



LTCC COAXIAL

Bandpass Filter

ZBFHK-K4951+

50Ω 4300 to 5300 MHz 2.92mm Female

KEY FEATURES

- Low Insertion Loss, 3.8 dB Typ.
- Return Loss, 13 dB Typ.
- Stopband Rejection, 82 dB Typ.
- Broadband Connectorized Package
- Power Handling: 1 Watts

APPLICATIONS

- Ku Band Satellite
- Telecom

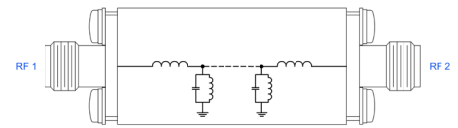
PRODUCT OVERVIEW

ZBFHK-K4951+ is a 50Ω band pass filter built in broad band connectorized package. Covering 4300-5300 MHz bandwidth, these units offer good matching within the passband and good rejection in stopband. ZBFHK-K4951+ offer low insertion loss, and excellent power handling capability. It handles up to 1 W RF input power and provides a wide operating temperature range from -55°C to 125°C.



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



ELECTRICAL SPECIFICATIONS¹ AT +25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency ²	—	—	—	4800	—	MHz
	Insertion Loss	F1-F2	4300 - 5300	—	3.8	5.0	dB
	Return Loss	F1-F2	4300 - 5300	—	13	—	dB
Stopband, Lower	Rejection	DC-F3	100 - 2800	70	82	—	dB
Stopband, Upper	Rejection	F4-F5	6700 - 12300	60	73	—	dB

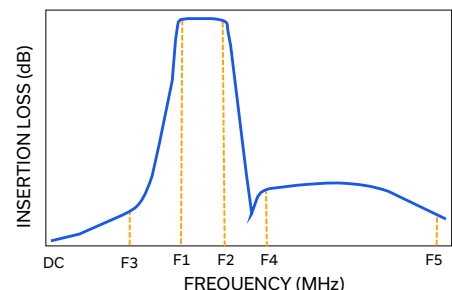
1. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.
 2. Typical variation $\pm 5\%$

ABSOLUTE MAXIMUM RATINGS³

Parameter	Ratings
Operating Temperature	-55°C to +125°C
Storage Temperature	-55°C to +125°C
Input Power	1 W

3. Permanent damage may occur if any of these limits are exceeded.

TYPICAL FREQUENCY RESPONSE





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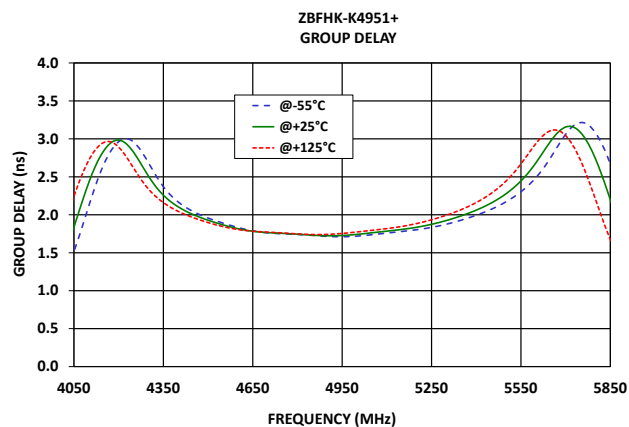
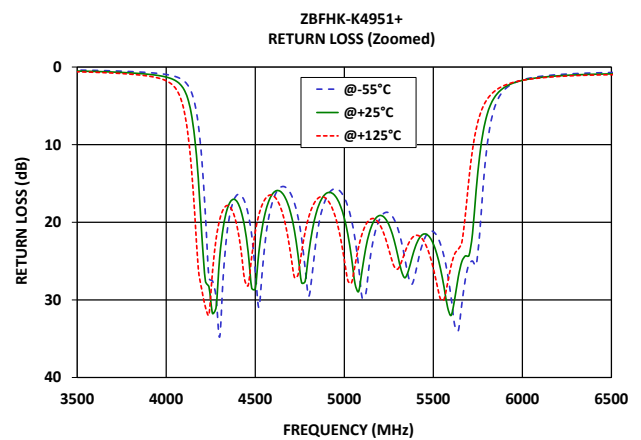
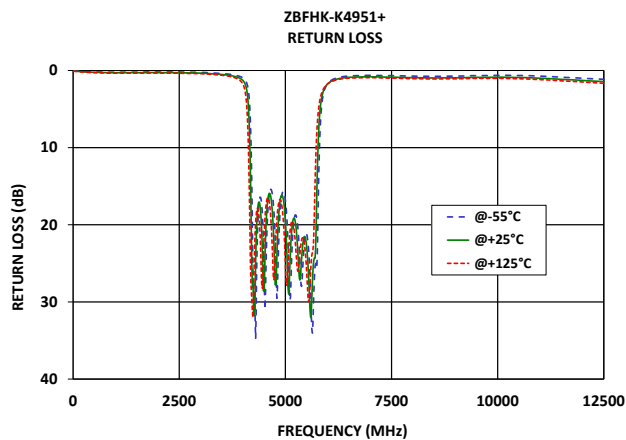
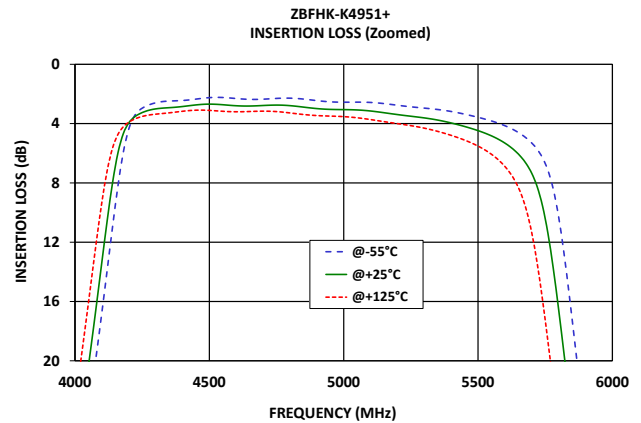
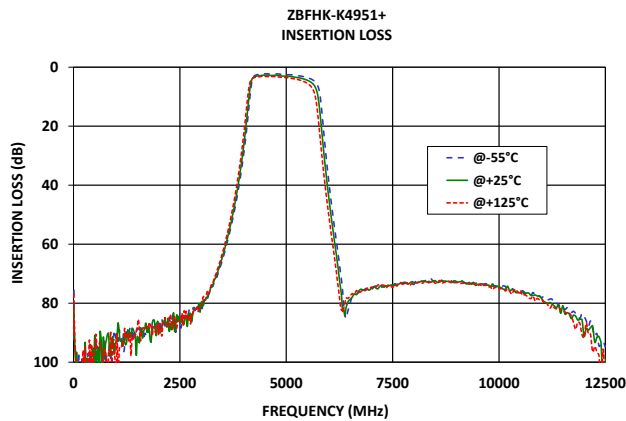
Bandpass Filter

ZBFHK-K4951+

Mini-Circuits

50Ω 4300 to 5300 MHz 2.92mm Female

TYPICAL PERFORMANCE GRAPHS





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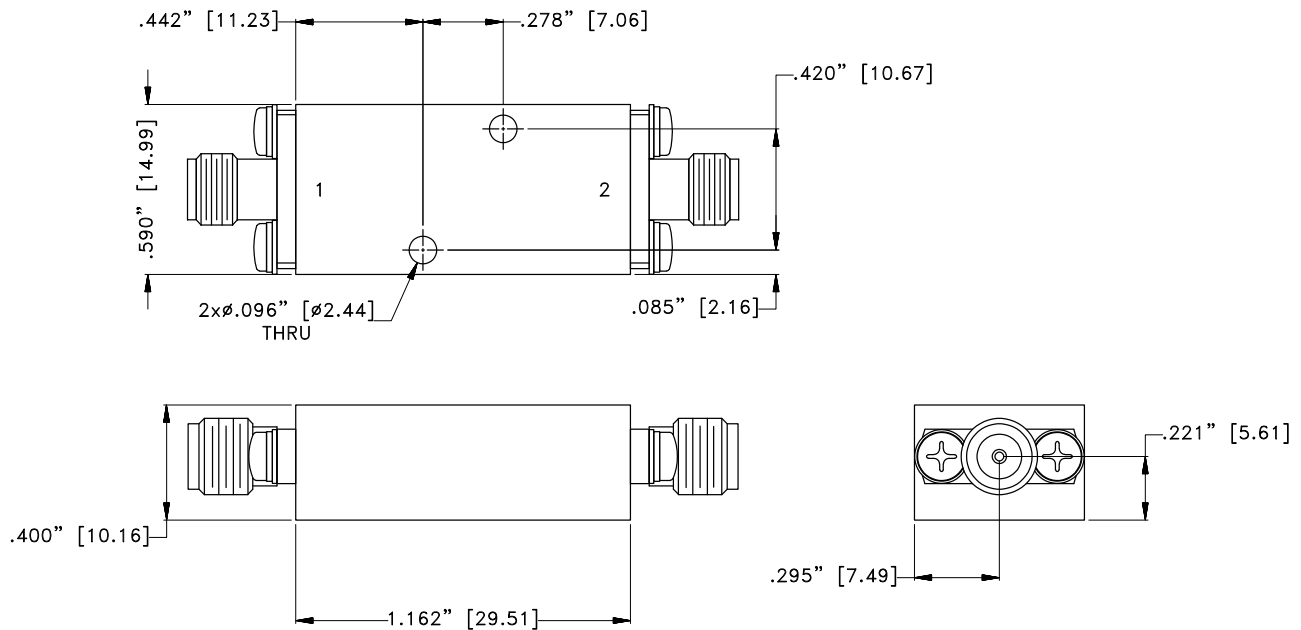
50Ω 4300 to 5300 MHz 2.92mm Female

CONNECTOR DESCRIPTION

Function	Connector
RF1 ⁴	2.92mm Female
RF2 ⁴	2.92mm Female

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

CASE STYLE DRAWING



Weight: 37 grams

Dimensions are in inches (mm). Tolerances: 2Pl ± .030 [.76]; 3Pl ± .015 [.38]

PRODUCT MARKING*: ZBFHK-K4951+

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



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Bandpass Filter

ZBFHK-K4951+

50Ω 4300 to 5300 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	BBW3851
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 Band Pass Filter

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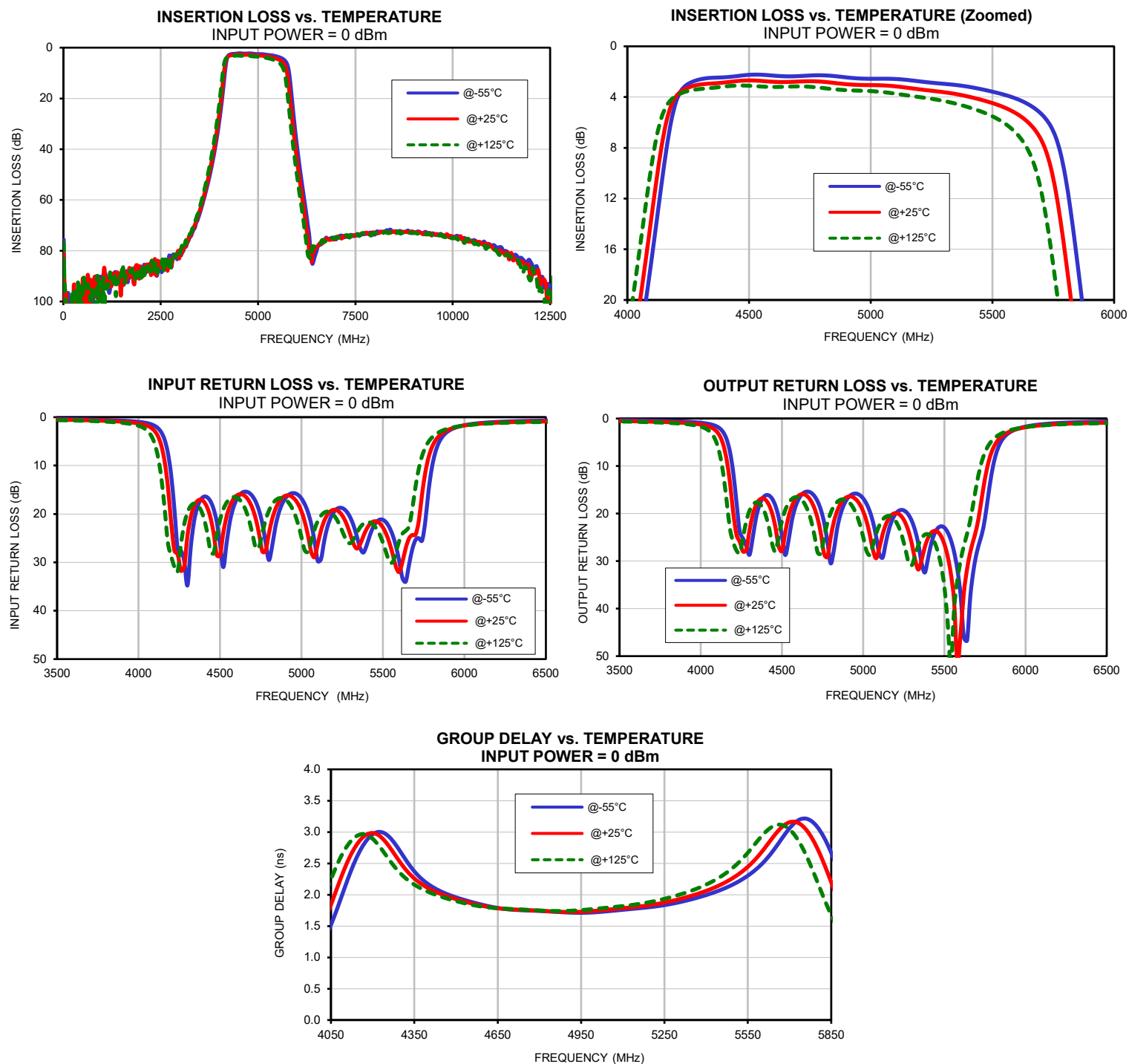
Typical Performance Data

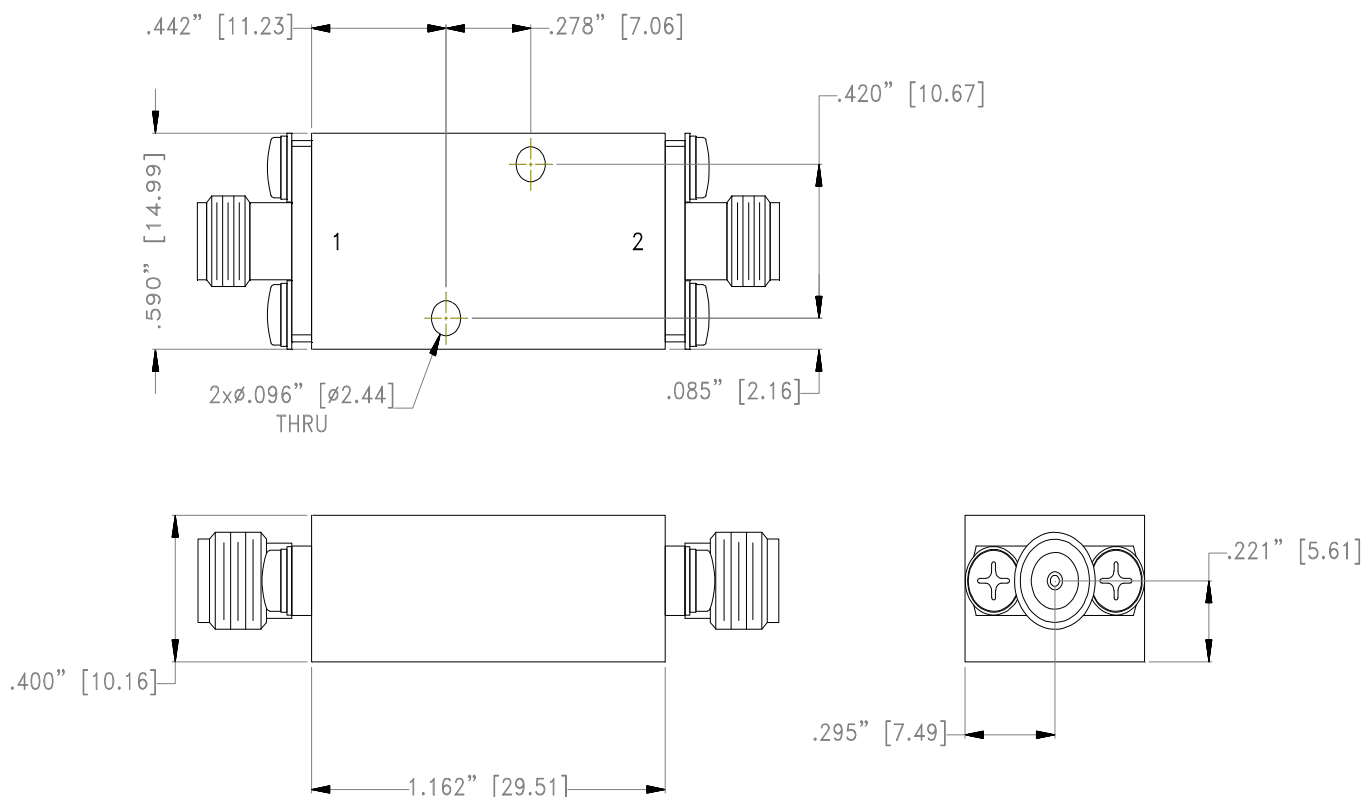
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+125°C	@-55°C	@+25°C	@+125°C	@-55°C	@+25°C	@+125°C
10	75.59	81.07	76.97	0.04	0.06	0.08	0.03	0.06	0.08
100	101.38	106.24	103.89	0.07	0.11	0.14	0.06	0.10	0.14
500	96.26	90.88	97.06	0.18	0.23	0.28	0.16	0.23	0.28
1000	90.42	92.73	109.02	0.22	0.29	0.35	0.18	0.27	0.32
1200	94.81	93.01	88.53	0.22	0.28	0.35	0.18	0.28	0.33
1400	92.87	88.82	92.61	0.21	0.28	0.35	0.17	0.27	0.33
1600	89.81	90.51	89.40	0.21	0.28	0.34	0.17	0.27	0.33
1800	87.12	92.41	86.77	0.19	0.27	0.33	0.16	0.27	0.33
2000	86.57	89.30	90.67	0.19	0.27	0.34	0.16	0.27	0.33
2200	85.92	88.03	87.33	0.20	0.28	0.34	0.15	0.27	0.33
2400	89.89	87.23	87.80	0.19	0.28	0.35	0.15	0.28	0.34
2600	85.96	87.09	82.58	0.21	0.30	0.37	0.17	0.30	0.35
2800	82.02	83.87	83.75	0.22	0.32	0.39	0.18	0.32	0.38
3000	81.00	79.77	80.99	0.24	0.34	0.42	0.20	0.35	0.42
3200	76.28	76.34	75.57	0.29	0.40	0.48	0.27	0.42	0.49
3400	69.62	68.92	67.84	0.35	0.48	0.56	0.32	0.49	0.58
3600	59.98	58.99	57.22	0.43	0.57	0.68	0.38	0.58	0.68
3960	33.55	31.11	27.65	0.84	1.11	1.45	0.77	1.08	1.40
4040	24.70	21.68	17.49	1.15	1.61	2.41	1.07	1.56	2.32
4120	13.85	10.52	7.15	2.30	4.00	8.32	2.16	3.84	7.96
4200	4.38	3.96	3.91	11.95	21.73	28.71	11.34	19.80	26.03
4300	2.60	3.01	3.37	34.78	24.55	19.69	28.68	23.56	19.41
4500	2.25	2.69	3.11	26.18	28.58	21.23	24.71	27.89	21.53
4600	2.31	2.80	3.20	17.14	16.25	16.57	17.14	16.30	16.61
4800	2.28	2.79	3.28	29.52	24.04	19.34	30.47	24.99	19.85
4950	2.53	3.04	3.49	15.72	16.69	19.39	15.82	16.88	19.57
5000	2.56	3.06	3.53	16.82	19.48	24.83	16.81	19.52	24.90
5100	2.57	3.15	3.73	29.73	26.18	21.48	28.56	27.18	22.47
5200	2.76	3.39	4.00	19.53	19.13	20.34	20.03	19.90	21.59
5300	2.96	3.62	4.31	20.78	24.26	26.03	21.60	26.39	30.86
5760	7.15	11.40	18.69	21.53	11.43	6.26	18.75	10.93	6.37
5840	15.66	22.59	30.39	5.50	4.03	3.18	5.44	4.18	3.35
5900	24.96	31.41	38.46	2.91	2.61	2.36	2.96	2.77	2.49
6000	38.89	44.30	50.34	1.65	1.72	1.71	1.70	1.83	1.80
6700	76.23	76.03	76.44	0.66	0.84	0.95	0.56	0.81	0.89
7000	75.55	74.91	74.57	0.63	0.81	0.92	0.51	0.77	0.86
7500	74.04	73.84	74.64	0.67	0.86	0.99	0.54	0.79	0.88
7800	73.21	72.92	73.32	0.70	0.91	1.04	0.55	0.82	0.92
8000	73.63	72.98	73.01	0.73	0.93	1.06	0.57	0.84	0.95
8200	72.63	72.56	73.26	0.74	0.94	1.07	0.59	0.87	0.98
8400	71.69	72.92	72.71	0.75	0.96	1.10	0.60	0.88	1.00
8600	72.41	72.84	72.30	0.75	0.96	1.10	0.59	0.90	1.02
8800	72.49	72.66	72.44	0.74	0.94	1.08	0.62	0.92	1.04
9000	72.76	72.68	73.05	0.73	0.94	1.08	0.62	0.94	1.06
9200	73.09	73.19	73.30	0.70	0.92	1.06	0.60	0.93	1.05
9400	73.37	72.93	73.51	0.67	0.89	1.03	0.60	0.94	1.06
9600	73.76	73.44	74.33	0.65	0.89	1.02	0.58	0.93	1.05
9800	74.06	74.37	74.53	0.65	0.88	1.02	0.59	0.92	1.05
10000	74.42	74.63	75.07	0.63	0.87	1.02	0.56	0.93	1.07
10200	75.21	74.26	75.28	0.62	0.87	1.03	0.56	0.94	1.08
10400	76.25	76.46	75.32	0.64	0.90	1.06	0.61	0.97	1.11
10600	76.31	76.92	77.17	0.65	0.92	1.09	0.60	0.98	1.13
10800	76.37	77.39	77.62	0.68	0.95	1.13	0.63	1.01	1.16
11000	78.13	78.41	78.65	0.73	1.00	1.18	0.63	1.03	1.18
11200	78.59	79.79	81.67	0.77	1.04	1.23	0.70	1.08	1.23
11400	80.46	80.55	81.35	0.84	1.11	1.30	0.74	1.12	1.27
11600	81.54	83.21	83.69	0.90	1.17	1.37	0.75	1.15	1.30
11800	83.44	84.40	88.83	0.94	1.22	1.42	0.82	1.20	1.35
12000	84.48	91.28	91.60	1.00	1.29	1.49	0.85	1.24	1.39
12300	90.33	91.62	96.52	1.09	1.38	1.59	0.90	1.30	1.46

Typical Performance Data

FREQ.	GROUP DELAY		
(MHz)	(nsec)		
	@-55°C	@+25°C	@+125°C
4300	2.69	2.51	2.34
4320	2.55	2.40	2.26
4340	2.43	2.30	2.19
4360	2.32	2.22	2.13
4380	2.24	2.16	2.09
4400	2.17	2.10	2.05
4420	2.11	2.06	2.01
4440	2.06	2.02	1.98
4460	2.02	1.99	1.95
4480	1.99	1.96	1.92
4500	1.96	1.93	1.90
4520	1.93	1.90	1.88
4540	1.90	1.88	1.85
4560	1.88	1.86	1.84
4580	1.85	1.84	1.82
4600	1.83	1.82	1.81
4620	1.81	1.80	1.80
4640	1.80	1.79	1.79
4660	1.78	1.78	1.78
4680	1.77	1.77	1.78
4700	1.76	1.77	1.77
4720	1.76	1.76	1.77
4740	1.75	1.76	1.76
4760	1.75	1.75	1.76
4780	1.74	1.75	1.75
4800	1.74	1.74	1.75
4820	1.74	1.74	1.74
4840	1.73	1.73	1.74
4860	1.73	1.73	1.74
4880	1.72	1.73	1.74
4900	1.72	1.72	1.74
4920	1.71	1.72	1.75
4940	1.71	1.73	1.75
4960	1.71	1.73	1.76
4980	1.71	1.73	1.77
5000	1.72	1.74	1.77
5020	1.73	1.75	1.78
5100	1.76	1.78	1.82
5200	1.80	1.84	1.88
5300	1.88	1.93	1.99

Typical Performance Curves





Dimensions are in inches [mm]. Tolerances: 2 Pl $\pm .030$ [.76]; 3 Pl $\pm .015$ [.38]

Notes:

1. Case material: Brass alloy.
2. Case finish:
 - a. Case & Cover of the units-Gold plating.
3. Unit weight: 37g
4. Refer to the individual model data sheet for the type of connectors available.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS



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