

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.

Notes

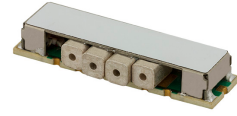
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Surface Mount Bandpass Filter

CBP4-1650Q+

50Ω 1600 to 1700 MHz



Generic photo used for illustration purposes only
CASE STYLE: HQ2218

Features

- Broad stopband performance upto 5 GHz
- High selectivity
- Excellent rejection, 60dB typ.

Applications

- Mobile Satellite Service
- Defense / Military

Electrical Specifications¹ at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	-	-	-	1650	-	MHz
	Insertion Loss	F1-F2	1600 - 1700	-	2.5	3	dB
	VSWR	F1-F2	1600 - 1700	-	1.35	1.92	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 1200	55	65	-	dB
		F3-F4	1200 - 1470	20	27	-	dB
Stop Band, Upper	Insertion Loss	F5-F6	1875 - 2200	20	30	-	dB
		F6-F7	2200 - 3000	48	60	-	dB
		F7-F8	3000 - 5000	-	30	-	dB

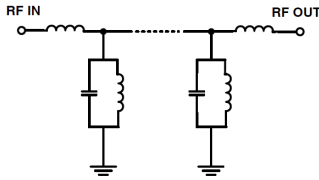
1. Measured on Mini-Circuits Characterization Test Board TB-CBP4-1650Q+

Maximum Ratings

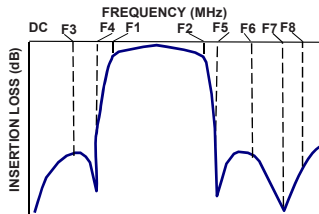
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input *	5W at 25°C

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

Functional Schematic



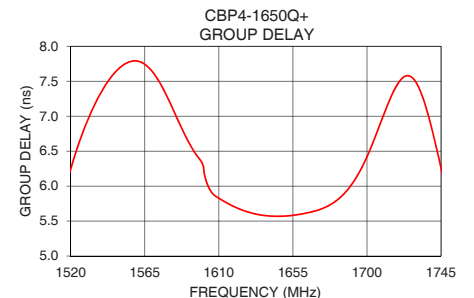
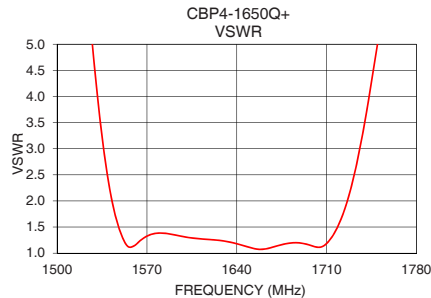
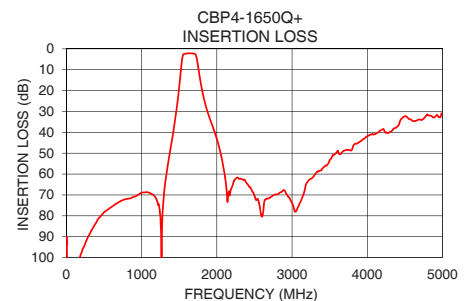
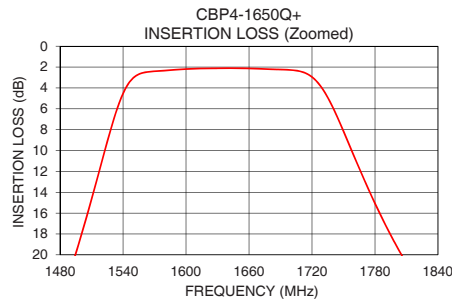
Typical Frequency Response



Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1	94.18	382.05	1600	6.32
10	100.20	503.24	1605	5.93
1200	72.33	17.45	1610	5.83
1460	30.20	15.63	1615	5.76
1470	27.46	15.11	1620	5.70
1495	19.86	12.55	1625	5.65
1520	10.98	7.04	1630	5.61
1550	3.01	1.36	1635	5.59
1600	2.19	1.31	1640	5.57
1620	2.13	1.26	1645	5.57
1650	2.11	1.11	1650	5.57
1670	2.16	1.13	1655	5.58
1700	2.28	1.13	1660	5.60
1721	3.03	1.64	1665	5.62
1758	10.06	6.33	1670	5.66
1806	20.13	10.68	1675	5.70
1875	29.98	9.29	1680	5.77
2200	66.30	11.21	1685	5.87
3000	73.87	23.06	1690	6.00
5000	27.18	46.89	1700	6.42

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



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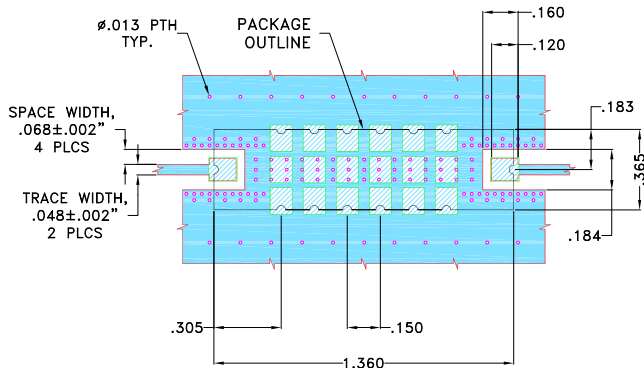


Pad Connections

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



Demo Board MCL P/N: TB-CBP4-1650Q+
Suggested PCB Layout (PL-543)

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

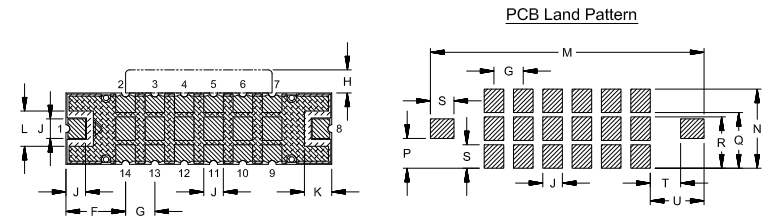
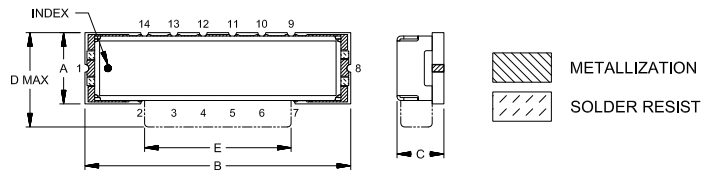


NOTES:

- 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.
- 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



Outline Dimensions (inch / mm)

A	B	C		D	E	F	G	H	J	K
		Min	Max							
.365	1.360	.240	.270	.483	.750	.305	.150	.118	.100	.140
9.27	34.54	6.10	6.86	12.27	19.05	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	4.2	

Note: Please refer to case style drawing for details

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