

## Surface Mount

# Coaxial-Ceramic Resonator Filters and Multiplexers

50Ω DC to 6 GHz

## The Big Deal

- Low insertion loss with excellent power handling
- Passbands up to 6 GHz
- Fractional bandwidth from <1 to 25%
- Low profile designs with min. height of 0.120"
- Excellent temperature stability
- Rugged construction to handle demanding environmental conditions



## Product Overview

Mini-Circuits' *Coaxial-Ceramic Resonator filters* offer low insertion loss in very small form factors, using ceramic material with high dielectric constant and superior Q factor. Bandpass and bandstop filters, diplexer and multiplexer designs can be constructed using this technology. Low insertion loss combined with excellent power handling makes these filters well suited for transmitter and receiver signal chains. Advanced filter design and construction can achieve stopband width greater than 3x the center frequency as high as 20 GHz.

All our coaxial-ceramic resonator filters are built with rugged construction, qualified to withstand multiple demanding reflow cycles. Custom integrated assembly with LNA in greatly simplifying system integration. They can be realized in small form factors with high-quality, precise machining for applications where size is critical. Excellent repeatability across units is achieved through precise tuning and process control.

## Key Features

Feature	Advantages
Low insertion loss	Low signal loss results in better SNR in signal chain
Fast roll-off	Higher selectivity results in better adjacent channel rejection and dynamic range
Wide stop band	Wide spur-free stopband results in better receiver sensitivity
Excellent power handling	Well suited for transmitter applications
Rugged Construction	These filter assemblies have been qualified over a wide range of thermal, mechanical and environmental conditions including withstanding the stress of extensive solder reflow cycles
Small Size	Very well suited for high performance applications where size is a constraint.
Temperature stability	Very minimal change in electrical performance across temperature makes these filters suitable for a wide range of operating conditions.

### Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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](http://www.minicircuits.com/MCLStore/terms.jsp)



# Surface Mount Bandpass Filter

## CBP-1414A+

50Ω 1402 to 1426 MHz



Generic photo used for illustration purposes only  
CASE STYLE: KV1514

### Features

- Fast roll-off
- Low passband IL
- Good VSWR 1.5:1 typical
- Miniature shielded package

### Applications

- Test and measurement
- Radio Astronomy
- Space research

### Electrical Specifications <sup>(1)</sup> at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Center Frequency	-	-	1414	-	MHz	
	Insertion Loss	F1-F2	1402 - 1426	-	2.2	2.8	dB
	VSWR	F1-F2	1402 - 1426	-	1.5	2.1	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 1310	30	50	-	dB
		F3-F4	1310-1352	20	30	-	dB
Stop Band, Upper	Insertion Loss	F5-F6	1480 - 1500	20	30	-	dB
		F6-F7	1500 - 3000	35	45	-	dB

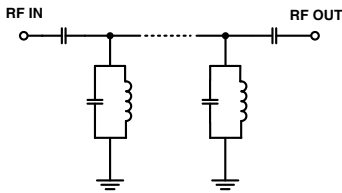
(1) Measured on Mini-Circuits Characterization Test Board TB-578+.

### Maximum Ratings

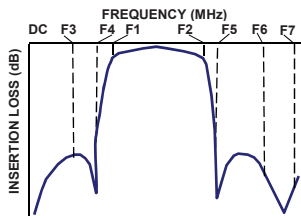
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	4 W Max.

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

### Functional Schematic



### Typical Frequency Response

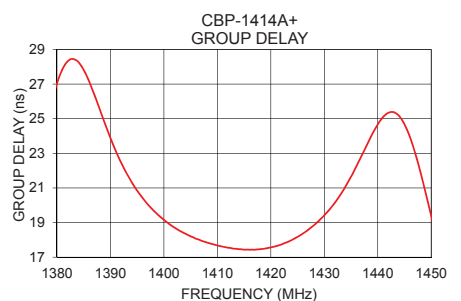
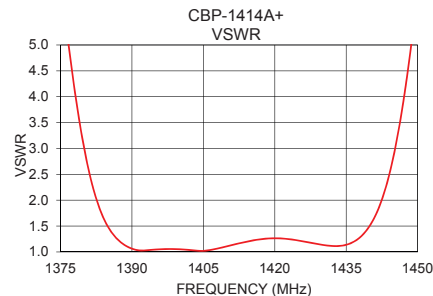
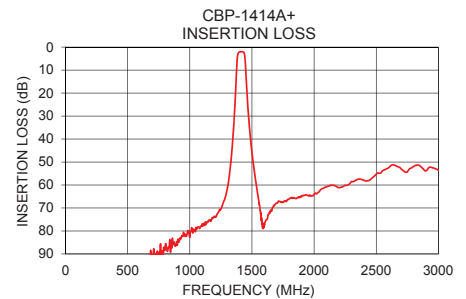
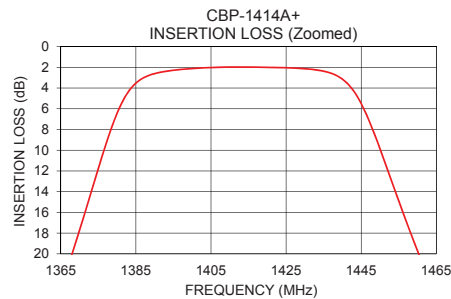


### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1	96.11	350.79	1400	19.15
10	103.51	419.09	1402	18.71
100	104.83	828.51	1404	18.36
1000	82.71	247.81	1405	18.20
1310	59.11	63.13	1406	18.07
1352	35.44	26.61	1407	17.95
1358	30.23	21.38	1408	17.85
1368	20.01	12.44	1409	17.76
1380	6.43	2.99	1410	17.67
1402	2.07	1.04	1411	17.61
1410	1.98	1.11	1412	17.55
1414	1.98	1.20	1413	17.49
1420	2.00	1.26	1414	17.46
1426	2.05	1.20	1415	17.43
1440	3.14	1.51	1416	17.43
1462	21.51	18.91	1417	17.43
1480	34.88	41.80	1420	17.56
1500	45.75	67.48	1422	17.74
2500	55.31	76.89	1424	18.00
3000	53.50	45.74	1426	18.37

### +RoHS Compliant

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



### Notes

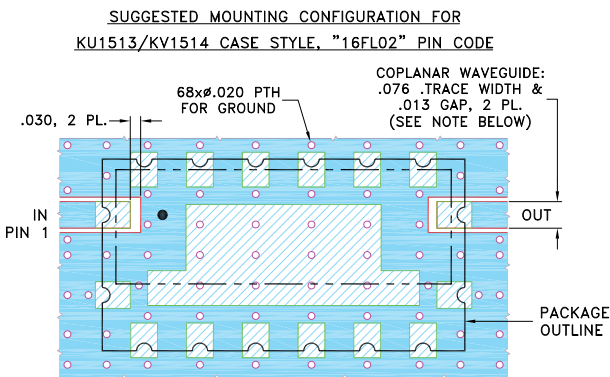
- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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](http://www.minicircuits.com/MCLStore/terms.jsp)



## Pad Connections

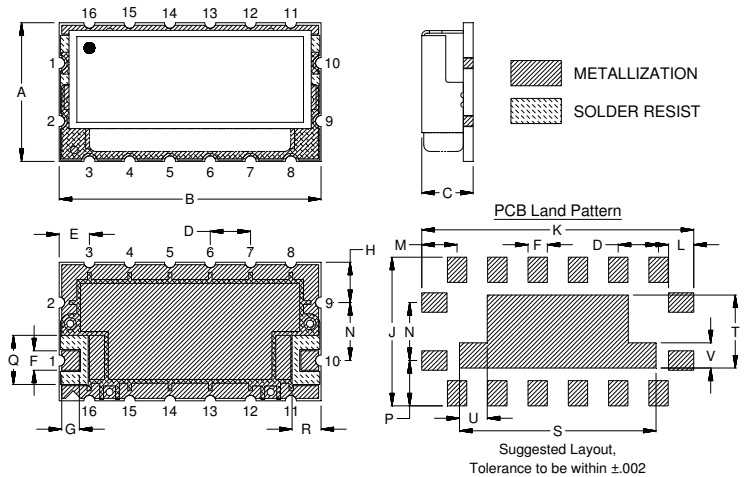
INPUT	1
OUTPUT	10
GROUND	2,3,4,5,6,7,8,9,11,12,13,14,15,16

## Demo Board MCL P/N: TB-578+ Suggested PCB Layout (PL-331)



- NOTE: 1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS  $.060 \pm .004$ ”;  
COPPER: 1/2 Oz. EACH SIDE.  
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.  
DENOTES PCB COPPER LAYOUT WITH SMOBC  
(SOLDER MASK OVER BARE COPPER)  
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## Outline Drawing



## Outline Dimensions ( inch ) ( mm )

A	B	C	D	E	F	G	H	J	K	L
.550	1.040	.225	.160	.120	.077	.070	.160	.590	1.080	.100
13.97	26.24	5.72	4.06	3.05	1.96	1.78	4.06	14.99	27.43	2.54
M	N	P	Q	R	S	T	U	V	Wt.	
.140	.230	.180	.195	.115	.780	.290	.110	.100	grams	
3.56	5.84	4.57	4.95	2.92	19.81	7.37	2.79	2.54	4.8	

Note: Please refer to case style drawing for details

### 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/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)