

# 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

## 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](http://www.minicircuits.com/MCLStore/terms.jsp)



# Low Pass Filter

## ZXLF-K252+

50Ω DC to 2500 MHz



Generic photo used for illustration purposes only

CASE STYLE: UK3042  
Connectors Model  
2.92mm-F ZXLF-K252+

### 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

### Applications

- Telecomm
- Military / Defense
- GPS
- ISM Band

### Electrical Specifications at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Insertion Loss	DC-F1	DC- 2500	-	1.8	2.6	dB
		F2	3220	-	3.5	-	dB
Stop Band	VSWR	DC-F1	DC- 2500	-	1.3	-	:1
		F3-F4	4550 - 16000	12	15	-	dB
	Rejection	F4-F5	16000 - 25000	-	18	-	dB
		VSWR	F3-F4	4550 - 16000	-	1.2	-
		F4-F5	16000 - 25000	-	1.8	-	:1

### Absolute Maximum Ratings<sup>3</sup>

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

<sup>1</sup> Passband rating derates linearly to 1W at 105°C ambient

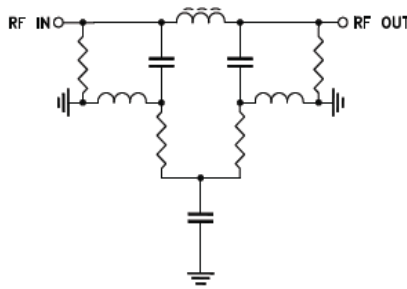
<sup>2</sup> Stopband rating derates linearly to 0.25W at 105°C ambient

<sup>3</sup> Permanent damage may occur if any of these limits are exceeded

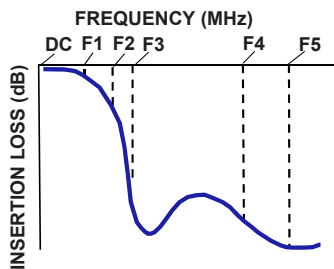
### ESD rating

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

### Functional Schematic



### Typical Frequency Response

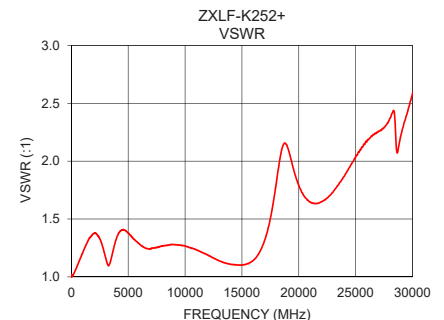
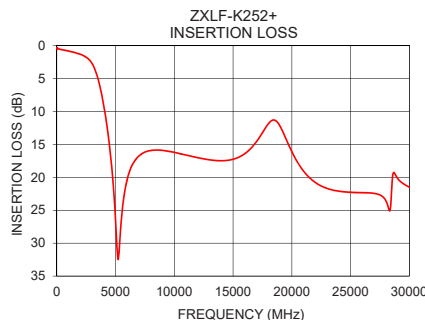


### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
1	0.42	1.01
10	0.37	1.00
100	0.42	1.01
150	0.47	1.01
220	0.50	1.03
310	0.55	1.05
370	0.57	1.06
1000	0.80	1.21
2500	1.74	1.33
3220	3.50	1.10
4000	9.13	1.34
4550	16.26	1.41
5000	26.59	1.38
6000	20.23	1.28
7000	16.73	1.24
10000	16.20	1.27
16000	16.39	1.14
20000	16.09	1.79
25000	22.29	2.03
30000	21.47	2.58

### +RoHS Compliant

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



### Notes

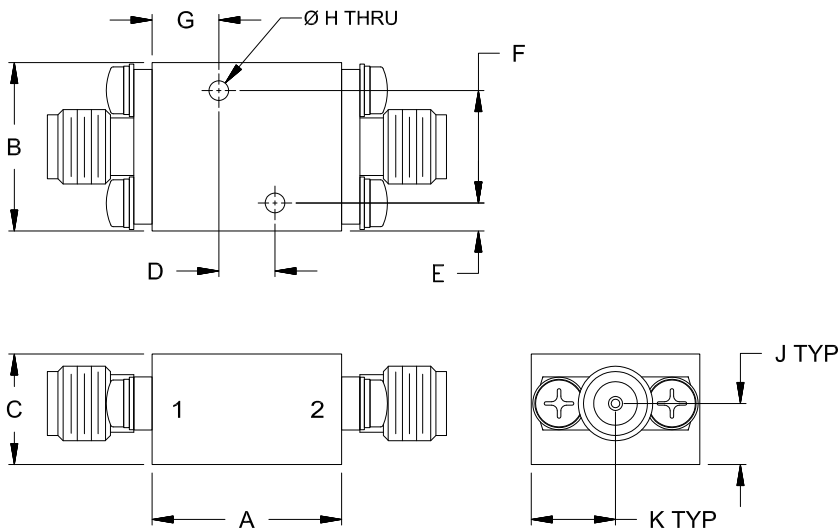
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## Coaxial Connections

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

## Outline Drawing



## Outline Dimensions (inch/mm)

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

Note: Please refer to case style drawing for details

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# Coaxial Reflectionless Low Pass Filter

# ZXLF-K252+

## Typical Performance Data

FREQ.	Insertion Loss	Input Return Loss	Output Return Loss	FREQ.	Group Delay
(MHz)	(dB)	(dB)	(dB)	(MHz)	(ns)
1	0.42	42.96	43.93	1	0.20
5	0.37	51.44	53.02	40	0.25
10	0.37	54.88	54.73	80	0.24
15	0.38	55.25	54.08	120	0.24
25	0.39	53.27	53.48	160	0.23
50	0.35	44.76	45.13	200	0.23
100	0.42	48.51	48.50	240	0.23
150	0.47	42.60	42.63	280	0.23
220	0.50	37.26	37.55	320	0.23
310	0.55	32.84	33.00	360	0.23
370	0.57	30.53	30.93	400	0.23
450	0.60	28.46	28.76	440	0.23
500	0.62	27.27	27.54	480	0.23
570	0.65	25.97	26.25	520	0.23
620	0.66	24.96	25.37	560	0.23
650	0.67	24.51	24.90	600	0.23
700	0.69	23.81	24.08	640	0.23
750	0.71	23.11	23.43	680	0.23
800	0.72	22.49	22.88	720	0.23
900	0.77	21.38	21.65	760	0.23
1000	0.80	20.47	20.72	800	0.23
1500	1.01	17.24	17.36	840	0.23
2000	1.29	16.00	16.00	880	0.23
2500	1.74	16.98	16.75	920	0.23
3000	2.70	22.06	20.85	960	0.23
3220	3.50	26.28	23.12	1000	0.23
3500	5.00	22.81	20.59	1040	0.23
4000	9.13	16.70	15.63	1080	0.23
4200	11.35	15.87	14.85	1120	0.23
4550	16.26	15.41	14.51	1160	0.24
5000	26.59	15.92	15.07	1200	0.23
5200	32.43	16.38	15.66	1240	0.23
5500	26.27	17.03	16.57	1280	0.24
5800	21.92	17.66	17.63	1320	0.24
6000	20.23	18.15	18.60	1360	0.23
6200	19.02	18.54	19.44	1400	0.24
6500	17.87	19.13	20.97	1440	0.24
6800	17.09	19.37	22.24	1480	0.24
7000	16.73	19.33	22.81	1520	0.24
7500	16.15	19.01	22.58	1560	0.24
7900	15.94	18.69	21.98	1600	0.24
8000	15.92	18.62	21.64	1640	0.24
8100	15.89	18.56	21.47	1680	0.24
8500	15.85	18.34	20.69	1720	0.24
9000	15.90	18.25	19.80	1760	0.24
9200	15.95	18.29	19.62	1800	0.24
9500	16.03	18.37	19.23	1840	0.24
10000	16.20	18.60	18.81	1880	0.25
10200	16.27	18.78	18.79	1920	0.25
10400	16.37	18.96	18.71	1960	0.25
10500	16.41	19.05	18.70	2000	0.25
12000	17.01	21.28	18.77	2040	0.25
15000	17.25	26.17	20.62	2080	0.25
16000	16.39	23.53	19.36	2120	0.25
16500	15.61	20.63	18.22	2160	0.25
17000	14.54	17.28	16.57	2200	0.26
18000	11.85	10.90	11.70	2240	0.26
20000	16.09	10.96	10.42	2280	0.26
25000	22.29	9.35	10.36	2400	0.26
30000	21.47	7.09	6.39	2500	0.27



ISO 9001 ISO 14001 AS 9100 CERTIFIED



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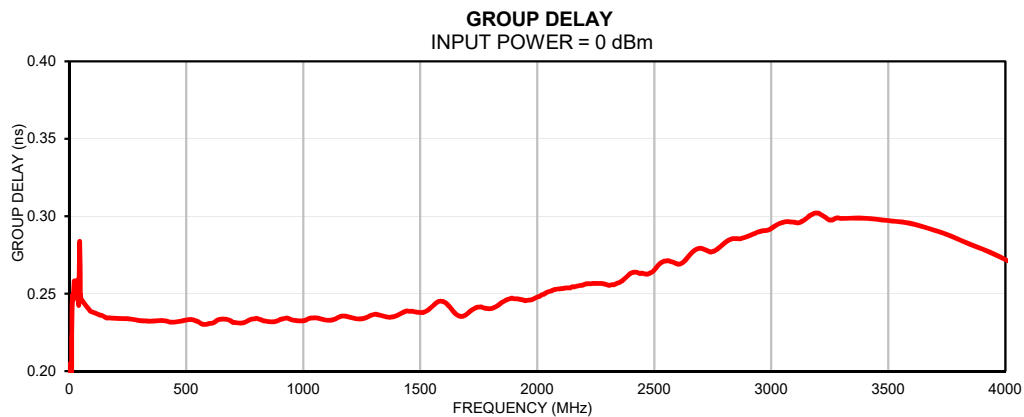
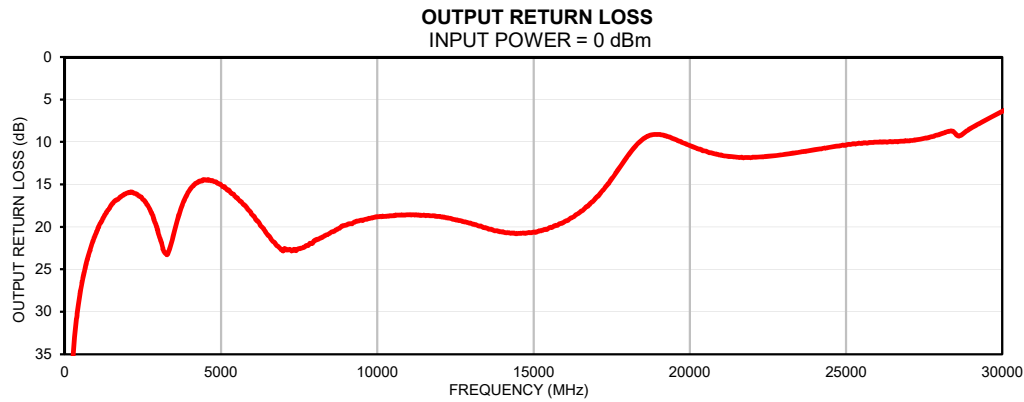
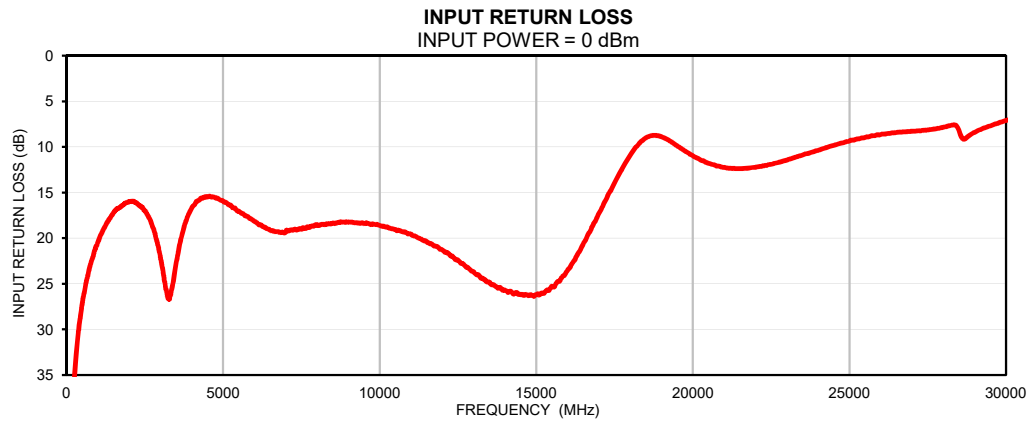
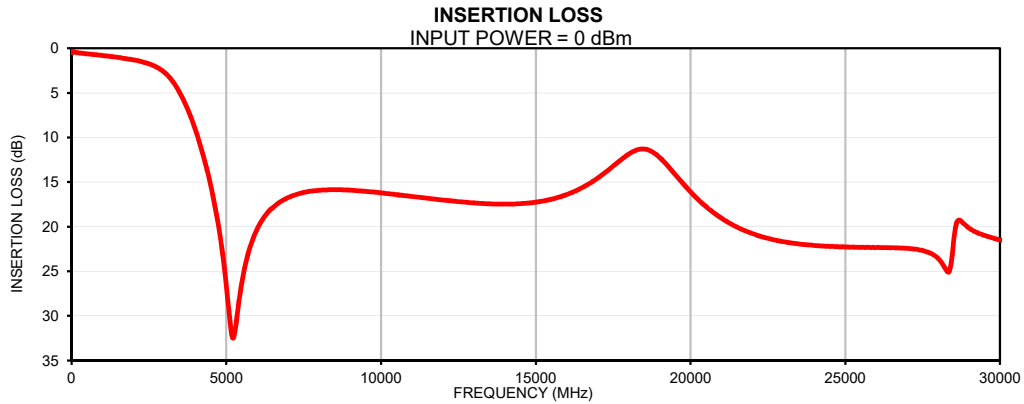
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IF/RF MICROWAVE COMPONENTS

REV. OR  
ZXLF-K252+  
201127

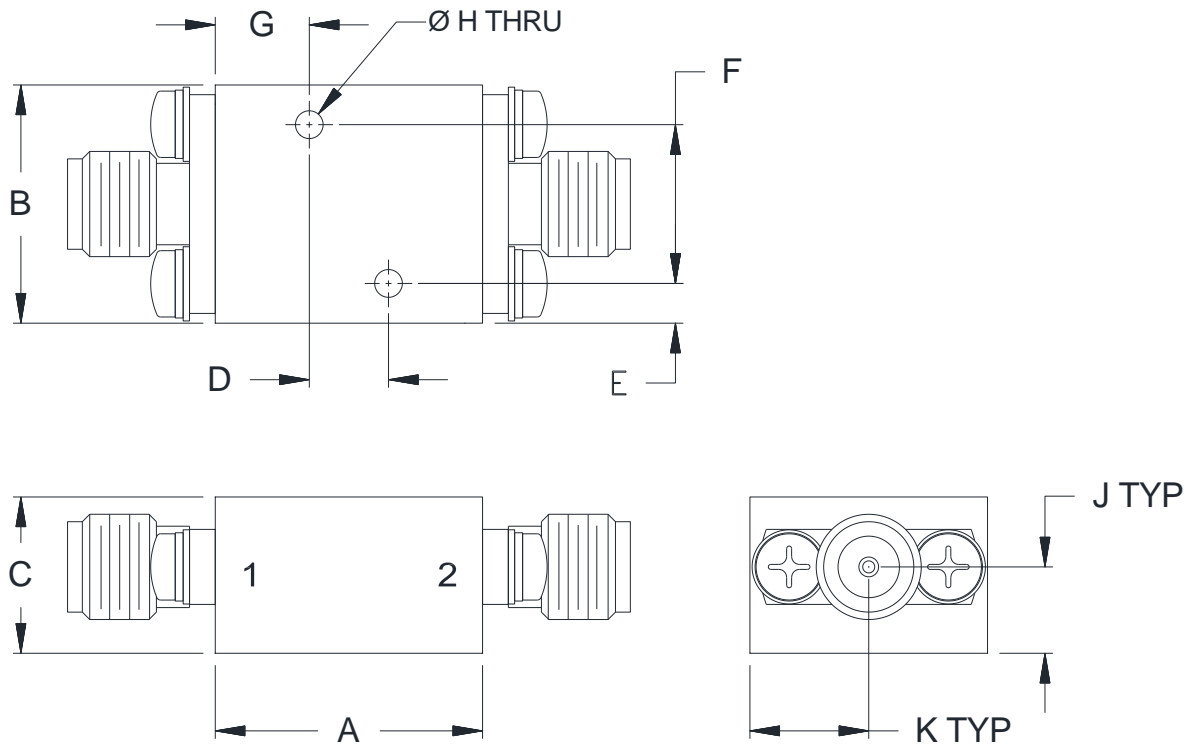
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Typical Performance Curves



## 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.



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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.

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