



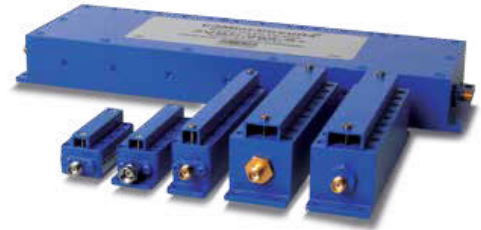
CAVITY

Bandpass Filter ZVBP MODEL SERIES

50Ω DC to 57 GHz

THE BIG DEAL

- Very low insertion loss with excellent power handling
- Very fast roll-off with wide stopband
- Passbands upto 36 GHz
- Stopband up to 57 GHz



PRODUCT OVERVIEW

Mini-Circuits' cavity filters are designed by implementing resonant structures with very high Q and are ideal for narrow-band, high-selectivity applications. These designs can provide bandwidths as narrow as 0.5% with very high selectivity and excellent low noise floor. Low insertion loss combined with excellent power handling makes them well-suited for transmitter and receiver front end. Advanced filter design and construction enables stopband width greater than 3x the center frequency.

Mini-Circuits' cavity filters feature a special protective assembly to prevent accidental de-tuning that would otherwise require expensive replacement or return to factory for re-tuning. Precise machining allows realization of cavity filters with small form factors for applications where size is critical. Excellent repeatability across units is achieved through precise tuning and process control.

KEY FEATURES

Feature	Advantages
Low insertion loss	Low signal loss results in better SNR in receiver front end and better power delivery to antenna in transmitter.
Fast roll-off	Higher selectivity results in better adjacent channel rejection and dynamic range
Wide stopband	Wide spur free band results in better receiver sensitivity
High power handling	Well suited for transmitter application
Protective assembly	Prevents accidental de-tuning of precisely tuned resonant circuit





CAVITY

Bandpass Filter

ZVBP-2940-S+

50Ω 2860 to 3020 MHz SMA-Female

FEATURES

- Low Insertion loss, 1.4dB typ.
- Good Return loss, 20dB typ.
- Great Rejection (40 to 100 dB typ.)
- Stopband up to 6000 MHz



Generic photo used for illustration purposes only

APPLICATIONS

- Test & Measurement Equipment
- Radar, EW, and ECM Defense Systems

Model No.	ZVBP-2940-S+
Case Style	YA3390
Connectors	SMA-FEMALE

+RoHS Compliant
 The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

ELECTRICAL SPECIFICATIONS AT 25°C

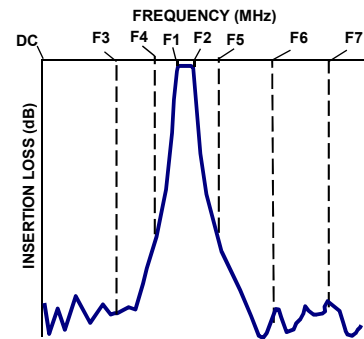
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	Fc	-	2940	-	MHz
Passband	Insertion Loss	F1-F2	2860 - 3020	1.4	2.0	dB
	Return Loss	F1-F2	2860 - 3020	20	-	dB
	Stop Band, Lower	Rejection	DC-F3	DC - 2815	40	43
		F3-F4	2815 - 2840	14	19	dB
Stop Band, Upper	Rejection	F5-F6	3040 - 3060	15	21	dB
		F6-F7	3060 - 6000	40	46	dB

MAXIMUM RATINGS

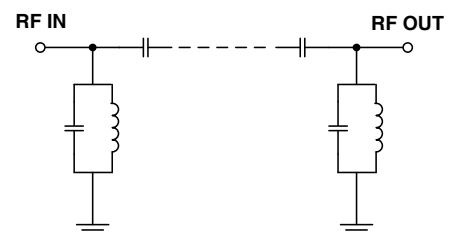
Parameter	Ratings
Operating temperature	-40°C to +85°C
Storage temperature	-55°C to +100°C
RF Power Input	20W max. at 25°C

Permanent damage may occur if any of these limits are exceeded
 Input and output ports are DC short to ground.

TYPICAL FREQUENCY RESPONSE



FUNCTIONAL SCHEMATIC





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Bandpass Filter

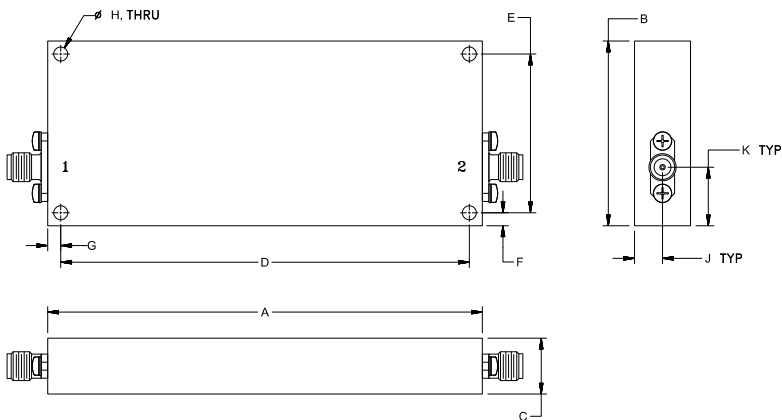
ZVBP-2940-S+

Mini-Circuits®

COAXIAL CONNECTIONS

PORT 1	SMA-Female
PORT 2	SMA-Female

OUTLINE DRAWING



OUTLINE DIMENSIONS (Inches/mm)

A	B	C	D	E	F
4.00	1.70	.51	3.760	1.460	.12
101.6	43.2	13.1	95.50	37.08	3.0
G	H	J	K		Wt.
.12	.130	.26	.55		grams
3.0	3.30	6.5	14.0		220

Note. Please refer to case style drawing for details





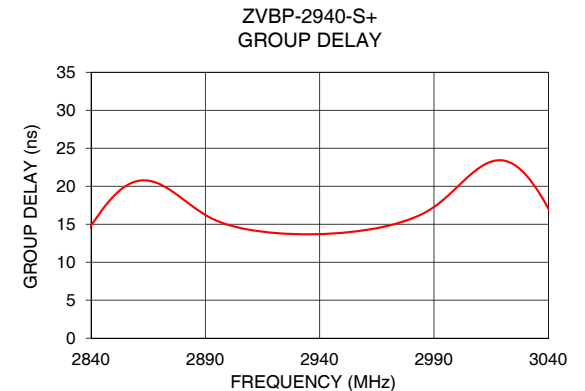
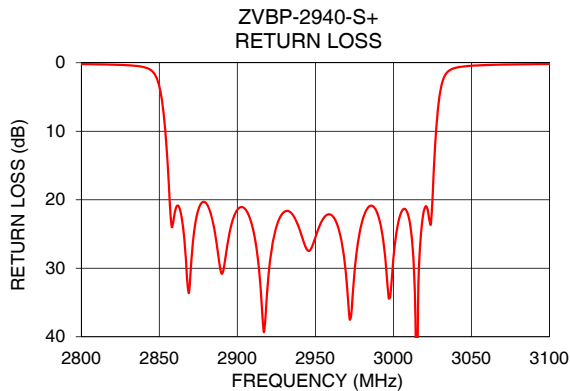
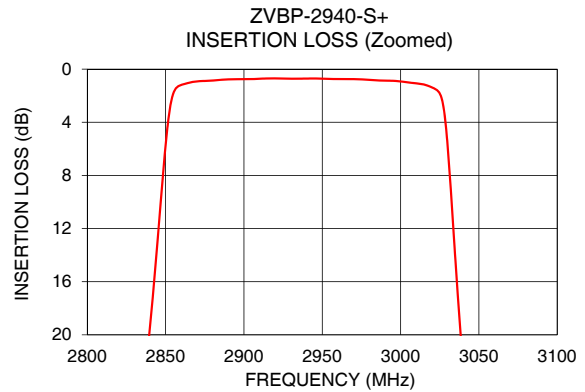
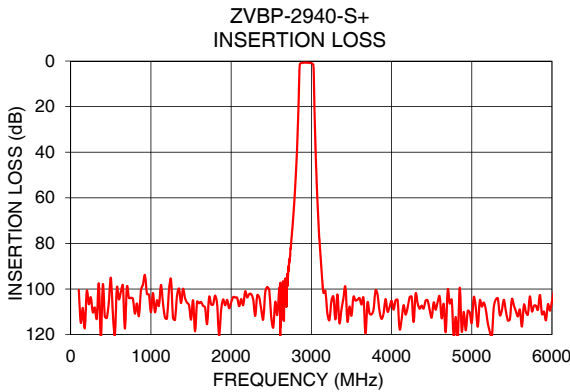
CAVITY

Bandpass Filter

ZVBP-2940-S+

TYPICAL PERFORMANCE DATA AT 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Frequency (MHz)	GROUP DELAY (ns)
100	100.46	0.04	2860	20.66
1000	110.15	0.10	2870	20.29
2815	43.75	0.25	2880	18.35
2830	30.69	0.36	2890	16.23
2840	19.45	0.63	2900	14.92
2860	1.19	21.77	2910	14.23
2900	0.76	21.46	2920	13.85
2940	0.71	24.41	2930	13.69
3000	0.92	28.61	2940	13.70
3020	1.37	21.24	2950	13.87
3040	22.63	0.73	2960	14.23
3050	36.11	0.43	2970	14.81
3060	46.98	0.33	2980	15.72
5000	114.83	0.13	3000	19.86
6000	105.38	0.12	3020	23.40



- 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



Cavity Bandpass Filter

ZVBP-2940-S+

Typical Performance Data

FREQ. (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
100	99.50	100.46	106.88	0.02	0.04	0.04	0.01	0.01	0.00
200	97.08	100.86	110.35	0.04	0.06	0.06	0.00	0.02	0.01
300	95.35	108.14	109.81	0.04	0.06	0.07	0.01	0.03	0.03
400	96.25	97.96	113.82	0.07	0.09	0.10	0.04	0.06	0.07
500	101.22	95.08	105.92	0.08	0.11	0.12	0.06	0.08	0.09
600	100.56	104.55	101.75	0.08	0.11	0.12	0.06	0.09	0.09
700	109.66	99.14	100.41	0.08	0.11	0.12	0.05	0.08	0.09
800	102.26	110.80	106.26	0.08	0.10	0.12	0.05	0.08	0.08
900	102.72	98.11	111.12	0.07	0.10	0.12	0.04	0.08	0.08
1000	110.57	110.15	109.43	0.07	0.10	0.12	0.04	0.07	0.07
1200	103.31	112.92	105.10	0.05	0.09	0.11	0.02	0.06	0.06
1400	107.09	99.93	109.96	0.04	0.08	0.10	0.01	0.06	0.06
1600	108.65	106.23	106.41	0.04	0.08	0.10	0.00	0.05	0.06
1800	104.00	102.89	105.96	0.02	0.08	0.10	0.01	0.05	0.06
2000	110.86	105.87	101.08	0.02	0.07	0.10	0.01	0.04	0.06
2100	114.37	107.51	112.41	0.02	0.07	0.11	0.02	0.04	0.06
2200	105.96	103.68	106.81	0.02	0.07	0.11	0.02	0.04	0.06
2300	105.39	111.79	109.89	0.02	0.07	0.11	0.02	0.04	0.06
2400	106.61	113.28	109.45	0.02	0.07	0.12	0.02	0.05	0.07
2500	101.28	112.35	103.85	0.02	0.08	0.12	0.01	0.05	0.07
2600	105.50	99.55	102.92	0.02	0.08	0.13	0.01	0.06	0.08
2700	94.89	93.34	94.54	0.04	0.10	0.15	0.01	0.07	0.10
2815	45.61	43.75	41.67	0.17	0.25	0.30	0.14	0.22	0.26
2830	33.10	30.69	27.91	0.27	0.36	0.45	0.24	0.35	0.43
2840	22.50	19.45	15.89	0.44	0.63	0.90	0.43	0.64	0.92
2847	13.33	9.81	6.17	0.94	1.66	3.31	0.96	1.72	3.45
2852	6.19	3.55	2.05	2.83	5.98	12.54	2.93	6.24	13.47
2860	1.16	1.19	1.20	23.67	21.77	21.72	43.25	23.26	22.39
2870	0.82	0.92	0.99	30.18	30.70	23.84	32.60	32.46	23.96
2880	0.75	0.86	0.91	19.86	20.50	22.51	19.41	19.89	21.50
2900	0.64	0.76	0.83	22.52	21.46	21.35	21.88	21.06	21.01
2940	0.60	0.71	0.79	22.48	24.41	27.35	22.96	25.59	30.48
2960	0.62	0.75	0.84	22.82	22.19	22.55	23.39	22.33	22.25
3000	0.76	0.92	1.08	34.67	28.61	23.43	28.50	25.77	22.38
3010	0.89	1.07	1.24	21.53	22.73	29.14	21.11	22.28	26.76
3020	1.07	1.37	1.74	25.51	21.24	23.02	24.52	21.04	27.79
3028	1.63	3.33	7.85	19.58	8.10	3.08	22.93	8.36	3.09
3033	5.67	10.78	16.64	3.88	1.87	1.16	3.94	1.85	1.10
3040	17.82	22.63	27.51	0.84	0.73	0.65	0.80	0.68	0.59
3045	25.60	29.80	34.11	0.53	0.53	0.52	0.49	0.49	0.46
3060	43.83	46.98	50.32	0.27	0.33	0.36	0.23	0.29	0.30
3200	111.62	110.88	101.95	0.05	0.12	0.18	0.02	0.09	0.13
3400	105.24	103.96	105.10	0.03	0.10	0.16	0.00	0.08	0.11
3600	104.60	103.98	104.05	0.03	0.11	0.17	0.00	0.08	0.11
3800	132.76	100.59	107.93	0.03	0.11	0.17	0.00	0.08	0.11
4000	107.09	105.18	101.68	0.03	0.11	0.17	0.00	0.08	0.11
4100	109.49	117.53	105.79	0.04	0.12	0.17	0.00	0.08	0.12
4200	117.84	108.19	110.84	0.04	0.12	0.17	0.00	0.09	0.12
4300	106.07	102.02	111.65	0.04	0.12	0.17	0.01	0.09	0.12
4400	102.73	108.55	108.28	0.05	0.13	0.18	0.01	0.09	0.12
4600	128.05	103.31	103.78	0.05	0.13	0.18	0.01	0.09	0.12
4700	112.15	100.34	104.80	0.05	0.13	0.18	0.01	0.09	0.12
4800	111.96	112.31	118.48	0.05	0.13	0.18	0.02	0.10	0.12
4900	103.25	110.07	112.71	0.06	0.13	0.18	0.02	0.10	0.12
5000	113.52	114.83	104.61	0.06	0.13	0.18	0.02	0.10	0.12
5100	107.00	105.06	101.67	0.06	0.13	0.18	0.02	0.10	0.12
5200	99.62	115.02	99.68	0.06	0.13	0.17	0.02	0.10	0.12
5300	121.18	104.54	105.64	0.06	0.13	0.17	0.02	0.10	0.11
5500	105.54	104.48	118.65	0.06	0.13	0.17	0.03	0.10	0.11
6000	108.38	105.38	113.45	0.06	0.12	0.16	0.04	0.10	0.11



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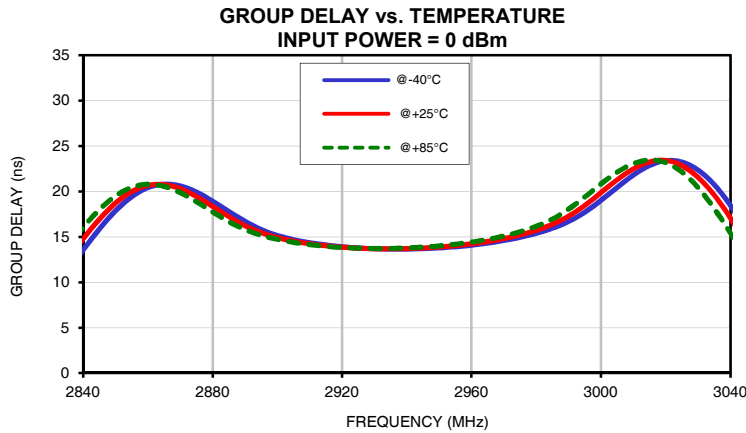
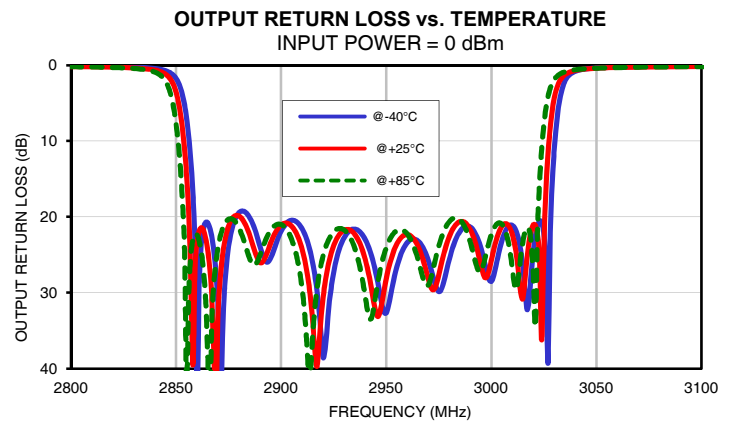
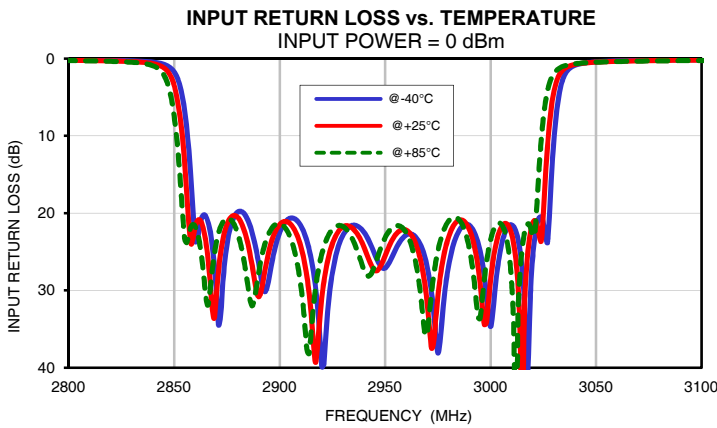
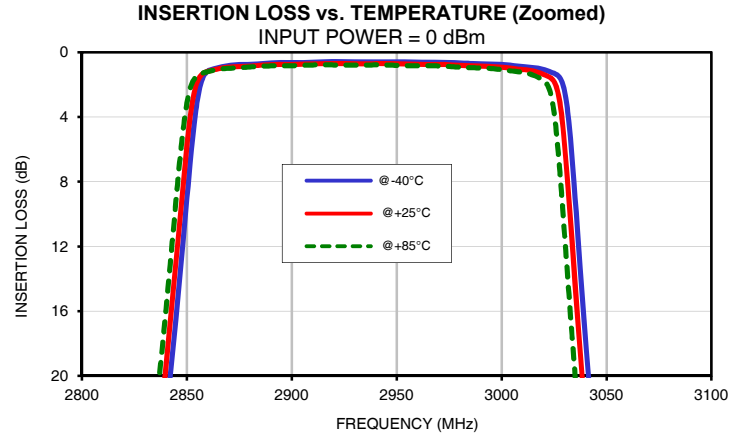
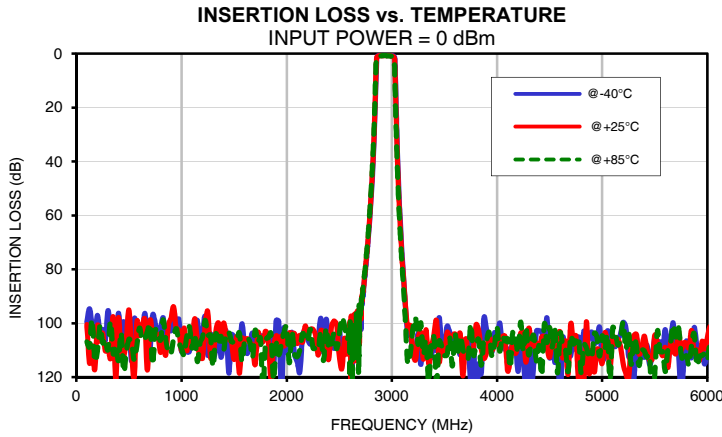
IF/RF MICROWAVE COMPONENTS

REV. OR
 ZVBP-2940-S+
 220714
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Typical Performance Data

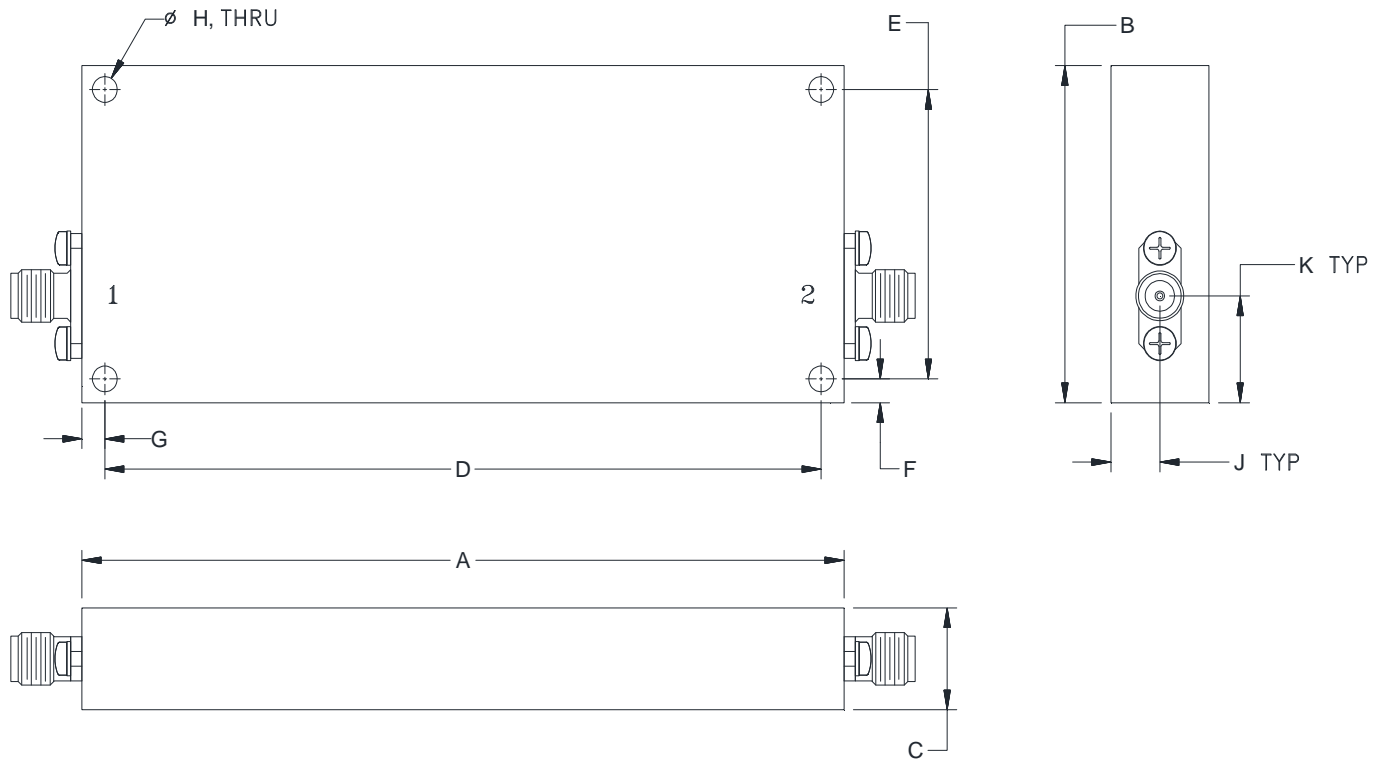
FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
2860	20.41	20.66	20.78
2865	20.79	20.74	20.55
2870	20.60	20.29	19.86
2875	19.92	19.43	18.86
2880	18.92	18.35	17.74
2885	17.79	17.22	16.68
2890	16.70	16.23	15.80
2895	15.80	15.46	15.17
2900	15.15	14.92	14.72
2905	14.69	14.52	14.38
2910	14.35	14.23	14.14
2915	14.09	14.01	13.95
2920	13.90	13.85	13.83
2925	13.77	13.75	13.75
2930	13.69	13.69	13.72
2935	13.65	13.67	13.73
2940	13.65	13.70	13.78
2945	13.69	13.77	13.87
2950	13.78	13.87	14.00
2955	13.91	14.03	14.19
2960	14.08	14.23	14.42
2965	14.30	14.49	14.72
2970	14.59	14.81	15.09
2975	14.94	15.21	15.56
2980	15.38	15.72	16.15
2985	15.94	16.37	16.95
2990	16.68	17.27	18.04
2995	17.70	18.46	19.38
2998	18.46	19.29	20.24
2999	18.73	19.57	20.53
3000	19.00	19.86	20.81
3002	19.57	20.43	21.36
3004	20.15	21.00	21.87
3006	20.72	21.53	22.33
3008	21.27	22.03	22.73
3010	21.79	22.47	23.05
3012	22.26	22.84	23.28
3014	22.67	23.13	23.42
3016	22.99	23.33	23.44
3018	23.23	23.42	23.36
3020	23.37	23.40	23.16

Typical Performance Curves



Outline Dimensions

YA3390



CASE#	A	B	C	D	E	F
YA3390	4.00 (101.6)	1.70 (43.2)	.51 (13.1)	3.760 (95.50)	1.460 (37.08)	.12 (3.0)

CASE#	G	H	J	K	WT. GRAMS
YA3390	.12 (3.0)	.130 (3.30)	.26 (6.5)	.55 (14.0)	220

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .100$; 3 Pl. $\pm .015$

Notes:

1. Case material: Brass.
2. Case Finish: Powder coated over silver plating.
3. Refer to the individual model data sheet for the type of connectors available.



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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 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	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
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, 11ms half-sine, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition A