50	0.62	0.72
128	13.70	13.23	12.81	1.27	1.56	1.81	1.17	1.44	1.69
130	9.30	8.96	8.65	2.42	2.93	3.38	2.24	2.73	3.17
132	5.35	5.29	5.20	5.46	6.39	7.20	5.05	5.92	6.71
134	2.94	3.14	3.27	13.35	14.76	15.94	11.91	13.10	14.20
140	1.72	1.96	2.12	19.15	20.32	21.59	19.72	21.10	22.46
142	1.61	1.85	2.02	23.46	23.59	23.71	24.96	25.33	25.06
145	1.56	1.79	1.96	20.22	20.18	20.13	20.89	20.87	20.65
150	1.53	1.75	1.92	18.85	20.84	22.93	19.03	20.75	22.31
153	1.53	1.78	1.97	27.87	33.53	31.55	24.21	24.68	23.83
155	1.57	1.85	2.05	30.19	25.43	22.51	23.13	21.42	19.98
158	1.69	1.99	2.21	20.82	20.03	19.24	19.30	18.94	18.57
160	1.79	2.12	2.37	21.65	21.79	21.60	21.70	23.07	24.26
164	2.70	3.31	3.81	12.39	11.09	10.12	13.29	11.88	10.79
178	20.40	20.98	21.50	0.85	0.94	0.98	0.79	0.88	0.93
180	22.61	23.13	23.61	0.74	0.82	0.87	0.68	0.77	0.82
185	27.46	27.88	28.27	0.56	0.64	0.68	0.51	0.58	0.63
190	31.59	31.93	32.26	0.46	0.52	0.56	0.41	0.48	0.52
200	38.35	38.58	38.83	0.34	0.39	0.43	0.30	0.35	0.39
250	59.31	59.36	59.50	0.15	0.19	0.21	0.13	0.17	0.19
300	73.47	73.20	73.81	0.09	0.13	0.15	0.09	0.12	0.14
400	90.22	97.24	90.70	0.05	0.09	0.11	0.05	0.08	0.10
500	88.98	93.20	92.28	0.03	0.07	0.10	0.04	0.07	0.09
550	88.67	90.60	89.81	0.02	0.07	0.09	0.03	0.07	0.09
600	92.31	98.67	97.87	0.02	0.07	0.09	0.03	0.07	0.09
650	95.04	96.22	103.35	0.01	0.07	0.09	0.03	0.07	0.09
700	113.91	95.37	99.19	0.01	0.07	0.10	0.03	0.07	0.09
750	107.17	104.87	99.07	0.01	0.07	0.10	0.03	0.07	0.10
800	108.71	98.93	101.95	0.00	0.07	0.10	0.03	0.07	0.10
850	101.36	104.78	97.17	0.00	0.07	0.11	0.03	0.07	0.10
900	99.50	101.02	95.72	0.00	0.07	0.11	0.02	0.07	0.10
950	91.75	92.00	90.99	0.01	0.08	0.12	0.02	0.08	0.11
1000	91.47	88.44	86.52	0.01	0.08	0.13	0.03	0.08	0.11
1050	86.05	87.91	84.15	0.01	0.09	0.13	0.03	0.09	0.12
1100	83.78	83.44	81.71	0.01	0.09	0.14	0.03	0.09	0.12
1150	83.28	82.40	80.81	0.01	0.09	0.14	0.03	0.09	0.13
1200	78.24	77.92	77.74	0.01	0.10	0.15	0.03	0.09	0.13
1250	78.23	76.32	75.14	0.02	0.10	0.15	0.03	0.09	0.14
1300	75.26	74.85	73.64	0.02	0.11	0.16	0.03	0.10	0.14
1350	73.68	73.24	72.36	0.02	0.11	0.16	0.03	0.10	0.15
1400	72.46	72.12	71.00	0.03	0.12	0.17	0.03	0.10	0.15
1500	63.61	62.14	60.15	0.04	0.14	0.20	0.03	0.12	0.16
1600	67.17	65.89	65.62	0.05	0.14	0.20	0.03	0.11	0.17
1700	62.93	62.23	62.07	0.06	0.16	0.21	0.04	0.13	0.18
1800	60.37	59.87	59.52	0.07	0.18	0.23	0.05	0.15	0.20
2000	56.15	55.51	55.30	0.10	0.20	0.27	0.09	0.19	0.25

Typical Performance Data

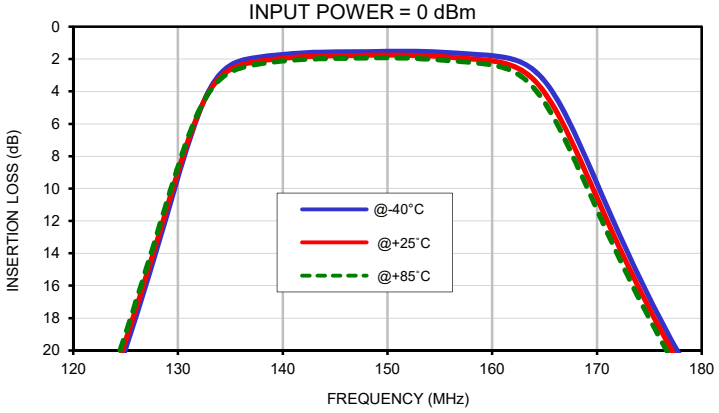
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25˚C	@+85˚C
140.0	34.71	34.25	33.90
140.5	33.91	33.51	33.20
141.0	33.21	32.86	32.58
141.5	32.60	32.28	32.02
142.0	32.06	31.75	31.52
142.5	31.56	31.28	31.07
143.0	31.10	30.84	30.65
143.5	30.68	30.44	30.26
144.0	30.28	30.06	29.91
144.5	29.92	29.72	29.58
145.0	29.58	29.41	29.29
145.5	29.26	29.13	29.03
146.0	28.98	28.87	28.79
146.5	28.72	28.64	28.58
147.0	28.49	28.43	28.41
147.5	28.29	28.27	28.26
148.0	28.12	28.12	28.14
148.5	27.98	28.00	28.03
149.0	27.87	27.91	27.95
149.5	27.79	27.84	27.90
150.0	27.73	27.80	27.86
150.5	27.71	27.78	27.85
151.0	27.70	27.77	27.84
151.5	27.70	27.77	27.84
152.0	27.72	27.79	27.87
152.5	27.76	27.83	27.90
153.0	27.82	27.88	27.96
153.5	27.88	27.95	28.02
154.0	27.96	28.03	28.11
154.5	28.06	28.13	28.23
155.0	28.17	28.27	28.38
155.5	28.32	28.43	28.56
156.0	28.49	28.64	28.80
156.5	28.71	28.89	29.09
157.0	28.97	29.19	29.43
157.5	29.28	29.56	29.85
158.0	29.67	30.00	30.33
158.5	30.12	30.51	30.89
159.0	30.65	31.08	31.51
159.5	31.25	31.72	32.18
160.0	31.93	32.42	32.90

Typical Performance Curves

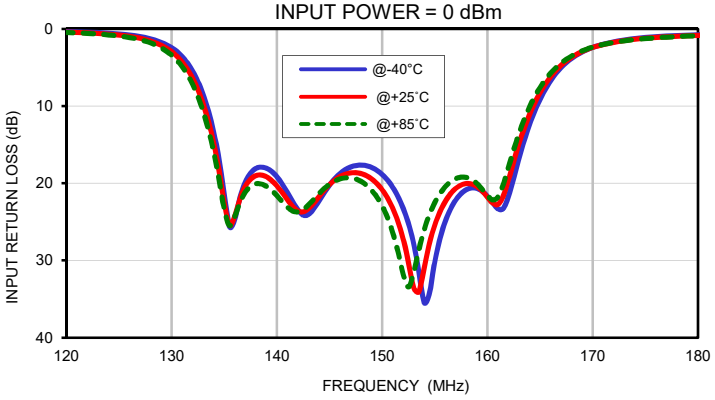
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



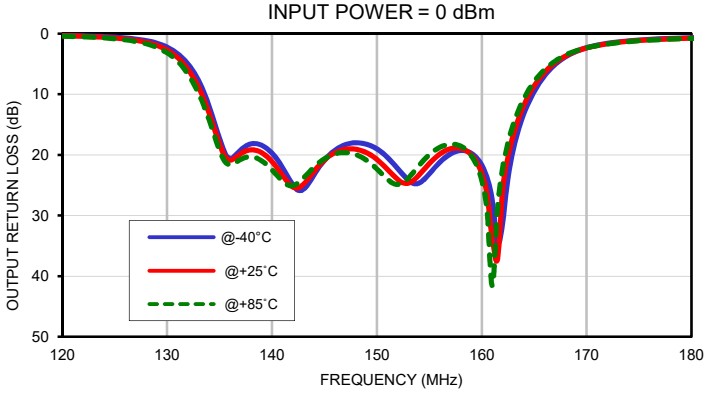
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



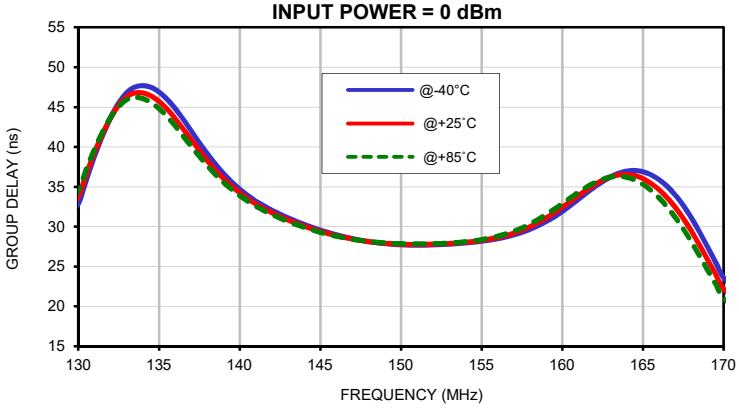
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm

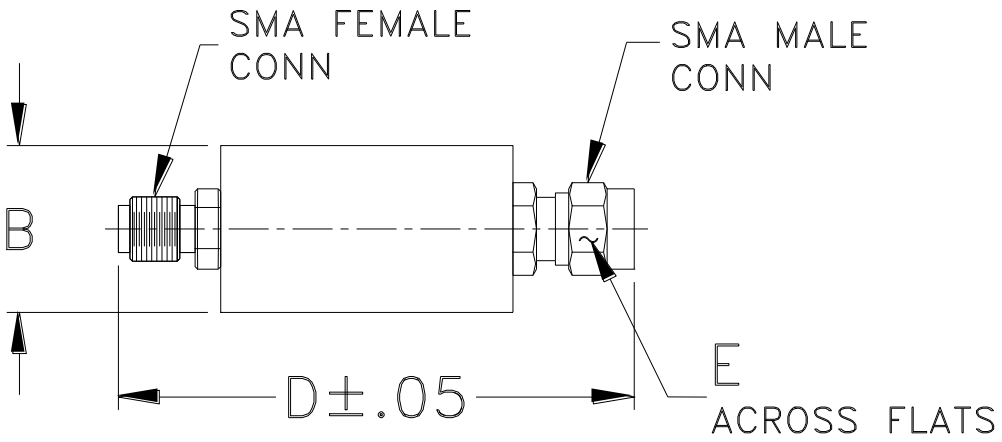


GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



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