(LTCC) COAXIAL

High Pass Filter

ZHFG-K3500+

50Ω 3900 to 16500 MHz 2.92mm Female

KEY FEATURES

- Low Insertion Loss, 1.3 dB Typ.
- Return Loss, 12 dB Typ.
- Stop Band Rejection, 49 dB Typ.
- Broadband Connectorized Package
- Power Handling: 3 Watts

APPLICATIONS

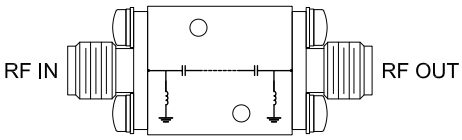
- Test and Measurement Equipment
- Military Applications
- Telecommunications and Broadband Wireless Systems
- 5G Sub 6 GHz
- WiFi 6E and X-Band Radar

Generic photo used for illustration purposes only

PRODUCT OVERVIEW

ZHFG-K3500+ is a 50Ω high pass filter built in broadband connectorized package. Covering 3900-16500 MHz bandwidth, these units offer good matching within the passband and good rejection in stopband. ZHFG-K3500+ offer low insertion loss, and excellent power handling capability. It handles up to 3 W RF input power and provides a wide operating temperature range from -55°C to 125°C.

FUNCTIONAL DIAGRAM



ELECTRICAL SPECIFICATIONS[1,2] AT +25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Pass Band	Insertion Loss	F3-F4	3900 - 4400	—	2.3	—	dB
		F4-F5	4400 - 5200	—	1.3	2.5	
		F5-F6	5200 - 15000	—	1.7	2.3	
		F6-F7	15000 - 16500	—	2.2	—	
	Return Loss	F3-F7	3900 - 16500	—	14	—	dB
Stop Band	Rejection	DC-F1	DC - 2400	40	49	—	dB
		F1-F2	2400 - 2700	26	41	—	
	Freq. Cut-Off[3]	Fc[3]	3600	—	3	—	dB

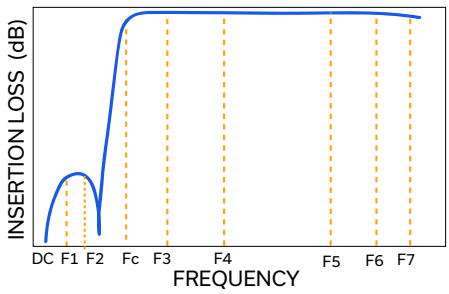
1. This filter is bi-directional, RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.
2. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.
3. Typical variation ± 5%

ABSOLUTE MAXIMUM RATINGS[4]

Parameter	Ratings
Operating Temperature	-55 °C to +125 °C
Storage Temperature	-55 °C to +125 °C
Input Power[5]	3 W @+25°C

4. Permanent damage may occur if any of these limits are exceeded.
5. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 0.6 W at +125°C.

TYPICAL FREQUENCY RESPONSE AT +25°C



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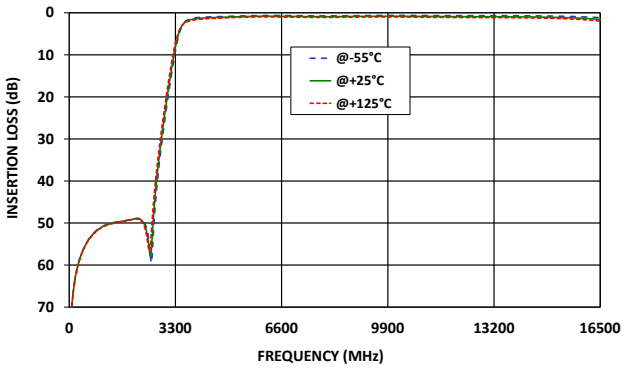
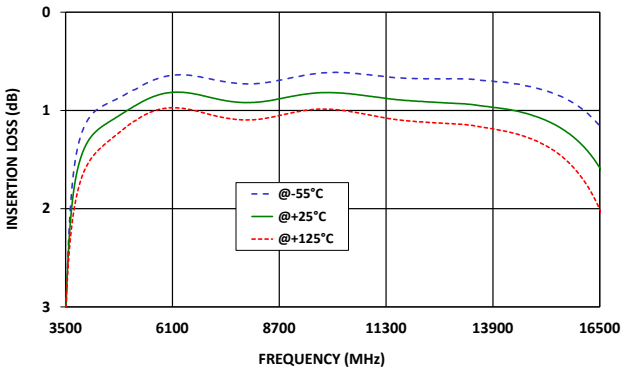
TYPICAL PERFORMANCE GRAPHS

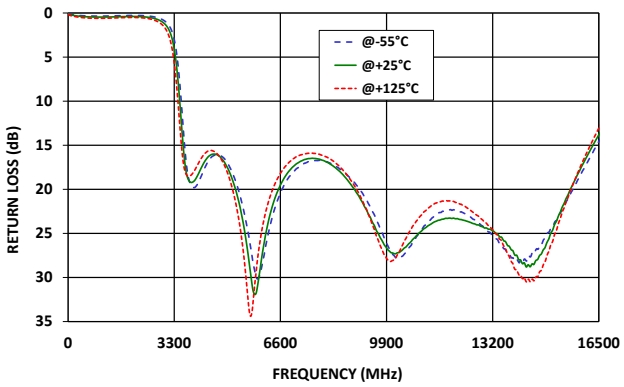
ZHFG-K3500+
INSERTION LOSS



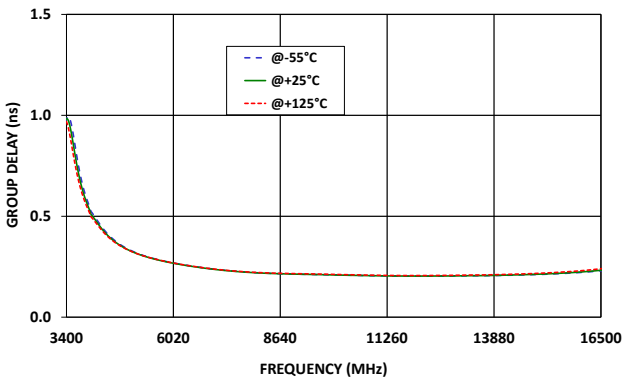
ZHFG-K3500+
INSERTION LOSS (Zoomed)



ZHFG-K3500+
RETURN LOSS



ZHFG-K3500+
GROUP DELAY



High Pass Filter

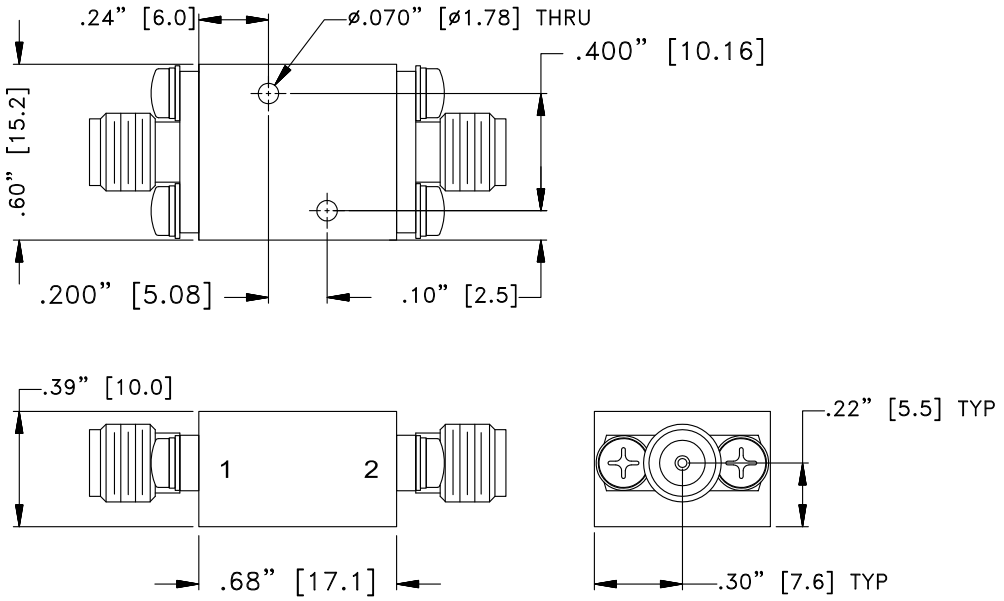
ZHFG-K3500+

50Ω 3900 to 16500 MHz 2.92mm Female

CONNECTOR DESCRIPTION

Function	Marking on Unit	Connector
RF1[1]	1	2.92mm Female
RF2[1]	2	2.92mm Female

CASE STYLE DRAWING



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

PRODUCT MARKING*: ZHFG-K3500+

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

High Pass Filter

ZHFG-K3500+

50Ω 3900 to 16500 MHz 2.92mm Female

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	ENV124

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-Circuits' 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/terms/viewterm.html

Coaxial High Pass Filter ZHFG-K3500+

Typical Performance Data

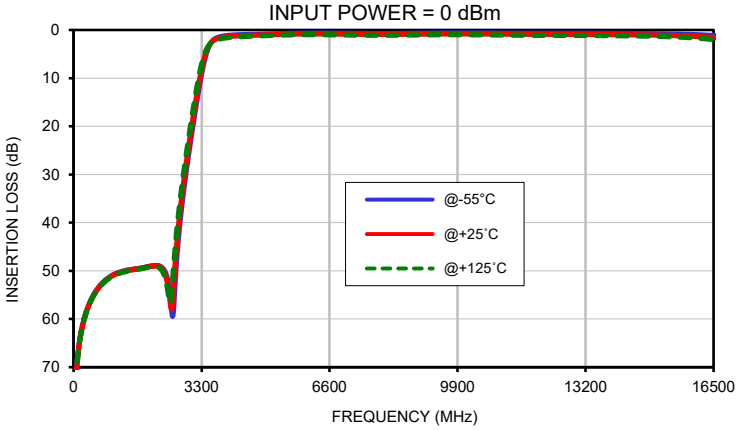
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-55°C	@+25˚C	@+125˚C	@-55°C	@+25˚C	@+125˚C	@-55°C	@+25˚C	@+125˚C
10	76.12	80.57	77.74	0.07	0.11	0.16	0.09	0.13	0.17
50	74.60	76.21	74.52	0.12	0.18	0.26	0.14	0.20	0.28
100	68.38	68.26	68.13	0.16	0.23	0.31	0.19	0.26	0.34
150	64.84	64.87	65.07	0.20	0.26	0.36	0.23	0.30	0.39
200	62.51	62.36	62.57	0.23	0.29	0.39	0.27	0.34	0.43
250	60.65	60.80	60.67	0.25	0.32	0.43	0.29	0.37	0.47
300	59.28	59.18	59.21	0.27	0.34	0.46	0.31	0.39	0.50
350	57.95	58.06	58.13	0.28	0.37	0.48	0.32	0.41	0.52
400	56.89	57.08	57.06	0.30	0.38	0.51	0.33	0.43	0.54
450	56.03	56.02	56.18	0.31	0.40	0.53	0.34	0.44	0.56
500	55.29	55.34	55.37	0.32	0.41	0.54	0.35	0.45	0.58
550	54.55	54.59	54.72	0.33	0.42	0.56	0.36	0.46	0.59
600	53.92	54.02	54.06	0.33	0.43	0.57	0.37	0.47	0.60
700	52.89	52.96	53.12	0.34	0.45	0.59	0.38	0.49	0.62
800	52.09	52.18	52.29	0.35	0.46	0.60	0.38	0.49	0.62
1000	50.90	51.01	51.13	0.35	0.46	0.60	0.38	0.49	0.62
1100	50.55	50.64	50.74	0.35	0.46	0.60	0.37	0.49	0.61
1200	50.25	50.31	50.45	0.34	0.46	0.59	0.36	0.48	0.60
1300	50.03	50.10	50.18	0.34	0.45	0.58	0.35	0.47	0.59
1400	49.85	49.93	50.03	0.33	0.44	0.57	0.34	0.46	0.58
1500	49.73	49.79	49.90	0.32	0.43	0.55	0.33	0.44	0.56
1600	49.59	49.65	49.76	0.31	0.42	0.54	0.31	0.43	0.54
1750	49.41	49.45	49.53	0.29	0.41	0.52	0.29	0.41	0.52
1790	49.36	49.39	49.48	0.29	0.40	0.52	0.29	0.41	0.52
1930	49.10	49.19	49.22	0.28	0.39	0.51	0.28	0.40	0.51
2000	49.03	49.08	49.14	0.28	0.39	0.51	0.28	0.39	0.51
2400	51.06	51.88	52.82	0.31	0.45	0.59	0.31	0.45	0.58
2600	54.70	50.62	46.93	0.39	0.55	0.72	0.39	0.55	0.72
2700	43.37	41.01	38.55	0.46	0.64	0.84	0.45	0.63	0.83
3000	23.89	22.39	20.66	0.90	1.22	1.64	0.87	1.18	1.56
3600	2.11	2.23	2.38	14.05	15.98	17.40	13.51	15.71	18.08
3900	1.22	1.44	1.67	19.79	19.11	18.05	23.03	22.04	20.31
4000	1.13	1.35	1.57	19.54	18.61	17.40	21.73	20.37	18.67
4400	0.96	1.16	1.36	16.59	16.18	15.61	16.59	16.14	15.55
4800	0.87	1.05	1.23	16.32	16.63	16.84	15.96	16.22	16.37
5200	0.79	0.95	1.10	18.99	19.94	21.36	18.16	18.90	19.94
6000	0.65	0.82	0.97	29.13	28.25	25.12	27.97	27.42	24.94
7000	0.68	0.87	1.04	18.02	17.42	16.53	18.05	17.47	16.50
7500	0.72	0.91	1.08	16.87	16.51	15.93	16.47	16.19	15.55
8000	0.73	0.92	1.10	16.85	16.84	16.28	16.32	16.31	15.73
8500	0.71	0.90	1.07	17.84	18.17	17.64	17.41	17.67	17.12
9000	0.67	0.86	1.02	19.66	20.55	20.20	19.74	20.52	20.04
9500	0.63	0.83	0.99	22.74	23.98	24.37	24.30	25.77	25.70
10000	0.61	0.82	0.99	26.79	27.04	28.11	32.83	33.67	32.54
10500	0.62	0.83	1.02	27.19	26.56	25.59	29.10	28.48	25.77
11000	0.64	0.86	1.05	24.55	24.69	22.86	24.31	24.64	22.35
11500	0.67	0.89	1.09	22.73	23.52	21.46	22.55	23.33	21.14
12000	0.68	0.90	1.11	22.33	23.29	21.40	22.55	23.38	21.34
12500	0.68	0.92	1.13	23.11	23.74	22.35	23.78	24.32	22.60
13000	0.68	0.93	1.14	24.54	24.38	23.83	27.20	26.88	25.65
13500	0.69	0.95	1.16	26.41	25.56	26.05	38.83	34.62	33.37
14000	0.71	0.97	1.20	28.22	27.91	29.58	34.58	37.00	39.03
14200	0.71	0.99	1.21	27.91	28.44	30.15	31.99	34.78	37.26
14400	0.73	1.00	1.23	27.50	28.60	30.37	30.60	33.11	35.58
14500	0.73	1.01	1.24	27.20	28.41	30.30	29.60	31.74	33.89
15000	0.78	1.07	1.32	24.46	25.03	26.36	25.65	25.85	26.52
15200	0.80	1.10	1.36	23.46	23.48	24.47	24.10	23.82	24.15
15500	0.85	1.17	1.44	21.32	20.92	21.29	21.80	21.14	21.09
16000	0.96	1.32	1.65	17.88	17.17	16.83	18.02	17.31	16.78
16500	1.16	1.58	2.01	14.57	13.82	13.07	14.65	13.97	13.17

Typical Performance Data

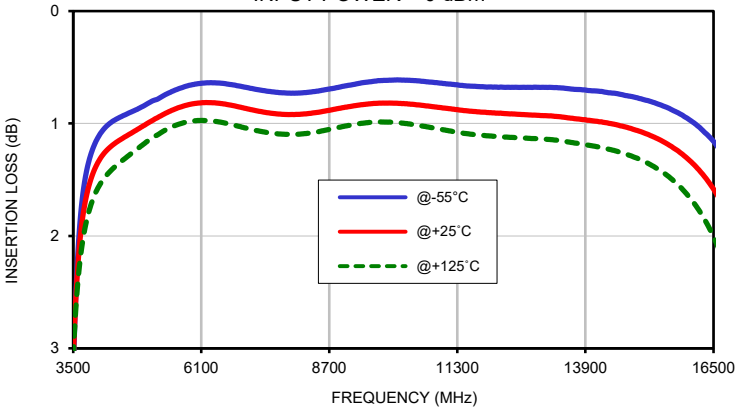
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-55°C	@+25°C	@+125°C
3900	0.58	0.56	0.55
4000	0.52	0.51	0.50
4100	0.50	0.48	0.47
4200	0.47	0.46	0.45
4300	0.44	0.43	0.42
4400	0.41	0.41	0.40
4500	0.39	0.39	0.38
4600	0.38	0.37	0.37
4700	0.36	0.36	0.36
4800	0.35	0.35	0.34
5000	0.33	0.33	0.32
5200	0.31	0.31	0.31
5500	0.29	0.29	0.29
6000	0.27	0.27	0.27
6500	0.25	0.25	0.25
7000	0.24	0.24	0.24
7500	0.23	0.23	0.23
8000	0.22	0.22	0.22
8500	0.22	0.22	0.22
9000	0.21	0.21	0.22
9500	0.21	0.21	0.21
10000	0.21	0.21	0.21
10500	0.21	0.21	0.21
11000	0.21	0.21	0.21
11500	0.20	0.20	0.21
12000	0.20	0.20	0.21
12500	0.20	0.20	0.21
13000	0.20	0.20	0.21
13500	0.21	0.21	0.21
14000	0.21	0.21	0.21
14200	0.21	0.21	0.21
14400	0.21	0.21	0.21
14600	0.21	0.21	0.21
14800	0.21	0.21	0.22
15000	0.21	0.21	0.22
15400	0.21	0.22	0.22
15800	0.22	0.22	0.23
16000	0.22	0.22	0.23
16200	0.22	0.23	0.23
16500	0.23	0.23	0.24

Typical Performance Curves

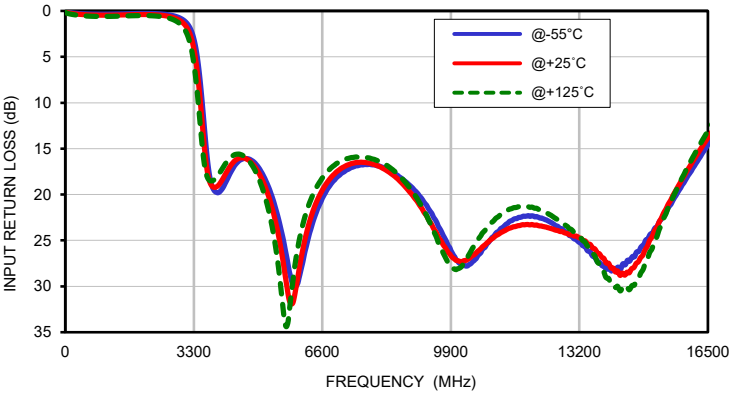
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



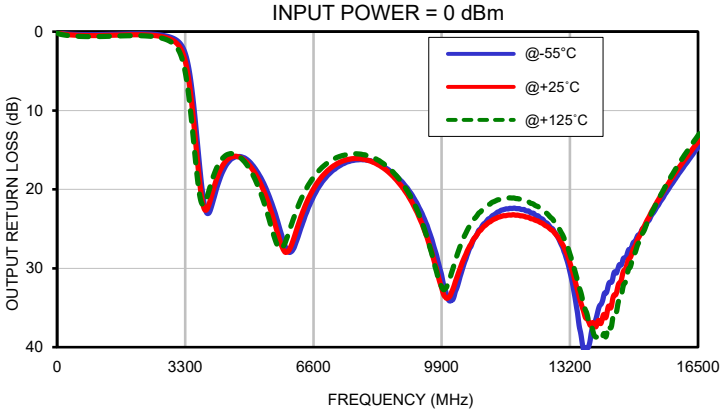
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



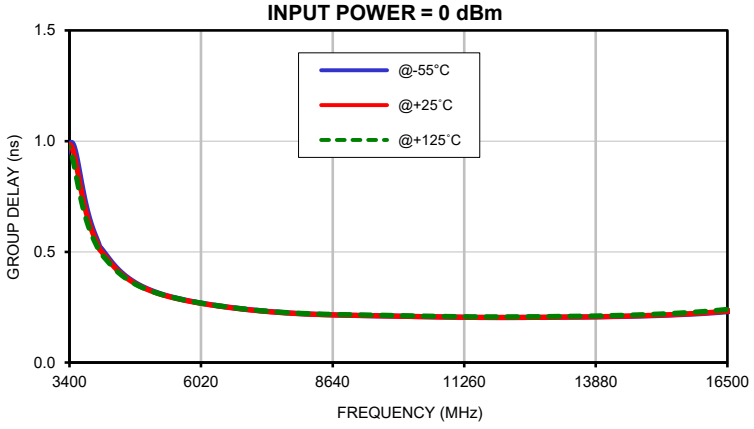
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



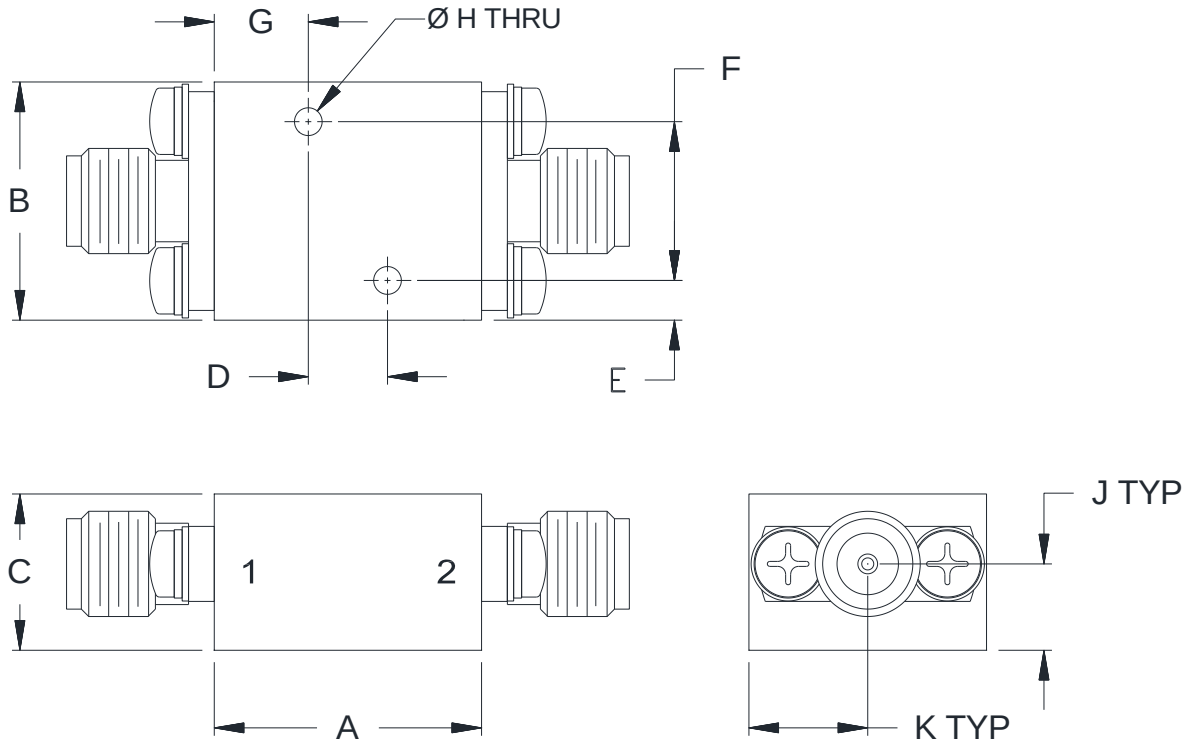
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



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 **ENV124**

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 125° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 125° C Ambient Environment	Individual Model Data Sheet

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