

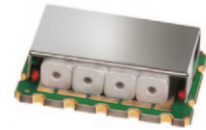
# Ceramic Resonator Bandpass Filter

## CSBP-D1228+

50Ω      1203 to 1253 MHz

### The Big Deal

- Excellent Rejection  
1010 MHz, 1450 MHz: 30 dB typ.  
920 MHz, 1600 MHz: 50 dB typ.
- Low Passband Insertion Loss: 0.9 dB typ.
- Stable IL vs. Temperature: ±0.3 dB typ.



CASE STYLE: KS1509

### Product Overview

The Mini-Circuits CSBP-D1228+ is a ceramic-coaxial-resonator based bandpass filter offering outstanding close-in rejections low insertion loss and high power handling for use in transmitter and receiver RF chains.

### Key Features

Feature	Advantages
High Selectivity	The CSBP-D1228+ filter incorporates High-Q custom ceramic resonators that enable sharp rejection near the passband while maintaining 4% passband bandwidth.
Low Passband VSWR: 1.4:1 typ.	The CSBP-D1228+ filter maintains typical VSWR over a wide passband frequency range making this filter easier to integrate into receiver and transmitter RF chains with less concerns for in-band frequency ripple.
RF Power Handling: 16.5W	Tested at high level RF powers, the CSBP-D1228+ can withstand high power CW signals within the passband making this filter ideal for higher power transmitters.
Temperature Stability: ±0.3dB	The use of highly stable materials enables the CSBP-D1228+ to maintain minimal insertion loss variation over a wide temperature range over the passband and the stopband.
Rugged construction	The CSBP-D1228+ has been qualified over a wide range of thermal, mechanical and environmental conditions including withstanding the stress of extensive solder reflow cycles.
Small size: 0.88" x 0.625 x 0.225"	The use of high dielectric constant resonators enables the CSBP-D1228+ to support a large number of poles in a small footprint enabling high selectivity in a small surface mount design.



For detailed performance specs & shopping online see web site

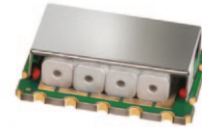
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine  Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

**Notes:** 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).

# Bandpass Filter

## CSBP-D1228+

50Ω 1203 to 1253 MHz



CASE STYLE: KS1509  
PRICE: \$29.95 ea. QTY (1-9)

### Features

- Low Insertion Loss, 0.9 dB typ.
- Minimal Insertion loss variation over operating temperature, ±0.3 dB
- High power handling, 16.5W
- Wide pass band (4%), high selectivity

### Applications

- Sub harmonic filtering
- Image Rejection
- Transmitter filtering

### Electrical Specifications at 25°C

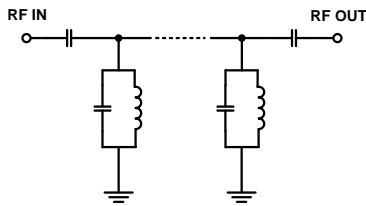
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Center Frequency	—	—	1228	—	MHz	
	Insertion Loss	F1-F2	1203 - 1253	—	0.9	2.0	dB
	VSWR	F1-F2	1203 - 1253	—	1.4	1.7	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 1020	20	30	—	dB
	VSWR	DC-F3	DC - 1020	—	35	—	:1
Stop Band, Upper	Insertion Loss	F4-F5	1425 - 2500	20	30	—	dB
	VSWR	F4-F5	1425 - 2500	—	27	—	:1

### Maximum Ratings

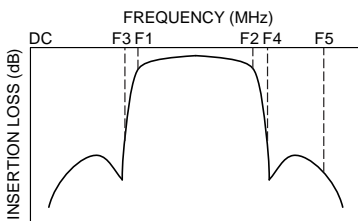
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input*	16.5W max. at 25°C

\*Derate linearly to 8W at 85°C  
Permanent damage may occur if any of these limits are exceeded.

### Functional Schematic



### Typical Frequency Response

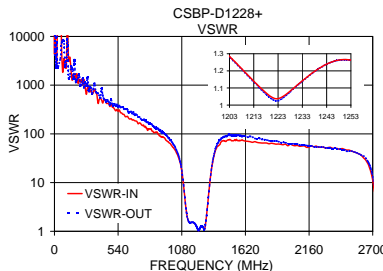
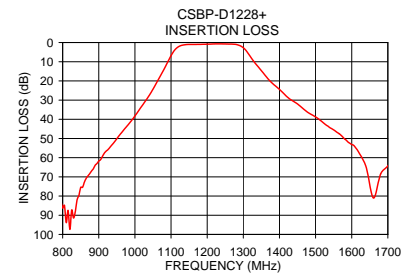
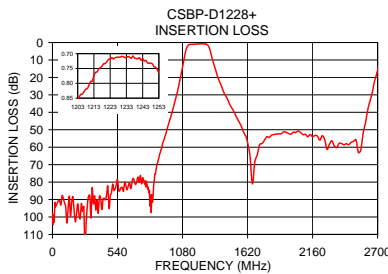


### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR-In (:1)	VSWR-Out (:1)
1	98.36	9454.68	15758.32
920	56.68	87.95	107.78
1020	32.88	47.91	55.40
1075	15.85	20.41	21.41
1110	3.94	3.94	3.91
1120	2.24	2.45	2.43
1130	1.44	1.81	1.79
1203	0.86	1.28	1.28
1228	0.71	1.08	1.08
1253	0.77	1.26	1.26
1280	1.01	1.32	1.32
1305	3.63	4.82	4.83
1370	19.26	48.36	53.11
1425	28.91	71.16	82.92
1600	53.16	72.70	90.98
2500	56.65	46.46	43.91
2580	51.70	39.07	39.25
2675	21.93	19.39	22.57

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.



For detailed performance specs & shipping online see web site

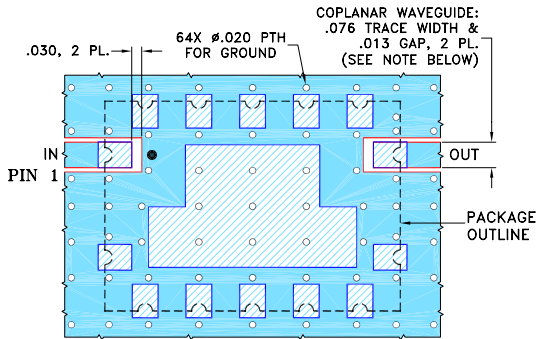
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## Pad Connections

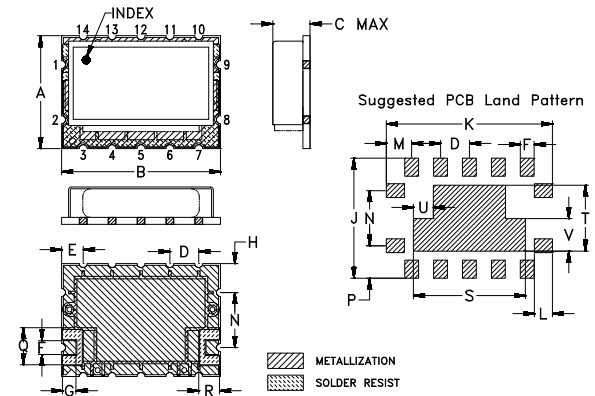
INPUT	1
OUTPUT	9
GROUND	2 to 8, 10 to 14

## Demo Board MCL P/N: TB-577+ Suggested PCB Layout (PL-332)



- NOTE: 1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS  $.060" \pm .004"$ ; 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
.625	.880	.225	.160	.120	.077	.070	.160	.665	.920	.100
15.88	22.35	5.72	4.06	3.05	1.96	1.78	4.06	16.89	23.37	2.54
M	N	P	Q	R	S	T	U	V	wt	
.140	.305	.180	.205	.115	.620	.365	.110	.180	grams	
3.56	7.75	4.57	5.21	2.92	15.75	9.27	2.79	4.57	4.4	