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
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.
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

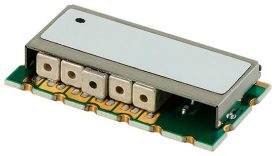
Mini-Circuits®
www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

Surface Mount

Bandpass Filter

50Ω 2000 to 2500 MHz

CBP-2250A+



CASE STYLE: KU1513

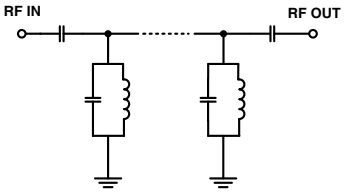
Features

- Low insertion loss
- Better rejection
- Miniature shielded package

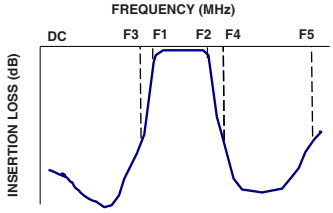
Applications

- Amateur radio
- Space operation
- ISM

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	Center Frequency	-	-	-	2250	-	MHz
	Insertion Loss	F1-F2	2000-2500	-	1.1	2.0	dB
	VSWR	F1-F2	2000-2500	-	1.6	2.1	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-1630	20.0	31.0	-	dB
	VSWR	DC-F3	DC-1630	-	20.0	-	:1
Stop Band, Upper	Insertion Loss	F4-F5	2900-6000	20.0	31.0	-	dB
	VSWR	F4-F5	2900-6000	-	20.0	-	:1

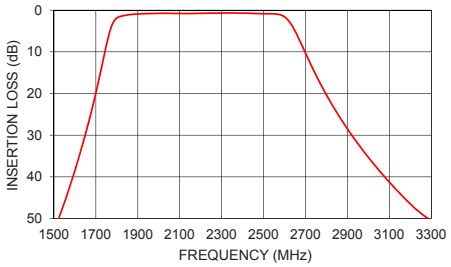
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	2 W Max.

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

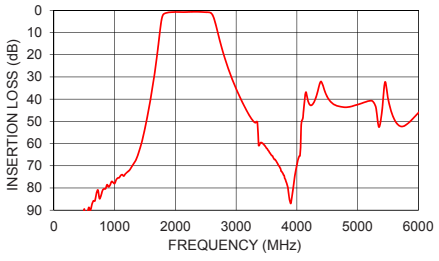
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1	109.86	408.42	2000	2.21
750	84.77	238.23	2025	2.12
1630	33.42	51.25	2050	2.04
1695	20.93	31.81	2075	1.96
1740	10.73	13.36	2100	1.90
1775	3.84	3.71	2125	1.85
2000	0.76	1.14	2150	1.80
2200	0.76	1.39	2175	1.77
2250	0.71	1.31	2200	1.75
2300	0.69	1.25	2225	1.74
2500	0.85	1.37	2250	1.72
2630	3.26	3.76	2275	1.72
2700	10.31	18.35	2300	1.72
2800	20.37	59.73	2325	1.72
2900	28.51	87.45	2350	1.73
2930	30.67	91.69	2375	1.75
3500	62.12	78.51	2400	1.76
4000	69.58	51.50	2425	1.79
5450	32.34	56.51	2450	1.82
6000	46.17	51.46	2500	1.94

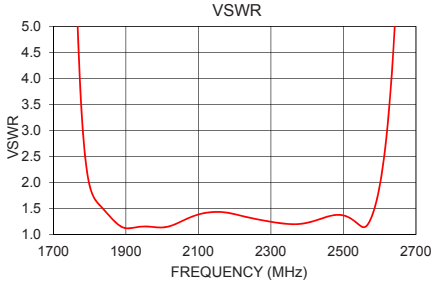
CBP-2250A+
INSERTION LOSS (Zoomed)



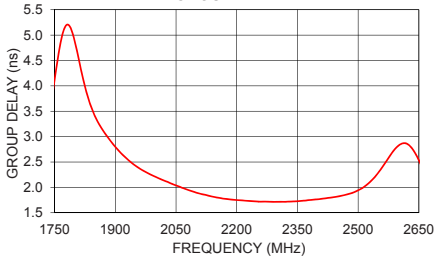
CBP-2250A+
INSERTION LOSS (Full band)



CBP-2250A+
VSWR



CBP-2250A+
GROUP DELAY



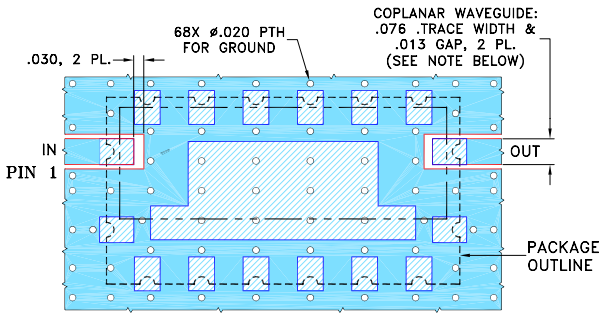
Notes

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.
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

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)

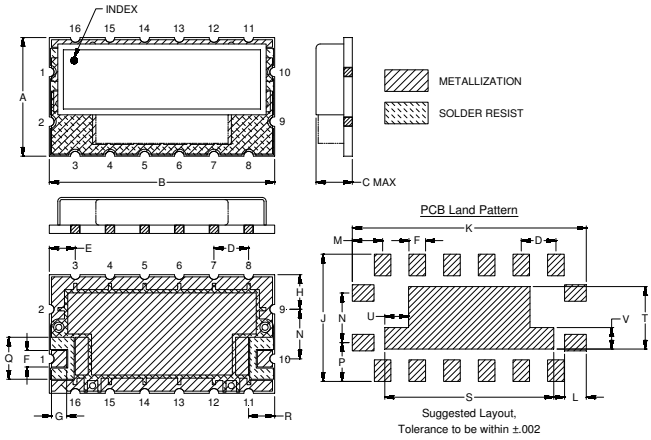


NOTE: 1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .060" ± .004"; COPPER: 1/2 OZ. EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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**	**.185**	**.160**	**.120**	**.077**	**.070**	**.160**	**.590**	**1.080**	**.100**
13.97	26.24	4.70	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	7.36	2.79	2.54		2.6

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.
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