

# Ceramic Resonator Bandpass Filter

## CSBP-A940+

50Ω      880 to 1000 MHz

### The Big Deal

- Excellent Rejection  
800 MHz, 1095 MHz: 30 dB typ.  
740 MHz, 1170 MHz: 54 dB typ.
- Low Passband Insertion Loss, 1.3 dB typ.
- Stable IL vs. Temperature: ±0.25 dB typ.



CASE STYLE: KV1514

### Product Overview

The Mini-Circuits CSBP-A940+ is a ceramic-coaxial-resonator based bandpass filter offering outstanding close-in rejection, low insertion loss and high power handling for use in GSM, cellular bands.

### Key Features

Feature	Advantages
High Selectivity	The CSBP-A940+ filter incorporates High-Q custom ceramic resonators that enable sharp rejection near the passband while maintaining 13% passband bandwidth.
Low Passband VSWR: 1.3:1 typ.	The CSBP-A940+ 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: 12.6W	Tested at high level RF powers, the CSBP-A940+ can withstand high power CW signals within the passband making this filter ideal for higher power transmitters.
Temperature Stability: ±0.25dB	The use of highly stable materials enables the CSBP-A940+ to maintain minimal insertion loss variation over a wide temperature range over the passband and stopband.
Rugged construction	The CSBP-A940+ has been qualified over a wide range of thermal, mechanical and environmental conditions including withstanding the stress of extensive solder reflow cycles.
Small size: 1.04" x 0.55 x 0.225"	The use of high dielectric constant resonators enables the CSBP-A940+ 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-A940+

50Ω 880 to 1000 MHz



CASE STYLE: KV1514  
PRICE: \$29.95 ea. QTY (1-9)

### Features

- Low Insertion Loss, 1.2 dB typ.
- Minimal Insertion loss variation over operating temperature, ±0.25 dB
- High power handling, 12.6 W
- Wide pass band (13%), high selectivity

### Applications

- Sub harmonic filtering
- Image Rejection
- Receivers/Transmitters
- GSM, Cellular

### Electrical Specifications at 25°C

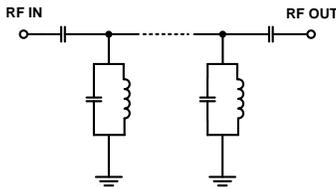
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Center Frequency	—	—	940	—	MHz	
	Insertion Loss	F1-F2	880 - 1000	—	1.2	2.0	dB
	VSWR	F1-F2	880 - 1000	—	1.3	1.9	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 800	20	34	—	dB
	VSWR	DC-F3	DC - 800	—	40	—	:1
Stop Band, Upper	Insertion Loss	F4-F5	1095 - 1840	20	30	—	dB
	VSWR	F4-F5	1095 - 1840	—	48	—	:1

### Maximum Ratings

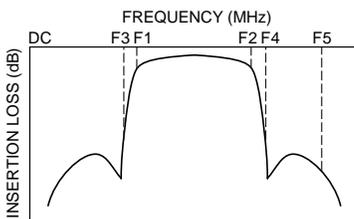
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input*	12.6W max. at 25°C

\*Derate linearly to 7.5W at 85°C  
Permanent damage may occur if any of these limits are exceeded.

### Functional Schematic



### Typical Frequency Response

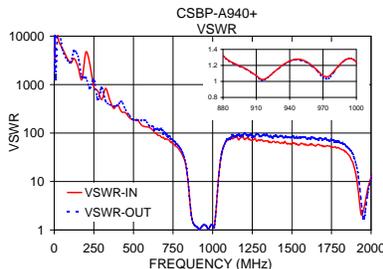
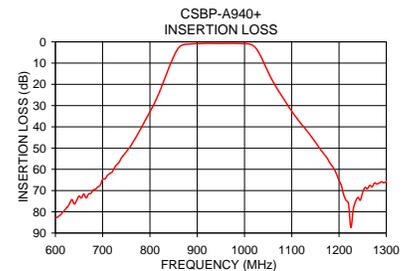
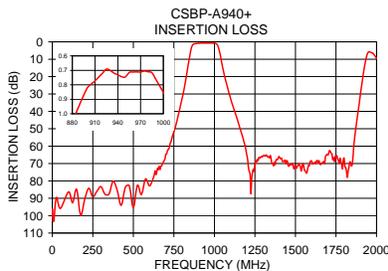


### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR-In (:1)	VSWR-Out (:1)
0.5	99.38	5380.68	2264.64
500	95.35	186.58	188.25
740	54.47	66.04	73.83
800	32.90	40.20	45.93
840	12.28	13.97	14.48
850	7.04	6.76	6.83
860	2.93	2.94	2.95
880	1.07	1.32	1.33
940	0.73	1.25	1.25
1000	0.85	1.24	1.24
1020	2.05	2.25	2.25
1025	3.24	3.65	3.65
1030	4.92	6.09	6.07
1055	16.47	34.99	36.37
1095	31.02	70.46	74.91
1170	53.30	76.62	91.07
1840	69.32	42.00	54.52
1900	30.74	16.10	26.18

**+ 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.



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IFIRF MICROWAVE COMPONENTS

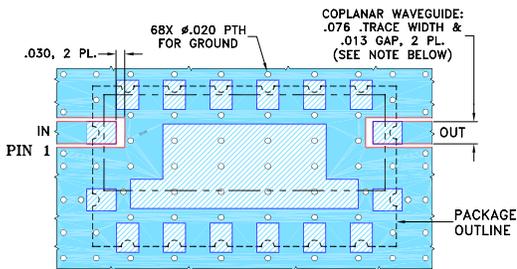
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## Pad Connections

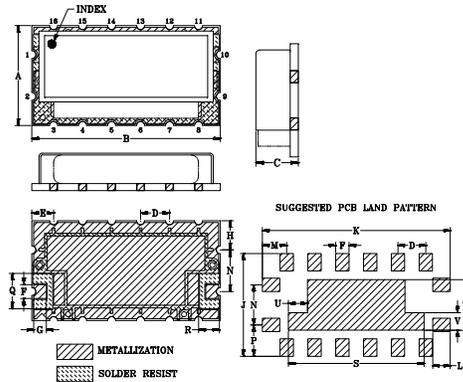
INPUT	1
OUTPUT	10
GROUND	2 to 9, 11 to 16

## Demo Board MCL P/N: TB-578+ Suggested PCB Layout (PL-331)



- 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 )

A	B	C	D	E	F	G	H	J	K	L
.550	1.040	.225	.160	.120	.077	.070	0.16	0.59	1.08	0.10
13.97	26.42	5.72	4.06	3.05	1.96	1.78	4.06	14.99	27.43	2.54
M	N	P	Q	R	S	T	U	V	wt	
0.14	.230	.180	.195	.115	.780	0.29	0.11	.100	grams	
3.56	5.84	4.57	4.95	2.92	19.81	7.37	2.79	2.54	4.80	