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 employs 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
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Coaxial Reflectionless

Low Pass Filter

ZXLF-K112H+

50Ω DC to 1050 MHz

Generic photo used for illustration purposes only

CASE STYLE: UK3042

Connectors	Model
2.92mm-F	ZXLF-K112H+

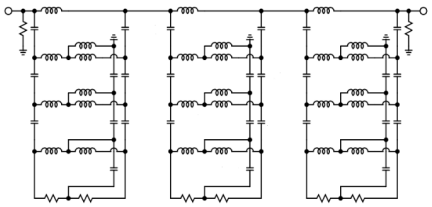
Features

- Match to 50Ω in the stop band, eliminates undesired reflections
- Cascadable
- Temperature stable, up to 105°C
- Protected by US Patents 8,392,495; 9,705,467, additional patent pending
- Protected by China Patent 201080014266.1
- Protected by Taiwan Patent I581494

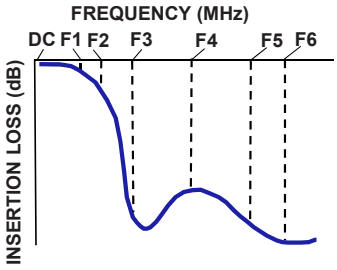
Applications

- Telecomm
- Military / Defense
- ISM band
- GPS

Functional Schematic



Typical Frequency Response



+RoHS Compliant

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

Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC- 1050	-	2.9	3.6	dB
	Freq. Cut-off	F2	1390	-	3.9	-	dB
	VSWR	DC-F1	DC- 1050	-	1.3	-	:1
Stop Band	Rejection	F3-F4	2000 - 2200	13	17	-	dB
		F4-F5	2200 - 10000	30	36	-	dB
		F5-F6	10000 - 15000	32	39	-	dB
	VSWR	F3-F4	2000 - 2200	-	1.2	-	:1
		F4-F5	2200 - 10000	-	1.3	-	:1
		F5-F6	10000 - 15000	-	2.2	-	:1

Absolute Maximum Ratings[3]

Parameter	Ratings
Operating Temperature	-55°C to +105°C
Storage Temperature	-55°C to +105°C
RF Power Input, Passband (DC-F1)[1]	7.9W at 25°C
RF Power Input, Stopband (F2-F6)[2]	1.58W at 25°C

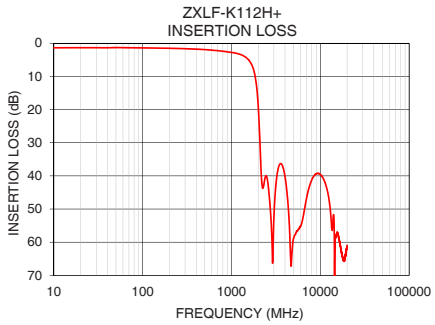
[1] Passband rating derates linearly to 3.9W at 105°C ambient
[2] Stopband rating derates linearly to 0.75W at 105°C ambient
[3] Permanent damage may occur if any of these limits are exceeded

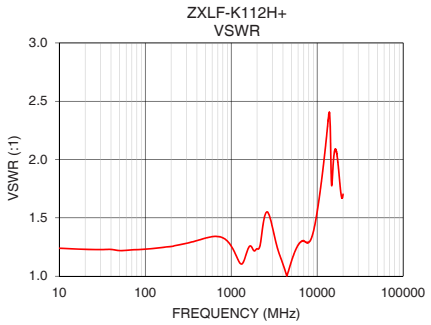
ESD rating

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

Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
1	1.37	1.24
10	1.38	1.24
100	1.41	1.23
200	1.52	1.25
500	1.92	1.33
800	2.41	1.33
1050	2.86	1.23
1390	3.90	1.12
2000	19.05	1.23
2050	24.51	1.23
2100	31.49	1.24
2200	42.50	1.29
3000	52.66	1.43
5000	58.82	1.12
10000	39.58	1.55
11000	41.26	1.76
12000	44.52	1.99
13000	50.79	2.23
15000	58.54	1.83
20000	60.96	1.70





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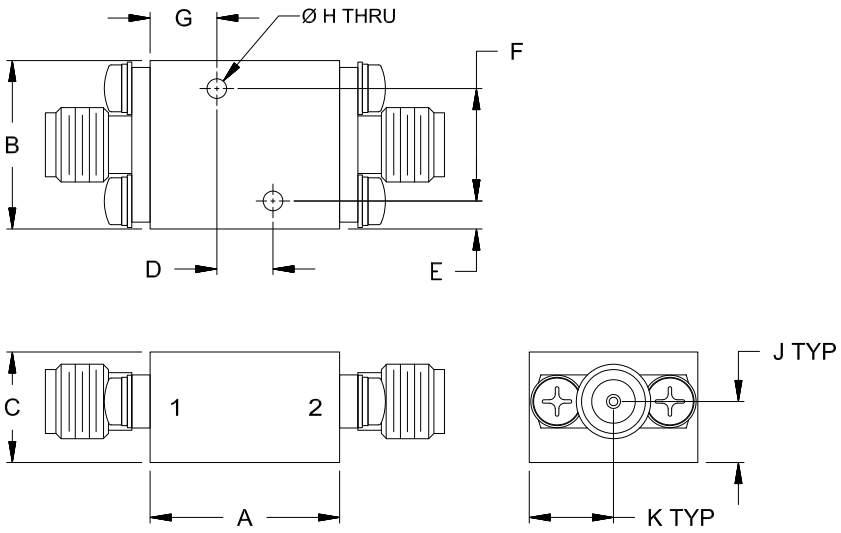
Coaxial Connections

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-K112H+

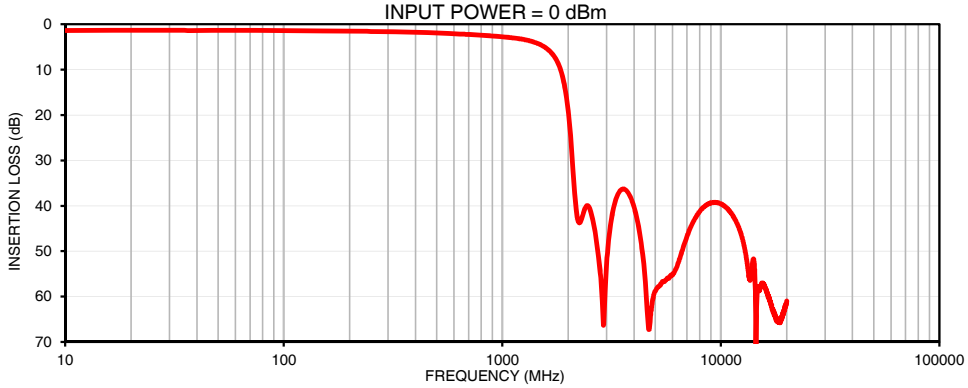
Typical Performance Data

FREQ. (MHz)	Insertion Loss (dB)	Input Return Loss (dB)	Output Return Loss (dB)
1	1.37	19.34	19.34
5	1.39	19.28	19.21
10	1.38	19.42	19.36
20	1.34	19.73	19.71
40	1.37	19.76	19.75
60	1.33	20.03	19.96
100	1.41	19.68	19.66
160	1.47	19.20	19.10
200	1.52	18.95	18.67
240	1.57	18.59	18.38
300	1.64	18.18	17.88
360	1.71	17.82	17.43
400	1.77	17.57	17.14
440	1.83	17.37	16.87
500	1.92	17.07	16.59
560	2.01	16.88	16.36
600	2.08	16.79	16.29
680	2.21	16.75	16.24
700	2.24	16.76	16.27
800	2.41	17.01	16.61
900	2.59	17.62	17.38
1000	2.76	18.82	18.73
1050	2.86	19.64	19.71
1300	3.52	26.03	27.73
1390	3.90	24.82	25.45
1400	3.96	24.45	25.01
2000	19.05	19.58	20.32
2050	24.51	19.65	20.39
2100	31.49	19.52	20.29
2200	42.50	17.99	18.53
2850	59.03	14.09	14.88
3000	52.66	15.07	15.90
3500	36.45	19.88	20.44
4000	40.19	26.06	25.16
5000	58.82	24.76	28.22
6000	55.26	18.61	21.13
6500	51.39	17.81	19.28
7500	43.36	17.95	16.64
8000	41.26	17.94	15.51
8500	39.96	17.22	14.34
9000	39.37	16.00	13.35
9500	39.24	14.61	12.53
10000	39.58	13.29	11.83
10500	40.25	12.16	11.24
11000	41.26	11.17	10.78
11500	42.67	10.33	10.36
11000	41.26	11.17	10.78
11500	42.67	10.33	10.36
12000	44.52	9.59	10.01
13000	50.79	8.37	9.37
13500	56.14	7.88	9.04
14000	52.08	7.75	9.06
15000	58.54	10.69	12.71
15500	57.28	9.55	11.17
16000	58.06	9.12	10.44
17000	62.13	9.32	9.96
18000	64.91	10.38	9.97
18500	65.40	11.11	10.06
19000	64.57	11.73	10.13
20000	60.96	11.70	10.06

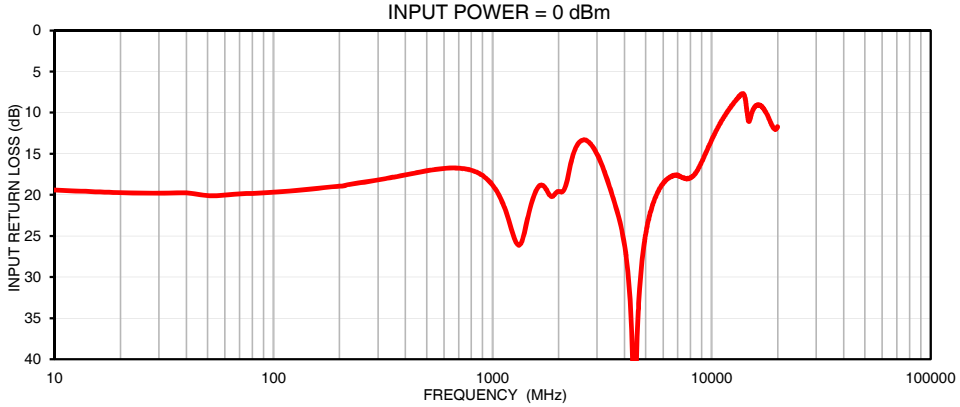
FREQ. (MHz)	Group Delay (ns)
1	0.50
10	0.50
20	0.50
50	0.50
100	0.50
120	0.50
140	0.50
160	0.50
180	0.50
200	0.50
220	0.50
240	0.50
260	0.50
280	0.50
300	0.50
320	0.50
340	0.50
360	0.50
380	0.50
400	0.50
420	0.50
440	0.50
460	0.50
480	0.50
500	0.50
520	0.51
540	0.51
560	0.51
580	0.51
600	0.51
620	0.51
640	0.51
660	0.51
680	0.51
700	0.51
720	0.52
740	0.52
760	0.52
780	0.52
800	0.53
810	0.53
820	0.53
830	0.53
840	0.53
850	0.53
860	0.53
870	0.53
880	0.54
890	0.54
900	0.54
910	0.54
920	0.54
930	0.55
940	0.55
950	0.55
1000	0.56
1010	0.56
1020	0.56
1040	0.57
1050	0.57

Typical Performance Curves

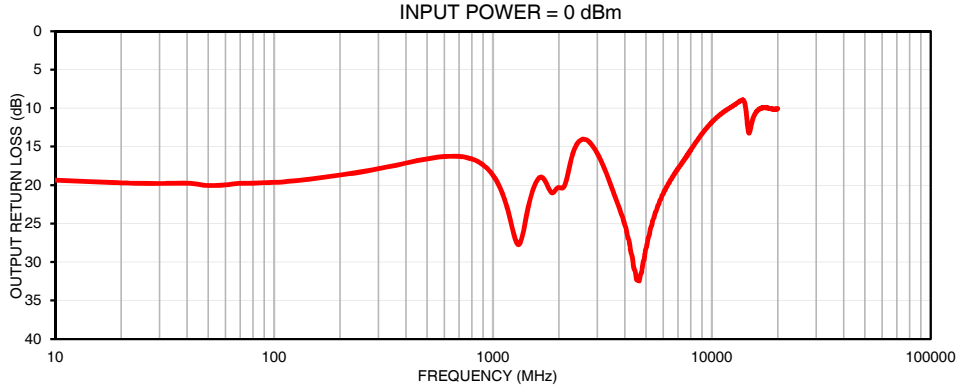
INSERTION LOSS
INPUT POWER = 0 dBm



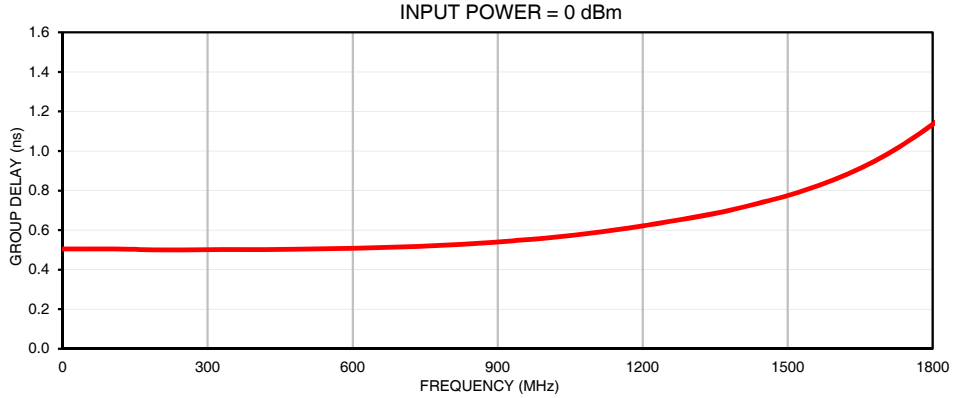
INPUT RETURN LOSS
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS
INPUT POWER = 0 dBm



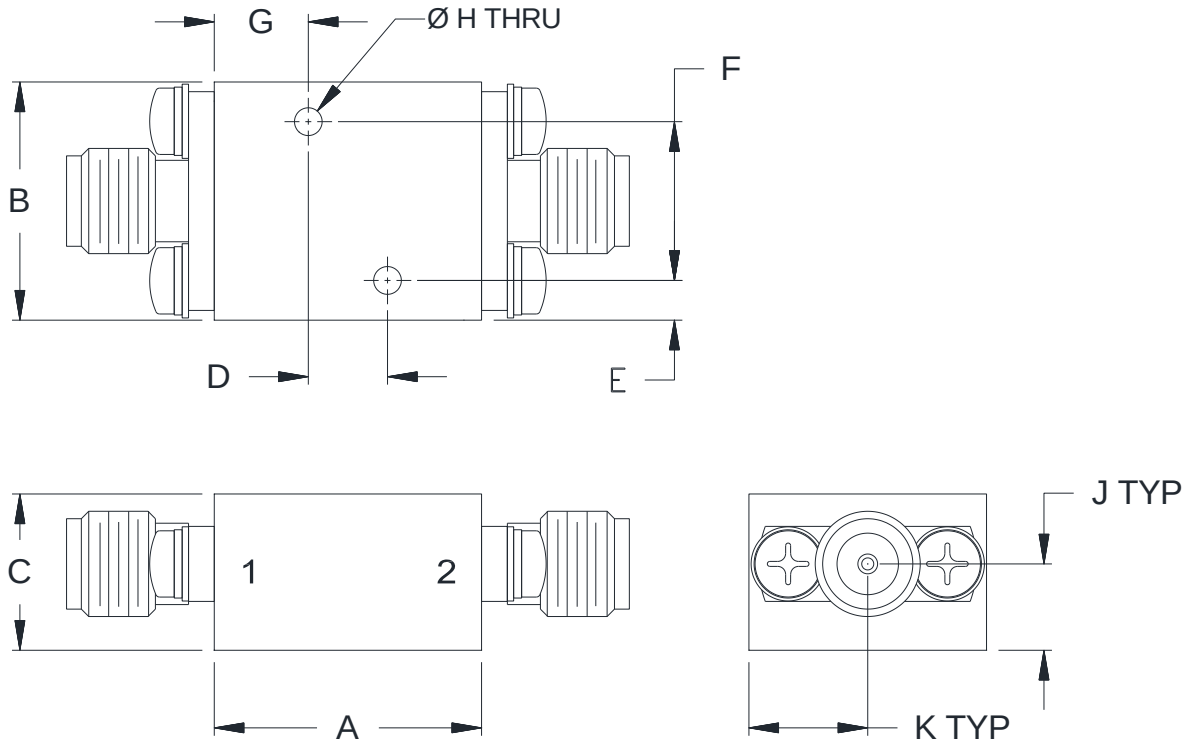
GROUP DELAY
INPUT POWER = 0 dBm



Case Style UK

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. ± .050; 3 Pl. ± .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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Mini-Circuits

Environmental Specifications ENV002

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

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