CAVITY COAXIAL

Bandpass Filter

ZVBP-435-S+

50Ω 425 to 445 MHz SMA Female

KEY FEATURES

- Low Insertion Loss, 0.9dB Typ.
- Good Return Loss, 18dB Typ.
- High Rejection, 80dB Typ.
- Wide Stopband up to 1750MHz

Generic photo used for illustration purposes only

APPLICATIONS

- ISM band - RFID, Low Power Communications.

PRODUCT OVERVIEW

Mini-Circuits' ZVBP-435-S+ is a coaxial cavity filter designed by implementing resonant structures with very high Q and are ideal for narrow-band, high-selectivity applications.

Mini-Circuits' coaxial cavity filters feature a special protective assembly to prevent accidental de-tuning that would otherwise require expensive replacement or return to factory for re-tuning. Precise machining allows realization of cavity filters with small form factors for applications where size is critical.

FUNCTIONAL DIAGRAM

ELECTRICAL SPECIFICATIONS[1,2] AT +25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	—	—	—	435	—	MHz
	Insertion Loss	F1-F2	425 - 445	—	0.9	1.5	dB
	Return Loss	F1-F2	425 - 445	14	18	—	dB
Stop Band, Lower	Rejection	DC-F3	DC - 400	65	72	—	dB
		F3-F4	400 - 412	40	46	—	
		F4-F5	412 - 417	20	28	—	
Stop Band, Upper	Rejection	F6-F7	453 - 458	20	28	—	dB
		F7-F8	458 - 470	40	49	—	
		F8-F9	470 - 1750	65	80	—	

1. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.

ABSOLUTE MAXIMUM RATINGS[2,3]

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power[4]	50W at +25°C

2. Permanent damage may occur if any of these limits are exceeded.
3. Input and output ports are DC short to ground.
4. Power rating applies only to signals within the passband.

TYPICAL FREQUENCY RESPONSE AT +25°C

REV. OR
ECO-019638
ZVBP-435-S+
EDU4635
URJ
231219

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TYPICAL PERFORMANCE GRAPHS

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CONNECTOR DESCRIPTION

Function	Marking on Unit	Connector
RF1[1]	1	SMA Female
RF2[1]	2	SMA Female

CASE STYLE DRAWING

Unit Weight: 880 grams

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .100; 3 Pl. ± .015

PRODUCT MARKING*: ZVBP-435-S+

*Marking may contain other features or characters for internal lot control.

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ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD

CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file)
Case Style	ZJ3545
RoHS Status	Compliant
Environmental Ratings	ENV77T1

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-Circuits' 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/terms/viewterm.html

Cavity Band Pass Filter ZVBP-435-S+

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
100	115.15	97.81	118.10	0.02	0.01	0.00	0.04	0.03	0.03
120	99.78	98.35	98.71	0.02	0.01	0.00	0.05	0.03	0.03
140	106.73	107.34	95.42	0.03	0.00	0.01	0.06	0.04	0.03
160	95.72	93.57	99.55	0.03	0.01	0.01	0.06	0.04	0.04
180	105.82	109.18	98.85	0.03	0.01	0.02	0.06	0.04	0.03
200	106.45	94.49	102.11	0.03	0.01	0.02	0.06	0.04	0.03
220	92.29	96.47	99.04	0.04	0.01	0.02	0.06	0.04	0.03
240	98.48	98.40	96.46	0.03	0.01	0.01	0.05	0.03	0.03
260	94.14	90.98	97.06	0.04	0.01	0.01	0.05	0.03	0.03
280	105.12	97.74	97.38	0.03	0.01	0.01	0.05	0.03	0.02
300	95.72	99.13	106.54	0.03	0.02	0.02	0.05	0.03	0.02
320	97.23	96.17	94.38	0.04	0.02	0.02	0.04	0.02	0.02
340	101.36	104.67	98.45	0.03	0.02	0.01	0.04	0.03	0.02
360	96.87	95.08	95.44	0.03	0.01	0.00	0.04	0.02	0.01
380	94.71	100.69	115.31	0.02	0.00	0.01	0.03	0.01	0.00
400	73.95	72.77	72.73	0.02	0.04	0.04	0.00	0.02	0.04
405	64.37	63.59	63.13	0.04	0.06	0.07	0.02	0.05	0.06
410	52.76	51.78	51.09	0.08	0.11	0.12	0.06	0.09	0.11
412	47.34	46.06	45.41	0.11	0.14	0.16	0.08	0.12	0.14
415	37.65	36.16	35.27	0.18	0.23	0.26	0.14	0.20	0.23
416	33.92	32.31	31.31	0.22	0.28	0.32	0.17	0.24	0.28
417	29.84	28.07	26.96	0.28	0.35	0.40	0.22	0.31	0.35
419	20.23	18.07	16.60	0.53	0.69	0.84	0.43	0.62	0.76
420	14.46	12.10	10.43	0.90	1.28	1.69	0.76	1.17	1.58
421	8.09	5.92	4.50	2.15	3.48	5.16	1.93	3.30	4.99
422	2.83	2.04	1.73	7.77	12.63	19.90	7.27	12.18	19.50
425	0.94	0.99	1.05	20.43	26.90	30.22	18.44	23.38	23.71
428	0.82	0.87	0.95	17.59	19.75	19.59	16.87	19.22	18.43
430	0.73	0.79	0.87	23.85	33.67	26.74	20.78	25.82	22.06
432	0.72	0.80	0.88	19.93	21.20	19.80	19.11	20.97	19.51
435	0.69	0.77	0.84	22.43	28.19	28.16	24.11	39.83	46.84
438	0.75	0.86	0.94	18.92	18.19	17.54	19.00	18.46	17.97
440	0.81	0.88	0.98	16.81	19.59	18.00	17.63	21.58	20.07
442	0.83	0.95	1.06	18.40	19.02	17.88	20.64	21.06	19.71
445	0.94	1.12	1.24	32.93	36.88	32.65	27.40	23.85	23.87
448	1.52	2.10	3.01	25.03	16.94	10.49	28.44	16.94	10.10
449	3.63	5.90	8.14	6.77	4.14	2.87	6.68	4.03	2.77
450	9.74	12.83	15.08	1.85	1.39	1.16	1.84	1.33	1.13
452	22.89	25.49	27.15	0.47	0.48	0.46	0.49	0.46	0.47
453	28.37	30.75	32.22	0.32	0.35	0.35	0.34	0.34	0.36
455	37.78	39.80	41.00	0.19	0.22	0.23	0.20	0.21	0.24
458	49.27	51.04	51.96	0.10	0.13	0.14	0.10	0.12	0.15
460	55.83	57.38	58.23	0.06	0.10	0.10	0.07	0.09	0.12
470	81.22	81.32	84.15	0.00	0.03	0.03	0.01	0.02	0.04
500	98.88	100.72	105.23	0.03	0.00	0.01	0.04	0.01	0.00
520	95.72	108.47	102.33	0.03	0.00	0.00	0.04	0.01	0.00
540	99.44	98.53	97.94	0.03	0.01	0.00	0.04	0.01	0.00
560	107.96	98.82	112.08	0.03	0.01	0.00	0.04	0.01	0.00
580	100.63	102.65	105.84	0.03	0.01	0.00	0.04	0.01	0.00
600	105.05	98.83	102.45	0.03	0.01	0.00	0.04	0.01	0.00
700	104.65	100.49	102.05	0.03	0.00	0.00	0.04	0.01	0.00
800	105.96	108.76	109.35	0.03	0.01	0.01	0.04	0.00	0.01
900	106.06	109.62	108.34	0.03	0.02	0.02	0.03	0.00	0.02
1000	109.85	102.02	108.96	0.04	0.01	0.01	0.03	0.00	0.02
1100	105.75	117.50	104.13	0.02	0.03	0.03	0.02	0.02	0.04
1200	118.22	121.09	104.69	0.02	0.04	0.05	0.02	0.02	0.05
1300	105.05	104.45	104.21	0.02	0.04	0.05	0.02	0.02	0.05
1400	102.44	106.64	106.31	0.01	0.05	0.07	0.01	0.04	0.07
1500	103.29	107.20	103.83	0.01	0.05	0.07	0.01	0.04	0.07
1750	114.13	100.62	101.02	0.01	0.08	0.11	0.01	0.07	0.11

Typical Performance Data

FREQ.	GROUP DELAY		
	(nsec)		
(MHz)	@-40°C	@+25˚C	@+85˚C
425.0	101.46	96.80	93.57
425.5	95.68	91.25	88.35
426.0	90.11	86.40	84.09
426.5	85.39	82.55	80.83
427.0	81.76	79.61	78.30
427.5	78.99	77.28	76.24
428.0	76.77	75.36	74.48
428.5	74.91	73.72	72.96
429.0	73.32	72.30	71.65
429.5	71.94	71.10	70.53
430.0	70.77	70.07	69.59
430.5	69.79	69.22	68.82
431.0	68.96	68.50	68.18
431.5	68.27	67.91	67.66
432.0	67.69	67.43	67.23
432.5	67.22	67.04	66.90
433.0	66.85	66.73	66.64
433.5	66.56	66.50	66.47
434.0	66.36	66.35	66.37
434.5	66.24	66.27	66.35
435.0	66.20	66.26	66.41
435.5	66.23	66.33	66.53
436.0	66.33	66.48	66.72
436.5	66.50	66.71	66.98
437.0	66.74	67.01	67.32
437.5	67.04	67.40	67.74
438.0	67.42	67.88	68.25
438.5	67.87	68.45	68.86
439.0	68.42	69.13	69.58
439.5	69.07	69.91	70.43
440.0	69.85	70.82	71.41
440.5	70.76	71.88	72.57
441.0	71.84	73.11	73.91
441.5	73.12	74.54	75.49
442.0	74.61	76.20	77.32
442.5	76.34	78.13	79.45
443.0	78.35	80.35	81.93
443.5	80.65	82.95	84.90
444.0	83.37	86.12	88.64
444.5	86.71	90.18	93.42
445.0	91.00	95.40	99.23

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 ZJ

Outline Dimensions

ZJ3545

Dimensions are in inches [mm]. Tolerances: 2 Pl. ± .100; 3 Pl. ± .015

Notes:

1. Case material: Aluminum alloy.
2. Case Finish: Powder coated.
3. Unit Weight: 880 grams.
4. Refer to the individual model data sheet for the type of connectors available.

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RF/IF MICROWAVE COMPONENTS

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Environmental Specifications ENV77T1

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	-30° to 70°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-30° to 70° 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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