

Ceramic

Bandpass Filter

BPJC-542R+

50Ω 4900 to 5900 MHz

The Big Deal

- Passband optimized for high band Wi-Fi
- Tiny size, 0603
- High rejection, 40 dB in lower stopband;
34 dB in upper stopband
- Low cost



CASE STYLE: JC0603C-1

Product Overview

Mini-Circuits' BPJC-542R+ is an LTCC bandpass filter with a passband from 4900 to 5900 MHz, optimized for use in Wi-Fi high-band applications. This model provides 1.0 dB passband insertion loss, 40 dB lower stopband rejection and 34 dB upper stopband rejection. The filter is capable of handling up to 1W RF input power and provides a wide operating temperature range from -55 to +100°C. Utilizing LTCC construction, the unit is fabricated in a tiny ceramic monolith (0.08 x 0.05 x 0.02") with excellent repeatability and low cost, suitable for volume production.

Key Features

| Feature | Advantages |
|---|--|
| Passband optimized for high band Wi-Fi. | Optimized for the 4900 to 5900 MHz passband, this model is ideal for cleaning signal in high band Wi-Fi applications. |
| Tiny size (0.06 x 0.04 x 0.02") | Minimizes performance variations due to parasitics and saves space in dense circuit board layouts. |
| High stopband rejection | Effective suppression of unwanted out-of-band spurs over a wide stopband range results in better receiver sensitivity and dynamic range. |
| Wraparound terminations | Excellent solderability and easy visual inspection. |
| Wide operating temperature range, -55 to +100°C | Reliable performance in extreme environments. |



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+RoHS Compliant

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

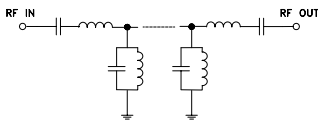
Features

- High Rejection.
- miniature size 0603 (1.6x0.8mm)
- LTCC construction
- low cost
- aqueous washable

Applications

- ISM Band
- WLAN
- Bluetooth
- Zigbee

Functional Schematic



Electrical Specifications at 25°C

| Parameter | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|------------------|------------------|--------------|------|------|------|
| Pass Band | Center Frequency | — | 5400 | — | MHz |
| | Insertion Loss | — | 1.0 | 1.5 | dB |
| | VSWR | — | 1.4 | 2 | :1 |
| Stop Band, Lower | Rejection | DC – 2700 | 29 | 40 | dB |
| Stop Band, Upper | Rejection | 9800 - 12000 | 30 | 34 | dB |

1. Tested on Evaluation Board TB-BPJC-542R+

Maximum Ratings

| | |
|-----------------------|-----------------|
| Operating Temperature | -55°C to +100°C |
| Storage Temperature* | -55°C to +100°C |
| RF Power Input | 1W |

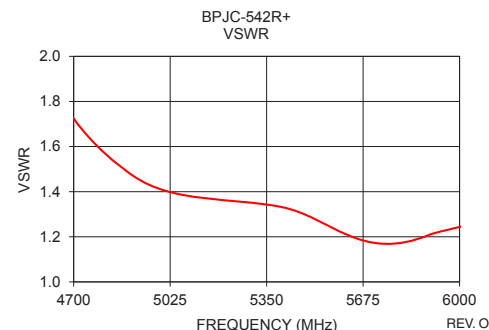
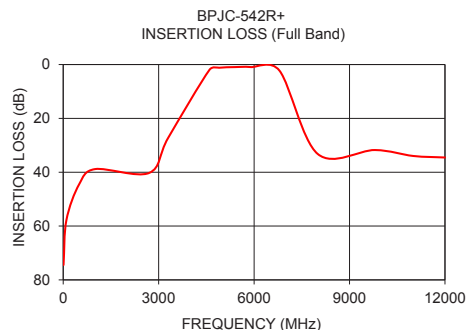
* Refer to product storage temperature after installation
Suggestion for T&R unused product storage condition:
+5 ~ +35 °C, Humidity 45~75%RH, 12 month Max

Typical Performance Data at 25°C

| Frequency (GHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 10 | 74.45 | 252.64 |
| 100 | 57.82 | 226.98 |
| 500 | 44.50 | 128.68 |
| 1000 | 38.84 | 96.27 |
| 2700 | 40.27 | 65.23 |
| 3300 | 27.22 | 41.86 |
| 4600 | 1.93 | 2.07 |
| 4900 | 1.19 | 1.47 |
| 5400 | 0.95 | 1.33 |
| 5900 | 0.95 | 1.21 |
| 6800 | 2.30 | 2.10 |
| 8000 | 33.22 | 15.80 |
| 9800 | 31.76 | 29.52 |
| 11000 | 33.96 | 34.59 |
| 12000 | 34.54 | 38.23 |

Pad Connections

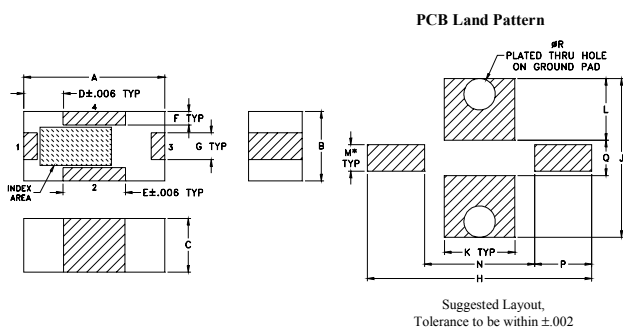
| | |
|--------|-----|
| Input | 1 |
| Output | 3 |
| Ground | 2,4 |



Bandpass Filter

BPJC-542R+

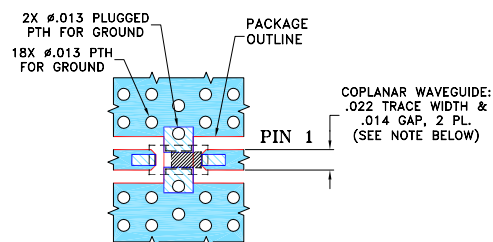
Outline Drawing





Pad Connections

| | |
|--------|-----|
| Input | 1 |
| Output | 3 |
| Ground | 2,4 |

Evaluation Board MCL P/N: TB-BPJC-542R+ Suggested PCB Layout (PL-412)



NOTES:

- TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS $.010" \pm .001"$. COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP 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 Dimensions ($\frac{\text{inch}}{\text{mm}}$)

| A | B | C | D | E | F | G | H | J |
|------|------|------|------|------|------|------|-------|------|
| .063 | .031 | .024 | .018 | .028 | .006 | .012 | .100 | .071 |
| 1.60 | 0.79 | 0.61 | 0.46 | 0.71 | 0.15 | 0.30 | 2.54 | 1.80 |
| K | L | M | N | P | Q | R | wt | |
| .032 | .028 | .012 | .049 | .026 | .016 | .014 | grams | |
| 0.81 | 0.71 | 0.30 | 1.24 | 0.66 | 0.41 | 0.36 | 0.005 | |

Additional Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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