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.

Coaxial Reflectionless

Low Pass Filter

ZXLF-K641M+

50Ω DC to 500 MHz

Generic photo used for illustration purposes only

CASE STYLE: UK3042

Connectors	Model
2.92mm-F	ZXLF-K641M+

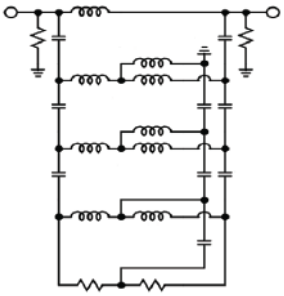
Features

- 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

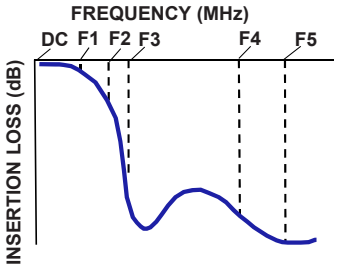
Applications

- Aerospace & Defense
- VHF/UHF Comm
- Pilot Location Systems

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- 500	-	2.6	3.3	dB
	Freq. Cut-off	F2	700	-	3.6	-	dB
	VSWR	DC-F1	DC- 500	-	1.2	-	:1
Stop Band	Rejection	F3-F4	1100 - 7800	20	28	-	dB
		F4-F5	7800 - 11000	27	38	-	dB
	VSWR	F3-F4	1100 - 7800	-	1.2	-	:1
		F4-F5	7800 - 11000	-	2.1	-	: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]	5W at 25°C
RF Power Input, Stopband (F2-F5)[2]	1.6W at 25°C

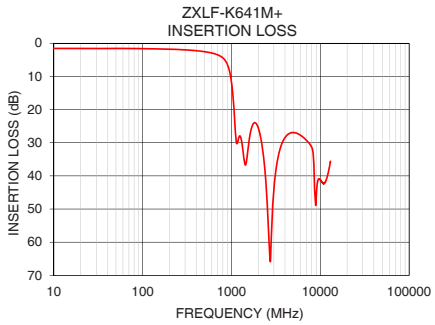
[1] Passband rating derates linearly to 2.5W at 105°C ambient
[2] Stopband rating derates linearly to 0.8W at 105°C ambient
[3] Permanent damage may occur if any of these limits are exceeded

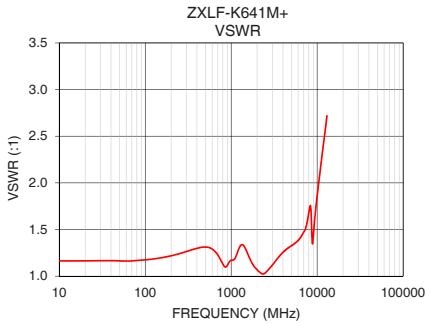
ESD rating

Human body model (HBM): Class 1B (Pass 750 V) in accordance with ANSI/ESD 5.1-2001

Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
1	1.54	1.16
10	1.57	1.16
100	1.63	1.17
200	1.79	1.22
220	1.83	1.23
300	1.99	1.26
500	2.56	1.31
640	3.15	1.27
700	3.50	1.23
1000	11.77	1.17
1100	25.70	1.19
1560	30.33	1.24
5000	26.94	1.32
5500	27.21	1.35
6000	27.78	1.38
7800	30.83	1.62
10000	41.16	1.86
11000	42.30	2.18
12000	40.03	2.46
13000	35.60	2.72





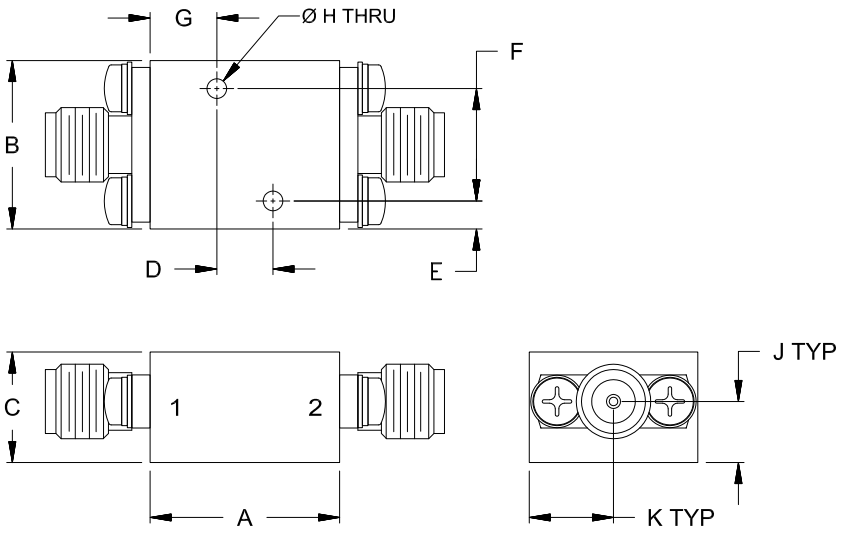
Notes

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

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

Coaxial Reflectionless Low Pass Filter ZXLF-K641M+

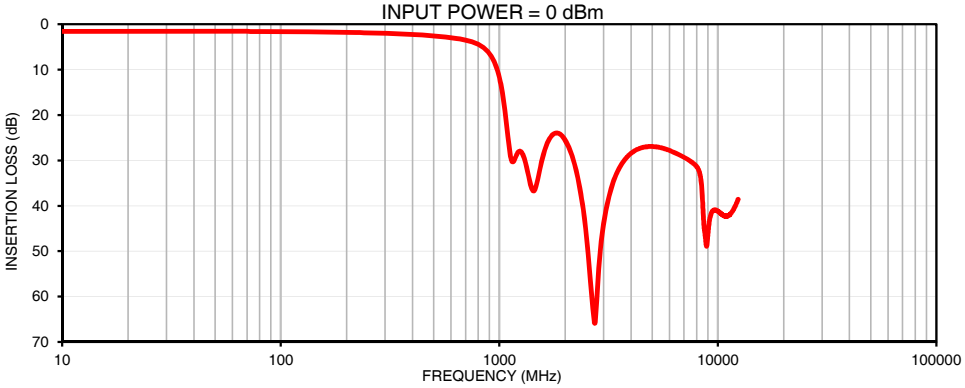
Typical Performance Data

FREQ. (MHz)	Insertion Loss (dB)	Input Return Loss (dB)	Output Return Loss (dB)
1	1.54	22.37	22.49
5	1.57	22.41	22.41
10	1.57	22.38	22.41
15	1.57	22.41	22.43
40	1.59	22.27	22.29
60	1.56	22.55	22.52
100	1.63	21.86	21.90
160	1.73	20.70	20.82
200	1.79	20.08	20.15
240	1.87	19.41	19.54
300	1.99	18.49	18.66
360	2.14	17.88	18.04
400	2.25	17.58	17.73
440	2.36	17.38	17.50
500	2.56	17.23	17.40
560	2.78	17.38	17.56
600	2.95	17.77	17.91
680	3.38	19.13	19.29
700	3.50	19.58	19.83
800	4.43	24.16	24.32
900	6.44	25.17	25.36
1000	11.77	22.04	22.08
1100	25.70	21.26	21.39
1200	28.71	18.37	18.47
1300	29.57	16.78	16.91
1400	35.94	16.94	17.07
1500	34.09	18.19	18.34
1600	28.28	20.09	20.25
1700	25.13	22.37	22.50
1800	24.00	24.74	24.94
1900	24.25	27.12	27.24
2000	25.51	29.39	29.67
2100	27.63	32.22	32.26
2200	30.60	35.46	35.49
2300	34.47	39.45	38.55
2400	39.61	39.52	38.26
2500	46.46	35.70	34.99
3000	43.95	25.05	25.17
3200	37.25	22.99	23.18
3300	35.12	22.17	22.38
3400	33.45	21.38	21.60
3500	32.12	20.74	21.01
4000	28.45	18.49	18.94
4500	27.17	17.22	17.82
5000	26.94	16.28	17.10
5500	27.21	15.60	16.53
6000	27.78	14.94	15.87
6500	28.49	14.24	15.17
7000	29.30	13.72	14.40
7800	30.83	12.40	12.53
8000	31.40	11.99	11.89
8500	38.48	12.67	11.88
9000	46.27	16.11	15.33
9500	41.02	12.76	12.01
10000	41.16	11.36	10.47
10500	41.98	10.40	9.41
11000	42.30	9.64	8.61
11500	41.61	9.01	7.99
12000	40.03	8.47	7.51
13000	35.60	7.64	6.70

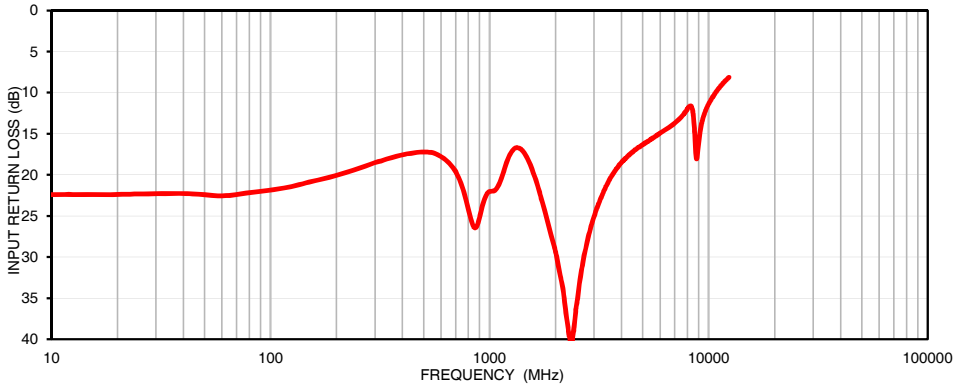
FREQ. (MHz)	Group Delay (ns)
1	0.62
2	0.62
3	0.62
4	0.62
5	0.62
6	0.62
7	0.62
8	0.62
9	0.62
10	0.62
11	0.62
12	0.62
13	0.62
14	0.62
15	0.62
16	0.62
17	0.62
18	0.62
19	0.62
20	0.62
40	0.62
60	0.62
80	0.62
100	0.61
120	0.61
140	0.61
160	0.61
180	0.61
200	0.61
220	0.61
240	0.61
260	0.62
280	0.62
300	0.62
320	0.62
340	0.63
360	0.63
380	0.64
400	0.64
420	0.65
440	0.65
460	0.66
480	0.67
500	0.68
520	0.69
540	0.70
560	0.71
580	0.72
600	0.73
620	0.75
640	0.77
660	0.79
680	0.81
700	0.83
720	0.86
740	0.89
760	0.92
780	0.96
800	1.00
820	1.04

Typical Performance Curves

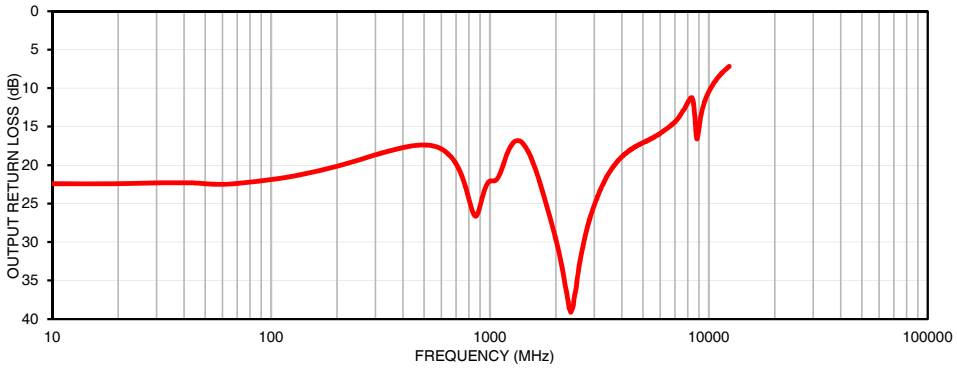
INSERTION LOSS
INPUT POWER = 0 dBm



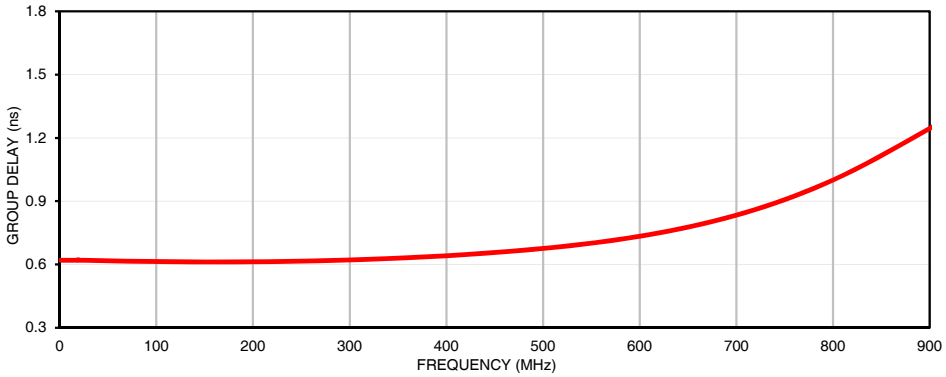
INPUT RETURN LOSS
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS
INPUT POWER = 0 dBm



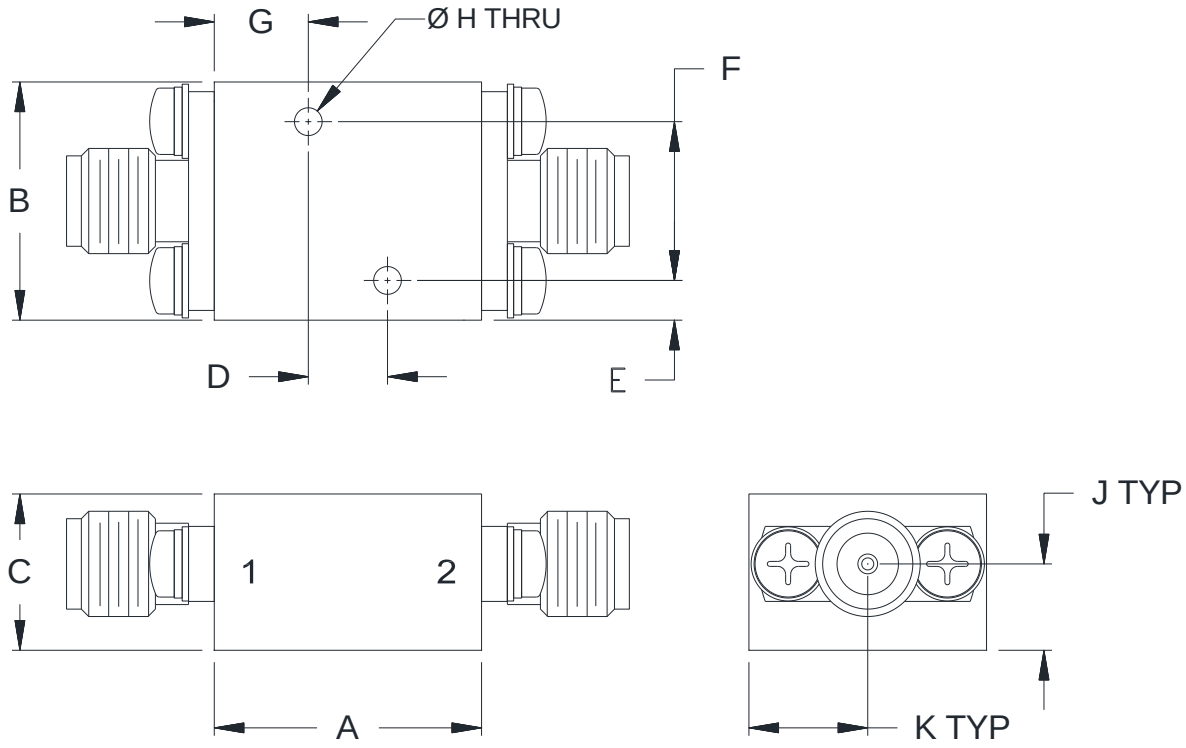
GROUP DELAY
INPUT POWER = 0 dBm



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.

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