

# Coaxial Bandpass Filter

## SBP-27R5+

50Ω 24 to 31 MHz



Generic photo used for illustration purposes only  
CASE STYLE: FF99

### The Big Deal

- Good VSWR 1.3:1 typ in passband
- Good rejection, 30 dB typical
- Connectorized package

### Product Overview

SBP-27R5+ is a 50Ω bandpass filter in a connectorized package. The bandpass filter covers from 24 to 31 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
Good rejection, 30 dB typical	Rejects unwanted spurious signals.
Good VSWR, 1.3:1 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.  
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Connectors	Model
SMA	SBP-27R5+

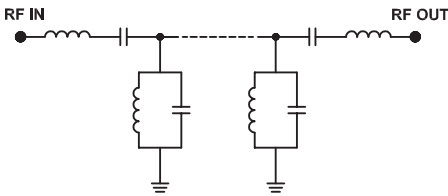
### Features

- Good VSWR, 1.3:1 typical over passband
- Good rejection, 30 dB typical
- Connectorized package

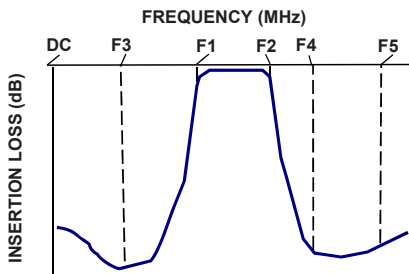
### Applications

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

### Functional Schematic



### Typical Frequency Response



**+RoHS Compliant**

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

### Electrical Specifications at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Insertion Loss	F1-F2	24 - 31	-	1.3	2.5	dB
	VSWR	F1-F2	24 - 31	-	1.3	1.7	:1
Stop Band, Lower	Insertion Loss	DC-F3		20	30	-	dB
Stop Band, Upper	Insertion Loss	F4-F5	39 - 900	20	30	-	dB

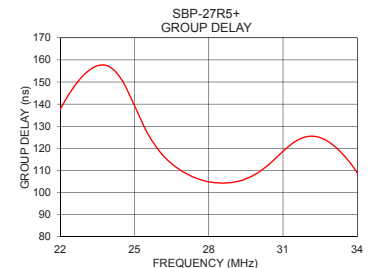
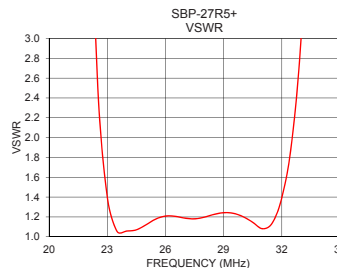
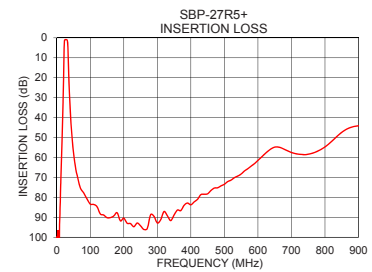
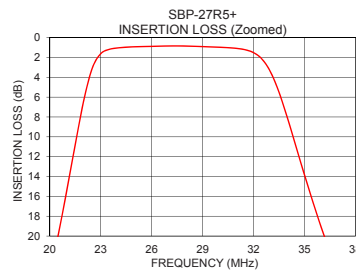
### Maximum Ratings

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 Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1.0	112.66	2722.55	24.0	156.85
10.0	85.06	1848.77	24.5	150.72
15.0	56.37	463.07	25.0	139.26
19.0	31.57	94.23	25.5	127.35
20.5	19.84	37.40	26.0	118.77
22.5	3.08	2.56	26.5	113.05
24.0	1.04	1.06	27.0	109.13
26.0	0.89	1.21	27.5	106.45
27.5	0.84	1.18	28.0	104.86
29.0	0.91	1.24	28.5	104.29
31.0	1.09	1.08	29.0	104.67
33.0	3.47	3.03	29.5	106.19
36.5	21.66	34.17	30.0	109.05
39.0	31.95	55.93	30.5	113.40
100.0	83.37	199.07	31.0	118.62
200.0	90.44	176.78	31.5	123.13
500.0	73.44	102.72	32.0	125.38
600.0	61.46	80.16	32.5	124.85
700.0	57.50	59.08	33.0	121.73
900.0	44.07	18.22	33.5	116.36



### Notes

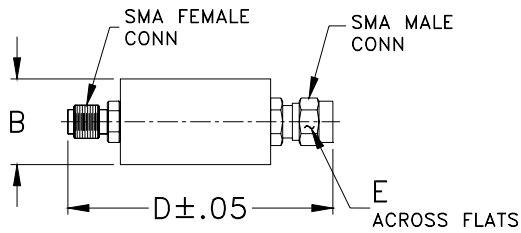
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**Coaxial Connections**

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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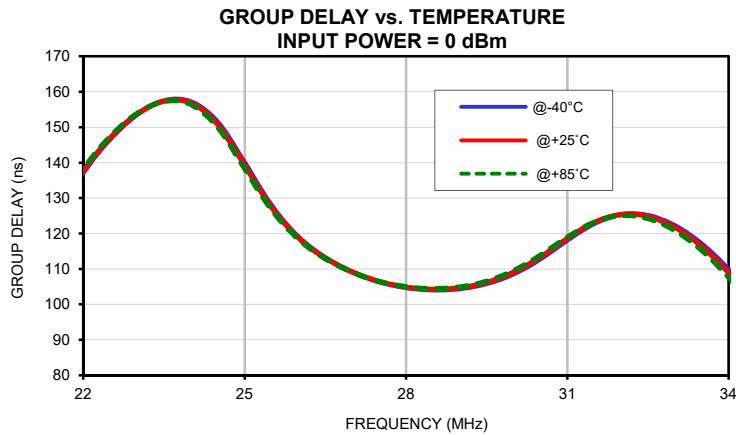
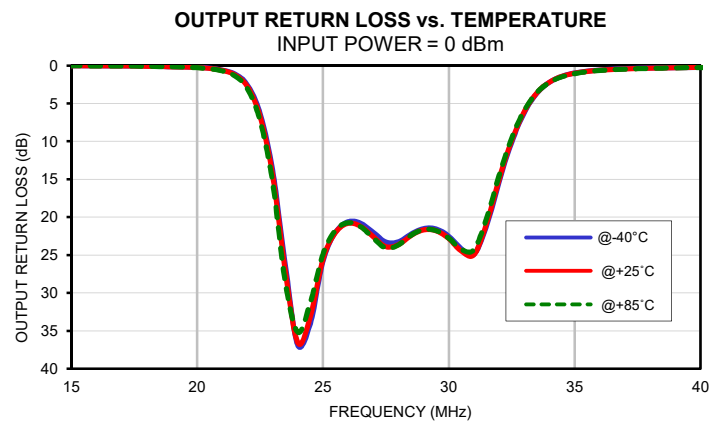
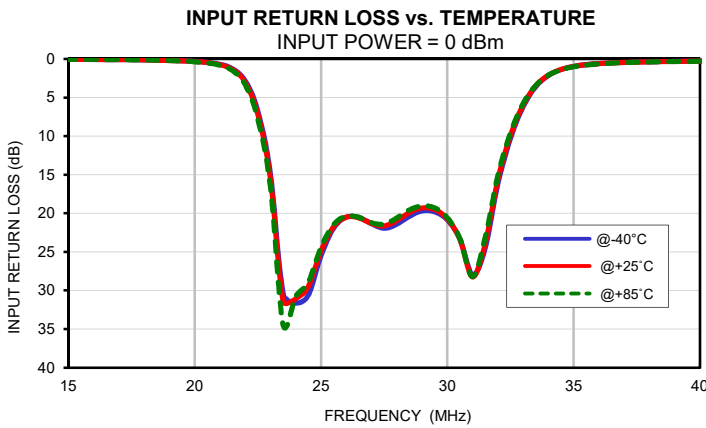
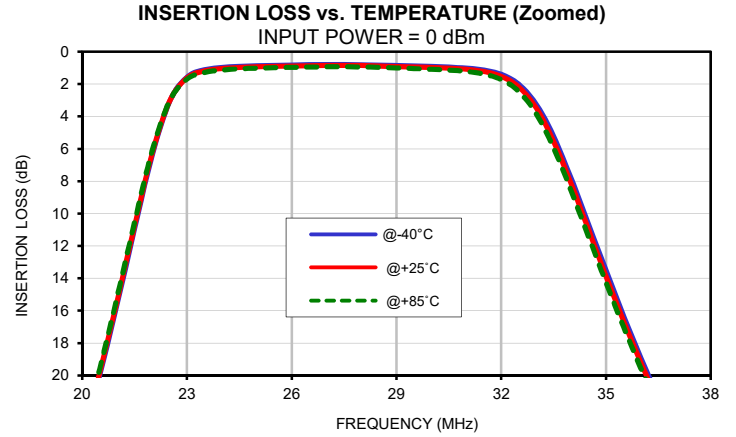
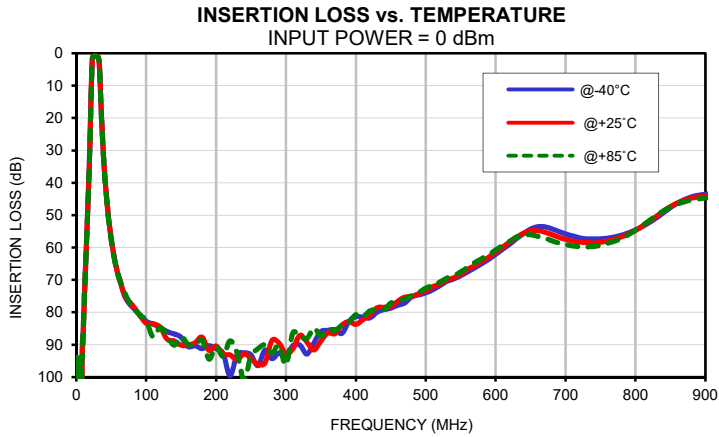
*Typical Performance Data*

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	99.59	112.66	93.75	0.01	0.01	0.01	0.00	0.00	0.00
10.0	86.10	85.06	84.40	0.01	0.01	0.01	0.01	0.01	0.01
15.0	56.46	56.37	56.21	0.04	0.04	0.04	0.03	0.03	0.03
16.0	50.75	50.67	50.53	0.05	0.05	0.06	0.04	0.04	0.05
17.0	44.82	44.70	44.58	0.07	0.08	0.08	0.05	0.06	0.07
18.0	38.53	38.40	38.25	0.11	0.12	0.13	0.08	0.09	0.10
18.5	35.20	35.05	34.90	0.14	0.15	0.16	0.11	0.11	0.13
19.0	31.73	31.57	31.39	0.18	0.18	0.20	0.14	0.15	0.16
20.0	24.18	24.00	23.79	0.30	0.32	0.35	0.24	0.26	0.29
20.5	20.04	19.84	19.62	0.44	0.46	0.51	0.35	0.39	0.43
21.0	15.60	15.40	15.17	0.69	0.74	0.82	0.58	0.64	0.71
22.0	6.45	6.32	6.16	2.82	3.02	3.33	2.56	2.78	3.07
22.5	3.10	3.08	3.06	6.75	7.16	7.76	6.28	6.70	7.27
24.0	0.98	1.04	1.14	31.65	31.07	30.77	36.88	36.55	35.16
26.0	0.84	0.89	0.97	20.51	20.50	20.38	20.60	20.82	20.74
27.0	0.80	0.85	0.93	21.36	21.33	21.23	22.00	22.57	22.76
27.5	0.80	0.84	0.93	21.94	21.65	21.40	23.28	23.89	24.07
28.0	0.80	0.85	0.94	21.44	20.94	20.60	23.26	23.62	23.66
29.0	0.85	0.91	1.01	19.70	19.31	19.04	21.50	21.67	21.64
31.0	1.01	1.09	1.22	27.97	28.24	28.22	24.91	24.94	24.28
32.0	1.40	1.52	1.72	16.19	15.67	15.15	15.30	14.98	14.49
33.0	3.23	3.47	3.83	6.19	5.96	5.79	6.19	6.04	5.90
36.5	21.38	21.66	21.99	0.50	0.51	0.54	0.49	0.51	0.55
39.0	31.73	31.95	32.21	0.31	0.31	0.34	0.27	0.28	0.31
50.0	57.32	57.46	57.70	0.14	0.15	0.16	0.11	0.12	0.13
60.0	68.55	68.22	68.67	0.11	0.12	0.13	0.09	0.09	0.10
70.0	75.33	75.05	74.29	0.09	0.10	0.11	0.08	0.09	0.09
80.0	78.32	77.67	78.23	0.08	0.09	0.10	0.08	0.08	0.09
90.0	80.51	80.68	80.62	0.08	0.09	0.10	0.07	0.08	0.09
100.0	82.72	83.37	82.63	0.08	0.09	0.09	0.08	0.08	0.09
130.0	85.99	88.32	87.33	0.08	0.09	0.10	0.07	0.08	0.09
150.0	87.73	90.20	87.56	0.08	0.09	0.10	0.07	0.08	0.09
200.0	91.25	90.44	90.55	0.08	0.10	0.11	0.07	0.08	0.09
240.0	92.53	92.88	100.82	0.08	0.10	0.12	0.07	0.09	0.10
250.0	93.16	94.28	93.44	0.08	0.10	0.13	0.07	0.09	0.10
300.0	93.37	92.85	96.25	0.08	0.11	0.14	0.07	0.10	0.11
320.0	90.14	87.11	87.40	0.08	0.12	0.14	0.07	0.10	0.12
370.0	85.30	86.64	85.63	0.09	0.13	0.16	0.08	0.11	0.13
400.0	81.36	83.73	80.76	0.09	0.14	0.16	0.08	0.11	0.13
410.0	81.48	82.28	81.32	0.09	0.14	0.17	0.09	0.11	0.14
480.0	75.19	75.20	74.87	0.11	0.16	0.20	0.10	0.13	0.16
500.0	74.01	73.44	72.54	0.11	0.17	0.21	0.10	0.14	0.16
520.0	71.82	71.36	70.71	0.12	0.18	0.22	0.11	0.15	0.17
550.0	68.79	68.29	67.55	0.12	0.19	0.23	0.11	0.16	0.19
600.0	62.09	61.46	60.76	0.14	0.22	0.27	0.14	0.19	0.23
620.0	58.98	58.28	58.07	0.16	0.23	0.29	0.15	0.21	0.25
640.0	55.66	55.60	56.20	0.17	0.25	0.31	0.17	0.23	0.27
680.0	54.20	56.02	57.88	0.20	0.28	0.35	0.22	0.28	0.33
700.0	55.77	57.50	59.06	0.21	0.29	0.37	0.25	0.32	0.39
720.0	57.00	58.33	59.74	0.22	0.32	0.39	0.29	0.38	0.46
740.0	57.38	58.61	59.65	0.24	0.34	0.43	0.36	0.46	0.56
760.0	57.12	57.98	58.72	0.27	0.38	0.47	0.46	0.59	0.71
780.0	56.19	56.69	57.13	0.30	0.42	0.52	0.62	0.80	0.97
800.0	54.61	54.71	54.72	0.34	0.47	0.58	0.89	1.13	1.36
820.0	52.29	51.93	51.65	0.39	0.53	0.65	1.34	1.67	1.97
840.0	49.27	48.76	48.68	0.46	0.60	0.73	2.08	2.49	2.77
860.0	46.31	46.24	46.54	0.53	0.68	0.84	3.10	3.36	3.35
880.0	44.40	44.75	45.33	0.61	0.80	0.98	3.76	3.56	3.21
890.0	43.86	44.33	44.98	0.67	0.87	1.07	3.67	3.32	2.94
900.0	43.54	44.07	44.70	0.73	0.95	1.18	3.36	2.97	2.62

## Typical Performance Data

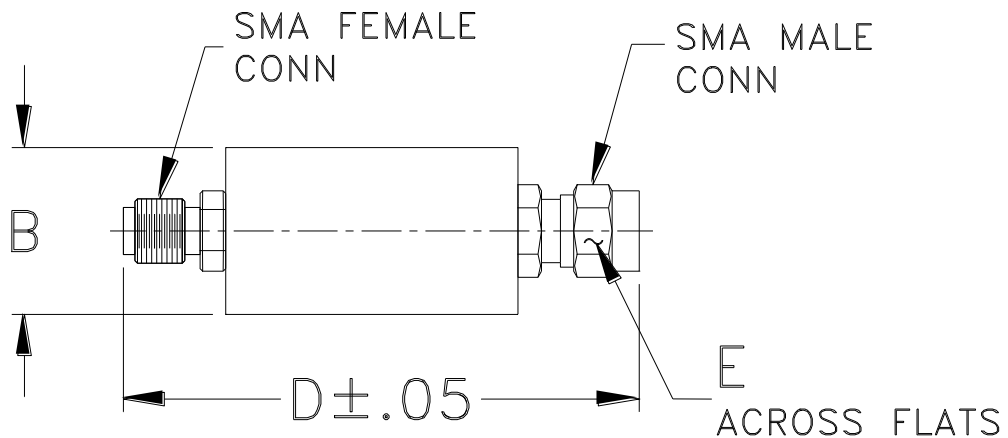
FREQ.  (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
17.00	23.36	23.98	23.99
17.50	26.38	26.51	26.69
18.00	30.39	30.58	30.97
18.50	35.50	36.04	36.47
19.00	42.70	43.31	43.95
19.50	53.02	53.88	55.00
20.00	68.22	69.37	70.80
20.50	88.32	89.60	91.07
21.00	108.60	109.55	110.70
21.50	124.80	125.46	126.32
22.00	137.20	137.67	138.28
22.50	146.69	147.02	147.43
23.00	153.59	153.74	153.94
23.50	157.44	157.36	157.28
24.00	157.22	156.85	156.41
24.50	151.40	150.72	149.88
25.00	140.02	139.26	138.30
25.50	127.87	127.35	126.69
26.00	119.03	118.77	118.41
26.50	113.17	113.05	112.86
27.00	109.16	109.13	109.05
27.50	106.42	106.45	106.47
28.00	104.75	104.86	104.97
28.50	104.10	104.29	104.46
29.00	104.42	104.67	104.93
29.50	105.85	106.19	106.54
30.00	108.61	109.05	109.51
30.50	112.88	113.40	113.89
31.00	118.13	118.62	118.98
31.50	122.84	123.13	123.17
32.00	125.38	125.38	125.06
32.50	125.11	124.85	124.20
33.00	122.22	121.73	120.85
33.50	117.05	116.36	115.27
34.00	109.80	108.91	107.63
39.50	21.42	21.19	21.05
40.00	19.17	19.03	18.85
10.50	24.04	-6.76	3.31
41.00	15.80	15.65	15.49
41.50	14.52	14.46	14.24
42.00	13.33	13.20	13.11

## Typical Performance Curves



**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.



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