



Mini-Circuits

LUMPED LC SURFACE MOUNT

## Low Pass Filter

LPHI-90+

50 $\Omega$ 

DC to 90 MHz

## KEY FEATURES

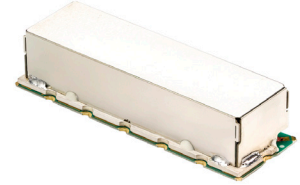
- Excellent Rejection of 80 dB Typ.
- Fast Roll-off Transition at Stopband
- Good Insertion Loss of 2 dB Typ.

## APPLICATIONS

- Test and Measurements
- Harmonic Rejection
- Receivers/Transmitters

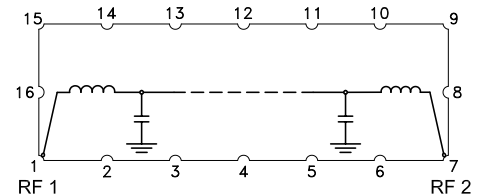
## PRODUCT OVERVIEW

Mini-Circuits' LPHI-90+ is a Lumped LC filter in a metal shielded package, that offers a good insertion loss and high rejection. This low pass filter covers from DC to 90 MHz and the stopband up to 1.8 GHz. This filter has high Q capacitors and inductors to achieve a low insertion loss. It has repeatable performance across production lots.



Generic photo used for illustration purposes only

## FUNCTIONAL DIAGRAM

ELECTRICAL SPECIFICATIONS<sup>1,2</sup> AT +25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Insertion Loss	DC-F1	DC - 90	—	2	2.7	dB
	Return Loss	DC-F1	DC - 90	12	20	—	dB
Stopband	Rejection	F2-F3	100 - 110	20	28	—	dB
		F3-F4	110 - 600	70	80	—	
		F4-F5	600 - 1800	58	72	—	

1. Tested in Evaluation Board P/N TB-LPHI-90+

2. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.

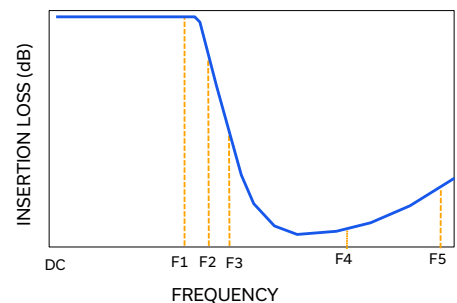
ABSOLUTE MAXIMUM RATINGS<sup>3</sup>

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power <sup>4</sup>	2 W at +25°C

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

4. Power rating applies only to signals within the passband. Power rating above +25°C, de-rate linearly to 0.5 W at +85°C.

## TYPICAL FREQUENCY RESPONSE



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[www.minicircuits.com](http://www.minicircuits.com) P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 [sales@minicircuits.com](mailto:sales@minicircuits.com)

 REV. OR  
 ECO-024893  
 LPHI-90+  
 EDU5069  
 URJ  
 250318  
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# Low Pass Filter

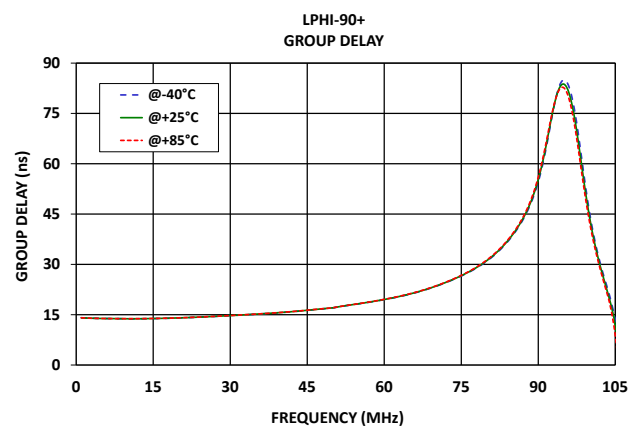
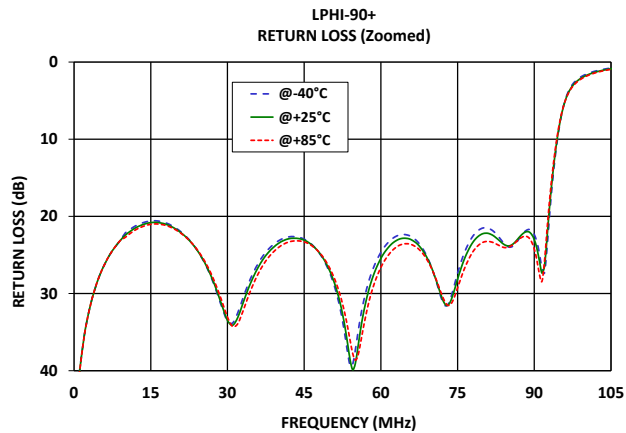
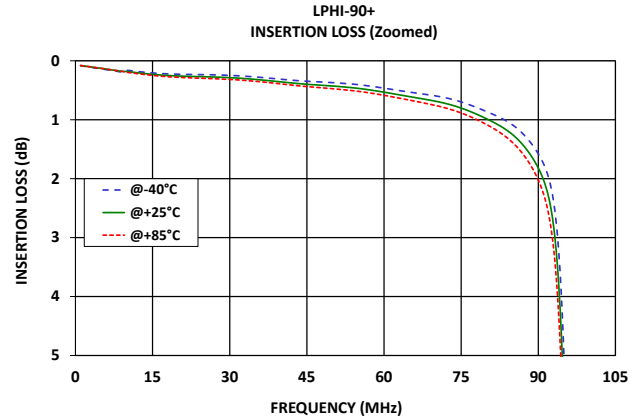
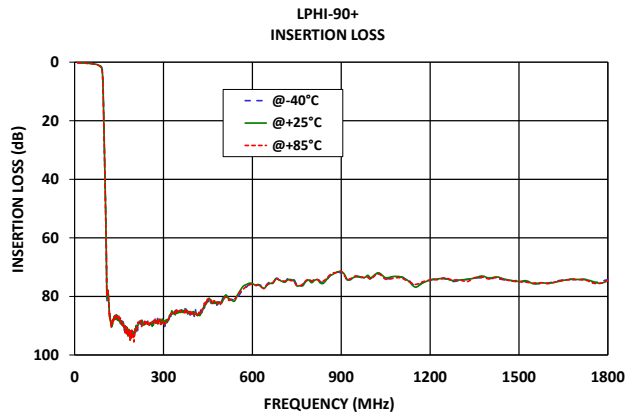
**LPHI-90+**

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50Ω

DC to 90 MHz

## TYPICAL PERFORMANCE GRAPHS





# LUMPED LC SURFACE MOUNT

# Low Pass Filter

# LPHI-90+

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## FUNCTIONAL DIAGRAM

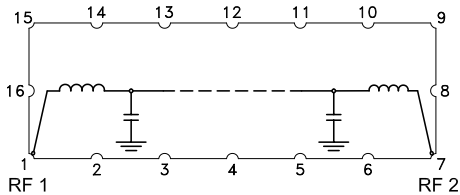


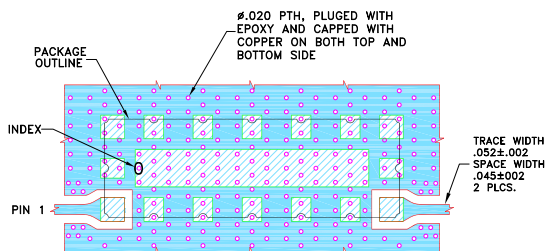
Figure 1. LPHI-90+ Functional Diagram

## PAD DESCRIPTION

Function	Pad Number	Description
RF1 <sup>2</sup>	1	Connects to RF Input Port
RF2 <sup>2</sup>	7	Connects to RF Output Port
GROUND	2-6 & 8-16	Connects to Ground on PCB, (See drawing PL-814)
NC	—	No connection, not used internally. See drawing PL-814 for connection to PCB

## SUGGESTED PCB LAYOUT (PL-814)

SUGGESTED MOUNTING CONFIGURATION  
FOR CASE STYLE BAN2915-1

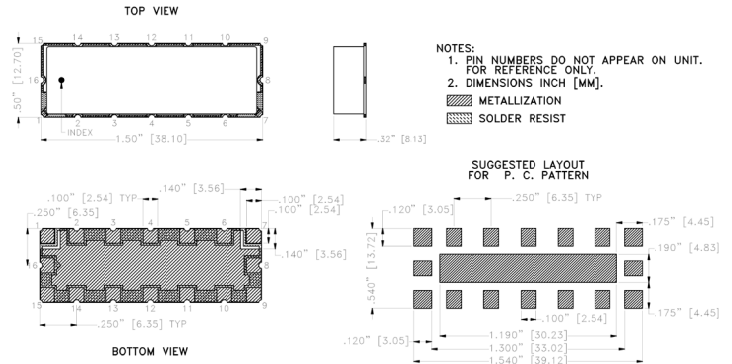


### NOTES:

1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS (R04350B) WITH DIELECTRIC THICKNESS .023±.002; 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 PATTERN WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
■ DENOTES PCB COPPER PATTERN FREE OF SOLDERMASK

Figure 2. Suggested PCB Layout PL-814

## CASE STYLE DRAWING



Weight: 6.5 gram

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015

## PRODUCT MARKING\*: LPHI-90

\*Marking may contain other features or characters for internal lot control.



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ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD.

[CLICK HERE](#)

Performance Data and Graphs	Data
	Graphs
	S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads
Case Style	BAN2915-1 Lead Finish: Gold over Nickel
RoHS Status	Compliant
Tape and Reel	TR-F019
Suggested Layout for PCB Design	PL-814
Evaluation Board	TB-LPHI-90+
	Gerber File
Environmental Rating	ENV02T1

## 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-Circuits' 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/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)

