THIN FILM COAXIAL

Low Pass Filter

ZALF-K9000+

50Ω DC to 9 GHz 2.92mm Female

KEY FEATURES

- Low Passband Insertion Loss, 1.5 dB Typ.
- High Rejection, 38 dB Typ.
- Small Size

Generic photo used for illustration purposes only

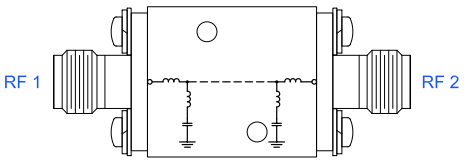
APPLICATIONS

- X- Band Radar
- Test and Measurement Equipment

PRODUCT OVERVIEW

Mini-Circuits' Connectorized Thin-Film filters offer low insertion loss and high rejection realized via Thin-Film on Alumina substrate, using a sputtering process that can guarantee an enhanced Q and repeatable performance. Low pass, high pass, and bandpass connectorized thin-film designs can be realized with this technology up to 40 GHz in a small form factor helping customers achieve their SWaP objectives. Using our high quality thin-film manufacturing process we can guarantee repeatability on large batches of filters.

FUNCTIONAL DIAGRAM



ELECTRICAL SPECIFICATIONS[1] AT +25°C

Parameter		F#	Frequency (GHz)	Min.	Typ.	Max.	Units
Passband	Insertion Loss	DC-F1	DC - 9	—	1.5	2.0	dB
	Freq. Cut-Off[2]	Fc	10.22	—	3	—	dB
	Return Loss	DC-F1	DC - 9	—	12	—	dB
Stopband	Rejection	F2-F3	12 - 15	20	30	—	dB
		F3-F4	15 - 20	34	38	—	
		F4-F5	20 - 22	—	20	—	

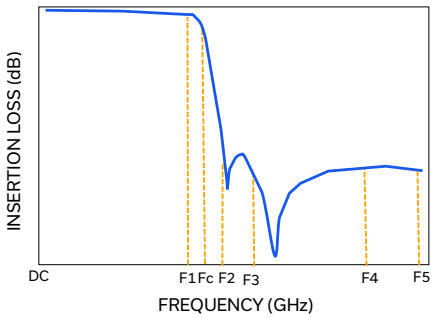
1. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.
2. Typical variation ± 3%

ABSOLUTE MAXIMUM RATINGS[3]

Parameter	Ratings
Operating Temperature	-55°C to +125°C
Storage Temperature	-55°C to +125°C
Input Power[4]	7 W at 25°C

3. Permanent damage may occur if any of these limits are exceeded.
4. Power rating applies only to signals within the passband.

TYPICAL FREQUENCY RESPONSE



REV. OR
ECO-029836
EDU5150
ZALF-K9000+
MCINU
260603

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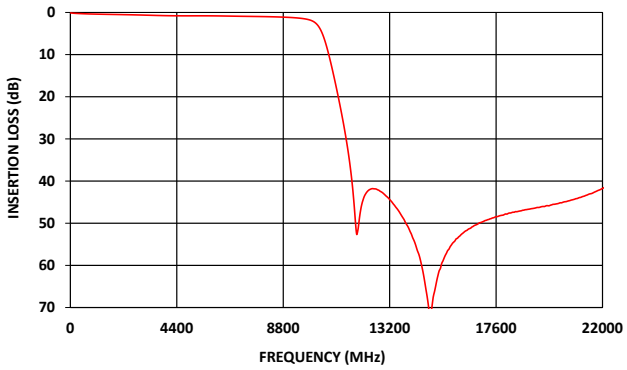
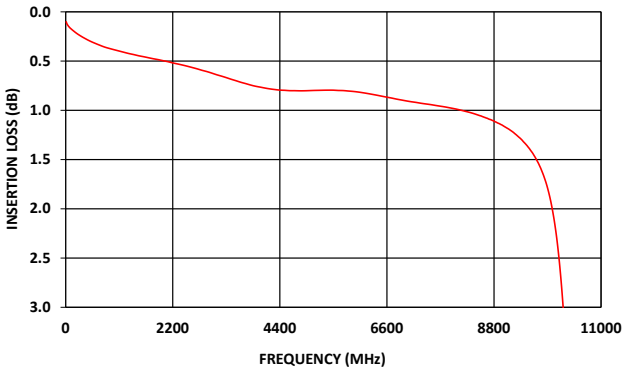
TYPICAL PERFORMANCE GRAPHS

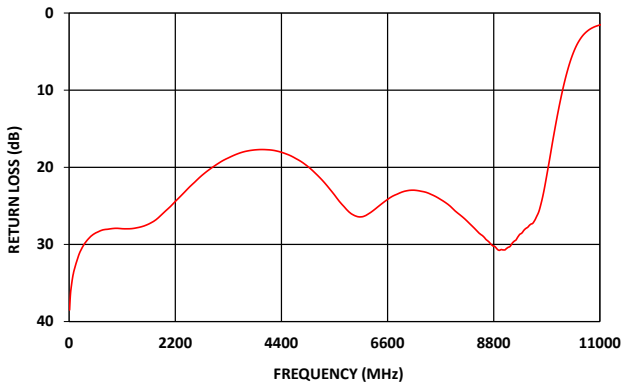
ZALF-K9000+
INSERTION LOSS



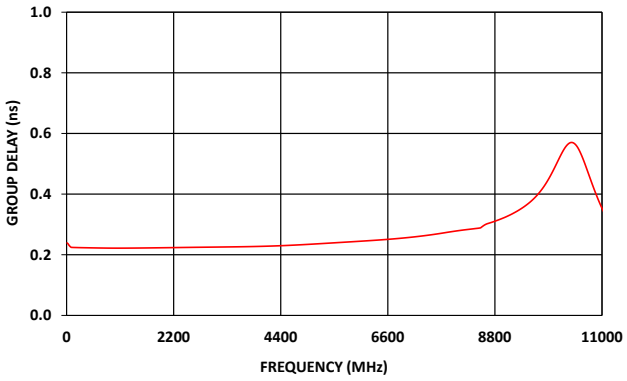
ZALF-K9000+
INSERTION LOSS (Zoomed)



ZALF-K9000+
RETURN LOSS



ZALF-K9000+
GROUP DELAY



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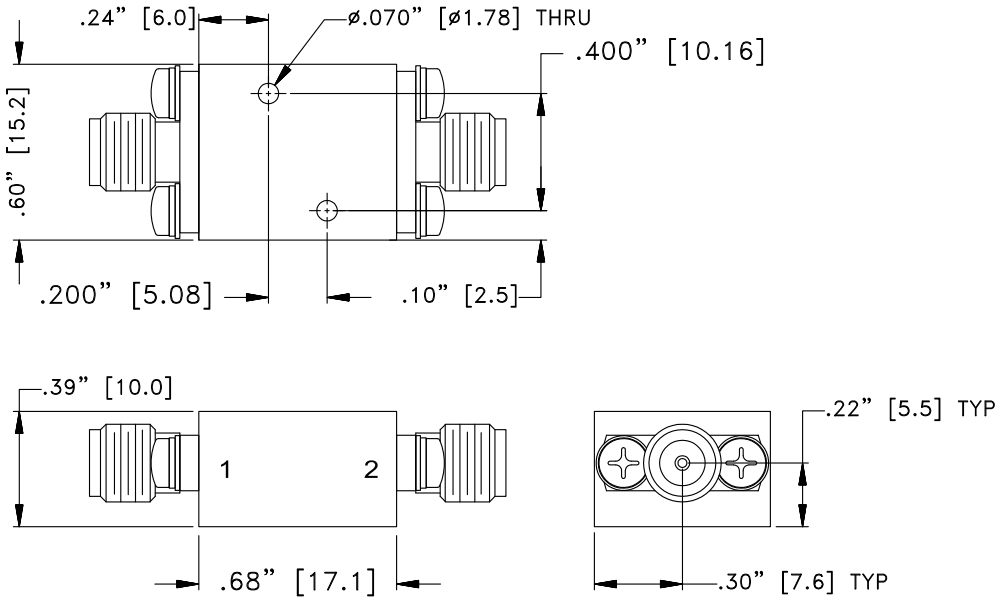
CONNECTOR DESCRIPTION

Function	Connector
RF1[5]	2.92mm Female
RF2[5]	2.92mm Female

5. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.

CASE STYLE DRAWING



Unit weight: 24grams
Dimensions are in inches (mm). Tolerances: 2 Pl.±.050"; 3 Pl.±.015"

PRODUCT MARKING*: ZALF-K9000+

*Marking may contain other features or characters for internal lot control.

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ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file)
Case Style	UK3042
RoHS Status	Compliant
Environmental Ratings	ENV144

Coaxial Thin-Film Lowpass Filter ZALF-K9000+

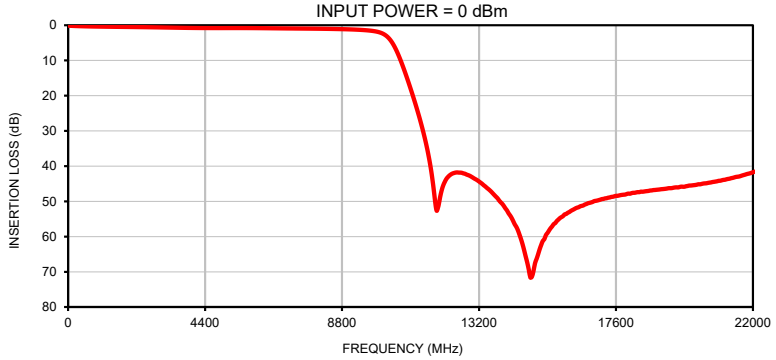
Typical Performance Data

FREQ. (MHz)	Insertion Loss (dB)	Input Return Loss (dB)	Output Return Loss (dB)
10	0.10	38.50	38.21
20	0.12	37.22	36.89
50	0.14	35.25	35.03
100	0.17	33.43	33.34
200	0.21	31.38	31.44
300	0.24	30.10	30.32
400	0.27	29.27	29.67
500	0.30	28.70	29.19
600	0.32	28.37	28.92
800	0.36	28.03	29.12
1000	0.39	27.91	29.46
1200	0.41	27.97	29.90
1400	0.43	27.85	29.70
1600	0.46	27.49	28.97
1800	0.48	26.80	27.60
2000	0.50	25.65	26.10
2200	0.52	24.43	24.58
2400	0.54	23.17	23.25
2600	0.57	21.94	22.06
2800	0.59	20.80	21.09
3000	0.62	19.88	20.27
3500	0.70	18.23	18.90
4000	0.76	17.70	18.25
4500	0.80	18.27	18.19
5000	0.80	20.17	18.65
5500	0.80	23.58	19.55
6000	0.81	26.42	20.88
6500	0.86	24.63	22.55
7000	0.90	23.04	23.89
7500	0.94	23.51	23.44
8000	0.98	25.66	21.98
8500	1.05	28.56	22.11
9000	1.16	30.71	25.86
9500	1.37	27.80	23.74
10220	2.99	10.21	8.64
11000	17.95	1.55	1.21
12000	46.92	1.04	0.84
12000	46.92	1.04	0.84
12500	41.79	0.97	0.81
13000	43.25	0.93	0.80
13500	46.51	0.90	0.78
14000	51.34	0.87	0.77
14500	59.45	0.84	0.76
15000	67.57	0.81	0.74
15500	57.62	0.76	0.71
16000	53.59	0.71	0.68
17000	49.77	0.67	0.59
17500	48.70	0.68	0.55
18000	47.80	0.72	0.52
18500	47.22	0.80	0.50
19000	46.63	0.89	0.49
19500	46.06	0.98	0.49
20000	45.51	1.05	0.51
20500	44.87	1.08	0.54
21000	44.03	1.07	0.59
21200	43.64	1.05	0.61
21400	43.21	1.03	0.63
21500	43.02	1.01	0.64
21800	42.27	0.96	0.68
22000	41.74	0.91	0.70

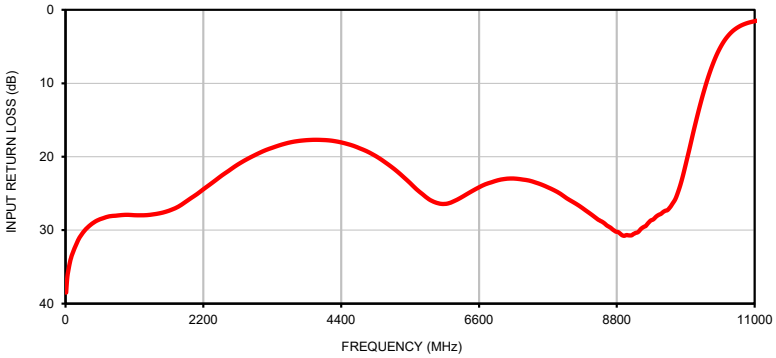
FREQ. (MHz)	Group Delay (ns)
10	0.24
20	0.24
50	0.23
200	0.22
300	0.22
400	0.22
500	0.22
600	0.22
700	0.22
800	0.22
900	0.22
1000	0.22
1100	0.22
1200	0.22
1300	0.22
1400	0.22
1500	0.22
1600	0.22
1700	0.22
1800	0.22
1900	0.22
2000	0.22
2100	0.22
2200	0.22
2300	0.22
2500	0.22
2800	0.22
3000	0.23
3100	0.23
3200	0.23
3300	0.23
3400	0.23
3500	0.23
3700	0.23
3800	0.23
3900	0.23
4000	0.23
4200	0.23
4300	0.23
4400	0.23
4500	0.23
4600	0.23
4700	0.23
4800	0.23
4900	0.23
5000	0.23
5200	0.24
5400	0.24
5600	0.24
5800	0.24
6000	0.24
6200	0.25
6400	0.25
6800	0.25
7000	0.26
7500	0.27
7800	0.27
8000	0.28
8500	0.29
9000	0.32

Typical Performance Curves

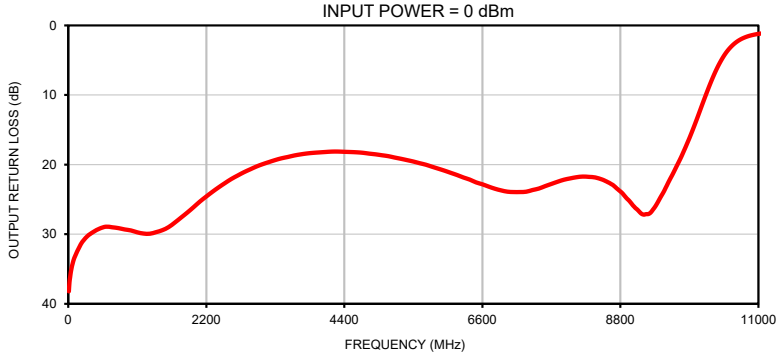
INSERTION LOSS
INPUT POWER = 0 dBm



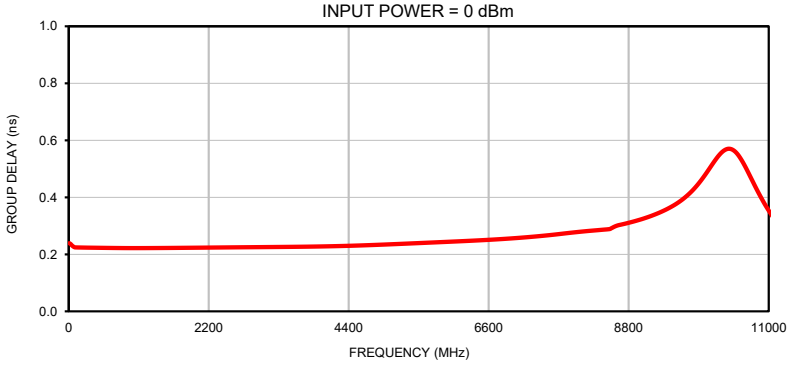
INPUT RETURN LOSS
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS
INPUT POWER = 0 dBm



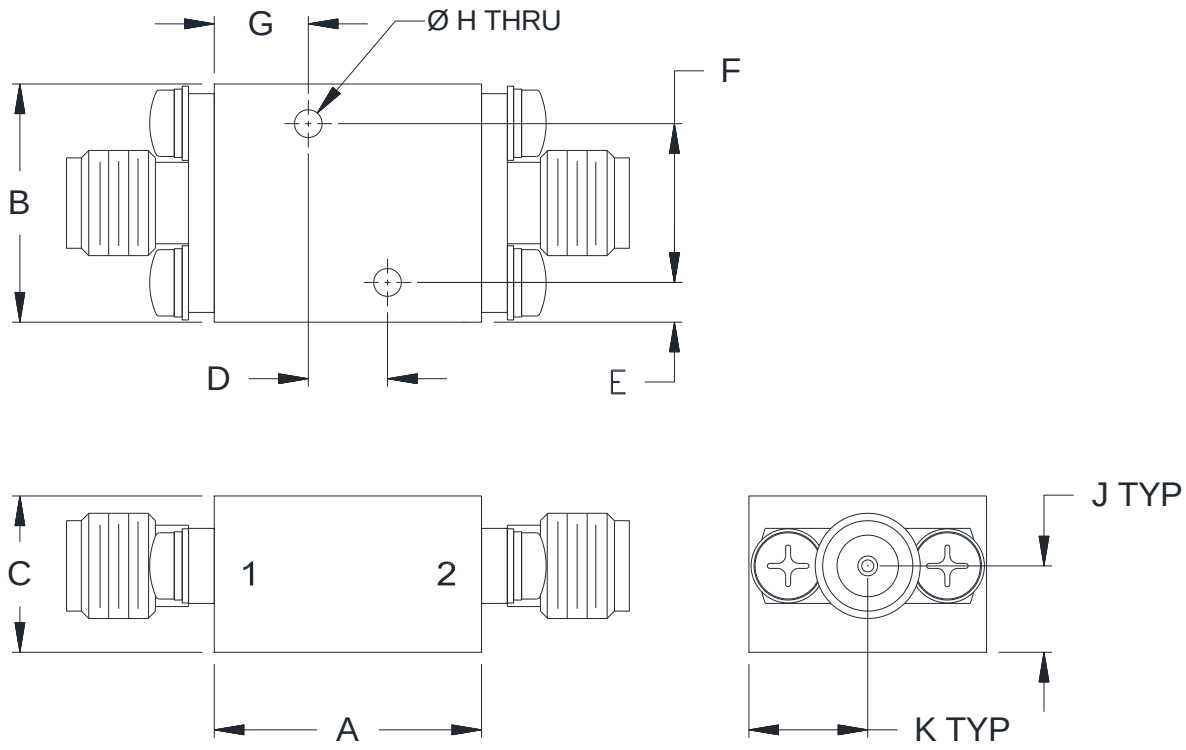
GROUP DELAY
INPUT POWER = 0 dBm



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 ENV144

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	-40° to 100° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 40°C, 96 hours Units may require bake-out after humidity to restore full performance.	MIL-STD-202. method 103. Condition B
Thermal Shock	-40°C to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except -40°C and +100°C