

Low Pass Filter

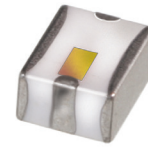
LFCV-45+

50Ω

DC to 45 MHz

The Big Deal:

- Small size 3.2mm x 2.5 mm
- High Power handling (8W)
- High rejection (50 dB typ)
- Ceramic construction



CASE STYLE: JV1210C

Product Overview:

New Low Pass Filter LFCV-45+ is an LTCC based 7 section design, that extends the lower frequency cutoff range of the existing LFCN series to 45 MHz. Systems that previously relied on active or lumped element filtering to support these lower frequencies can save power and system complexity by integrating the LFCV-45+ into new designs. These filters are offered in a EIA 1210 package size and have a typical stop band rejection of 50 dB.

Summary Performance

| | | |
|----------------------------|-------------|---------|
| Insertion Loss (Pass band) | 1.2 dB Max. | 45 MHz |
| Return Loss (Pass band) | 20 dB Typ. | 45 MHz |
| Stop band Rejection | 20 dB Min. | 120 MHz |
| Stop band Rejection | 50 dB typ. | 180 MHz |

Key Features

| Feature | Advantages |
|----------------------------|---|
| Small Size (3.2mm x2.5 mm) | Available in the size of typical resistors or capacitors (EIA 1210), the ultra small LFCV series integrates up to 7 low pass sections in a simple SMT chip form factor. |
| High Power Handling | The LFCV series can withstand up to 8W CW signal without damage making this filter ideal for use in medium power to transmit paths. |
| Temperature Stability | Over a 155°C operating temperature range (-55°C to +100°C), the LFCV series ceramic filters typically exhibit less than 0.2 dB pass band insertion loss variation, and less than 0.4 dB rejection variation at the 20 dB point (as measured on a single unit) |
| High Rejection | Achieving 50dB rejection @ 180 MHz; the LFCV-45+ provides a versatile anti aliasing solution for high data rate receivers. |

Notes

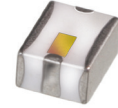
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B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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Ceramic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

50Ω DC to 45 MHz

LFCV-45+



Generic photo used for illustration purposes only
CASE STYLE: JV1210C

+RoHS Compliant

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

Maximum Ratings

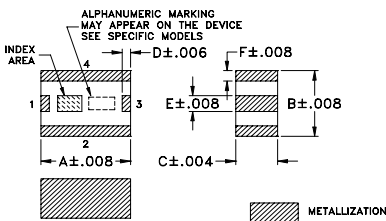
| | |
|-----------------------|-------------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature | -55°C to 100°C |
| RF Power Input* | 8.5W max. at 25°C |

* Passband rating, derate linearly to 3.5W at 100°C ambient.
Permanent damage may occur if any of these limits are exceeded.

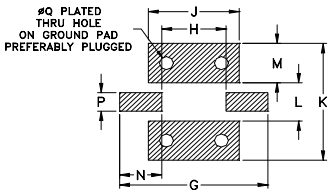
Pin Connections

| | |
|--------|-----|
| RF IN | 1 |
| RF OUT | 3 |
| GROUND | 2,4 |

Outline Drawing



PCB Land Pattern

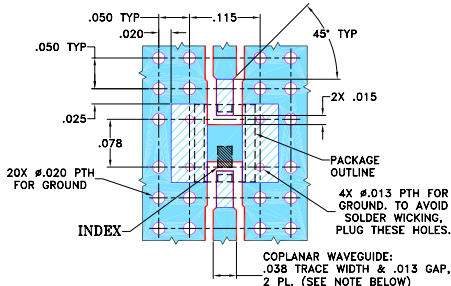


Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch)

| A | B | C | D | E | F | G | H |
|------|------|------|------|------|------|------|-------|
| .126 | .098 | .059 | .012 | .024 | .016 | .209 | .091 |
| 3.20 | 2.49 | 1.50 | 0.30 | 0.61 | 0.41 | 5.31 | 2.31 |
| J | K | L | M | N | P | Q | wt |
| .128 | .175 | .057 | .059 | .059 | .028 | .020 | grams |
| 3.25 | 4.45 | 1.45 | 1.50 | 1.50 | 0.71 | 0.51 | .03 |

Demo Board MCL P/N: TB-526+ Suggested PCB Layout (PL-307)



NOTES:

1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP 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

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Features

- excellent power handling, 8.5W
- small size
- 7 sections
- temperature stable
- hermetically sealed
- protected by U.S. Patent 6,943,646

Applications

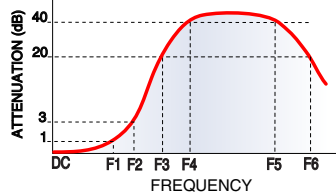
- harmonic rejection
- VHF/UHF transmitters/receivers
- anti-aliasing for A/D converter

Electrical Specifications^{1,2} at 25°C

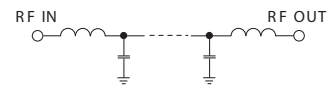
| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit | |
|-----------|----------------|-----------------|----------|------|------|------|----|
| Pass Band | Insertion Loss | DC-F1 | DC-45 | — | — | 1.2 | dB |
| | Freq. Cut-Off | F2 | 77 | — | 3.0 | — | dB |
| | VSWR | DC-F1 | DC-45 | — | 1.2 | — | :1 |
| Stop Band | Rejection Loss | F3 | 120 | 20 | — | — | dB |
| | | F4-F5 | 150-910 | — | 40 | — | dB |
| | VSWR | F6 | 1000 | — | 20 | — | dB |
| | | F3-F6 | 120-1000 | — | 20 | — | :1 |

1. Coupling capacitors at input and output are recommended for use in applications that require DC isolation of input to output port or either port to ground.
2. Measured on Mini-Circuits Characterization Test Board TB-526+.

Typical Characterization Response



Electrical Schematic



Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 0.30 | 0.42 | 1.09 |
| 29.00 | 0.74 | 1.17 |
| 37.00 | 0.89 | 1.19 |
| 40.00 | 0.95 | 1.19 |
| 60.00 | 1.43 | 1.29 |
| 75.00 | 2.66 | 2.03 |
| 95.00 | 11.96 | 9.18 |
| 120.00 | 27.64 | 15.67 |
| 140.00 | 36.43 | 17.93 |
| 150.00 | 39.88 | 18.90 |
| 190.00 | 53.36 | 23.49 |
| 400.00 | 49.60 | 57.91 |
| 700.00 | 60.72 | 96.51 |
| 900.00 | 41.65 | 82.73 |
| 1100.00 | 12.04 | 5.54 |

