Coaxial

Bandpass Filter

BBP-101+

50Ω 94 to 108 MHz

Generic photo used for illustration purposes only

CASE STYLE: FF55

The Big Deal

- Flat group delay over passband
- Narrow bandwidth
- Good VSWR (1.2:1 typical)
- Fast roll-off
- High rejection

Product Overview

BBP-101+ is a 50Ω bandpass filter in a connectorized package. The bandpass filter covers from 94 to 108 MHz, and offers good matching within the passband with high out of band rejection. The filter 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
Flat group delay over passband	The model has group delay over passband around 45 ns
Good VSWR, 1.2:1 typical over passband	This provides well matched input and output ports.
High rejection	This enables the filter to attenuate spurious signals and reject harmonics for broad frequency band.
Connectorized package	Connectorized package is easy to interface with other devices and well suited for test setups.

Notes
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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

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Connectors	Model
BNC	BBP-101+

Features

- Flat group delay over passband
- Good VSWR, 1.2:1 typical in passband
- High rejection, 60 dB typ
- Rugged shielded case
- Connectorized package
- Fast roll-off

Applications

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

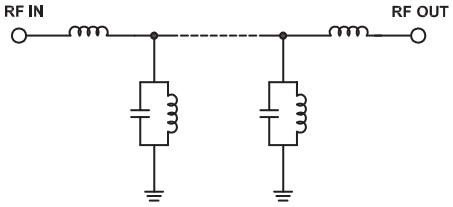
Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center frequency	-	-	-	101	-	MHz
	Insertion Loss	F1-F2	94 - 108	-	2.3	3.5	dB
	VSWR	F1-F2	94 - 108	-	1.2	1.6	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 50	50	65	-	dB
		F3-F4	50 - 80	20	29	-	dB
	VSWR	DC-F4	DC - 80	-	20	-	:1
Stop Band, Upper	Insertion Loss	F5-F6	130 - 200	20	28	-	dB
		F6-F7	200 - 680	50	60	-	dB
		F7-F8	680 - 2000	-	40	-	dB
	VSWR	F5-F8	130 - 2000	-	20	-	:1

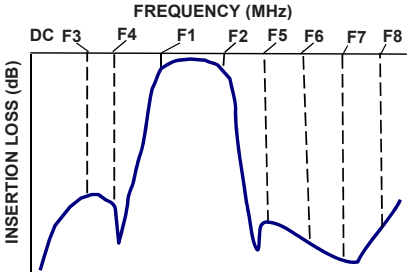
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.25 W max.

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

Functional Schematic



Typical Frequency Response

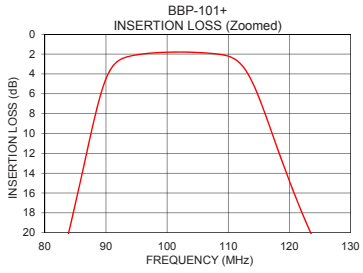


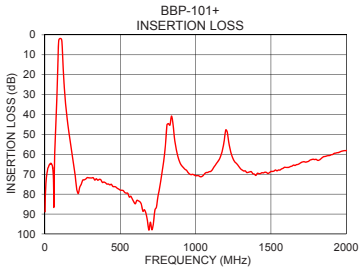
+RoHS Compliant

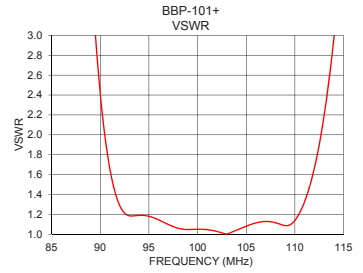
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

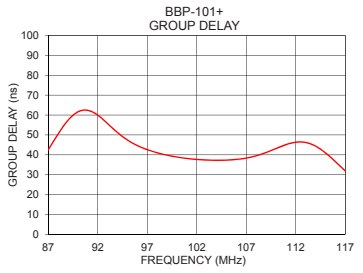
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1	88.85	84.83	94.0	51.17
10	71.57	64.16	94.5	49.18
30	65.06	47.20	95.0	47.44
50	65.99	47.41	95.5	45.94
79	31.55	36.76	96.0	44.65
80	29.37	34.02	96.5	43.55
83	22.30	24.16	97.0	42.60
91	3.31	1.65	97.5	41.76
94	2.19	1.19	98.0	41.03
101	1.80	1.05	98.5	40.39
108	1.98	1.12	99.0	39.82
124	20.71	16.97	99.5	39.32
130	27.84	23.53	100.0	38.88
133	30.83	26.35	100.5	38.49
145	40.41	35.58	101.0	38.18
200	70.25	69.12	101.5	37.91
680	93.18	198.49	102.0	37.69
1000	70.76	104.09	106.0	37.67
1500	68.61	51.28	107.0	38.36
2000	58.15	41.32	108.0	39.51









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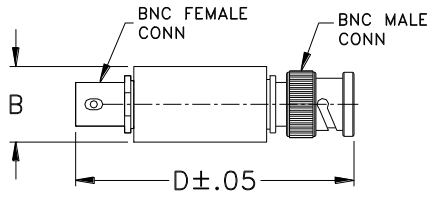
Coaxial Connections

PORT - 1	BNC-Male
PORT - 2	BNC-Female

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	Wt.
--	**0.57**	--	**2.59**	--	grams
--	14.47	--	65.79	--	40

Note: Please refer to case style drawing for details

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Coaxial Band Pass Filter BBP-101+

Typical Performance Data

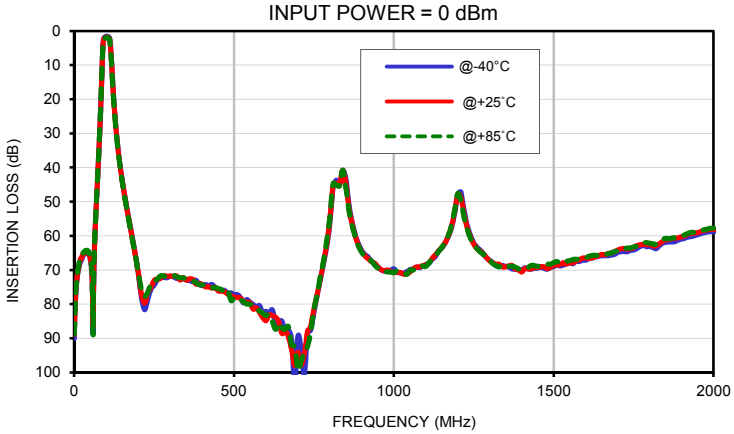
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1.0	90.02	88.85	88.68	0.15	0.20	0.23	0.15	0.20	0.23
5.0	77.46	76.11	75.89	0.18	0.23	0.26	0.18	0.23	0.26
10.0	71.99	71.57	71.33	0.22	0.27	0.30	0.22	0.26	0.29
12.0	70.77	70.39	69.79	0.23	0.28	0.30	0.23	0.28	0.31
14.0	69.78	69.20	68.74	0.25	0.30	0.32	0.24	0.29	0.32
18.0	68.10	67.49	67.50	0.27	0.32	0.34	0.27	0.31	0.34
20.0	67.68	66.80	66.64	0.28	0.33	0.35	0.28	0.32	0.35
30.0	65.66	65.06	64.95	0.32	0.37	0.39	0.32	0.36	0.38
32.0	65.29	65.01	64.65	0.33	0.37	0.39	0.32	0.36	0.39
34.0	65.12	64.77	64.45	0.33	0.38	0.39	0.32	0.37	0.39
36.0	65.03	64.79	64.30	0.33	0.38	0.39	0.33	0.37	0.39
40.0	65.05	64.49	64.23	0.34	0.38	0.39	0.33	0.37	0.39
42.0	65.02	64.97	64.50	0.34	0.38	0.39	0.33	0.37	0.39
50.0	66.62	65.99	66.00	0.33	0.37	0.38	0.32	0.36	0.38
52.0	67.41	66.79	66.90	0.33	0.36	0.38	0.32	0.36	0.38
60.0	79.78	80.46	81.36	0.31	0.35	0.37	0.31	0.35	0.37
70.0	49.43	49.31	49.15	0.31	0.36	0.38	0.31	0.36	0.38
79.5	30.75	30.47	30.26	0.42	0.49	0.53	0.43	0.50	0.54
80.0	29.66	29.37	29.15	0.43	0.51	0.55	0.44	0.52	0.56
83.5	21.39	21.04	20.77	0.66	0.78	0.85	0.68	0.81	0.89
91.0	3.12	3.31	3.39	11.11	12.20	13.06	12.02	13.42	14.61
94.0	1.94	2.19	2.33	20.66	21.23	21.25	22.28	22.66	22.40
100.0	1.58	1.81	1.94	33.07	32.15	30.75	29.86	29.44	28.90
101.0	1.57	1.80	1.93	32.85	32.86	31.72	31.22	31.26	30.72
108.0	1.71	1.98	2.13	26.38	25.21	25.29	26.72	25.84	26.17
113.0	3.24	3.77	4.11	8.96	8.57	8.27	9.10	8.73	8.45
123.5	19.49	20.03	20.37	0.98	1.06	1.10	0.97	1.06	1.10
130.0	27.42	27.84	28.12	0.67	0.74	0.76	0.66	0.73	0.77
133.0	30.45	30.83	31.08	0.60	0.66	0.68	0.59	0.65	0.69
140.0	36.47	36.78	37.00	0.49	0.54	0.56	0.48	0.54	0.56
145.0	40.15	40.41	40.63	0.44	0.49	0.50	0.43	0.48	0.51
146.0	40.83	41.09	41.29	0.43	0.48	0.50	0.42	0.48	0.50
150.0	43.44	43.69	43.90	0.40	0.45	0.46	0.39	0.44	0.46
200.0	70.47	70.25	70.46	0.21	0.25	0.26	0.21	0.25	0.27
221.0	81.64	79.69	77.80	0.17	0.22	0.23	0.18	0.22	0.23
231.0	78.32	76.54	76.36	0.16	0.20	0.21	0.16	0.20	0.22
241.0	75.52	75.03	73.98	0.15	0.19	0.20	0.15	0.19	0.20
251.0	74.34	72.96	73.44	0.14	0.18	0.19	0.14	0.18	0.19
301.0	71.77	71.87	72.01	0.10	0.13	0.14	0.10	0.14	0.15
421.0	74.59	74.90	74.53	0.05	0.09	0.10	0.05	0.09	0.10
501.0	77.29	78.01	78.15	0.04	0.08	0.09	0.03	0.07	0.08
510.0	77.18	78.06	78.58	0.04	0.08	0.09	0.03	0.07	0.08
520.0	78.04	78.23	78.78	0.04	0.08	0.09	0.03	0.07	0.08
530.0	79.63	79.20	79.29	0.04	0.08	0.09	0.03	0.07	0.08
600.0	82.12	84.83	83.39	0.03	0.08	0.09	0.02	0.06	0.07
650.0	85.01	88.59	86.99	0.04	0.08	0.10	0.01	0.06	0.07
680.0	90.11	93.18	91.88	0.04	0.09	0.10	0.01	0.06	0.07
700.0	89.44	94.11	99.46	0.04	0.09	0.11	0.01	0.06	0.08
750.0	82.55	81.22	81.62	0.05	0.10	0.12	0.01	0.06	0.08
800.0	56.21	55.30	54.58	0.06	0.12	0.15	0.03	0.08	0.10
850.0	43.20	44.72	45.92	0.12	0.17	0.19	0.06	0.11	0.12
900.0	64.43	64.80	64.89	0.08	0.14	0.17	0.03	0.09	0.11
950.0	69.19	69.12	69.50	0.09	0.15	0.18	0.03	0.09	0.12
1000.0	69.66	70.76	70.82	0.10	0.17	0.20	0.04	0.10	0.13
1100.0	68.44	68.60	68.94	0.13	0.20	0.23	0.06	0.13	0.16
1200.0	47.93	47.77	47.66	0.19	0.27	0.31	0.12	0.19	0.22
1300.0	67.16	67.38	67.16	0.20	0.27	0.31	0.12	0.19	0.22
1500.0	68.98	68.61	67.88	0.26	0.34	0.38	0.19	0.27	0.30
1800.0	63.11	62.51	62.16	0.31	0.40	0.45	0.29	0.38	0.41
2000.0	58.75	58.15	57.78	0.32	0.42	0.46	0.33	0.43	0.47

Typical Performance Data

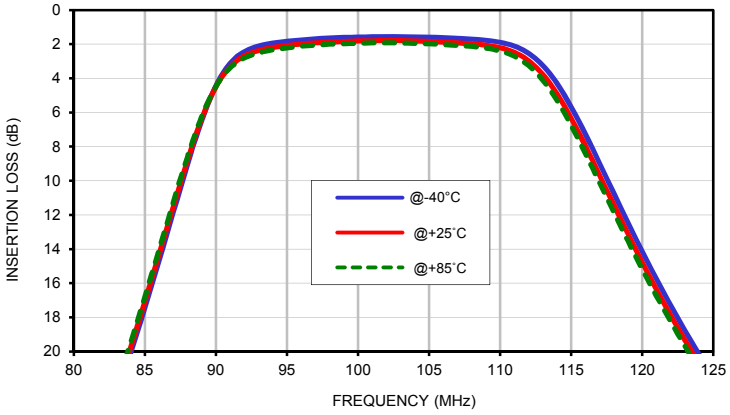
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
90.0	61.86	61.62	61.63
90.5	63.06	62.43	62.14
91.0	63.33	62.35	61.83
91.5	62.71	61.48	60.76
92.0	61.32	59.96	59.11
92.5	59.34	57.93	57.05
93.0	57.00	55.67	54.82
93.5	54.54	53.36	52.58
94.0	52.16	51.17	50.48
94.5	50.01	49.18	48.62
95.0	48.10	47.44	46.98
95.5	46.48	45.94	45.56
96.0	45.09	44.65	44.35
96.5	43.92	43.55	43.29
97.0	42.90	42.60	42.37
97.5	42.02	41.76	41.56
98.0	41.27	41.03	40.87
98.5	40.59	40.39	40.25
99.0	39.98	39.82	39.69
99.5	39.46	39.32	39.21
100.0	39.00	38.88	38.79
100.5	38.59	38.49	38.43
101.0	38.25	38.18	38.13
101.5	37.95	37.91	37.88
102.0	37.71	37.69	37.68
102.5	37.52	37.51	37.51
103.0	37.37	37.38	37.39
103.5	37.28	37.30	37.33
104.0	37.21	37.25	37.31
104.5	37.21	37.28	37.33
105.0	37.26	37.34	37.42
105.5	37.36	37.47	37.56
106.0	37.54	37.67	37.79
106.5	37.80	37.96	38.11
107.0	38.14	38.36	38.54
107.5	38.62	38.88	39.09
108.0	39.21	39.51	39.75
108.5	39.94	40.28	40.54
109.0	40.78	41.16	41.44
109.5	41.74	42.14	42.42
110.0	42.78	43.16	43.43

Typical Performance Curves

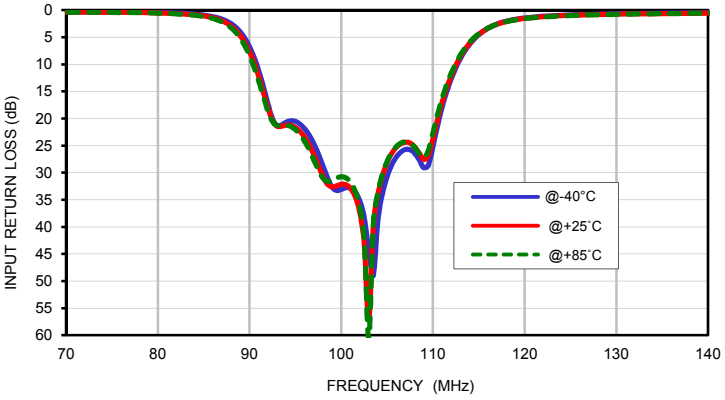
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



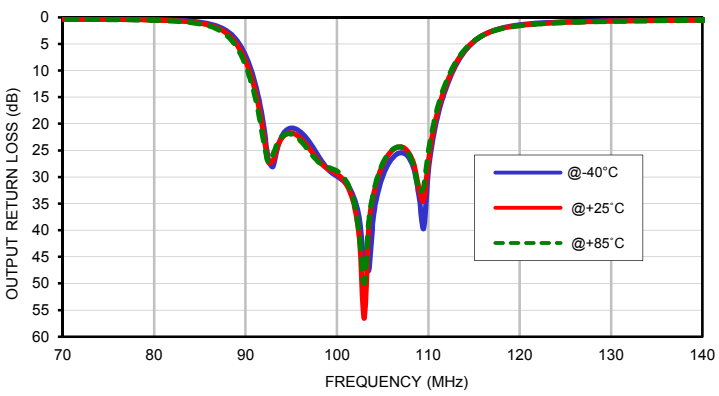
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



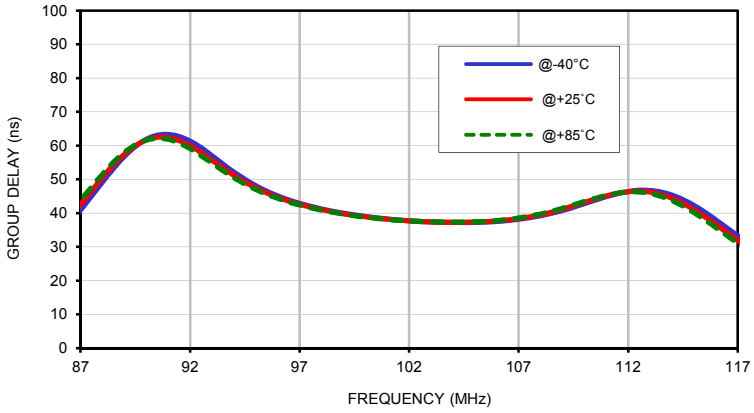
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



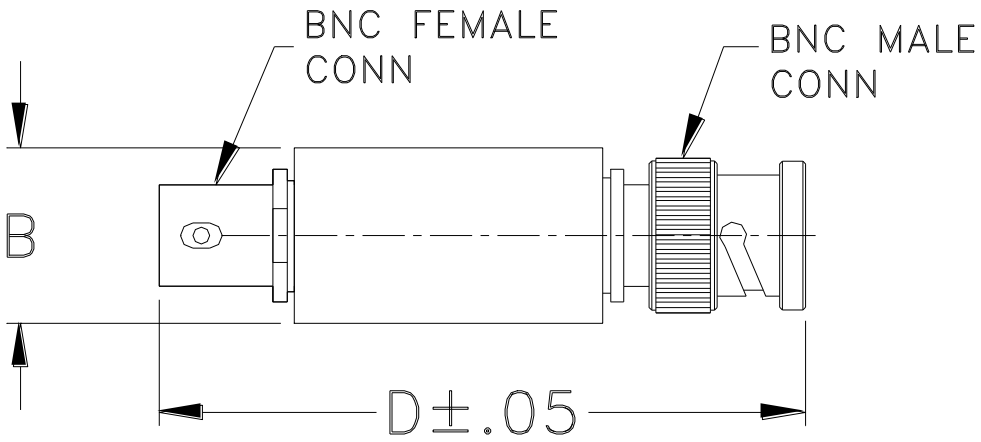
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style FF

FF55

Outline Dimensions



CASE #.	A	B	C	D	E	WT GRAMS
FF55	-- --	.57 (14.47)	-- --	2.59 (65.79)	-- --	40.0

Dimensions are in inches (mm). Tolerances: 2Pl. +.03/-.04; 3Pl. ± .015

Note:

1. Case material: Stainless steel.

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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

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