

Coaxial Reflectionless Low Pass Filter

ZXLF Series

50Ω

DC to 11 GHz

The Big Deal

- Patented design terminates Stopband signals
- Stopband up to 35 GHz
- High Stopband rejection, up to 50 dB



Generic photo used for illustration purposes only
CASE STYLE: UK3042

Product Overview

Mini-Circuits' ZXLF Series reflectionless filters employ a novel filter topology which absorbs and terminates stop band signals internally rather than reflecting them back to the source. Reflectionless filters eliminate stopband reflections, allowing them to be paired with sensitive devices and used in applications that otherwise require circuits such as isolation amplifiers or attenuators. This is developed in a new broadband, stable connectorized package.

Key Features

Feature	Advantages
Easy integration with sensitive reflective components, e.g. mixers, multipliers	Reflectionless filters absorb unwanted signals, preventing reflections back to the source. This reduces generation of additional unwanted signals without the need for extra components like attenuators, improving system dynamic range.
Cascadable	Reflectionless filters can be cascaded in multiple sections to provide sharper and higher attenuation, while also preventing any standing waves that could affect pass band signals.
Excellent stability over temperature	Minimal variation in electrical performance across temperature.
Operating temperature up to 105°C	Suitable for operation close to high power components.
Broadband connectorized package	The connectorized package works well even in high frequencies and easy to interface with other devices. This is well suited for test setups.

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



Low Pass Filter

ZXLF-K421+

50Ω DC to 420 MHz



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CASE STYLE: UK3042
Connectors Model
2.92mm-F ZXLF-K421+

Features

- Match to 50Ω in the stop band, eliminates undesired reflections
- Cascadable
- Temperature stable, up to 105°C
- Protected by US Patent No. 8,392,495

Electrical Specifications at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	DC-F1	DC- 420	-	1.5	2.1	dB
	F2	610	-	3.0	-	dB
	DC-F1	DC- 420	-	1.2	-	:1
Stop Band	F3-F4	900 - 5200	11	14	-	dB
	F4-F5	5200 - 18000	-	24	-	dB
	F3-F4	900 - 5200	-	1.2	-	:1
	F4-F5	5200 - 18000	-	1.7	-	:1

Applications

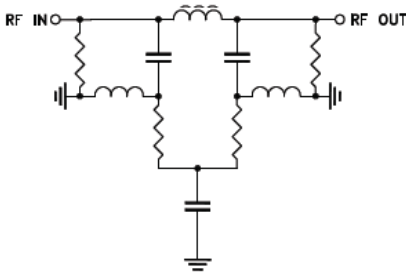
- Aerospace & Defense
- Military Radios

Absolute Maximum Ratings³

Parameter	Ratings
Operating Temperature	-55°C to +105°C
Storage Temperature	-55°C to +105°C
RF Power Input, Passband (DC-F1) ¹	2W at 25°C
RF Power Input, Stopband (F2-F5) ²	0.5W at 25°C

¹ Passband rating derates linearly to 1W at 105°C ambient
² Stopband rating derates linearly to 0.25W at 105°C ambient
³ Permanent damage may occur if any of these limits are exceeded

Functional Schematic



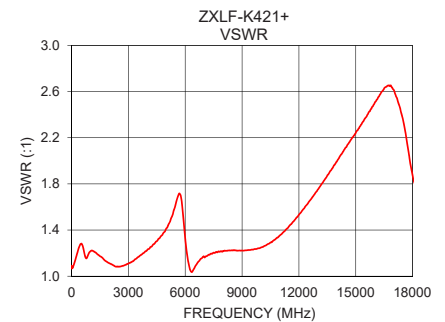
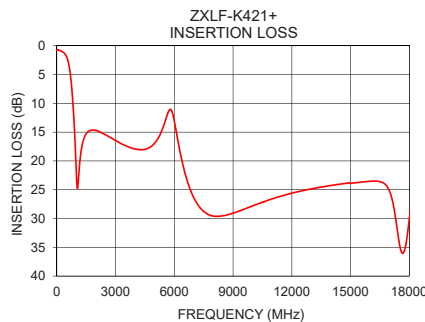
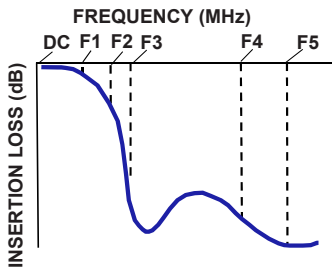
ESD rating

Human body model (HBM): Class 1A (250 to <500V) in accordance with ANSI/ESD 5.1-2001

Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
1	0.72	1.07
10	0.70	1.07
100	0.76	1.09
150	0.83	1.11
200	0.90	1.14
400	1.36	1.25
420	1.44	1.26
610	3.17	1.25
900	14.53	1.19
980	20.73	1.21
1000	22.38	1.22
4000	17.93	1.23
5000	16.92	1.41
5200	15.91	1.47
8000	29.59	1.22
10000	27.81	1.25
15000	23.90	2.24
16000	23.54	2.50
17000	25.36	2.62
18000	29.93	1.87

Typical Frequency Response



+RoHS Compliant

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

Notes

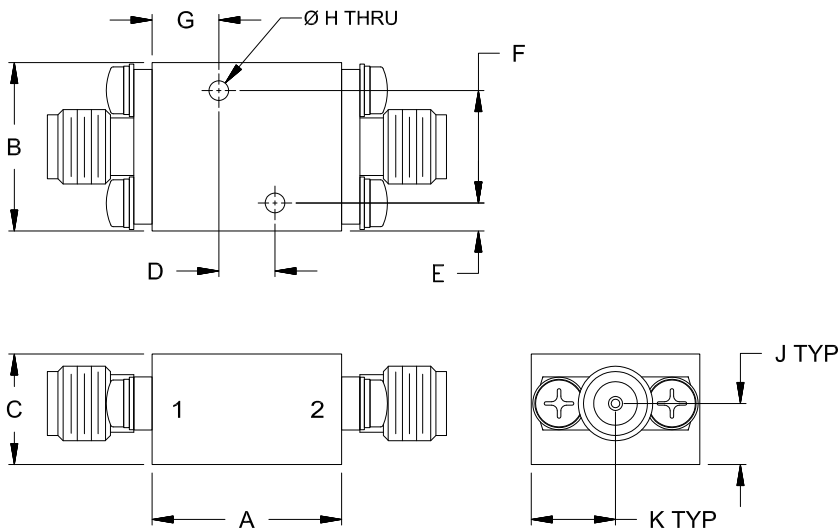
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Coaxial Connections

PORT - 1	2.92mm-Female
PORT - 2	2.92mm-Female

Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F
.68	.60	.39	.200	.10	.400
17.1	15.2	10.0	5.08	2.5	10.16
G	H	J	K	Wt.	
.24	.070	.22	.30	grams	
6.0	1.78	5.5	7.6	24	

Note: Please refer to case style drawing for details

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Coaxial Reflectionless Low Pass Filter

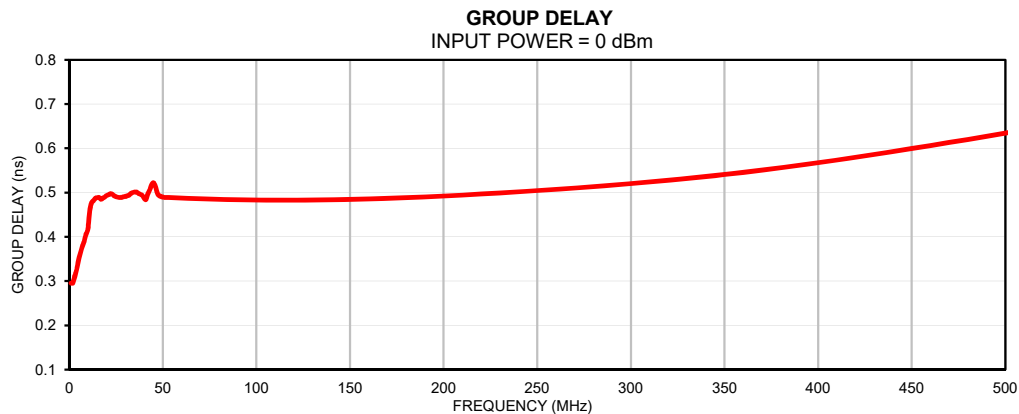
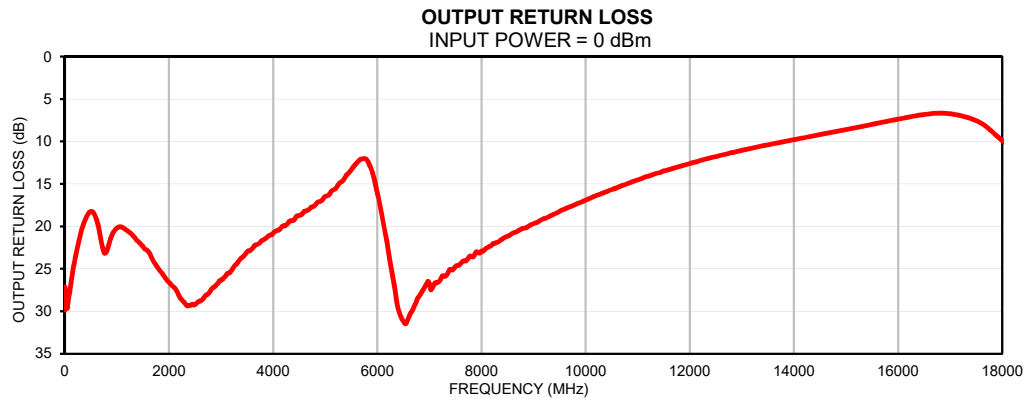
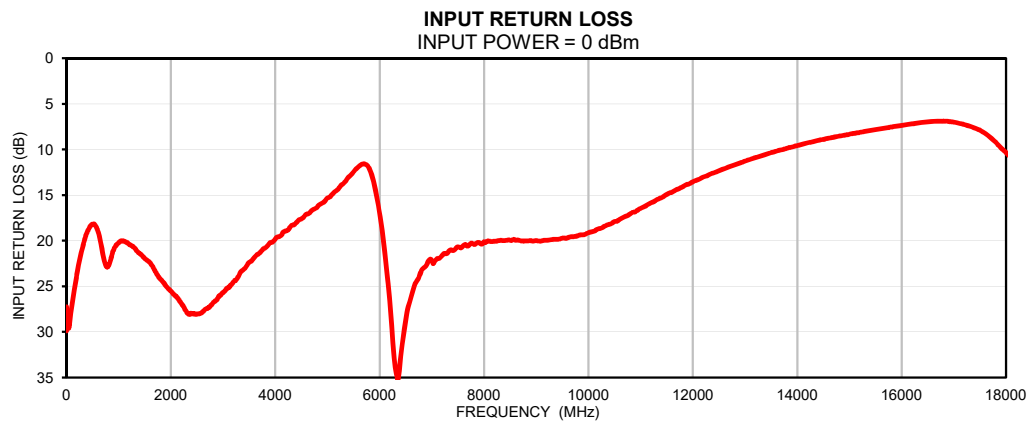
ZXLF-K421+

Typical Performance Data

FREQ.	Insertion Loss	Input Return Loss	Output Return Loss
(MHz)	(dB)	(dB)	(dB)
1	0.72	29.37	29.39
5	0.70	29.39	29.37
10	0.70	29.26	29.34
15	0.70	29.21	29.31
25	0.71	29.15	29.19
50	0.67	29.46	29.54
100	0.76	27.37	27.48
250	0.97	22.16	22.25
400	1.36	19.04	19.08
420	1.44	18.80	18.84
500	1.91	18.19	18.25
550	2.36	18.29	18.39
600	3.01	18.89	19.03
610	3.17	19.06	19.21
750	6.81	22.64	23.02
900	14.53	21.07	21.09
980	20.73	20.34	20.32
1000	22.38	20.24	20.21
1050	24.80	20.03	20.05
1100	23.38	20.06	20.09
1250	18.08	20.57	20.73
1500	15.26	21.95	22.37
1750	14.67	23.82	24.57
2000	14.71	25.51	26.58
2500	15.49	28.04	29.22
3000	16.45	25.66	26.32
3500	17.35	22.38	22.99
4000	17.93	19.81	20.80
4500	17.99	17.62	18.72
5000	16.92	15.32	16.47
5200	15.91	14.37	15.55
5500	13.44	12.45	13.35
6000	13.10	17.07	16.02
6500	21.55	28.71	31.19
7000	26.44	22.16	26.74
7500	28.76	20.67	24.73
8000	29.59	20.11	22.91
8500	29.51	19.95	21.18
9000	29.07	19.99	19.67
9500	28.46	19.72	18.23
10000	27.81	19.12	16.92
10500	27.18	17.91	15.66
11000	26.59	16.46	14.53
11500	26.07	14.92	13.46
12000	25.61	13.55	12.60
12500	25.21	12.33	11.79
13000	24.85	11.28	11.04
13500	24.54	10.34	10.39
14000	24.27	9.58	9.78
14200	24.16	9.27	9.55
14500	24.02	8.91	9.19
15000	23.90	8.33	8.60
15200	23.80	8.12	8.35
15500	23.70	7.82	7.99
16000	23.54	7.35	7.36
16250	23.51	7.14	7.07
17000	25.36	7.00	6.73
17250	28.92	7.36	7.04
17500	34.56	7.88	7.52
18000	29.93	10.35	9.89

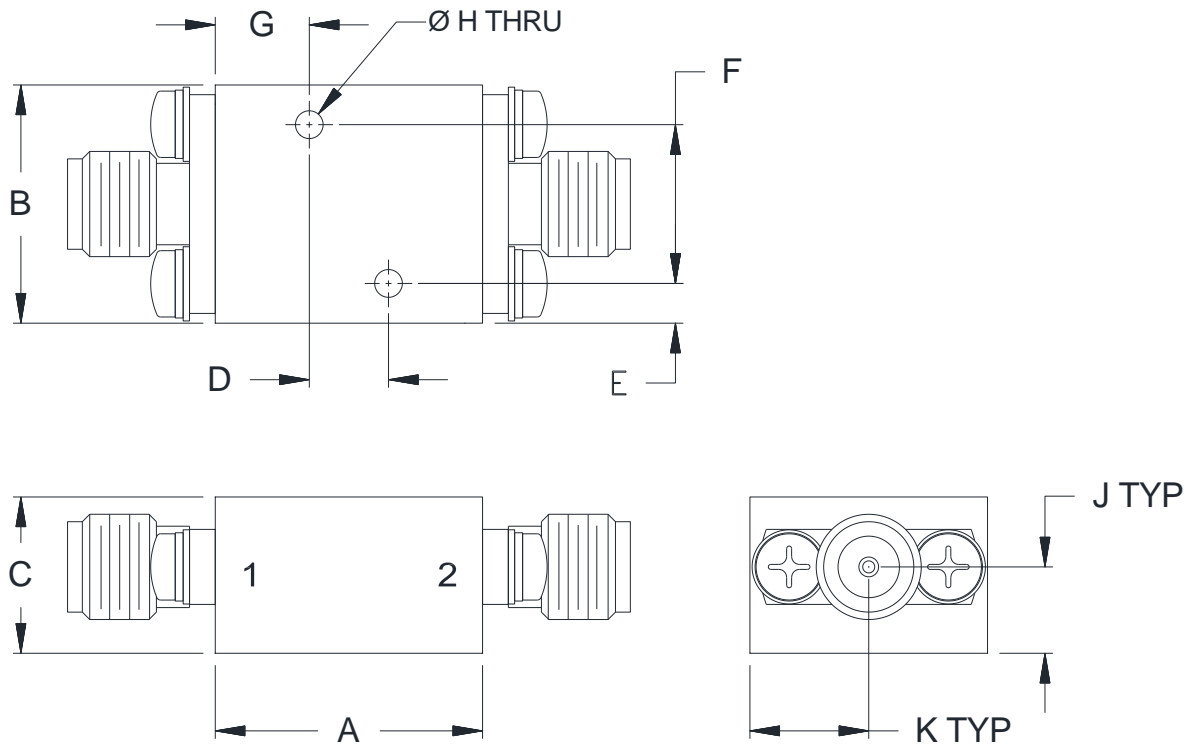
FREQ.	Group Delay
(MHz)	(ns)
1	0.30
5	0.35
10	0.42
15	0.49
16	0.49
17	0.48
18	0.49
19	0.49
20	0.49
21	0.50
22	0.50
23	0.50
24	0.49
25	0.49
26	0.49
27	0.49
28	0.49
29	0.49
30	0.49
31	0.49
32	0.49
33	0.50
34	0.50
35	0.50
36	0.50
40	0.49
50	0.49
60	0.49
70	0.49
80	0.48
90	0.48
100	0.48
110	0.48
120	0.48
130	0.48
140	0.48
150	0.48
160	0.49
170	0.49
180	0.49
190	0.49
200	0.49
210	0.49
220	0.50
230	0.50
240	0.50
250	0.50
260	0.51
270	0.51
280	0.51
290	0.52
300	0.52
310	0.52
320	0.53
330	0.53
340	0.54
350	0.54
360	0.55
400	0.57
420	0.58

Typical Performance Curves



Outline Dimensions

UK3042



CASE#	A	B	C	D	E	F
UK3042	.68 (17.1)	.60 (15.2)	.39 (10.0)	.200 (5.08)	.10 (2.5)	.400 (10.16)

CASE#	G	H	J	K	WT.GRAMS
UK3042	.24 (6.0)	.070 (1.78)	.22 (5.5)	.30 (7.6)	24

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .050$; 3 Pl. $\pm .015$

Notes:

1. Case material: Brass alloy.
2. Case Finish:
 - a. Case & Cover of the units –Gold plating.
3. Refer to the individual model data sheet for the type of connectors available.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 105°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 105°C Ambient Environment	Individual Model Data Sheet