Coaxial Reflectionless

Bandpass Filter

ZXBF Series

50Ω 2 to 21 GHz

The Big Deal

- Patented design terminates stopband signals
- Stop band 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.

Coaxial Reflectionless

Bandpass Filter

ZXBF-K282+

50Ω 2350 to 3150 MHz

Generic photo used for illustration purposes only

CASE STYLE: UK3042

Connectors	Model
2.92mm-F	ZXBF-K282+

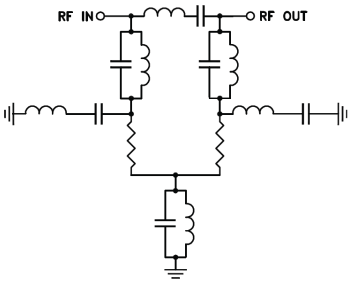
Features

- 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

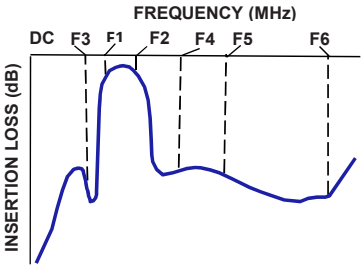
Applications

- Telecomm
- 5G Sub 6GHz, ISM Band

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	F1-F2	2350 - 3150	-	3.6	4.5	dB
	VSWR	F1-F2	2350 - 3150	-	1.2	-	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 1810	12	15	-	dB
	VSWR	DC-F3	DC - 1810	-	1.2	-	:1
Stop Band, Upper	Insertion Loss	F4-F5	3800 - 9500	10	15	-	dB
		F5-F6	9500 - 20000	-	20		dB
	VSWR	F4-F5	3800 - 9500	-	1.2	-	:1
		F5-F6	9500 - 20000	-	1.5	-	: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 (F1-F2)[1]	2W at 25°C
RF Power Input, Stopband (DC-F1, F2-F6)[2]	0.5W at 25°C

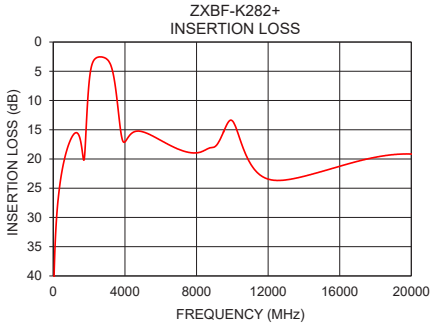
[1] Passband rating derates linearly to 1W at 105°C ambient
[2] Stopband rating derates linearly to 0.25W at 105°C ambient
[3] Permanent damage may occur if any of these limits are exceeded

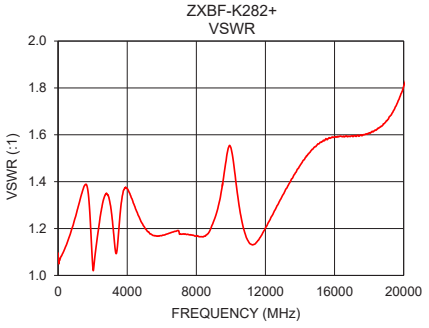
ESD rating

Human body model (HBM): Class 2(2000 to <4000 V) in accordance with ANSI/ESD 5.1-2001

Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
1	43.38	1.07
10	43.12	1.07
100	34.62	1.07
200	29.27	1.08
600	20.31	1.16
1000	16.47	1.25
1500	16.62	1.38
1810	16.18	1.30
2000	6.86	1.04
2200	3.49	1.12
2350	2.82	1.20
3000	2.95	1.31
3150	3.56	1.23
3800	15.93	1.36
4000	17.07	1.37
5000	15.36	1.21
9500	15.43	1.38
10000	13.48	1.55
15000	22.14	1.56
20000	19.15	1.81





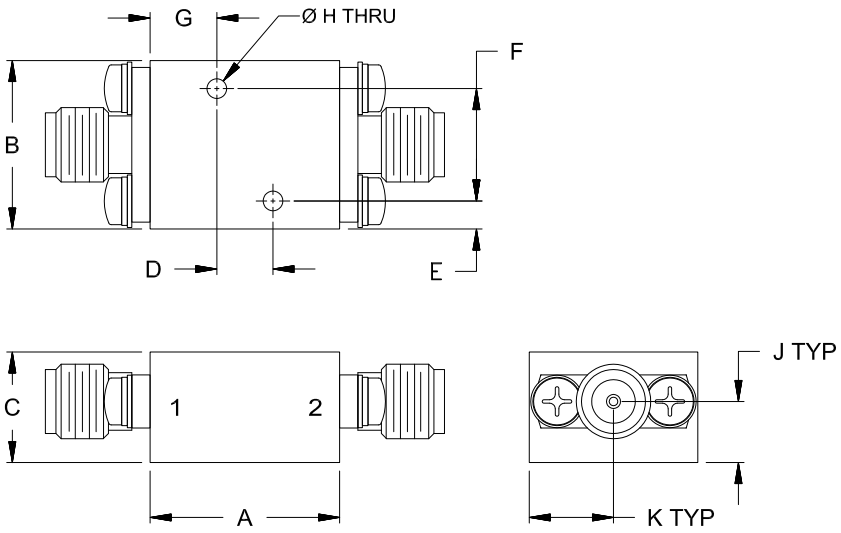
Notes

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 Bandpass Filter ZXBF-K282+

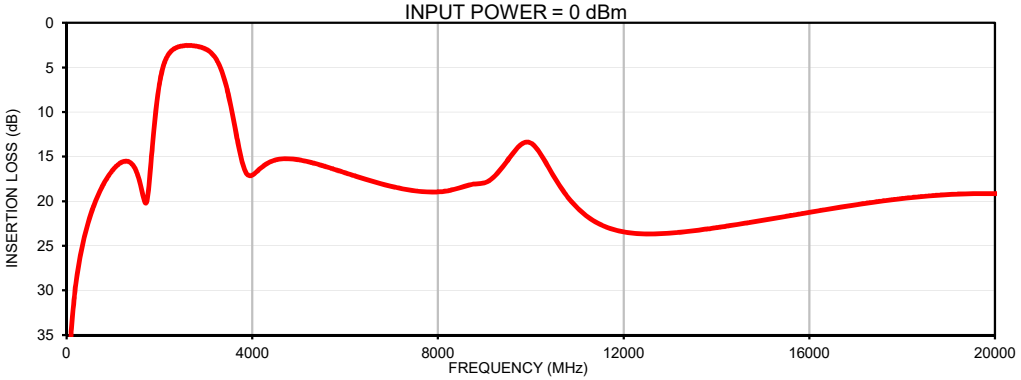
Typical Performance Data

FREQ. (MHz)	Insertion Loss (dB)	Input Return Loss (dB)	Output Return Loss (dB)
1	43.38	28.96	29.29
5	43.34	29.56	29.57
10	43.12	29.49	29.53
15	42.79	29.52	29.53
25	41.87	29.51	29.49
50	39.04	32.18	31.39
100	34.62	29.86	29.47
150	31.57	28.51	28.26
180	30.12	28.03	27.90
200	29.27	27.91	27.70
300	26.02	26.52	26.35
350	24.75	25.84	25.69
500	21.80	24.02	23.94
600	20.31	22.85	22.88
750	18.53	21.32	21.31
900	17.17	19.97	19.93
1000	16.47	19.14	19.12
1100	15.94	18.32	18.30
1250	15.52	17.28	17.26
1300	15.51	16.94	16.94
1400	15.79	16.38	16.39
1500	16.62	15.94	15.92
1600	18.33	15.78	15.77
1800	16.79	17.57	17.51
1810	16.18	17.82	17.76
1900	10.97	21.73	21.67
2000	6.86	33.46	33.55
2150	3.94	26.96	27.11
2200	3.49	24.73	24.83
2300	2.97	21.73	21.81
2350	2.82	20.66	20.70
2400	2.70	19.71	19.73
2500	2.59	18.29	18.30
2600	2.54	17.30	17.36
2800	2.62	16.54	16.50
3000	2.95	17.44	17.31
3100	3.30	18.73	18.53
3150	3.56	19.77	19.59
3800	15.93	16.24	16.13
4000	17.07	16.14	15.95
5000	15.36	20.60	20.29
6000	16.82	22.16	21.75
7000	18.34	21.42	21.14
8000	18.94	22.19	22.28
9000	17.95	19.72	19.89
9500	15.43	15.92	15.86
10000	13.48	13.38	13.25
10500	17.26	18.03	17.91
11000	20.73	23.29	22.52
11500	22.61	23.52	21.60
12000	23.44	20.76	18.99
12500	23.68	18.44	16.86
13000	23.57	16.70	15.24
14000	22.96	14.44	13.24
15000	22.14	13.23	12.29
16000	21.25	12.85	12.20
17000	20.40	12.79	12.83
18000	19.70	12.65	13.75
19000	19.26	12.11	13.44
20000	19.15	10.83	11.05

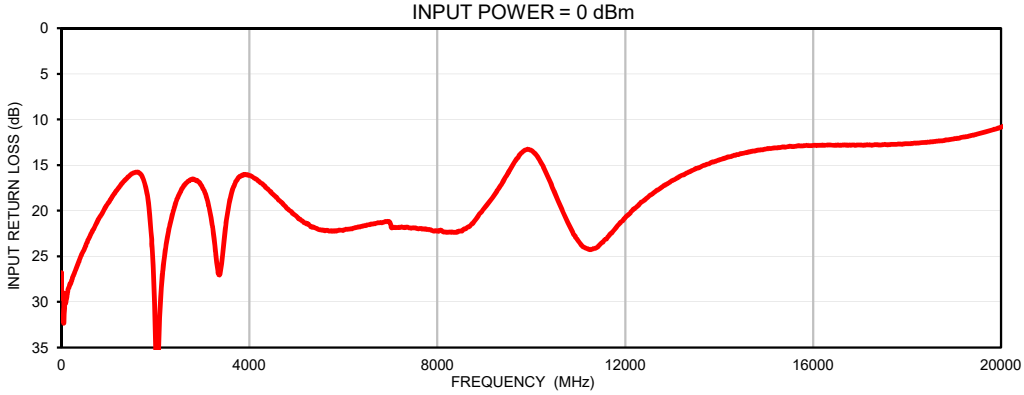
FREQ. (MHz)	Group Delay (ns)
2350	0.51
2360	0.51
2370	0.50
2390	0.50
2400	0.49
2410	0.49
2420	0.48
2430	0.48
2440	0.48
2450	0.48
2480	0.47
2500	0.46
2510	0.46
2520	0.46
2530	0.45
2540	0.45
2550	0.45
2560	0.45
2580	0.44
2600	0.44
2620	0.44
2640	0.44
2650	0.43
2660	0.43
2670	0.43
2680	0.43
2690	0.43
2700	0.43
2710	0.43
2730	0.43
2750	0.43
2780	0.43
2800	0.43
2820	0.43
2840	0.43
2850	0.43
2860	0.43
2880	0.43
2900	0.44
2910	0.44
2920	0.44
2940	0.44
2950	0.44
2960	0.45
2980	0.45
3000	0.45
3010	0.45
3020	0.45
3030	0.46
3050	0.46
3060	0.46
3070	0.47
3080	0.47
3090	0.47
3100	0.47
3110	0.47
3120	0.47
3130	0.48
3140	0.48
3150	0.48

Typical Performance Curves

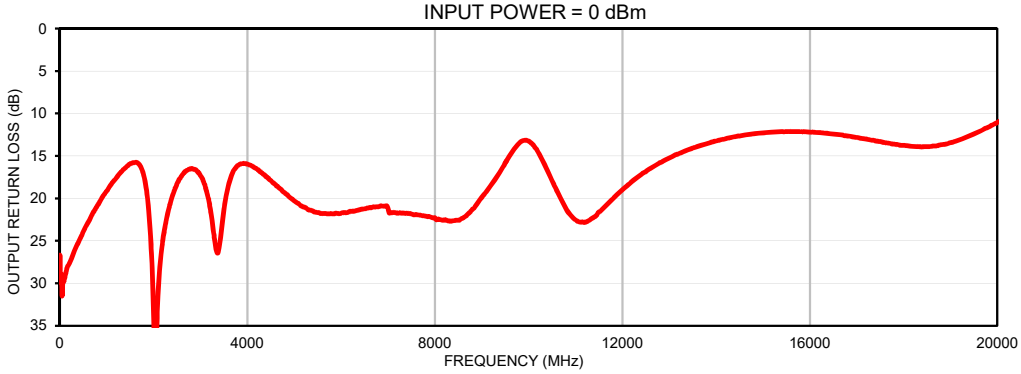
INSERTION LOSS
INPUT POWER = 0 dBm



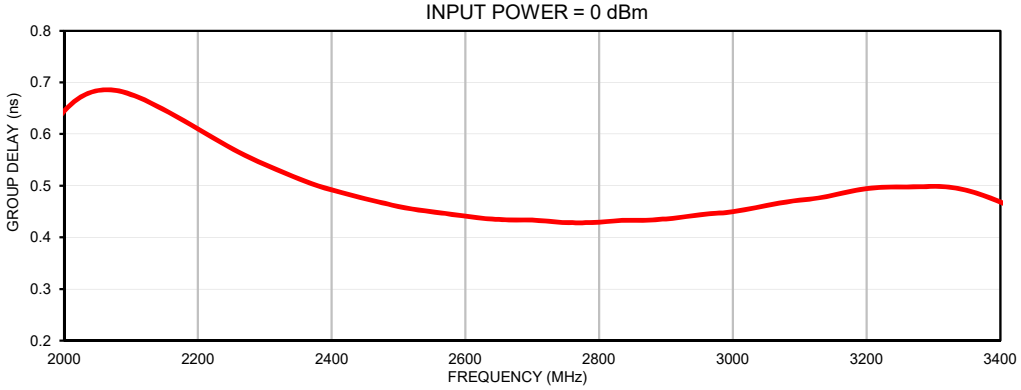
INPUT RETURN LOSS
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS
INPUT POWER = 0 dBm



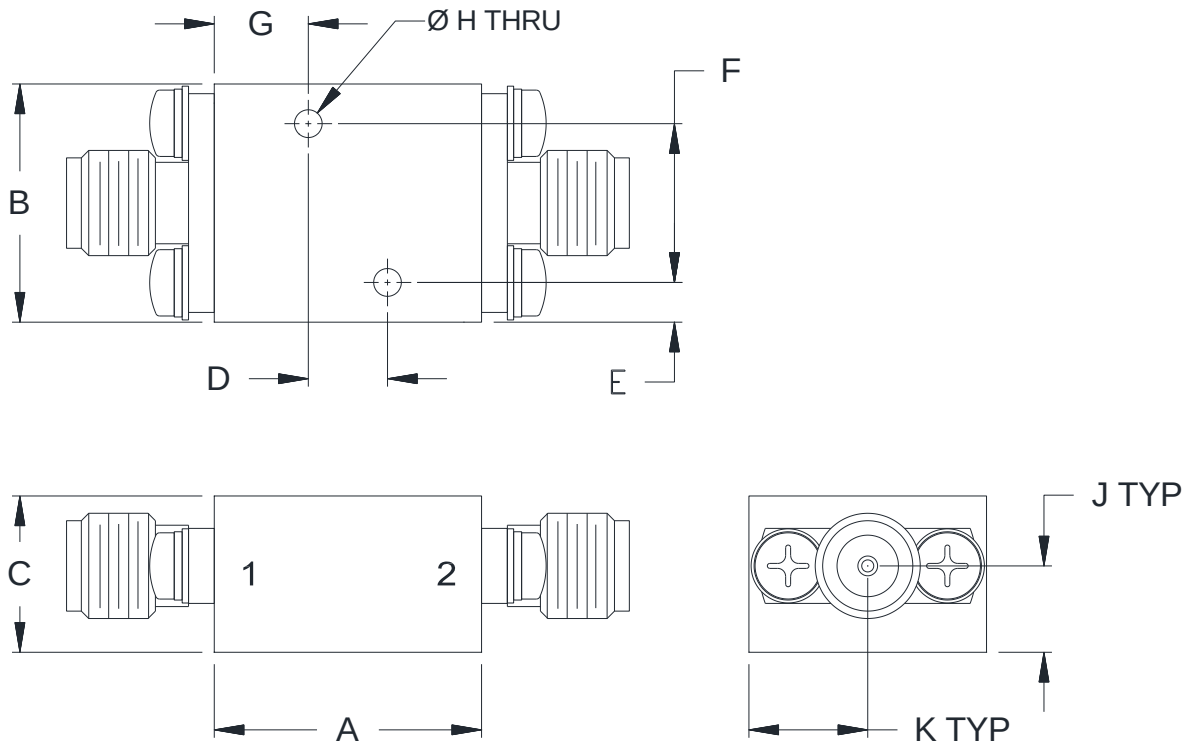
GROUP DELAY
INPUT POWER = 0 dBm



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