

Ceramic

Low Pass Filter

LFCW-1142+

50Ω

DC to 11.4 GHz

The Big Deal

- Small size 0603 (1.6 x 0.8 mm)
- Low insertion loss, 2.2 dB typical
- Rejection 20 dB typical from 12.7 to 16.8 GHz
- Good power handling, 6.3W



CASE STYLE: JC0603C-1

Product Overview

Mini-Circuits' LFCW-1142+ is a Low Temperature Co-fired Ceramic (LTCC) low pass filter, designed in a very small, 0603 package. The multilayer construction provides high repeatability of performance. Small, wrap-around terminations minimize variations in performance due to parasitics. Covering DC – 11.4 GHz, these units offer low insertion loss, good rejection, and excellent power handling capability.

Key Features

| Feature | Advantages |
|---|---|
| Small size 0603 (1.6 x 0.8 mm) | Allows for high layout density of circuit boards while minimizing the effects of parasitics. |
| Stop band rejection 20 dB typical over 12.7 –16.8 GHz | Provides good rejection in a tiny package, saving PCB space for customers. |
| Wrap-around terminations | Provides excellent solderability and easy visual inspection. |
| LTCC construction | Rugged package, well-suited for tough environments including high humidity and high temperature extremes. |



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Low Pass Filter

LFCW-1142+

50Ω DC¹ to 11.4 GHz

Features

- Good power handling, 6.3W
- Small size 0603 (1.6 x 0.8 mm)
- 7 sections
- Temperature stable
- LTCC construction



CASE STYLE: JC0603C-1

+RoHS Compliant

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

Applications

- Harmonic Rejection
- VHF/UHF transmitters / receivers
- lab use

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

| Parameter | F# | Frequency (GHz) | Min. | Typ. | Max. | Unit |
|------------------|----------------|-----------------|---------------|------|------|------|
| Pass Band | Insertion Loss | DC - F1 | DC - 11.4 | — | 2.6 | dB |
| | Freq. cut-off | F2 | 11.7 | — | 3.0 | dB |
| | VSWR | DC - F1 | DC - 11.4 | — | 1.85 | :1 |
| Stop Band | Rejection Loss | F3 | 12.7 | — | — | dB |
| | | F4 - F5 | 12.86 - 13.86 | 23 | 28.5 | :1 |
| | | F6 | 16.8 | — | 20 | dB |

¹ In Application where DC voltage is present at either input or output port, coupling capacitors are required.

² Measured on Mini-Circuits Characterization Test Board TB-720+

Maximum Ratings

| | |
|-----------------------|-----------------|
| Operating Temperature | -55°C to +100°C |
| Storage Temperature | -55°C to +100°C |
| RF Power Input* | 6.3W at 25°C |

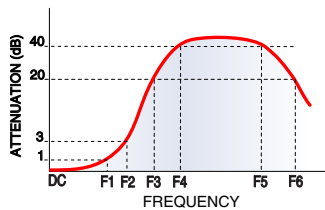
*Passband rating, derate linearly to 3.2W at 100°C ambient (Reference AN-75-005)

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

Typical Performance Data at 25°C

| Frequency (GHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 0.01 | 0.02 | 1.02 |
| 0.50 | 0.13 | 1.06 |
| 1.00 | 0.17 | 1.12 |
| 3.00 | 0.33 | 1.30 |
| 5.00 | 0.39 | 1.23 |
| 7.00 | 0.44 | 1.09 |
| 9.00 | 0.66 | 1.15 |
| 10.00 | 0.95 | 1.34 |
| 11.40 | 1.90 | 1.49 |
| 11.70 | 2.49 | 1.57 |
| 12.70 | 25.16 | 8.57 |
| 12.86 | 36.87 | 10.65 |
| 13.86 | 42.42 | 21.84 |
| 15.21 | 35.60 | 36.45 |
| 16.80 | 23.97 | 38.76 |
| 18.00 | 19.40 | 34.10 |
| 20.00 | 15.10 | 27.70 |

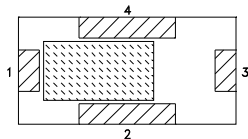
Specification Definition



Functional Schematic

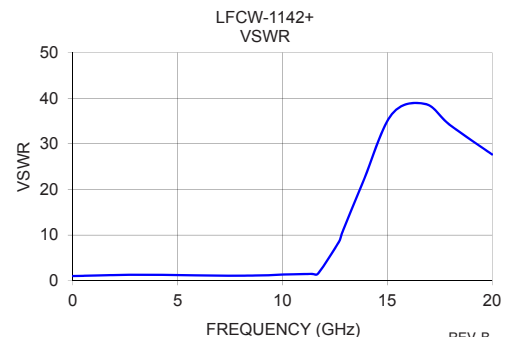
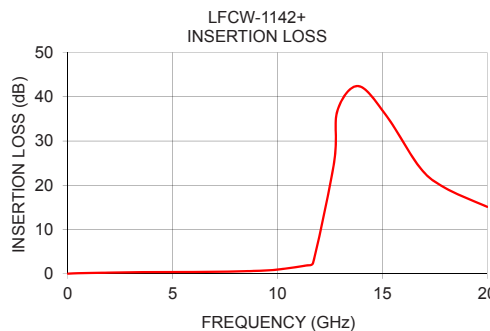


Top View

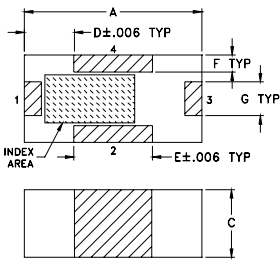


Pad Connections

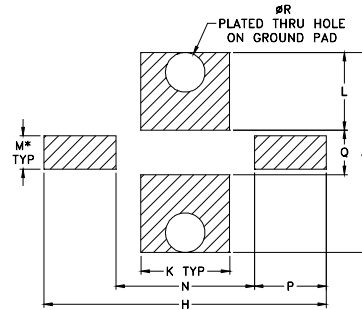
| | |
|--------|-----|
| Input | 1 |
| Output | 3 |
| Ground | 2,4 |



Outline Drawing

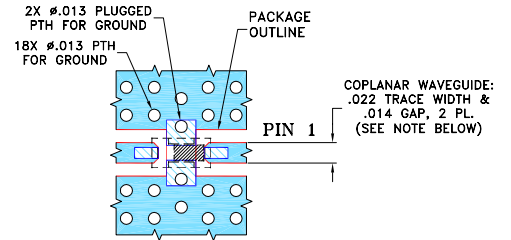


PCB Land Pattern



Suggested Layout,
Tolerance to be within $\pm .002$

Demo Board MCL P/N: TB-720+ 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.

Pad Connections

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

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.
- 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