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. 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.

SURFACE MOUNT CERAMIC RESONATOR

Bandpass Filter

CBP2-3050BN+

50Ω 2700 to 3400 MHz

FEATURES

- Low-profile shielded package
- High rejection, 50dB typ.
- Low passband Insertion loss, 2.4dB typ.

Generic photo used for illustration purposes only

CASE STYLE: WA3176

APPLICATIONS

- Defense / Military
- Aeronautical radionavigation service

+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.	Units
Passband	Center Frequency	—	—	—	3050	—	MHz
	Insertion Loss	F1-F2	2700 - 3400	—	2.4	3.0	dB
	Return Loss	F1-F2	2700 - 3400	—	13	—	dB
Stop Band, Lower	Insertion Loss	DC-F3	DC - 2000	50	60	—	dB
		F3-F4	2000 - 2465	20	29	—	
Stop Band, Upper	Insertion Loss	F5-F6	3640 - 3900	20	29	—	dB
		F6-F7	3900 - 4500	35	50	—	

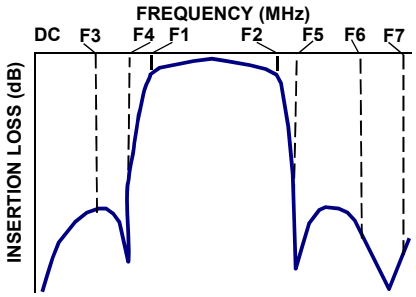
1. Measured on Mini-Circuits Test Board TB-CBP2-3050BN+

MAXIMUM RATINGS

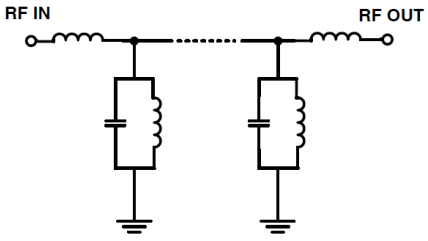
Parameter	Ratings
Operating temperature	-40°C to +85°C
Storage temperature	-55°C to +100°C
RF Power Input *	6W at 25°C

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

TYPICAL FREQUENCY RESPONSE



FUNCTIONAL SCHEMATIC



REV. OR
ECO-011220
CBP2-3050BN+
EDU4237
URJ
211216

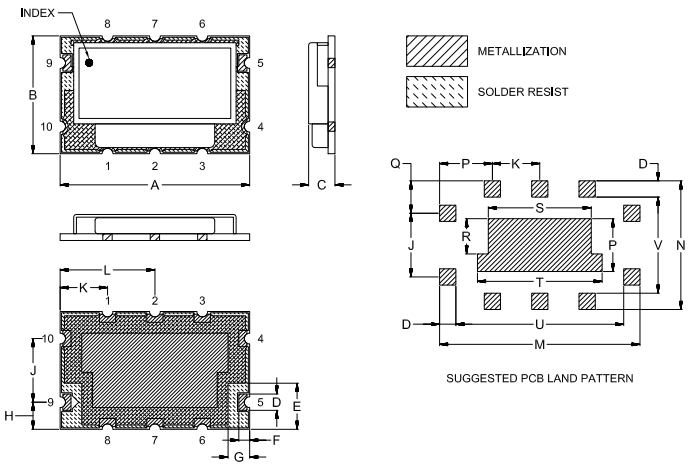
Bandpass Filter

CBP2-3050BN+

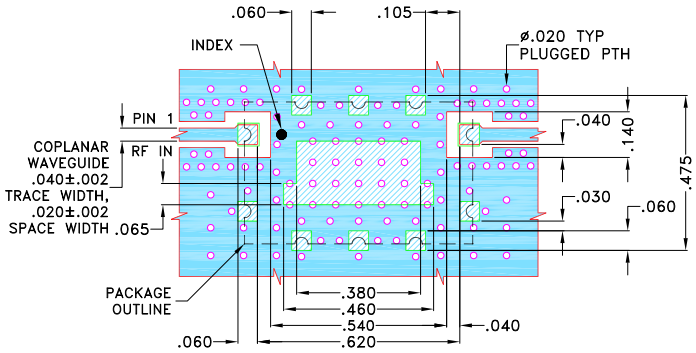
PAD CONNECTIONS

RF IN	9
RF OUT	5
GROUND	1,2,3,4,6,7,8,10

OUTLINE DRAWING



DEMO BOARD MCL P/N: TB-CBP2-3050BN+
SUGGESTED PCB LAYOUT (PL-721)



NOTES:
1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .020±.0015. COPPER: 1/2 Oz. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP 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 SOLDERMASK

OUTLINE DIMENSIONS (Inches / mm)

A	B	C	D	E	F	G	H	J	K	L	M
.700	**.435**	**.120**	**.060**	**.170**	**.040**	**.080**	**.100**	**.235**	**.175**	**.350**	**.740**
17.78	11.05	3.05	1.52	4.32	1.02	2.03	2.54	5.97	4.45	8.89	18.80

N	P	Q	R	S	T	U	V	Wt.
.475	**.195**	**.120**	**.130**	**.380**	**.460**	**.620**	**.355**	grams
12.07	4.95	3.05	3.30	9.65	11.68	15.75	9.02	1.1

Note: Please refer to case style drawing for details

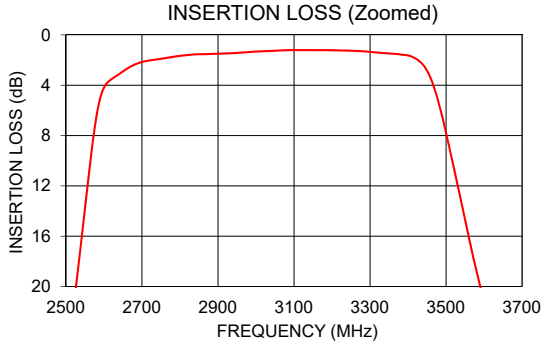
Bandpass Filter

CBP2-3050BN+

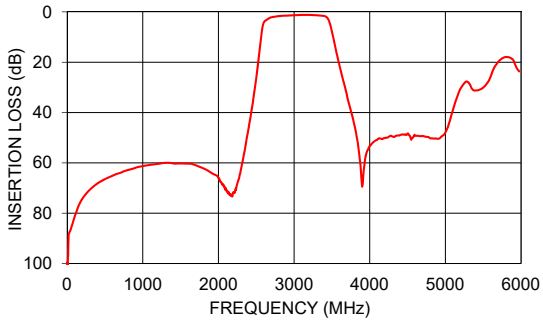
TYPICAL PERFORMANCE DATA

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Frequency (MHz)	Group Delay (ns)
1	102.44	0.06	2500	1.77
104	81.03	0.12	2550	3.72
2000	65.94	0.20	2700	3.22
2465	33.79	0.64	2750	2.75
2525	20.38	1.30	2800	2.48
2645	3.01	11.23	2850	2.29
2700	2.16	19.01	2900	2.12
3050	1.26	22.54	3000	1.97
3200	1.22	23.47	3050	1.94
3400	1.63	24.48	3100	1.93
3456	3.20	8.62	3150	1.93
3592	20.30	0.75	3200	1.97
3640	26.20	0.55	3250	2.04
3900	69.44	0.27	3300	2.15
4500	48.40	0.20	3600	1.17

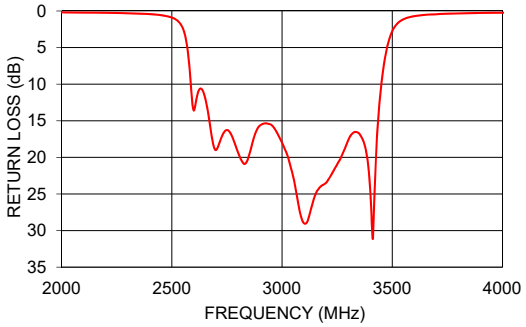
CBP2-3050BN+
INSERTION LOSS (Zoomed)



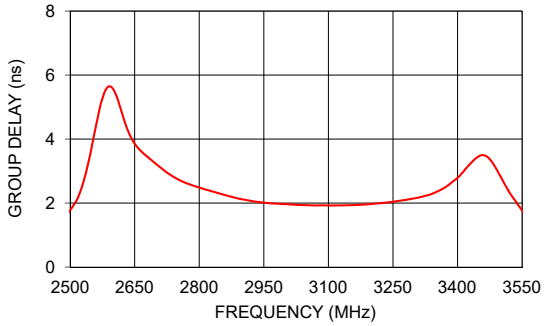
CBP2-3050BN+
INSERTION LOSS



CBP2-3050BN+
RETURN LOSS



CBP2-3050BN+
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