Coaxial

Bandpass Filter

SBP-140+

50Ω 130 to 150 MHz

Generic photo used for illustration purposes only

CASE STYLE: FF99

The Big Deal

- High rejection, 50 dB typ.
- Good VSWR, 1.3:1 typ.
- Fast roll-off
- Narrow bandwidth
- Connectorized package

Product Overview

SBP-140+ is a 50Ω bandpass filter in a connectorized package. This bandpass filter covers from 130 to 150 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, 50 dB typ.	This enables the filter to attenuate spurious signals and reject harmonics for broad frequency band.
Good VSWR, 1.3:1 typ.	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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Bandpass Filter

50Ω 130 to 150 MHz

SBP-140+

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CASE STYLE: FF99

Connectors	Model
SMA	SBP-140+

Features

- High rejection, 50 dB typ.
- Fast roll-off
- Good VSWR, 1.3:1 typ.
- Rugged shielded case
- Connectorized package

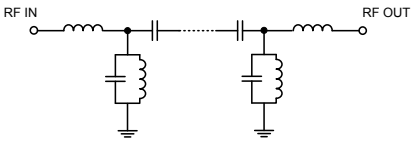
Applications

- Transmitters / Receivers
- Wireless communication systems
- Radio links
- Test setup

Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center frequency	-	-	-	140	-	MHz
	Insertion Loss	F1-F2	130 - 150	-	2.6	3.5	dB
	VSWR	F1-F2	130 - 150	-	1.3	1.7	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 100	40	47	-	dB
		F3-F4	100 - 110	20	30	-	dB
	VSWR	DC-F4	DC - 110	-	20	-	:1
Stop Band, Upper	Insertion Loss	F5-F6	185 - 210	20	30	-	dB
		F6-F7	210 - 1000	40	50	-	dB
		F7-F8	1000 - 2000	-	40	-	dB
	VSWR	F7-F8	185 - 2000	-	20	-	:1

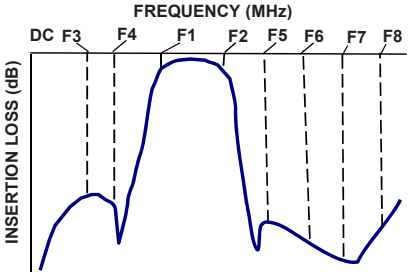
Functional Schematic



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 Frequency Response

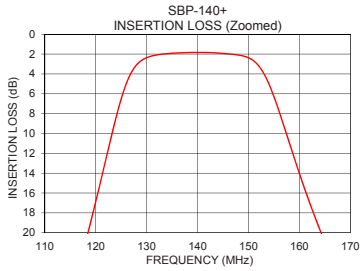


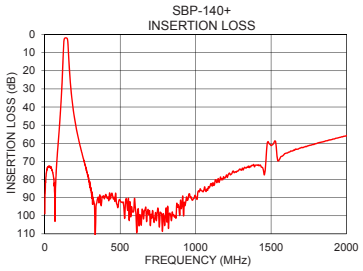
+RoHS Compliant

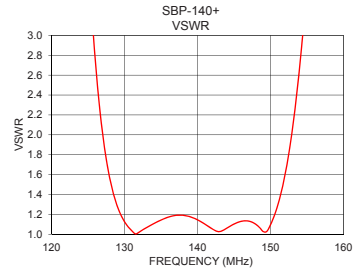
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

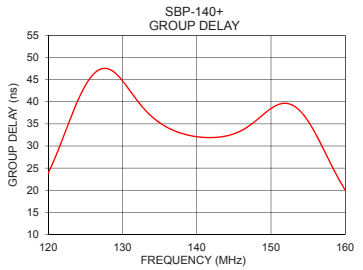
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1	98.92	42.32	130	44.74
10	76.56	37.38	131	42.50
80	70.24	97.83	132	40.24
100	47.91	94.99	133	38.23
110	34.62	58.74	134	36.57
112	31.53	49.71	135	35.26
118	20.93	23.62	136	34.22
128	3.09	1.55	137	33.43
130	2.36	1.13	138	32.82
140	1.83	1.14	139	32.39
150	2.38	1.10	140	32.10
153	3.97	2.06	141	31.95
165	20.98	16.48	142	31.91
174	30.44	27.81	143	32.01
185	38.86	40.75	144	32.28
210	52.05	68.25	145	32.75
500	91.65	262.38	146	33.48
1000	89.31	214.01	147	34.49
1500	61.23	125.48	148	35.77
2000	55.82	84.55	150	38.48









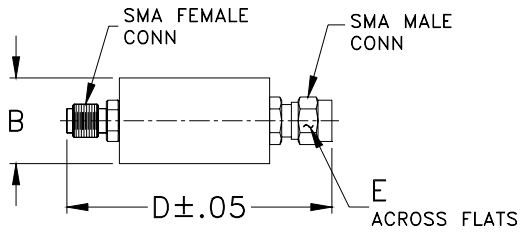
Notes

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-140+

Typical Performance Data

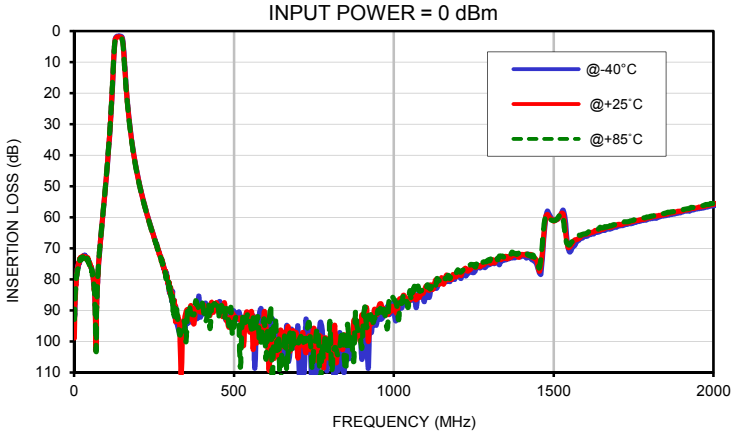
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	90.35	98.92	92.96	0.31	0.41	0.50	0.14	0.24	0.33
5	82.25	81.40	83.14	0.35	0.45	0.54	0.18	0.28	0.37
10	77.26	76.56	77.68	0.37	0.46	0.55	0.21	0.31	0.40
11	75.68	76.38	76.85	0.37	0.47	0.55	0.21	0.31	0.40
12	75.99	75.86	76.78	0.38	0.47	0.55	0.22	0.31	0.40
50	75.35	74.97	76.05	0.26	0.29	0.32	0.20	0.24	0.27
85	64.87	64.53	64.51	0.15	0.17	0.19	0.14	0.16	0.18
100	48.21	47.91	47.65	0.15	0.18	0.21	0.15	0.18	0.21
110	35.00	34.62	34.27	0.24	0.30	0.34	0.25	0.31	0.35
112	31.93	31.53	31.16	0.28	0.35	0.40	0.30	0.36	0.42
113	31.14	30.73	30.35	0.30	0.37	0.42	0.31	0.38	0.44
115	26.94	26.51	26.11	0.39	0.48	0.55	0.40	0.50	0.58
118	21.37	20.93	20.51	0.60	0.74	0.85	0.62	0.77	0.90
120	17.29	16.86	16.44	0.88	1.07	1.24	0.91	1.13	1.32
125	6.58	6.50	6.38	3.99	4.63	5.20	4.15	4.88	5.55
128	2.84	3.09	3.25	12.45	13.30	14.06	13.05	14.17	15.15
130	2.08	2.36	2.56	23.97	24.58	25.16	25.24	25.42	25.09
132	1.82	2.08	2.28	39.52	39.15	35.73	29.79	27.82	26.11
133	1.75	2.01	2.20	30.64	29.81	28.67	28.34	26.63	25.16
135	1.67	1.92	2.10	23.51	23.47	23.29	24.76	24.16	23.48
140	1.59	1.83	2.02	21.06	23.40	25.90	22.08	24.26	25.97
145	1.65	1.93	2.15	30.80	26.20	23.61	24.97	23.12	21.41
150	1.99	2.38	2.70	30.81	26.72	23.96	27.24	23.30	21.00
153	3.28	3.97	4.56	10.03	9.22	8.55	9.43	8.59	7.94
160	13.27	14.07	14.78	1.71	1.80	1.83	1.48	1.57	1.60
165	20.37	20.98	21.54	0.96	1.06	1.11	0.81	0.90	0.95
170	26.14	26.61	27.07	0.68	0.76	0.81	0.57	0.64	0.69
174	30.04	30.44	30.82	0.55	0.62	0.67	0.46	0.53	0.57
175	30.93	31.31	31.70	0.53	0.60	0.64	0.44	0.51	0.55
180	35.03	35.33	35.67	0.43	0.50	0.54	0.37	0.43	0.46
185	38.61	38.86	39.14	0.37	0.43	0.46	0.31	0.37	0.40
210	51.92	52.05	52.23	0.21	0.25	0.28	0.19	0.22	0.25
220	55.99	56.07	56.25	0.18	0.22	0.25	0.16	0.20	0.22
230	59.70	59.75	59.93	0.16	0.20	0.22	0.14	0.18	0.20
300	83.36	84.48	81.80	0.08	0.11	0.14	0.08	0.11	0.12
400	88.25	89.31	87.45	0.04	0.08	0.10	0.05	0.07	0.09
500	90.32	91.65	94.66	0.03	0.07	0.09	0.03	0.06	0.07
550	93.08	96.96	93.35	0.02	0.06	0.09	0.02	0.05	0.07
600	95.79	95.14	105.77	0.02	0.06	0.09	0.02	0.05	0.07
650	100.38	97.24	103.81	0.01	0.06	0.09	0.01	0.05	0.07
700	95.20	105.41	100.92	0.01	0.06	0.10	0.00	0.05	0.07
750	109.09	95.74	101.82	0.01	0.07	0.10	0.00	0.05	0.07
800	105.95	99.89	93.61	0.01	0.07	0.11	0.00	0.05	0.07
850	100.02	99.93	109.12	0.01	0.07	0.11	0.00	0.05	0.07
900	105.84	91.44	102.10	0.01	0.07	0.11	0.01	0.04	0.07
950	92.25	90.93	90.05	0.01	0.08	0.12	0.01	0.04	0.07
1000	89.39	89.31	86.42	0.01	0.08	0.13	0.01	0.04	0.07
1050	86.06	86.77	83.69	0.01	0.09	0.13	0.02	0.04	0.07
1100	84.60	82.34	83.14	0.02	0.09	0.14	0.02	0.04	0.07
1150	81.37	79.49	79.30	0.02	0.10	0.15	0.02	0.05	0.08
1200	78.72	78.39	76.98	0.02	0.10	0.16	0.02	0.05	0.08
1250	77.86	75.33	75.31	0.02	0.11	0.16	0.02	0.05	0.09
1300	75.27	74.74	74.04	0.03	0.11	0.17	0.02	0.05	0.08
1350	73.77	72.60	72.27	0.03	0.12	0.18	0.03	0.05	0.09
1400	72.63	72.00	71.82	0.04	0.13	0.18	0.03	0.05	0.09
1500	60.85	61.23	61.05	0.05	0.14	0.20	0.03	0.05	0.10
1600	66.15	65.42	65.35	0.06	0.15	0.21	0.03	0.05	0.10
1700	63.04	62.35	62.18	0.07	0.16	0.23	0.04	0.06	0.10
1800	60.59	60.14	59.82	0.08	0.18	0.24	0.03	0.06	0.11
2000	56.24	55.82	55.57	0.11	0.21	0.28	0.03	0.07	0.13

Typical Performance Data

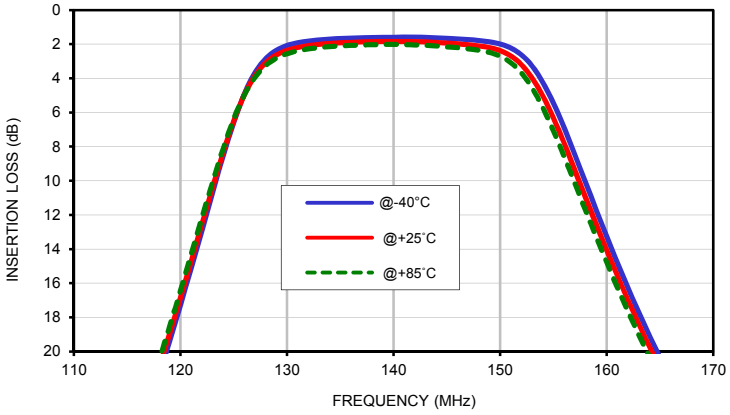
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
120	22.78	23.95	25.01
121	26.50	27.70	28.79
122	30.80	31.91	32.93
123	35.40	36.29	37.10
124	39.83	40.36	40.88
125	43.58	43.72	43.90
126	46.33	46.09	45.95
127	47.92	47.36	46.93
128	48.30	47.47	46.82
129	47.52	46.53	45.74
130	45.76	44.74	43.93
131	43.42	42.50	41.78
132	40.96	40.24	39.66
133	38.76	38.23	37.79
134	36.95	36.57	36.25
135	35.53	35.26	35.03
136	34.41	34.22	34.08
137	33.54	33.43	33.34
138	32.89	32.82	32.79
139	32.41	32.39	32.39
140	32.08	32.10	32.13
141	31.90	31.95	32.00
142	31.84	31.91	31.98
143	31.91	32.01	32.12
144	32.14	32.28	32.44
145	32.53	32.75	32.97
146	33.18	33.48	33.78
147	34.11	34.49	34.87
148	35.33	35.77	36.19
149	36.78	37.18	37.55
150	38.23	38.48	38.71
151	39.42	39.39	39.38
152	40.04	39.66	39.35
153	39.90	39.14	38.51
154	38.89	37.79	36.86
155	37.03	35.63	34.46
156	34.40	32.80	31.48
157	31.20	29.54	28.17
158	27.73	26.15	24.85
159	24.30	22.92	21.76
160	21.18	20.02	19.04

Typical Performance Curves

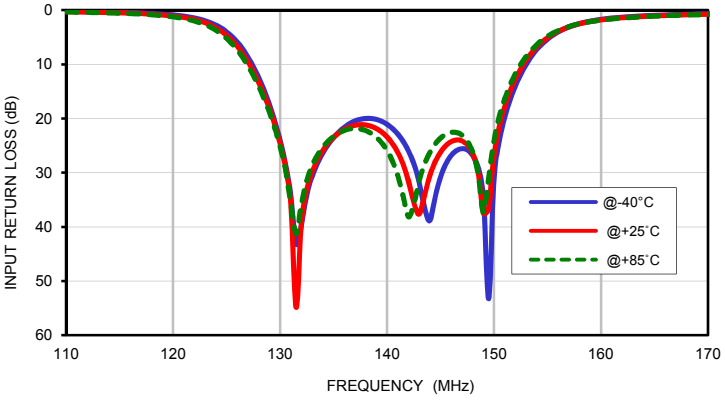
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



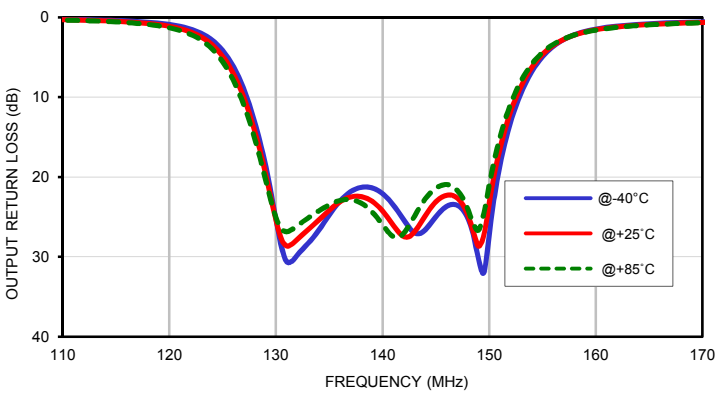
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



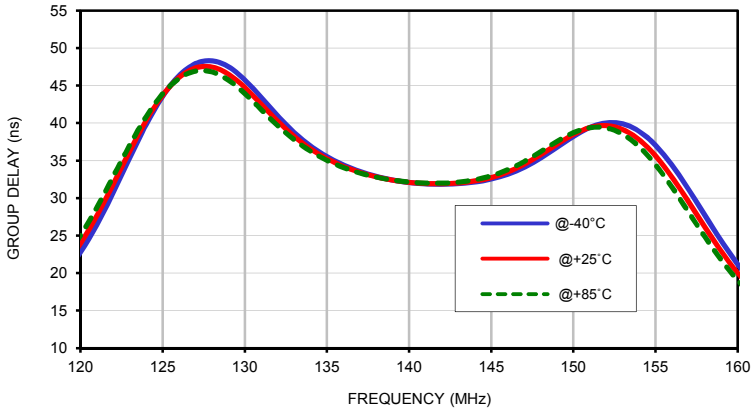
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm

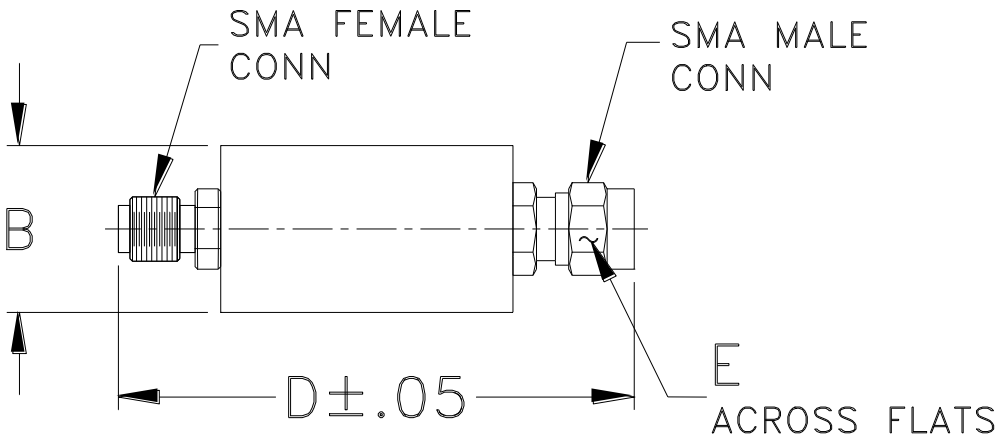


GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



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