COAXIAL REFLECTIONLESS

Bandpass Filter

ZXBF SERIES

50Ω 2 to 21 GHz

THE BIG DEAL

- Patented design terminates Stopband signals
- Stopband up to 40 GHz
- High Stopband rejection, up to 60 dB



PRODUCT OVERVIEW

Mini-Circuits' ZXBF Series reflectionless filters employs a novel filter topology which absorbs and terminates stopband 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 passband 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.

REV. A
ECO-027515
ZXBF-K24+
EDU3919
URJ
251101

COAXIAL REFLECTIONLESS

Bandpass Filter

ZXBF-K24+

50Ω 19.5 to 20.5 GHz

FEATURES

- Match to 50Ω in the stopband, eliminates undesired reflections
- Cascadable
- Good stopband rejection, 51dB typ.
- 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



Generic photo used for illustration purposes only

Model No.	ZXBF-K24+
Case Style	UK3042
Connectors	2.92mm-F

+RoHS Compliant

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

APPLICATIONS

- Aerospace & Defense
- Satellite
- KA band block down converters

ELECTRICAL SPECIFICATIONS AT 25°C

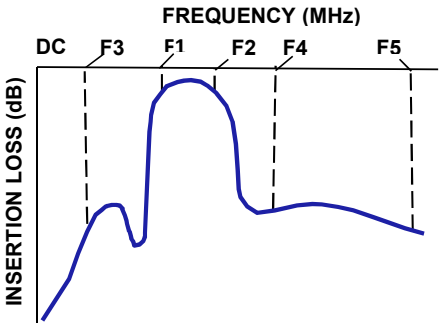
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Insertion Loss	F1-F2	19500 - 20500	—	5.8	6.8	dB
	Return Loss	F1-F2	19500 - 20500	—	8.9	—	dB
Stopband, Lower	Insertion Loss	DC-F3	DC - 10000	45	51	—	dB
	Return Loss	DC-F3	DC - 10000	—	20.8	—	dB
Stopband, Upper	Insertion Loss	F4-F5	30000 - 32000	30	42	—	dB
	Return Loss	F4-F5	30000 - 32000	—	8.5	—	dB

ABSOLUTE MAXIMUM RATINGS[3]

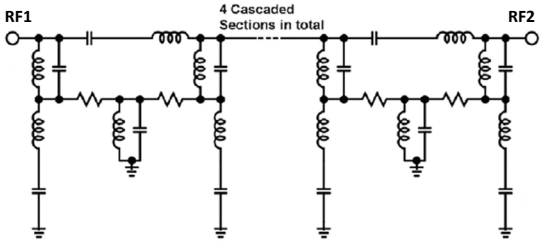
Parameter	Ratings
Operating temperature	-55°C to +105°C
Storage temperature	-55°C to +105°C
RF Power Input, Passband (F1-F2)[1]	0.5W at 25°C
RF Power Input, Stopband (DC-F1, F2-F5)[2]	0.16W at 25°C

[1] Passband rating derates linearly to 0.25W at 105°C ambient
[2] Stopband rating derates linearly to 0.08W at 105°C ambient
[3] Permanent damage may occur if any of these limits are exceeded

TYPICAL FREQUENCY RESPONSE



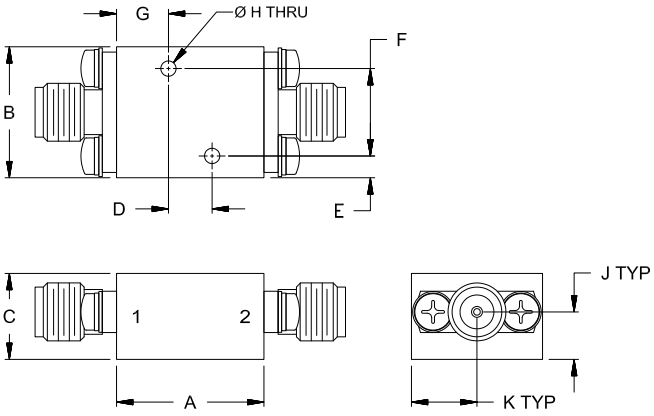
FUNCTIONAL SCHEMATIC



COAXIAL CONNECTIONS

RF1	2.92mm-Female
RF2	2.92mm-Female

OUTLINE DRAWING



OUTLINE DIMENSIONS (Inches / 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**

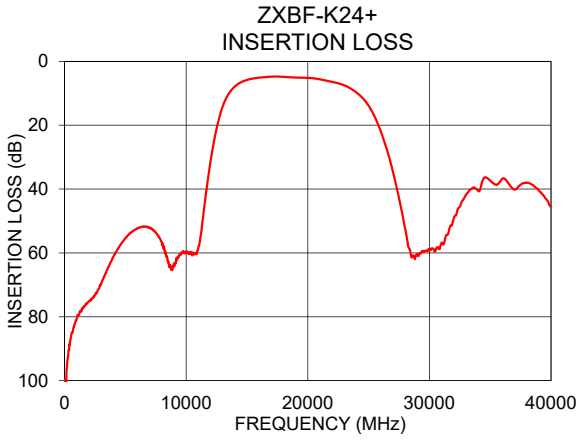
Note: Please refer to case style drawing for details

ESD rating

Human Body Model (HBM): Class 1C (Pass 1000V) in accordance with ANSI/ESD STM 5.1 - 2001

TYPICAL PERFORMANCE DATA AT 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
25	99.52	35.65
500	86.96	32.53
5000	55.36	24.45
10000	59.54	18.17
12050	30.31	16.52
12550	20.27	15.65
19500	5.14	14.65
19700	5.16	15.86
20000	5.18	18.85
20500	5.33	35.28
25800	19.92	14.91
26700	30.22	13.33
30000	58.70	10.39
32000	49.27	11.25
40000	45.92	4.84





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 Reflectionless Bandpass Filter ZXBF-K24+

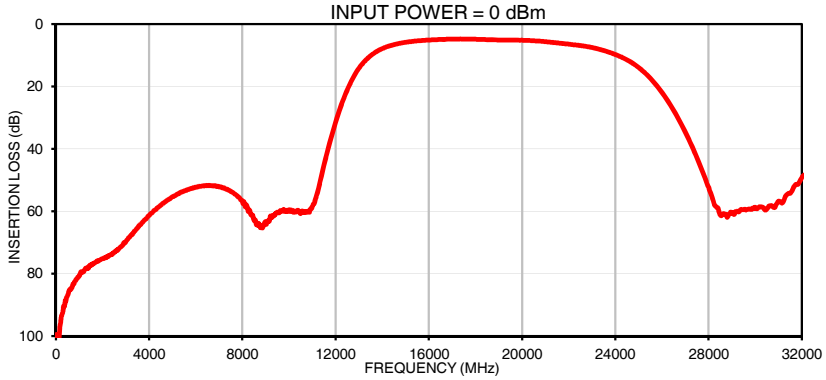
Typical Performance Data

FREQ. (MHz)	Insertion Loss (dB)	Input Return Loss (dB)	Output Return Loss (dB)
25	99.52	35.65	36.07
50	103.48	36.50	36.68
100	105.02	41.71	39.95
200	95.88	36.75	35.44
300	92.28	34.96	33.85
500	86.96	32.53	31.48
700	84.29	31.68	30.45
1000	80.65	30.30	29.33
1200	79.30	29.81	28.80
1400	78.20	29.52	28.69
1600	76.71	30.72	29.52
1800	76.09	29.07	28.63
2000	75.20	29.88	29.57
2500	73.27	30.22	31.03
3000	69.80	32.53	34.97
3500	65.41	33.42	35.13
4000	61.36	31.63	29.03
4500	58.06	27.29	24.52
5000	55.36	24.45	21.57
5500	53.48	22.05	19.48
6000	52.28	20.09	17.67
6500	51.81	18.52	16.45
7000	52.16	17.76	15.73
8000	56.70	16.53	14.75
9000	63.34	16.28	15.11
10000	59.54	18.17	18.02
11000	58.48	22.57	22.92
12050	30.31	16.52	16.66
12550	20.27	15.65	17.01
13525	10.03	15.87	20.85
19500	5.14	14.65	11.98
19600	5.14	15.24	12.08
19700	5.16	15.86	12.20
19800	5.16	16.70	12.35
20000	5.18	18.85	12.60
20100	5.19	20.46	12.73
20200	5.24	22.50	12.76
20300	5.25	25.43	12.77
20400	5.31	29.13	12.74
20500	5.33	35.28	12.62
24100	10.07	15.92	8.97
25800	19.92	14.91	9.63
26700	30.22	13.33	9.68
27000	34.56	12.51	9.60
27200	37.73	11.95	9.52
27400	41.08	11.42	9.46
27600	44.66	11.04	9.37
27800	48.33	10.77	9.25
28000	52.23	10.55	9.14
28300	58.35	10.30	8.91
28600	61.07	10.15	8.73
28900	60.83	10.08	8.53
29200	60.09	10.15	8.34
29500	59.53	10.20	8.16
29800	59.31	10.28	8.09
30000	58.70	10.39	8.01
30500	59.36	10.60	8.06
31000	56.81	10.87	8.29
31500	54.29	11.09	8.81
32000	49.27	11.25	9.87

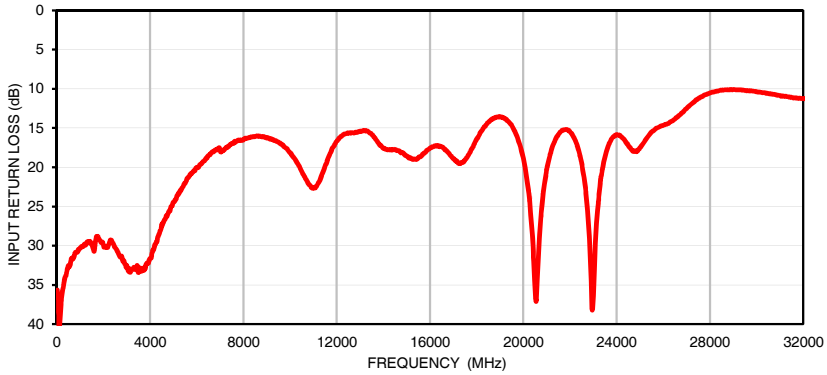
FREQ. (MHz)	Group Delay (ns)
19250	0.29
19275	0.29
19300	0.29
19325	0.29
19350	0.29
19375	0.29
19400	0.29
19425	0.29
19450	0.29
19475	0.29
19500	0.29
19525	0.29
19550	0.29
19575	0.29
19600	0.29
19625	0.29
19650	0.29
19675	0.29
19700	0.29
19725	0.29
19750	0.29
19775	0.29
19800	0.29
19825	0.29
19850	0.29
19875	0.29
19900	0.30
19925	0.30
19950	0.30
19975	0.30
20000	0.30
20025	0.30
20050	0.30
20075	0.30
20100	0.30
20125	0.30
20150	0.30
20175	0.30
20200	0.30
20225	0.30
20250	0.30
20275	0.30
20300	0.30
20325	0.30
20350	0.30
20375	0.30
20400	0.30
20425	0.30
20450	0.30
20475	0.30
20500	0.30
20525	0.30
20550	0.30
20575	0.30
20600	0.30
20625	0.30
20650	0.30
20675	0.30
20700	0.30
20725	0.30

Typical Performance Curves

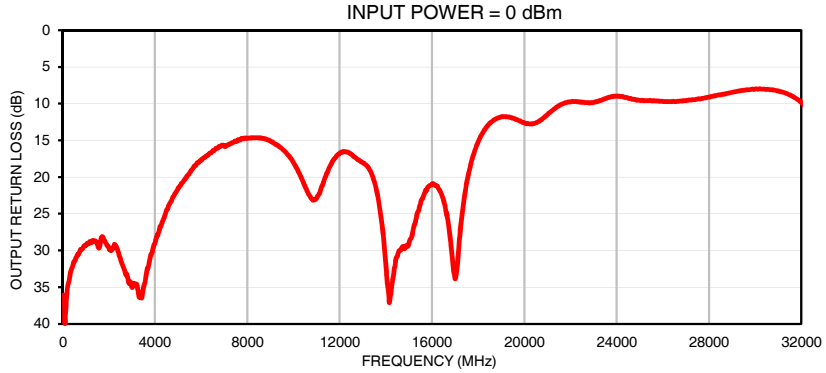
INSERTION LOSS
INPUT POWER = 0 dBm



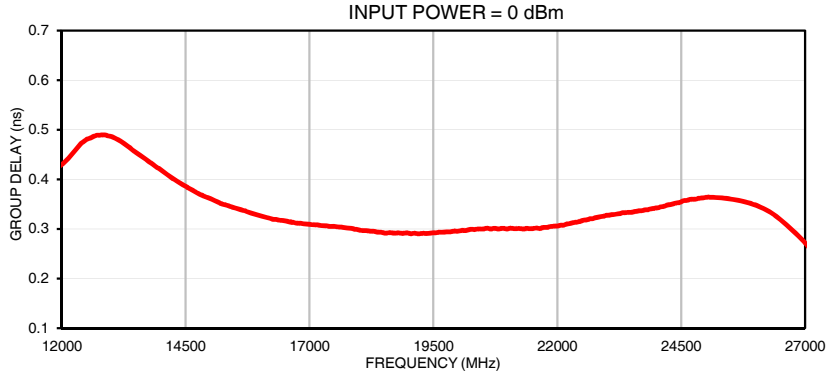
INPUT RETURN LOSS
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS
INPUT POWER = 0 dBm



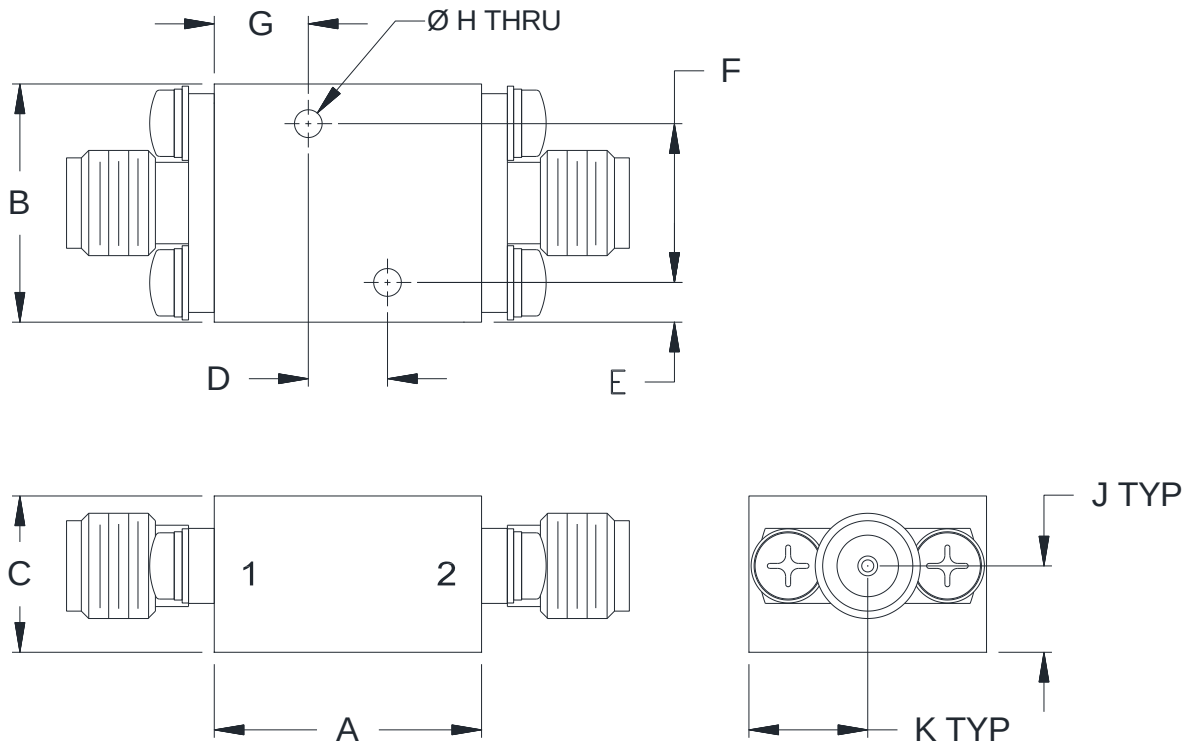
GROUP DELAY
INPUT POWER = 0 dBm



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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RF/IF MICROWAVE COMPONENTS

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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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