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 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.

REV. OR
ECO-012169
ZXBF-K163+
EDU3920
URJ
220305

COAXIAL REFLECTIONLESS

Bandpass Filter

ZXBF-K163+

50Ω 15.5 to 16.5 GHz

FEATURES

- Match to 50Ω in the stop band, eliminates undesired reflections
- Cascadable
- Good stopband rejection, 52dB 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-K163+
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
- Telecomm
- KA band block down converters
- Microwave Point-to-Point Links

ELECTRICAL SPECIFICATIONS AT 25°C

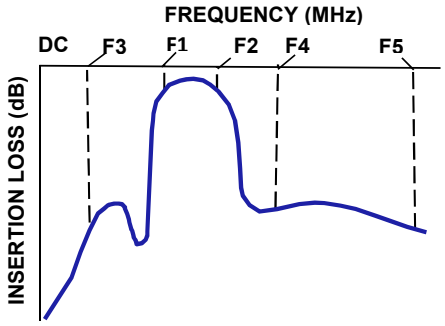
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Insertion Loss	F1-F2	15500 - 16500	—	5.5	6.8	dB
	Return Loss	F1-F2	15500 - 16500	—	15.0	—	dB
Stop Band, Lower	Insertion Loss	DC-F3	DC - 8000	45	52	—	dB
	Return Loss	DC-F3	DC - 8000	—	20	—	dB
Stop Band, Upper	Insertion Loss	F4-F5	24000 - 30000	40	52	—	dB
	Return Loss	F4-F5	24000 - 30000	—	8	—	dB

ABSOLUTE MAXIMUM RATINGS[3]

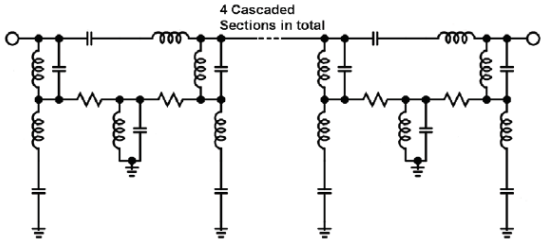
Parameter	Ratings
Operating temperature	-55°C to +105°C
Storage temperature	-55°C to +105°C
RF Power Input, Passband (F1-F2)[1]	0.5W at 25°C
RF Power Input, Stopband (DC-F1, F2-F5)[2]	0.16W at 25°C

[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



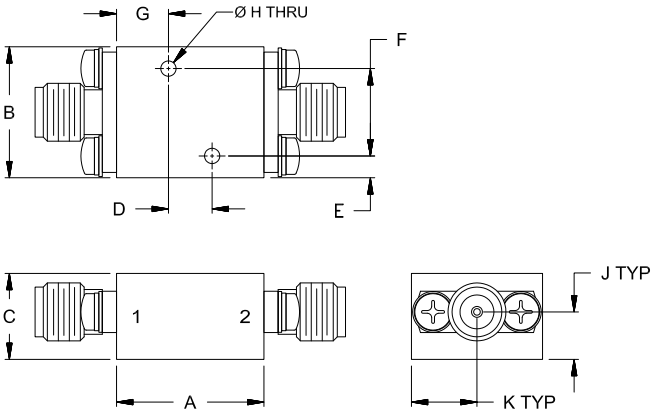
FUNCTIONAL SCHEMATIC



COAXIAL CONNECTIONS

PORT 1	2.92mm-Female
PORT 2	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

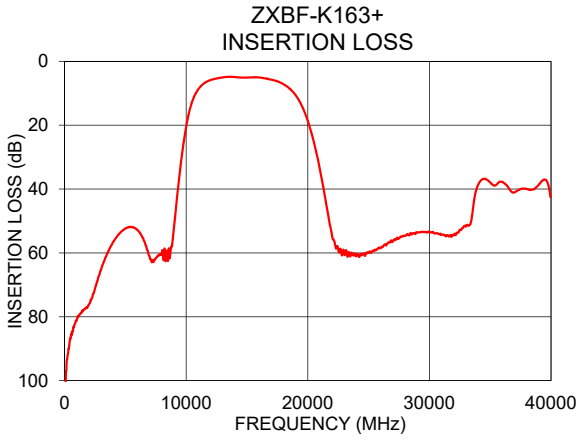
G	H	J	K		Wt.
.24	**.070**	**.22**	**.30**		grams
6.0	1.78	5.5	7.6		**24**

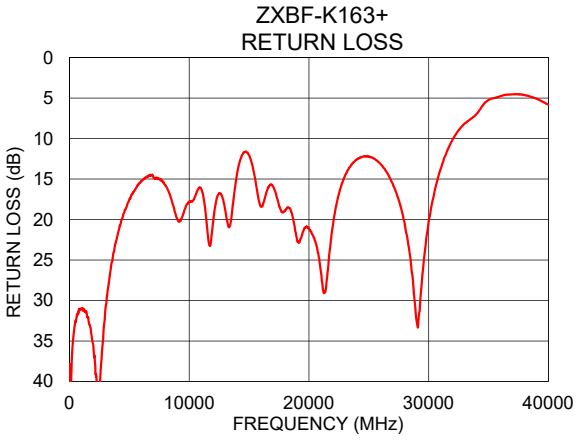
Note. Please refer to case style drawing for details

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	116.77	37.85
500	86.86	32.51
5000	52.34	17.55
8000	60.54	15.78
9625	30.18	18.76
10025	20.00	17.79
15500	5.00	14.88
15700	5.00	16.67
16000	5.05	18.41
16500	5.35	16.43
20125	20.12	21.35
20800	30.20	24.38
24000	60.76	12.58
30000	53.52	20.22
40000	44.38	5.85





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-K163+

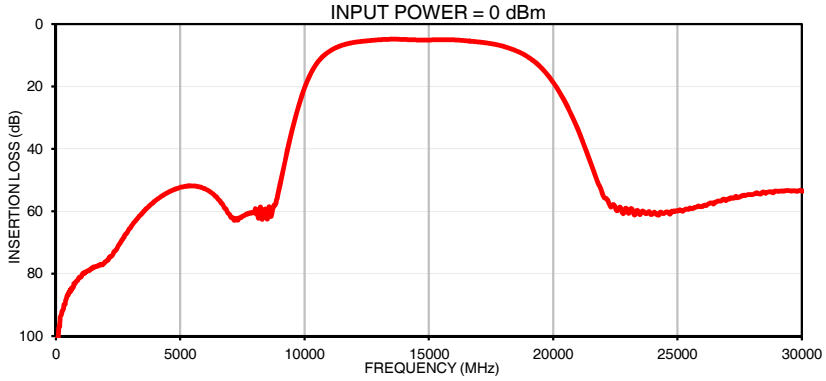
Typical Performance Data

FREQ. (MHz)	Insertion Loss (dB)	Input Return Loss (dB)	Output Return Loss (dB)
25	116.77	37.85	37.77
50	101.08	39.06	38.62
100	99.57	43.33	41.51
200	93.54	37.27	36.33
300	91.44	34.98	34.29
500	86.86	32.51	32.08
700	84.34	31.69	31.14
1000	81.13	31.02	30.65
1200	79.52	31.03	30.54
1400	78.56	31.34	31.04
1600	77.79	32.53	31.91
1800	77.03	33.89	33.05
2000	76.20	35.55	34.39
2500	71.22	40.67	37.87
3000	65.28	31.22	32.28
3500	60.37	25.50	27.04
4000	56.62	22.07	23.58
4500	54.02	19.36	21.29
5000	52.34	17.55	19.65
5500	51.86	16.28	18.45
6000	52.79	15.24	17.41
6500	55.87	14.65	16.41
7000	61.24	14.69	15.32
7500	61.62	15.02	14.12
8000	60.54	15.78	13.32
8500	62.53	17.43	13.29
9625	30.18	18.76	25.37
10025	20.00	17.79	26.92
10800	9.95	16.11	17.11
13500	4.85	20.09	20.59
15500	5.00	14.88	15.27
15600	5.00	15.81	16.46
15700	5.00	16.67	17.88
15800	5.00	17.54	19.56
16000	5.05	18.41	22.71
16100	5.10	18.36	23.34
16200	5.15	17.94	22.82
16300	5.21	17.45	21.81
16400	5.28	16.92	20.59
16500	5.35	16.43	19.71
18900	10.11	21.63	17.95
20125	20.12	21.35	12.41
20800	30.20	24.38	10.76
21500	44.30	27.32	8.62
22000	54.75	20.75	7.51
22500	58.76	16.82	6.87
23000	60.25	14.64	6.59
23500	61.08	13.34	6.57
24000	60.76	12.58	6.77
24500	60.50	12.23	7.09
25000	59.87	12.20	7.60
25500	58.99	12.53	8.24
26000	58.49	13.18	8.98
26500	57.17	14.15	9.98
27000	56.23	15.58	11.23
27500	55.45	17.60	12.70
28000	54.65	20.50	14.34
28500	54.04	25.09	15.93
29000	53.56	32.60	16.63
30000	53.52	20.22	14.46

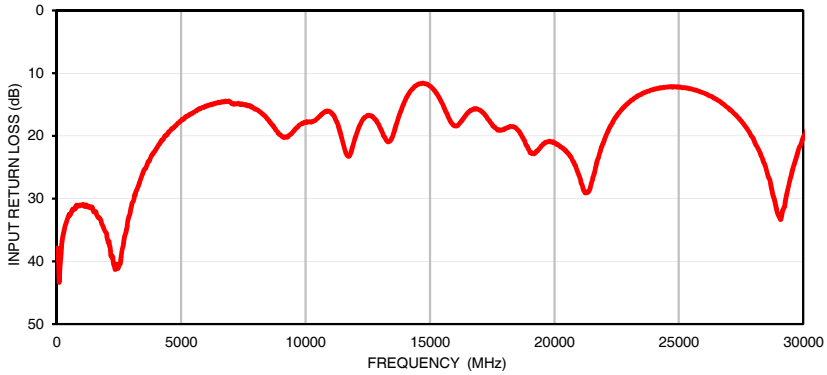
FREQ. (MHz)	Group Delay (ns)
15250	0.32
15275	0.33
15300	0.33
15325	0.33
15350	0.33
15375	0.33
15400	0.33
15425	0.33
15450	0.33
15475	0.33
15500	0.33
15525	0.33
15550	0.33
15575	0.33
15600	0.33
15625	0.33
15650	0.33
15675	0.33
15700	0.33
15725	0.33
15750	0.33
15775	0.34
15800	0.34
15825	0.34
15850	0.34
15875	0.34
15900	0.34
15925	0.34
15950	0.34
15975	0.34
16000	0.34
16025	0.34
16050	0.34
16075	0.34
16100	0.34
16125	0.34
16150	0.34
16175	0.34
16200	0.34
16225	0.34
16250	0.34
16275	0.34
16300	0.34
16325	0.34
16350	0.34
16375	0.34
16400	0.34
16425	0.34
16450	0.34
16475	0.34
16500	0.34
16525	0.34
16550	0.34
16575	0.34
16600	0.34
16625	0.34
16650	0.34
16675	0.34
16700	0.34
16725	0.34

Typical Performance Curves

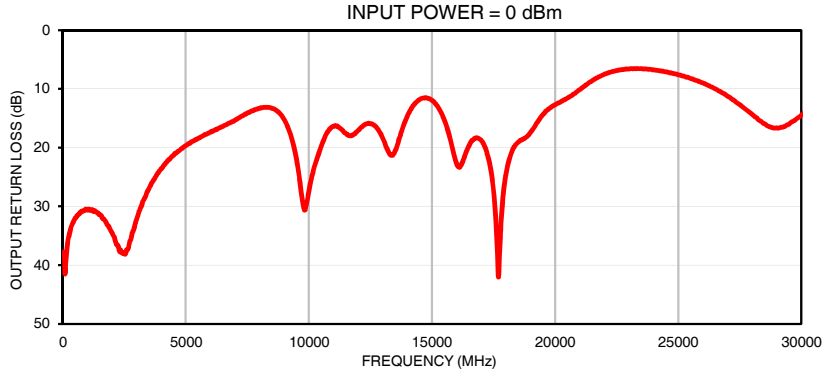
INSERTION LOSS
INPUT POWER = 0 dBm



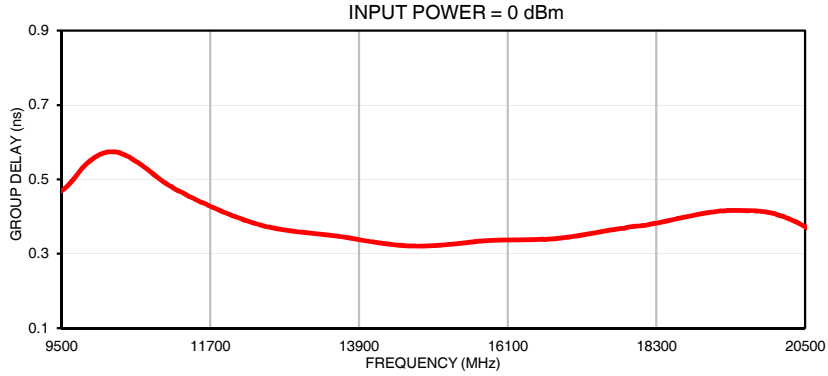
INPUT RETURN LOSS
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS
INPUT POWER = 0 dBm



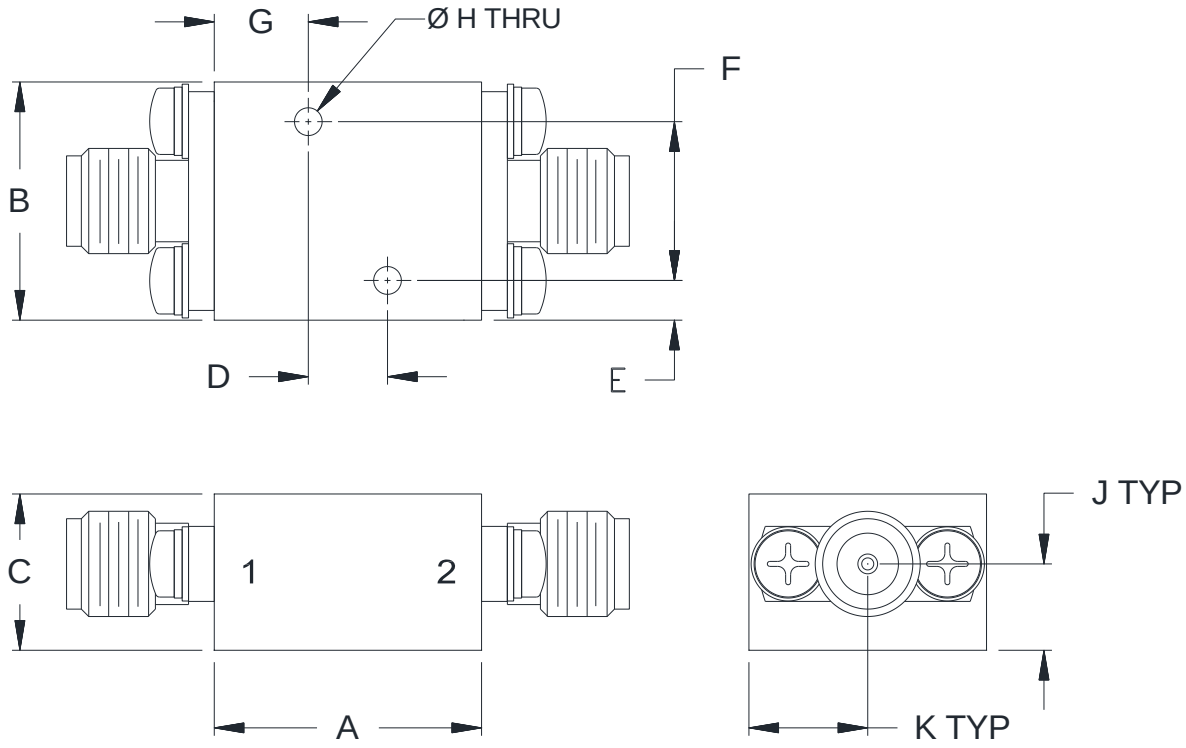
GROUP DELAY
INPUT POWER = 0 dBm



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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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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