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.

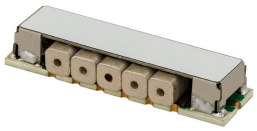
Notes
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Surface Mount

Bandpass Filter

CBP-1060Q+

50Ω 1030 to 1090 MHz



CASE STYLE: HQ2299

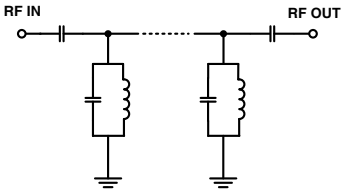
Features

- Broad stopband performance up to 20 GHz
- High selectivity
- Miniature shielded package

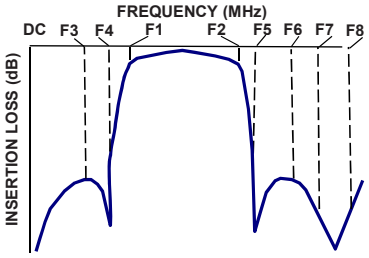
Applications

- Aeronautical radio navigation
- Fixed satellite
- Radio astronomy
- Radar and navigation systems

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

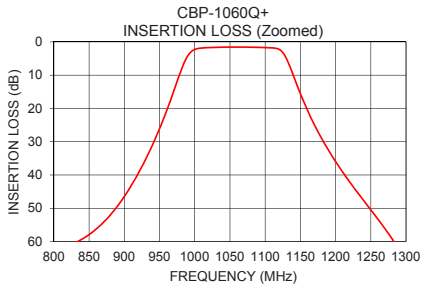
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	-	-	-	1060	-	MHz
	Insertion Loss	F1-F2	1030-1090	-	1.6	2.5	dB
	VSWR	F1-F2	1030-1090	-	1.3	1.7	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-500	60	68	-	dB
		F3-F4	500-930	20	32	-	dB
	VSWR	DC-F4	DC-930	-	20	-	:1
Stop Band, Upper	Insertion Loss	F5-F6	1190-1400	20	30	-	dB
		F6-F7	1400-2800	45	52	-	dB
		F7-F8	2800-20000	-	20	-	dB
	VSWR	F5-F8	1190-20000	-	8	-	:1

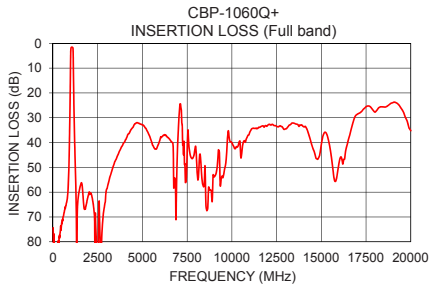
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	8 W Max.

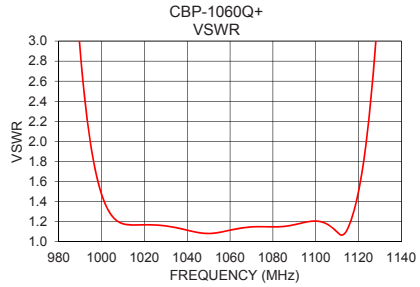
Passband rating , derate linearly to 3.5W at 85°C ambient.
Permanent damage may occur if any of these limits are exceeded.

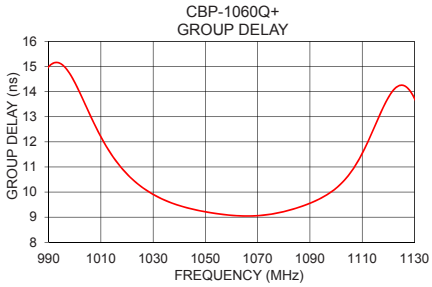
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
10	74.37	362.04	1030	9.91
100	90.40	303.37	1032	9.80
500	72.71	40.93	1034	9.70
930	35.44	18.49	1036	9.61
940	31.00	18.17	1038	9.53
960	20.77	15.72	1040	9.46
990	4.22	2.90	1042	9.40
1030	1.65	1.16	1044	9.35
1060	1.57	1.11	1046	9.30
1090	1.64	1.17	1048	9.25
1130	4.94	3.59	1050	9.21
1160	20.56	12.18	1052	9.18
1180	28.97	13.69	1054	9.15
1190	32.62	14.09	1056	9.12
1400	62.89	16.03	1060	9.07
2800	69.84	26.38	1066	9.05
7100	24.49	3.59	1070	9.06
10000	40.07	18.84	1080	9.22
15000	40.75	2.39	1086	9.40
20000	35.21	1.49	1090	9.55









Notes

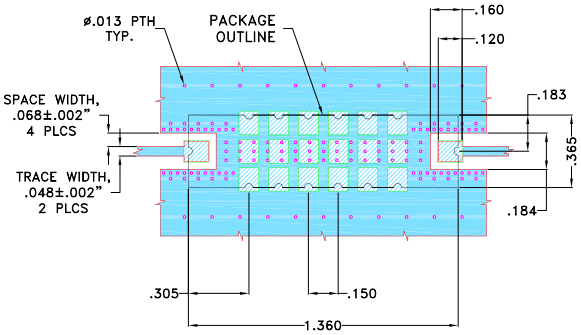
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Pad Connections

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

Demo Board MCL P/N: TB-1006+
Suggested PCB Layout (PL-543)

SUGGESTED MOUNTING CONFIGURATION FOR
HQ2218 & HQ2299 CASE STYLE "14FL01" PIN CODE



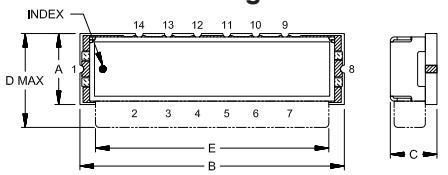
NOTES:

1. TRACE WIDTH IS SHOWN FOR FR4, IT180A WITH DIELECTRIC THICKNESS .025"±.002". 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.

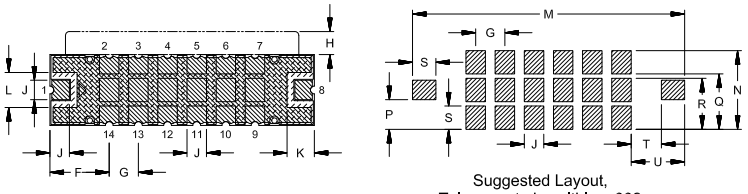
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Outline Drawing



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

A	B	C		D	E	F	G	H	J	K
-	-	**Min**	**Max**	-	-	-	-	-	-	-
.365	**1.360**	**.240**	**.270**	**.483**	**1.200**	**.305**	**.150**	**.118**	**.100**	**.140**
9.27	34.54	6.10	6.86	12.27	30.48	7.75	3.81	3.00	2.54	3.56

L	M	N	P	Q	R	S	T	U	
-	-	-	-	-	-	-	-	-	Wt.
.180	**1.400**	**.405**	**.153**	**.285**	**.263**	**.120**	**.155**	**.275**	grams
4.57	35.56	10.29	3.87	7.24	6.67	3.05	3.94	6.99	5.0

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