

Surface Mount Bandpass Filter

BPF-E16+

50Ω 2 to 30 MHz

The Big Deal

- Low insertion loss (1 dB typical)
- Good VSWR (1.4:1 typical)
- High rejection
- Fast roll-off



CASE STYLE: HR1176

Product Overview

The BPF-E16+ is a 50Ω band pass filter in a shielded package (size of 1.20" x 1.20" x 0.370") fabricated using SMT technology. These units offer good matching within the pass band and high rejection. This unit has miniature high Q capacitors and wire welded inductors for high reliability. In addition it has repeatable performance across production lots and consistent performance across temperature.

Key Features

| Feature | Advantages |
|---------------------------------------|---|
| Sharp shape factor | Sharp shape factor helps in adjacent channel rejection and increased selectivity. |
| Good VSWR, 1.4:1 typical in passband | The BPF-E16+ has very good return loss which provides good matching when used with other devices. |
| More than 40dB rejection up to 500MHz | This enables the filter to attenuate spurious signals and reject harmonics for broad band of frequency. |
| Shielded case | Reduced interference with and from the surrounding components. |

Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document 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



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CASE STYLE: HR1176

Features

- Excellent VSWR, 1.4:1 typical in passband
- High rejection
- Sharp insertion loss roll off
- Shielded case
- Aqueous washable

Applications

- Harmonic rejection
- Transmitters / receivers
- Lab use

Electrical Specifications at 25°C

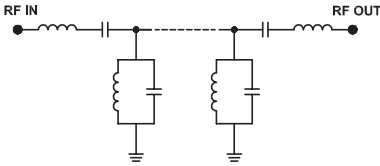
| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|------------------|------------------|-----------------|--------|------|------|------|
| Pass Band | Center Frequency | — | — | 16 | — | MHz |
| | Insertion Loss | F1-F2 | 2-30 | 1.5 | 3.0 | dB |
| | VSWR | F1-F2 | 2-30 | 1.4 | 1.9 | :1 |
| Stop Band, Lower | Insertion Loss | DC-F3 | DC-1.4 | 20 | 40 | dB |
| | VSWR | DC-F3 | DC-1.4 | — | 21 | :1 |
| Stop Band, Upper | Insertion Loss | F4-F5 | 35-500 | 20 | 32 | dB |
| | VSWR | F4-F5 | 35-500 | — | 22 | :1 |

Maximum Ratings

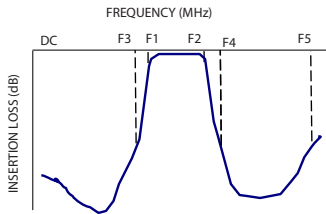
| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| RF Power Input | 0.5W max. |

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

Functional Schematic



Typical Frequency Response

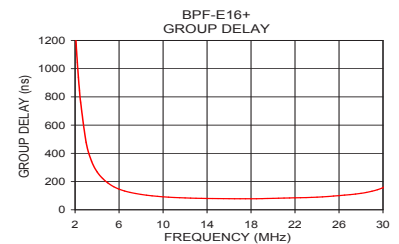
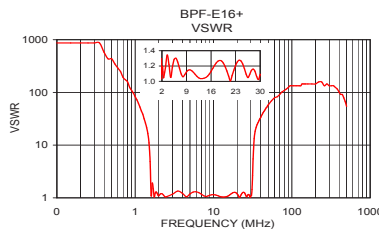
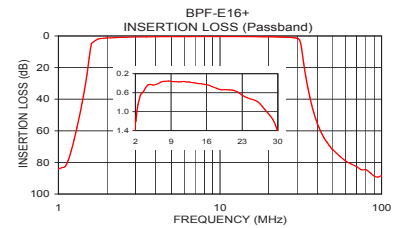
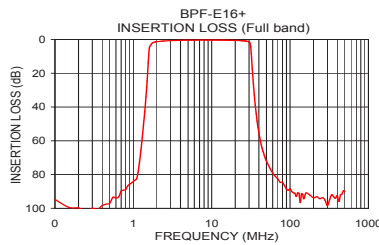


Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) | Frequency (MHz) | Group Delay (nsec) |
|-----------------|---------------------|-----------|-----------------|--------------------|
| 0.10 | 89.63 | 868.59 | 2 | 1325.56 |
| 1.20 | 72.57 | 44.55 | 4 | 269.01 |
| 1.40 | 41.88 | 21.46 | 6 | 146.43 |
| 1.50 | 23.78 | 11.03 | 8 | 108.69 |
| 1.55 | 12.95 | 4.88 | 10 | 91.88 |
| 1.60 | 4.84 | 1.10 | 11 | 87.19 |
| 1.70 | 2.58 | 1.49 | 12 | 84.03 |
| 2.00 | 1.25 | 1.09 | 13 | 81.77 |
| 3.00 | 0.70 | 1.18 | 14 | 80.25 |
| 16.00 | 0.49 | 1.13 | 15 | 79.26 |
| 25.00 | 0.81 | 1.23 | 16 | 78.69 |
| 30.00 | 1.47 | 1.09 | 17 | 78.29 |
| 31.00 | 2.29 | 1.44 | 18 | 78.21 |
| 31.50 | 4.11 | 2.65 | 20 | 80.84 |
| 32.00 | 7.86 | 5.47 | 22 | 84.77 |
| 33.00 | 17.29 | 13.29 | 24 | 89.39 |
| 35.00 | 32.63 | 21.73 | 25 | 94.14 |
| 40.00 | 54.55 | 33.42 | 26 | 100.52 |
| 200.00 | 91.51 | 144.77 | 28 | 116.42 |
| 500.00 | 93.56 | 54.29 | 30 | 156.93 |

+RoHS Compliant

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



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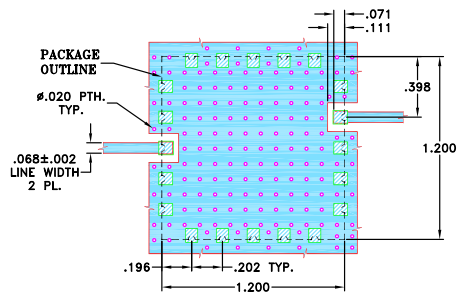
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REV. A
M160153
BPF-E16+
EDR-8470/3U
RAV/URJ/NY
161230
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Pad Connections

| | |
|--------|--------------------|
| INPUT | 18 |
| OUTPUT | 9 |
| GROUND | 1-8, 10-17, 19-,20 |

Demo Board MCL P/N: TB-573+
Suggested PCB Layout (PL-329)

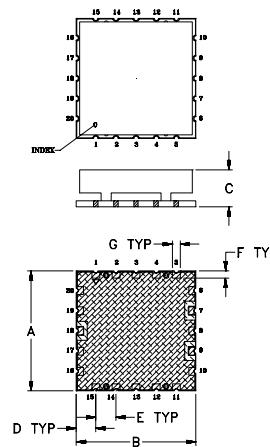


NOTES:

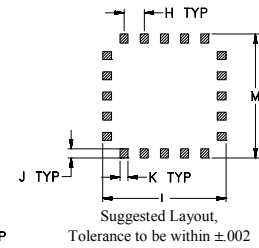
- TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030"±.003". COPPER: 1/2 OZ. EACH SIDE.
 FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

Outline Drawing



PCB Land Pattern



Suggested Layout,
 Tolerance to be within ±.002

- METALLIZATION
- SOLDER RESIST

Outline Dimensions (inch / mm)

| A | B | C | D | E | F | G |
|-------|-------|------|-------|-------|-------|------|
| 1.200 | 1.200 | .370 | .196 | .202 | .071 | .079 |
| 30.48 | 30.48 | 9.40 | 4.98 | 5.13 | 1.80 | 2.01 |
| H | J | K | L | M | wt | |
| .202 | .091 | .079 | 1.240 | 1.240 | grams | |
| 5.13 | 2.31 | 2.01 | 31.50 | 31.50 | 8.5 | |

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