(LTCC) COAXIAL

High Pass Filter

VHF-3500A+

50Ω 3900 to 7000 MHz SMA Male/Female

KEY FEATURES

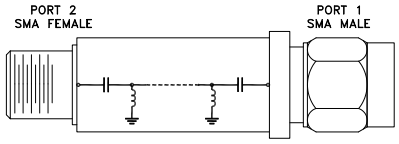
- Rugged Unibody Construction, Small Size
- 5 Sections
- Temperature Stable
- Excellent Power Handling, 7 W
- Low Cost

Generic photo used for illustration purposes only

APPLICATIONS

- Sub-Harmonic Rejection
- Transmitters/Receivers
- Lab Use

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

VHF-3500A+ is a 50Ω high pass filter built in rugged unibody construction. Covering a passband of 3900 to 7000 MHz, this model offers good matching within the passband and good rejection in the stopband. It can handle a high power of 7W with a wide operating temperature range from -55°C to +100°C.

ELECTRICAL SPECIFICATIONS[1] AT +25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Pass Band	Insertion Loss	F3-F4	3900 - 4000	—	1.1	2	dB
		F4-F5	4000 - 7000	—	1.0	1.6	
	Return Loss	F3-F5	3900 - 4000	—	13	—	dB
		F4-F5	4000 - 7000	—	13	—	
Stop Band	Rejection	DC-F1	DC - 2800	20	31	—	dB
		F1-F2	2800 - 2900	20	29	—	
	Freq. Cut-Off[2]	Fc	3500	—	3	—	dB

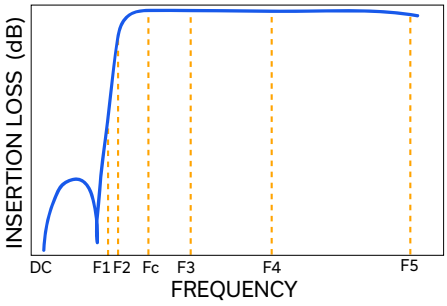
1. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.
2. Typical variation ±5%

ABSOLUTE MAXIMUM RATINGS[3]

Parameter	Ratings
Operating Temperature	-55°C to +100°C
Storage Temperature	-55°C to +100°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. Power rating above +25°C operating temperature decreases linearly to 1.3 W at +125°C.

TYPICAL FREQUENCY RESPONSE



REV. OR
ECO-019841
VHF-3500A+
EDU4890
URJ
240627

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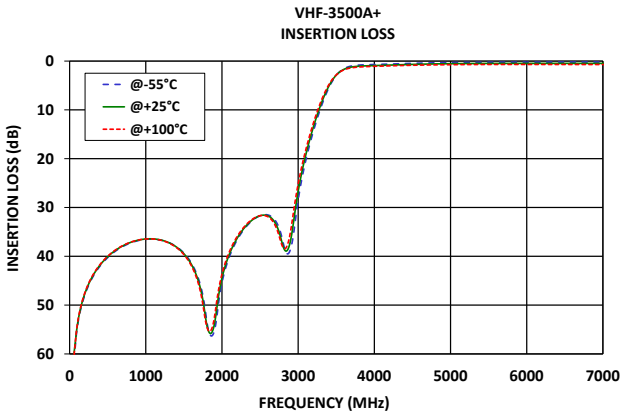
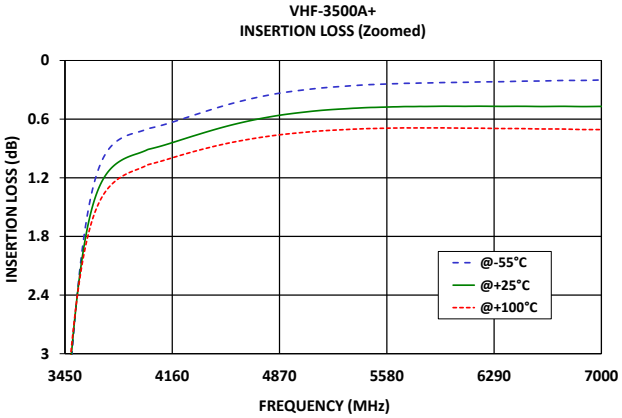
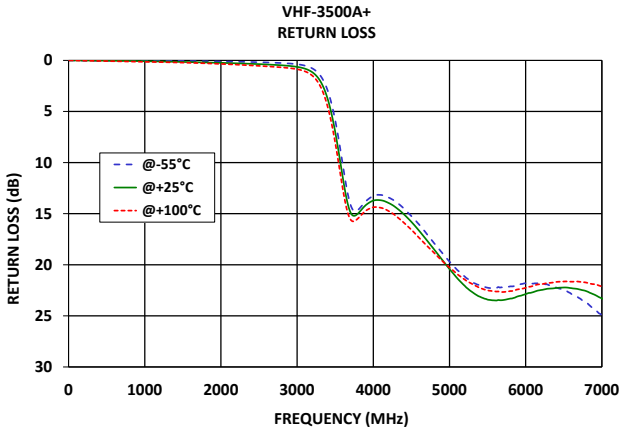
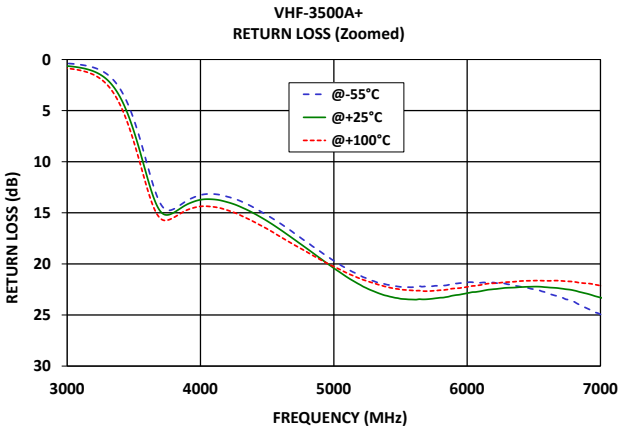
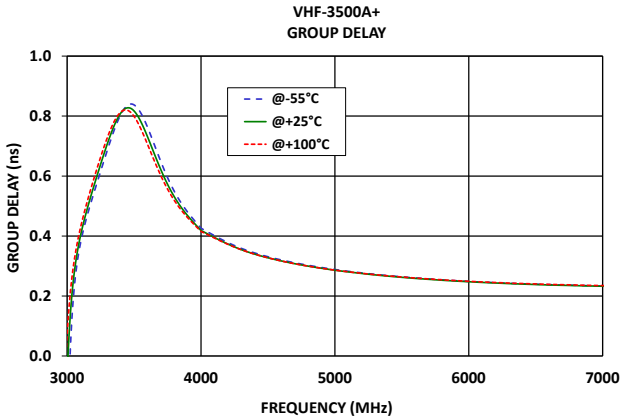
TYPICAL PERFORMANCE GRAPHS











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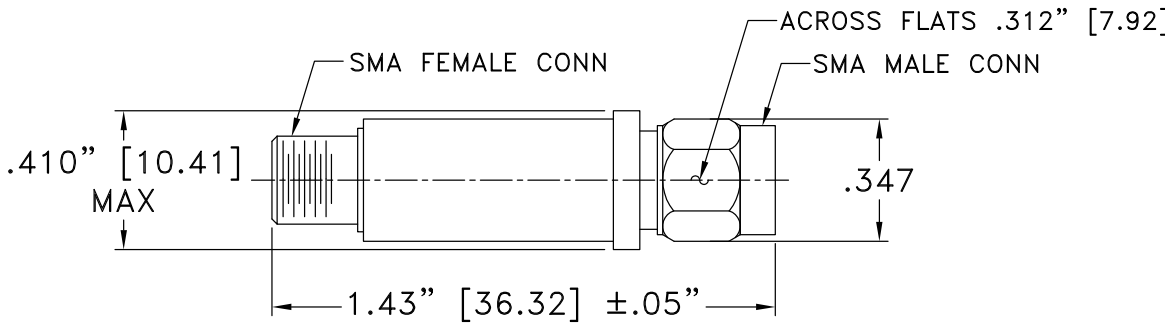
50Ω 3900 to 7000 MHz SMA Male/Female

CONNECTOR DESCRIPTION

Function	Functionality	Connector
RF1	Port-1	SMA-Male
RF2	Port-2	SMA-Female

CASE STYLE DRAWING



Unit weight: 10.0grams
Dimensions are in inches (mm). Tolerances: 2 Pl. ±.04"; 3 Pl. ±.30"

PRODUCT MARKING*: VHF-3500A+

*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	FF704
RoHS Status	Compliant
Environmental Ratings	ENV113

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 VHF-3500A+

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	68.40	65.51	67.01	0.01	0.00	0.00	0.01	0.00	0.00
20	67.00	64.42	65.71	0.00	0.00	0.00	0.00	0.00	0.00
30	65.54	63.28	64.35	0.00	0.00	0.00	0.00	0.00	0.00
40	64.01	62.09	62.94	0.00	0.00	0.00	0.00	0.00	0.00
50	62.44	60.84	61.48	0.00	0.00	0.00	0.00	0.00	0.00
60	60.83	59.55	59.97	0.00	0.00	0.00	0.01	0.00	0.00
70	59.17	58.22	58.43	0.00	0.00	0.00	0.01	0.00	0.00
80	57.48	56.84	56.84	0.01	0.00	0.01	0.01	0.00	0.00
90	55.75	55.43	55.22	0.01	0.00	0.01	0.01	0.00	0.01
100	54.58	54.27	54.09	0.01	0.00	0.01	0.01	0.00	0.01
150	50.53	50.24	50.06	0.01	0.01	0.02	0.01	0.00	0.01
200	47.90	47.62	47.45	0.02	0.01	0.03	0.02	0.01	0.02
250	45.92	45.67	45.51	0.02	0.01	0.04	0.02	0.01	0.03
300	44.35	44.12	43.97	0.03	0.01	0.04	0.03	0.01	0.03
350	43.06	42.85	42.71	0.03	0.02	0.05	0.03	0.02	0.04
390	42.18	41.98	41.86	0.03	0.02	0.05	0.02	0.02	0.04
430	41.40	41.21	41.10	0.03	0.02	0.06	0.02	0.02	0.04
490	40.40	40.22	40.13	0.03	0.03	0.07	0.02	0.03	0.05
580	39.19	39.03	38.94	0.03	0.03	0.08	0.02	0.03	0.06
600	38.95	38.80	38.72	0.03	0.04	0.08	0.02	0.04	0.06
650	38.43	38.29	38.21	0.02	0.04	0.09	0.01	0.04	0.07
700	37.97	37.84	37.78	0.02	0.04	0.09	0.01	0.05	0.08
730	37.73	37.61	37.56	0.02	0.05	0.10	0.01	0.05	0.08
800	37.26	37.15	37.11	0.02	0.05	0.11	0.01	0.06	0.09
880	36.86	36.76	36.74	0.01	0.06	0.12	0.00	0.07	0.11
900	36.78	36.69	36.67	0.01	0.07	0.13	0.00	0.07	0.11
950	36.62	36.54	36.53	0.01	0.07	0.13	0.00	0.08	0.12
1000	36.52	36.45	36.45	0.00	0.08	0.14	0.01	0.08	0.13
1150	36.56	36.52	36.55	0.01	0.10	0.16	0.02	0.10	0.15
1200	36.69	36.67	36.71	0.01	0.11	0.17	0.02	0.11	0.16
1300	37.17	37.19	37.26	0.02	0.12	0.18	0.03	0.12	0.17
1400	38.01	38.08	38.19	0.04	0.13	0.20	0.04	0.13	0.19
1500	39.34	39.48	39.65	0.05	0.15	0.22	0.06	0.15	0.21
1600	41.43	41.70	41.99	0.06	0.17	0.24	0.07	0.17	0.23
1700	45.03	45.59	46.16	0.07	0.18	0.26	0.08	0.18	0.24
1800	53.25	53.97	54.37	0.08	0.20	0.29	0.09	0.20	0.26
1900	55.24	53.93	52.56	0.09	0.22	0.31	0.11	0.22	0.28
2000	45.39	44.45	43.63	0.11	0.24	0.35	0.13	0.24	0.30
2100	39.97	39.45	38.95	0.12	0.26	0.38	0.15	0.26	0.33
2200	36.61	36.27	35.92	0.13	0.29	0.41	0.17	0.28	0.36
2400	32.64	32.53	32.39	0.16	0.34	0.49	0.21	0.34	0.42
2800	37.03	37.85	38.14	0.26	0.48	0.68	0.34	0.51	0.62
2900	38.51	36.76	34.89	0.30	0.54	0.76	0.39	0.58	0.72
3000	28.49	26.68	25.17	0.38	0.63	0.86	0.48	0.70	0.88
3300	9.45	8.81	8.25	1.44	1.98	2.47	1.75	2.35	2.94
3500	2.94	2.88	2.83	5.87	7.01	8.06	6.97	8.48	9.99
3900	0.75	0.97	1.13	13.80	14.17	14.72	14.74	14.98	15.55
4000	0.70	0.91	1.07	13.26	13.73	14.38	13.60	14.02	14.72
4200	0.61	0.82	0.98	13.42	13.95	14.74	13.44	13.98	14.78
4400	0.51	0.73	0.89	14.49	15.05	15.88	14.55	15.11	15.79
4600	0.42	0.64	0.82	16.05	16.66	17.35	16.35	16.90	17.23
4800	0.35	0.58	0.77	17.91	18.52	18.85	18.69	19.10	18.80
5000	0.31	0.53	0.74	19.69	20.42	20.27	21.23	21.66	20.49
5200	0.27	0.50	0.72	21.16	22.06	21.45	23.75	24.35	22.04
5400	0.25	0.49	0.70	22.04	23.13	22.25	25.86	26.50	23.18
5600	0.24	0.48	0.69	22.27	23.49	22.61	26.89	27.30	23.56
5800	0.23	0.47	0.69	22.11	23.31	22.57	26.33	26.54	23.16
6000	0.23	0.47	0.69	21.81	22.86	22.25	25.18	25.37	22.50
6500	0.21	0.47	0.70	22.47	22.22	21.64	23.77	23.31	21.82
7000	0.20	0.47	0.71	24.94	23.29	22.12	24.41	23.75	23.70

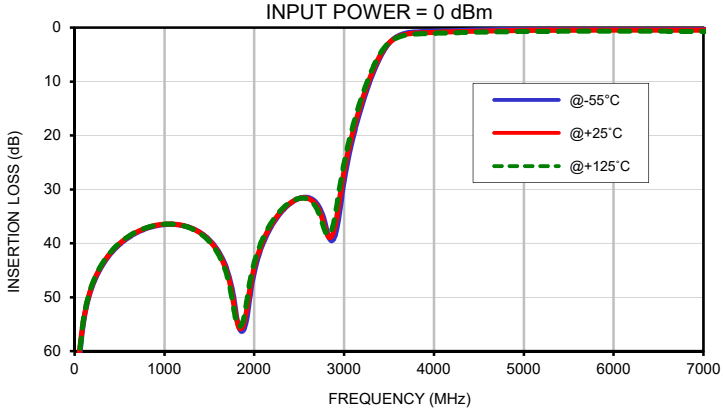
Typical Performance Data

FREQ. (MHz)	GROUP DELAY (nsec)		
	@-55°C	@+25°C	@+125°C
3900	0.48	0.47	0.46
3950	0.45	0.44	0.44
4000	0.43	0.42	0.42
4040	0.42	0.41	0.41
4100	0.40	0.40	0.39
4140	0.39	0.39	0.38
4200	0.38	0.37	0.37
4240	0.37	0.37	0.36
4300	0.36	0.35	0.35
4340	0.35	0.35	0.35
4400	0.34	0.34	0.34
4440	0.34	0.33	0.33
4500	0.33	0.33	0.33
4540	0.33	0.32	0.32
4600	0.32	0.32	0.32
4640	0.32	0.31	0.31
4700	0.31	0.31	0.31
4740	0.31	0.30	0.30
4800	0.30	0.30	0.30
4840	0.30	0.30	0.30
4900	0.30	0.29	0.29
4940	0.29	0.29	0.29
5000	0.29	0.29	0.29
5100	0.28	0.28	0.28
5200	0.28	0.28	0.28
5300	0.27	0.27	0.27
5400	0.27	0.27	0.27
5500	0.26	0.26	0.26
5600	0.26	0.26	0.26
5700	0.26	0.26	0.26
5800	0.25	0.25	0.25
5900	0.25	0.25	0.25
6000	0.25	0.25	0.25
6100	0.25	0.25	0.25
6200	0.24	0.24	0.24
6300	0.24	0.24	0.24
6400	0.24	0.24	0.24
6500	0.24	0.24	0.24
6700	0.24	0.24	0.24
7000	0.23	0.23	0.23

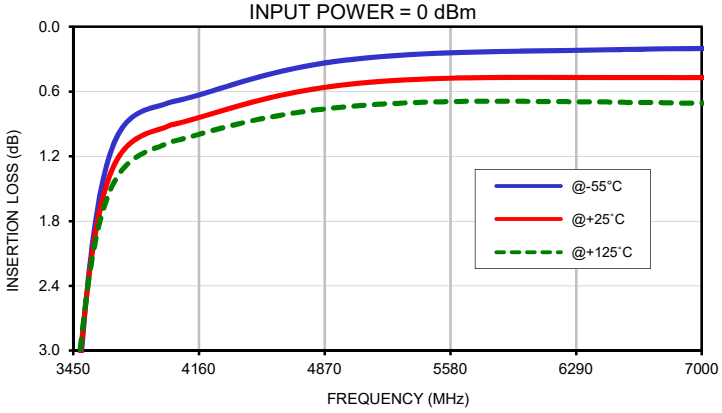
Coaxial High Pass Filter VHF-3500A+

Typical Performance Curves

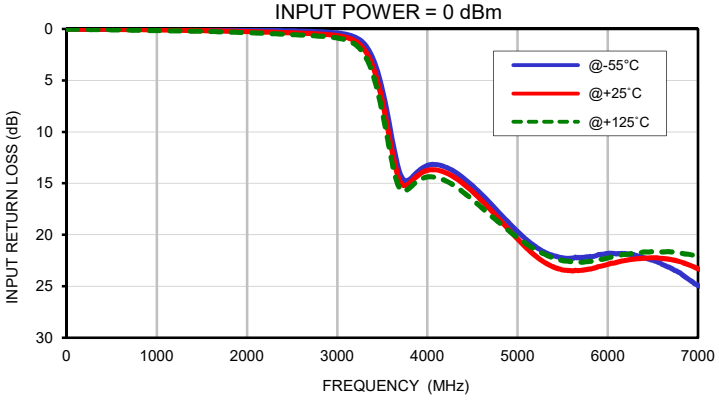
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



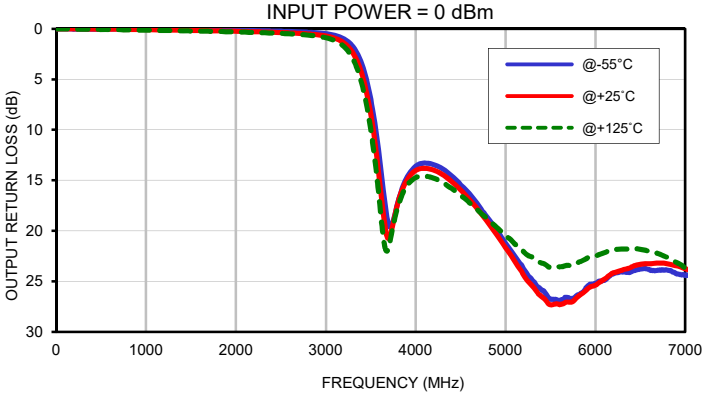
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



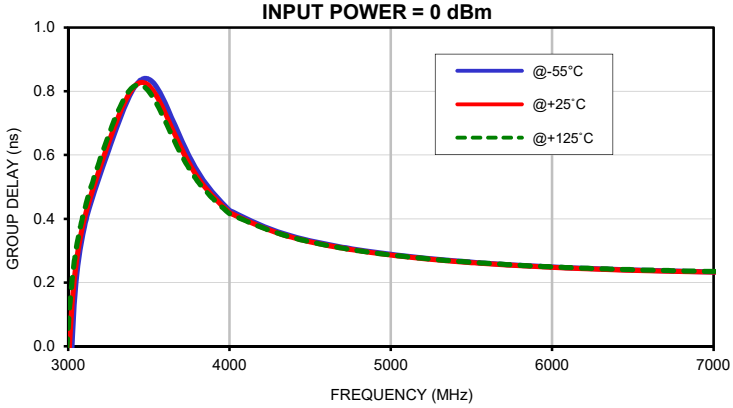
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



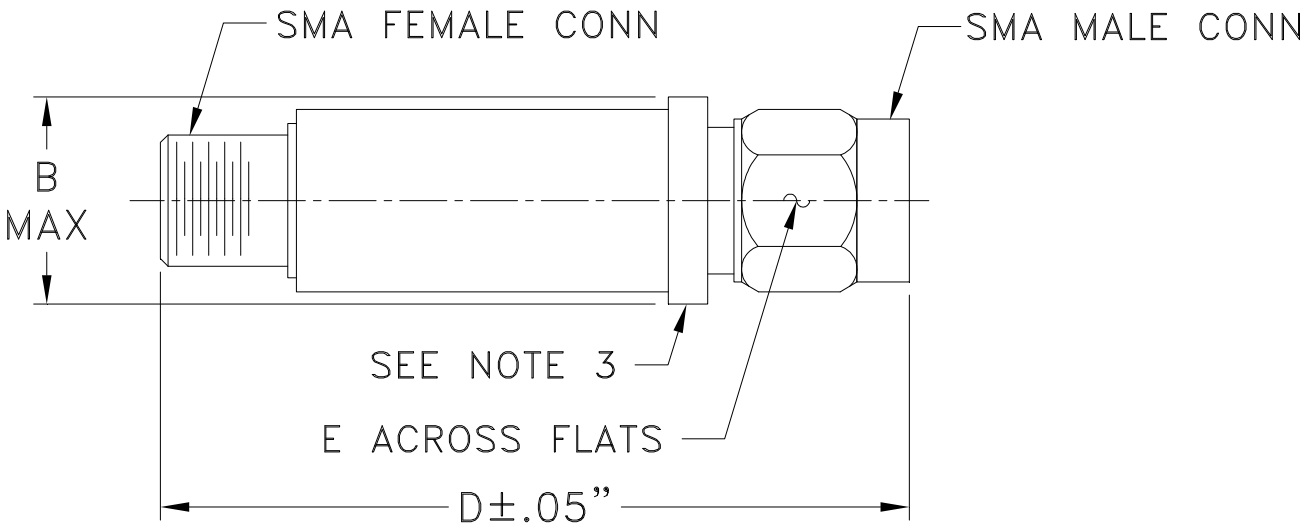
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style FF

FF704

Outline Dimensions



CASE #.	A	B	C	D	E	WT GRAMS
FF704	-- --	.410 (10.41)	-- --	1.43 (36.32)	.312 (7.92)	10.0

Dimensions are in inches (mm). Tolerances: 2Pl. ± .04; 3Pl. ± .030

Notes:

1. Case material: Stainless steel.
2. Case finish: Gold plated.
3. Round Flange may have .312 Across Flats in some models.

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Mini-Circuits

Environmental Specifications ENV113

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 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, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, Except +100°C

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