

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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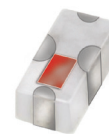
Features

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

Applications

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

LFCW-1142+



CASE STYLE: JC0603C-1

+RoHS Compliant

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

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	20	—	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

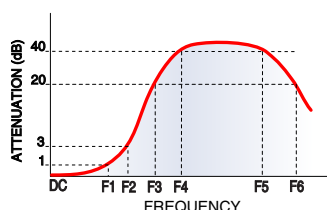
*Passband rating, derate linearly to 3.2W at 100°C ambient (Reference AN-75-005)

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

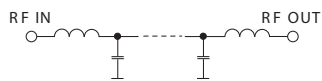
Typical Performance Data at 25°C

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

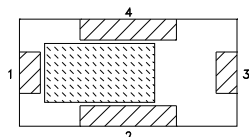
Specification Definition



Functional Schematic



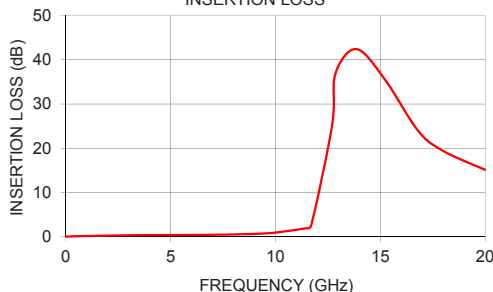
Top View



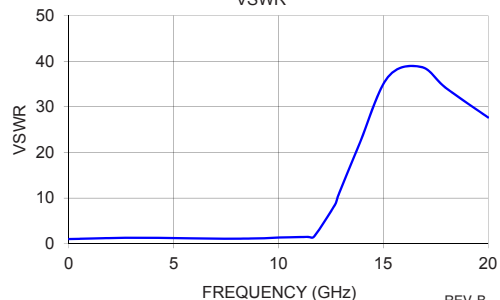
Pad Connections

Input	1
Output	3
Ground	2,4

LFCW-1142+
INSERTION LOSS



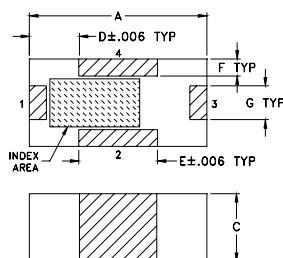
LFCW-1142+
VSWR



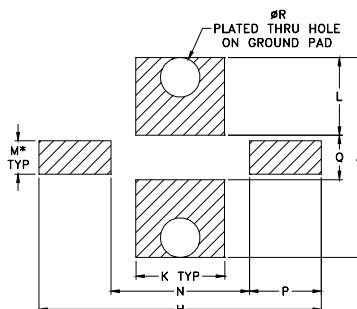
Low Pass Filter

LFCW-1142+

Outline Drawing



PCB Land Pattern



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

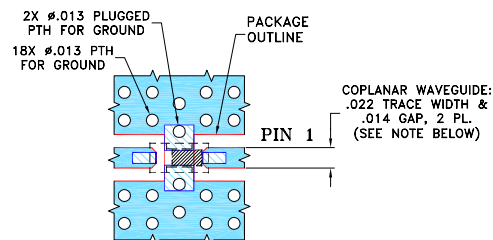
Pad Connections

Input	1
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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	

Demo Board MCL P/N: TB-720+ Suggested PCB Layout (PL-412)



NOTES:

1. 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.
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.

Additional 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

