

## 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

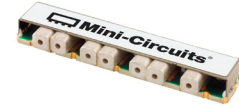
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# Surface Mount Bandpass Filter

## CBP-1953AF+

50Ω 1858 to 2048 MHz



Generic photo used for illustration purposes only  
CASE STYLE:SV2484

### Features

- High rejection of 60 dB.
- High selectivity
- Miniature shielded package

### Applications

- Mobile satellite
- Fixed microwave
- Defense/Military

### Electrical Specifications<sup>(1)</sup> at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Center Frequency	-	-	1953	-	MHz	
	Insertion Loss	F1-F2	1858-2048	-	3.0	3.5	dB
	VSWR	F1-F2	1858-2048	-	1.78	2.0	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-1500	60	65	-	dB
	VSWR	DC-F3	DC-1500	-	20	-	:1
Stop Band, Upper	Insertion Loss	F4-F5	2400-2600	60	63	-	dB
	Insertion Loss	F5-F6	2600-3500	40	50	-	dB
	VSWR	F4-F6	2400-3500	-	20	-	:1

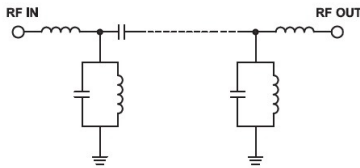
(1) Measured on Mini-Circuits Characterization Test Board TB-1069+.

### Maximum Ratings

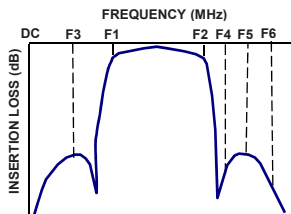
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	5 W Max.

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

### Functional Schematic



### Typical Frequency Response

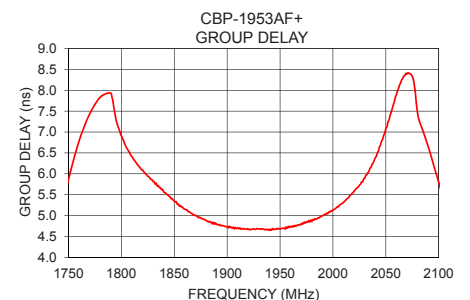
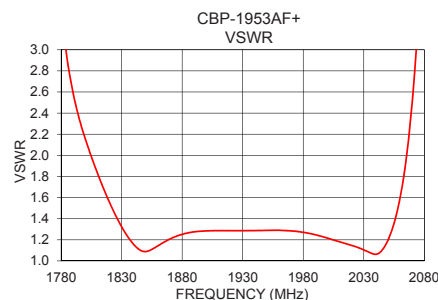
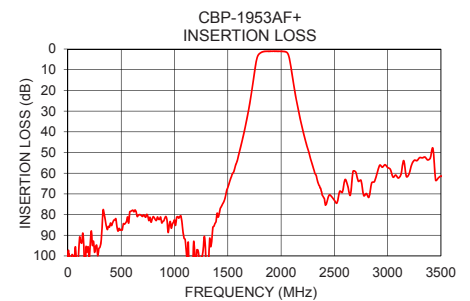
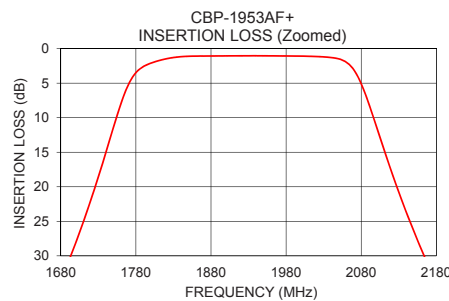


### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1	106.04	347.95	1858	5.20
10	104.24	311.83	1860	5.15
500	87.24	221.81	1870	5.00
1000	82.63	657.90	1880	4.88
1500	66.97	147.78	1890	4.79
1600	51.60	102.69	1900	4.73
1690	30.90	57.16	1910	4.70
1725	20.27	35.32	1920	4.66
1780	3.48	3.40	1930	4.68
1858	1.09	1.13	1940	4.65
1953	1.04	1.29	1953	4.69
2048	1.44	1.15	1960	4.74
2073	3.55	2.94	1970	4.78
2116	16.43	24.49	1980	4.86
2131	21.05	36.07	1990	4.99
2166	30.55	59.57	2000	5.13
2400	71.83	135.70	2010	5.32
2600	63.10	149.13	2020	5.59
2700	59.40	167.52	2030	5.89
3500	61.38	126.22	2048	6.92

### +RoHS Compliant

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



### Notes

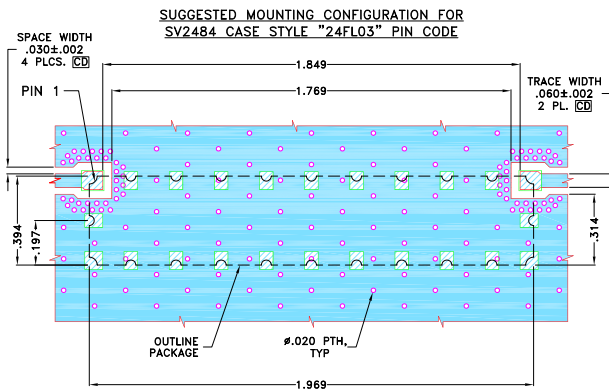
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## Pad Connections

INPUT	1
OUTPUT	11
GROUND	2 - 10, 12 - 24

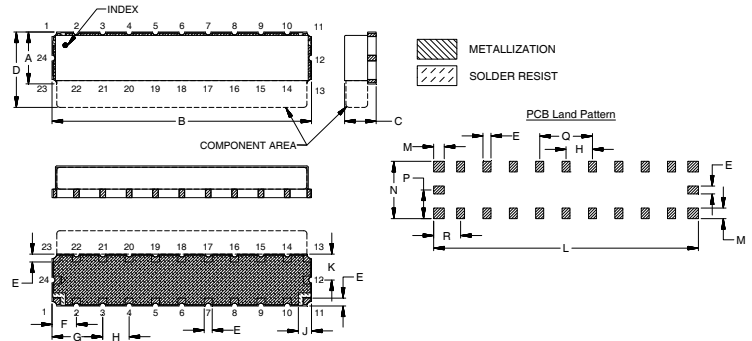
## Demo Board MCL P/N: TB-1069+ Suggested PCB Layout (PL-604)



### NOTES:

- TRACE WIDTH IS SHOWN FOR ROEGERS (RQ4350B), WITH DIELECTRIC THICKNESS .030±.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
.394	1.969	.240	.492	.060	.184	.384	.200	.100	.197
10.00	50.00	6.10	12.50	1.52	4.68	9.76	5.08	2.54	5.00
L	M	N	P	Q	R	Wt.			
2.009	.080	.434	.217	.400	.204	grams			
51.02	2.03	11.02	5.51	10.16	5.19	7.0			

Note: Please refer to case style drawing for details

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