

## 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 3 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

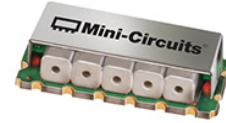
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# Surface Mount Bandpass Filter

## CBP-1413R5A+

50Ω 1400 to 1427 MHz



CASE STYLE: KV1514

### Features

- Fast roll-off
- Low passband IL
- Good VSWR 1.4:1 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	-	-	1413.5	-	MHz	
	Insertion Loss	F1-F2	1400-1427	-	2.5	3.0	dB
	VSWR	F1-F2	1400-1427	-	1.5	2.1	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-1300	40	60	-	dB
		F3-F4	1300-1350	20	30	-	dB
	VSWR	DC-F4	DC-1350	-	20	-	:1
Stop Band, Upper	Insertion Loss	F5-F6	1475-1520	20	30	-	dB
		F6-F7	1520-2800	40	50	-	dB
	VSWR	F5-F7	1475-2800	-	20	-	:1

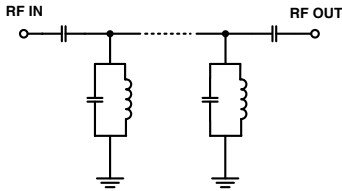
(1) Measured on Mini-Circuits Characterization Test Board TB-578+.

### Maximum Ratings

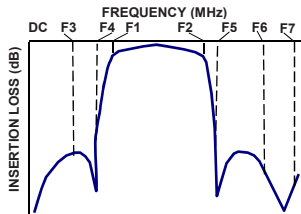
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	4 W Max.

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

### Functional Schematic



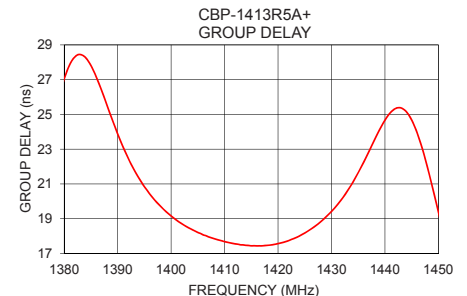
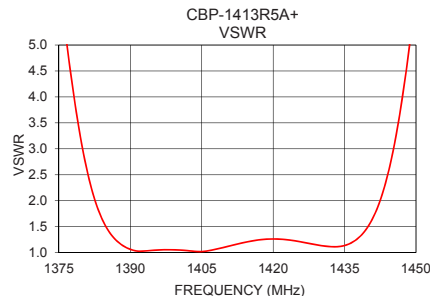
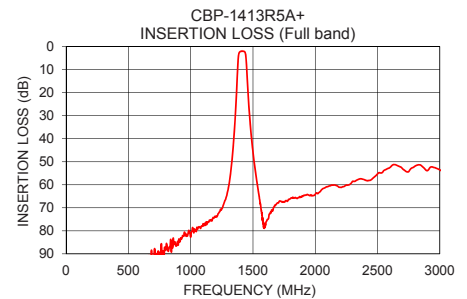
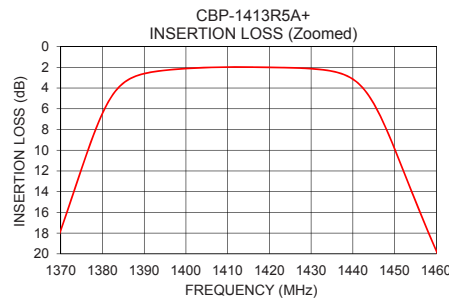
### Typical Frequency Response



### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1.0	96.11	350.79	1400.0	19.15
10.0	103.51	419.09	1402.0	18.71
100.0	104.83	828.51	1404.0	18.36
1000.0	82.71	247.81	1405.0	18.20
1300.0	62.18	71.50	1406.0	18.07
1350.0	37.06	28.39	1407.0	17.95
1358.0	30.23	21.38	1408.0	17.85
1368.0	20.01	12.44	1409.0	17.76
1375.0	11.76	6.31	1410.0	17.67
1380.0	6.43	2.99	1411.0	17.61
1400.0	2.12	1.05	1413.0	17.49
1413.5	1.98	1.19	1413.5	17.49
1427.0	2.07	1.19	1414.0	17.46
1440.0	3.14	1.51	1415.0	17.43
1452.0	11.86	7.83	1416.0	17.43
1462.0	21.51	18.91	1417.0	17.43
1475.0	31.61	35.31	1420.0	17.56
1520.0	54.31	90.54	1422.0	17.74
2000.0	64.13	121.46	1424.0	18.00
2800.0	51.92	55.65	1427.0	18.58

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



### Notes

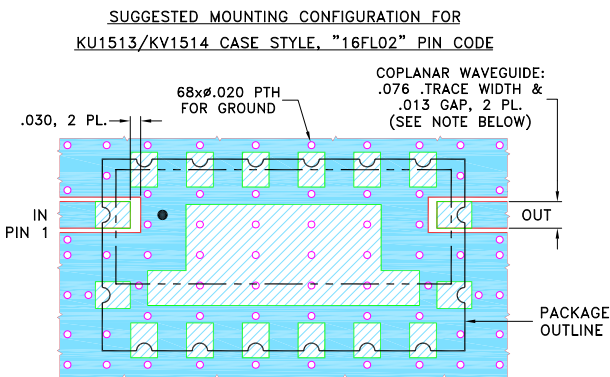
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## Pad Connections

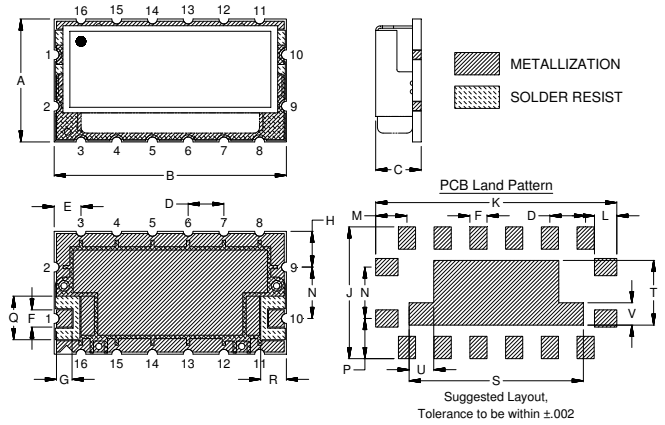
INPUT	1
OUTPUT	10
GROUND	2,3,4,5,6,7,8,9,11,12,13,14,15,16

## 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)

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	

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