

# Surface Mount Bandpass Filter

## SXBP-20R5+

50Ω      20 to 21 MHz

### The Big Deal

- Low frequency - Good for IF stage
- Narrow band, 4.87% bandwidth
- High rejection, 40dB from 40-400 MHz
- Fast roll-off
- Good VSWR, 1.3:1 Typical



CASE STYLE: HF1139

### Product Overview

The SXBP-20R5+ is a narrow-band bandpass filter fabricated using SMT technology. Covering 20 MHz to 21 MHz band width, these units offer good matching within the passband and high rejection. This unit uses a miniature high Q capacitors and wire welded inductors for high reliability. It has repeatable performance across production lots and consistent performance across temperature.

### Key Features

Feature	Advantages
Narrow bandwidth filter (Fractional bandwidth < 5%)	Fast roll-off, this will attenuate frequencies closer to the passband with good rejection value of > 20dB.
More than 40dB rejection up to 400 MHz	This enables the filter to attenuate spurious signals and reject harmonics for a broad band of frequency. It will be an excellent choice for IF stage filtering
Good VSWR, 1.3:1 typical in passband	The SXBP-20R5+ has very good return loss for a narrow bandwidth which provides good interface when used with other devices.
Small size, 0.44" x 0.74" x 0.27"	The surface mount package enables the SXBP-20R5+ to be used in compact designs.

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ISO 9001 ISO 14001 AS 9100 CERTIFIED

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IF/RF MICROWAVE COMPONENTS

For detailed performance specs  
& shopping online see web site

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

## SXBP-20R5+

50Ω 20 to 21 MHz



CASE STYLE: HF1139  
PRICE: \$17.95 ea. QTY (1-9)

### Features

- Flat group delay over passband
- Good VSWR, 1.3:1 typical in passband
- High rejection (40dB form 40-400 MHz)
- Shielded case
- Aqueous washable

### Applications

- Transmitters / Receivers - IF stage
- Harmonic rejection
- Test equipments
- Military

### Electrical Specifications at 25°C

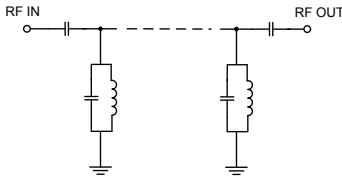
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	20.5	—	MHz
	Insertion Loss	F1-F2	20-21	2.2	3.0	dB
	VSWR	F1-F2	20-21	1.3	1.6	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-17	20	31	dB
	VSWR	DC-F3	DC-17	—	42	:1
Stop Band, Upper	Insertion Loss	F4-F5	27-400	20	28	dB
	VSWR	F4-F5	27-400	—	50	:1

### Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5W max.

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

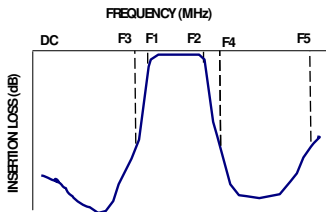
### Functional Schematic



### Typical Performance Data at 25°C

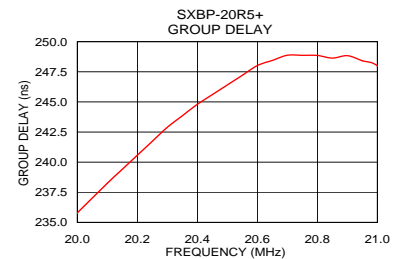
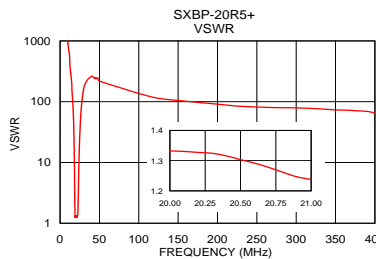
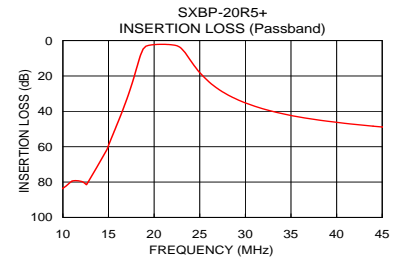
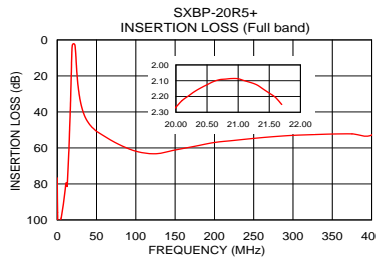
Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
0.03	76.64	1304.10	20.00	235.80
12.60	81.43	380.10	20.10	238.25
15.80	49.13	113.75	20.15	239.42
17.00	33.20	54.92	20.20	240.58
17.90	18.85	18.24	20.25	241.74
18.30	11.73	7.19	20.30	242.90
18.70	5.85	2.39	20.35	243.85
19.00	3.67	1.35	20.40	244.80
20.00	2.27	1.33	20.45	245.61
20.50	2.13	1.30	20.50	246.41
21.00	2.09	1.24	20.55	247.21
21.70	2.25	1.31	20.60	248.02
22.60	3.12	1.50	20.65	248.45
23.30	6.19	3.74	20.70	248.87
27.00	27.28	79.81	20.75	248.86
40.00	46.20	263.30	20.80	248.85
50.00	50.78	218.64	20.85	248.64
100.00	61.81	136.47	20.90	248.84
200.00	56.98	91.11	20.95	248.42
400.00	52.81	64.62	21.00	248.00

### Typical Frequency Response



+ 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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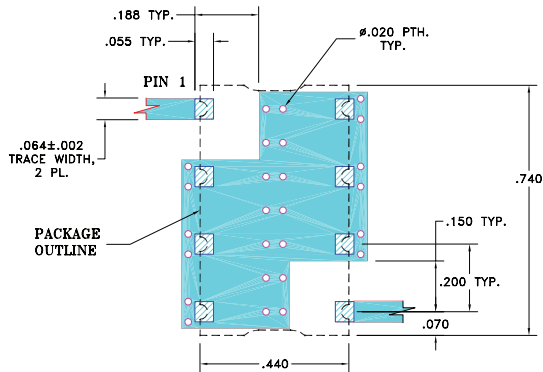
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## Pad Connections

INPUT	1
OUTPUT	8
GROUND	2,3,4,5,6,7

## Demo Board MCL P/N: TB-368 Suggested PCB Layout (PL-230)

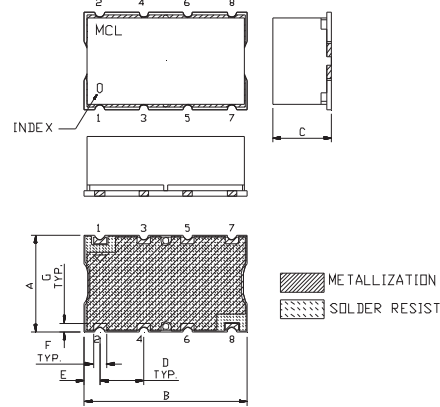


### NOTE:

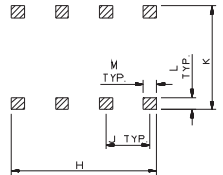
- TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS: .025" ± .002". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## Outline Drawing



## PCB Land Pattern



## Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
.44	.74	.27	.200	.07	.060	.040
11.18	18.80	6.86	5.08	1.78	1.52	1.02
H	J	K	L	M	wt	
.660	.200	.470	.055	.060	grams	
16.76	5.08	11.94	1.40	1.52	3.0	