

Cavity Bandpass Filters

50Ω DC to 15 GHz

The Big Deal

- Very low insertion loss with excellent power handling
- Very fast roll-off with wide stopband
- Passbands up to 15 GHz
- Stopbands up to 20 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 1% 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

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



Bandpass Filter

ZVBP-1420-N+

50Ω 1415-1425 MHz



Generic photo used for illustration purposes only

CASE STYLE: SJ2566

Connectors	Model
N-F	ZVBP-1420-N+

Electrical Specifications at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	Fc	-	1420	-	MHz
	Insertion Loss	F1-F2	-	1.65	2.5	dB
	VSWR	F1-F2	1415 - 1425	-	1.24	1.5
Stop Band, Lower	Insertion Loss	DC-F3	DC - 1370	75	81	dB
	VSWR	DC-F3	DC - 1370	-	20	:1
Stop Band, Upper	Insertion Loss	F4-F5	1470 - 3000	75	79	dB
	VSWR	F4-F5	1470 - 3000	-	20	:1

Maximum Ratings

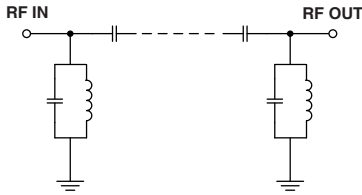
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	20 W max.

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

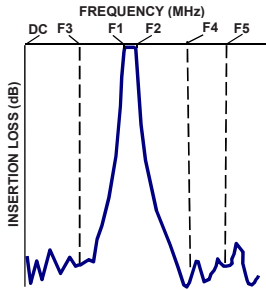
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
10	122.17	1666.01	1415.0	80.18
100	106.53	286.53	1415.5	77.67
500	107.70	304.35	1416.0	75.43
1000	115.74	446.95	1416.5	73.52
1300	108.45	313.60	1417.0	71.95
1370	85.43	208.75	1417.5	70.49
1400	45.11	73.79	1418.0	69.58
1405	31.59	41.47	1418.5	68.85
1408	20.47	21.05	1419.0	68.66
1410	11.06	8.45	1419.5	68.39
1412	3.20	1.75	1420.0	68.45
1415	1.70	1.11	1420.5	68.51
1420	1.43	1.08	1421.0	68.64
1425	1.62	1.09	1421.5	68.93
1428	2.80	1.51	1422.0	69.33
1433	23.79	27.47	1422.5	70.26
1435	31.04	41.37	1423.0	71.17
1470	86.21	202.61	1423.5	72.68
2000	107.86	142.76	1424.0	74.39
3000	103.78	94.59	1425.0	78.78

Functional Schematic

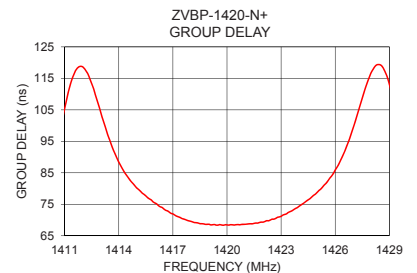
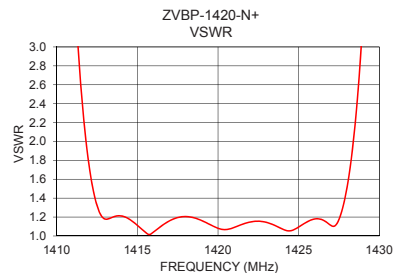
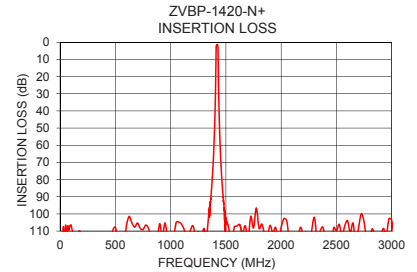
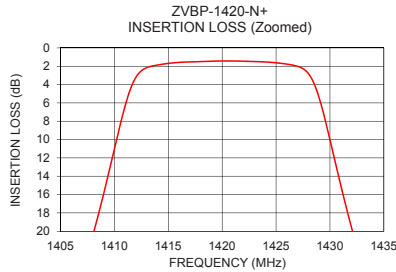


Typical Frequency Response



+RoHS Compliant

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



Notes

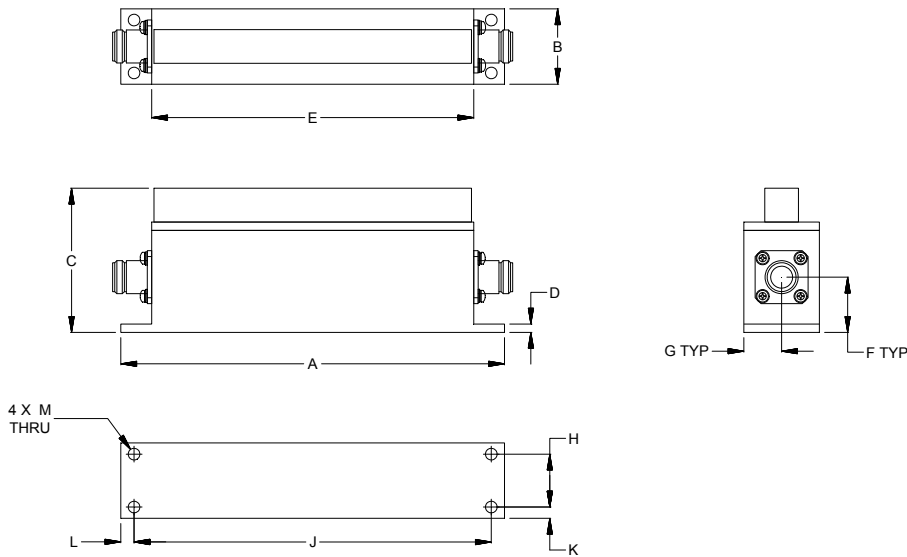
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Coaxial Connections

PORT-1	N-FEMALE
PORT-2	N-FEMALE

Outline Drawing



Outline Dimensions ($\frac{\text{inch}}$ / mm)

A	B	C	D	E	F	G
7.25	1.43	2.73	.16	6.09	1.04	.71
184.15	36.20	69.22	4.00	154.60	26.50	18.10
H	J	K	L	M	Wt.	
1.000	6.750	.21	.25	.220	grams	
25.40	171.45	5.40	6.35	5.59	640	

Note: Please refer to case style drawing for details

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Typical Performance Data

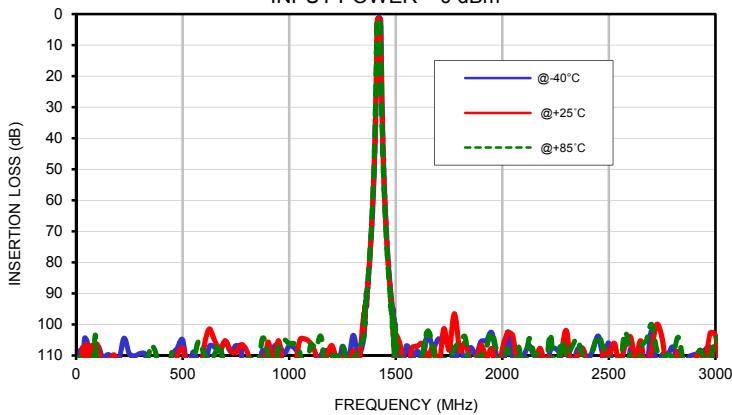
FREQ. (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
10	121.17	122.17	113.97	0.01	0.01	0.01	0.00	0.01	0.01
100	107.49	106.53	114.82	0.05	0.06	0.06	0.05	0.05	0.04
150	109.74	114.27	122.93	0.07	0.07	0.07	0.06	0.07	0.06
200	111.47	113.46	121.02	0.07	0.08	0.08	0.07	0.08	0.07
250	109.55	114.11	114.70	0.07	0.08	0.08	0.07	0.08	0.07
300	109.40	119.77	112.96	0.06	0.07	0.08	0.07	0.08	0.07
350	125.62	112.54	106.83	0.06	0.07	0.08	0.06	0.08	0.07
400	117.60	120.17	122.07	0.05	0.07	0.07	0.06	0.08	0.07
450	110.14	121.25	108.97	0.05	0.06	0.07	0.05	0.07	0.07
500	105.08	107.70	118.00	0.04	0.06	0.06	0.04	0.07	0.06
550	108.87	112.44	111.33	0.04	0.05	0.06	0.04	0.06	0.06
600	116.35	107.12	109.39	0.03	0.05	0.06	0.03	0.06	0.06
650	107.33	105.25	109.61	0.03	0.05	0.06	0.03	0.06	0.06
700	105.40	105.32	116.59	0.02	0.04	0.05	0.02	0.05	0.05
750	106.82	109.13	122.91	0.02	0.04	0.05	0.02	0.05	0.05
800	145.89	108.39	111.52	0.02	0.04	0.05	0.01	0.05	0.05
850	120.09	119.57	114.54	0.01	0.04	0.05	0.01	0.04	0.05
900	119.09	105.78	109.33	0.01	0.04	0.05	0.01	0.05	0.06
950	106.35	105.29	107.40	0.01	0.04	0.05	0.00	0.04	0.05
1000	106.96	115.74	106.22	0.01	0.04	0.06	0.00	0.04	0.05
1050	110.24	104.98	109.25	0.01	0.04	0.06	0.00	0.04	0.06
1100	113.77	106.10	106.67	0.01	0.04	0.06	0.00	0.05	0.06
1150	109.73	117.52	104.18	0.00	0.04	0.06	0.01	0.05	0.07
1200	108.87	106.83	110.20	0.01	0.05	0.07	0.00	0.05	0.07
1250	107.07	110.36	107.13	0.01	0.05	0.08	0.00	0.06	0.07
1300	103.57	108.45	111.87	0.01	0.06	0.08	0.01	0.06	0.08
1370	86.05	85.43	85.24	0.04	0.08	0.11	0.03	0.09	0.10
1400	47.62	45.11	42.74	0.17	0.24	0.29	0.15	0.23	0.27
1405	35.15	31.59	28.05	0.31	0.42	0.54	0.28	0.40	0.50
1408	25.26	20.47	15.52	0.54	0.83	1.32	0.50	0.78	1.25
1410	17.01	11.06	5.79	1.01	2.07	5.45	0.96	2.02	5.44
1412	7.57	3.20	2.23	3.28	11.27	19.40	3.23	11.86	21.12
1415	1.75	1.70	1.69	27.21	25.50	27.96	33.02	22.54	23.73
1420	1.31	1.43	1.53	27.87	28.19	30.17	31.98	33.01	40.29
1425	1.39	1.62	1.89	25.08	26.90	27.14	24.70	26.39	27.28
1428	1.80	2.80	6.23	17.16	13.80	4.74	17.23	13.45	4.57
1432	13.39	19.61	24.27	1.37	0.85	0.68	1.28	0.78	0.61
1435	26.61	31.04	34.57	0.45	0.42	0.40	0.39	0.38	0.35
1470	84.77	86.21	88.28	0.04	0.09	0.12	0.03	0.09	0.11
1900	105.53	106.69	110.07	0.06	0.11	0.15	0.05	0.12	0.15
2000	115.63	107.86	113.13	0.07	0.12	0.15	0.07	0.14	0.17
2100	110.14	129.03	117.22	0.08	0.13	0.17	0.08	0.15	0.18
2150	110.20	114.63	109.73	0.09	0.14	0.17	0.08	0.16	0.19
2200	115.46	112.37	116.56	0.09	0.15	0.18	0.09	0.17	0.20
2250	107.80	122.73	120.43	0.10	0.15	0.19	0.10	0.17	0.20
2300	106.50	102.00	110.38	0.10	0.16	0.20	0.10	0.18	0.20
2350	108.34	110.40	104.73	0.11	0.16	0.20	0.11	0.19	0.22
2400	111.00	113.16	113.68	0.11	0.17	0.20	0.11	0.19	0.22
2450	103.78	121.63	103.70	0.12	0.17	0.21	0.12	0.20	0.22
2500	106.20	110.07	110.70	0.12	0.18	0.22	0.12	0.20	0.23
2550	110.86	112.96	114.51	0.13	0.18	0.22	0.12	0.20	0.23
2600	108.13	103.96	110.60	0.13	0.18	0.22	0.13	0.21	0.24
2650	112.01	105.40	107.57	0.13	0.19	0.22	0.13	0.22	0.24
2700	101.90	107.95	100.02	0.13	0.19	0.23	0.13	0.22	0.24
2750	109.74	104.80	110.72	0.13	0.19	0.23	0.14	0.22	0.25
2800	107.37	113.74	110.08	0.13	0.19	0.23	0.14	0.23	0.26
2850	114.15	114.64	112.30	0.13	0.19	0.22	0.14	0.22	0.25
2900	109.76	112.79	114.57	0.12	0.18	0.22	0.15	0.23	0.26
2950	108.25	112.25	110.96	0.13	0.19	0.22	0.15	0.23	0.26
3000	113.75	103.78	104.38	0.12	0.18	0.21	0.14	0.23	0.26

Typical Performance Data

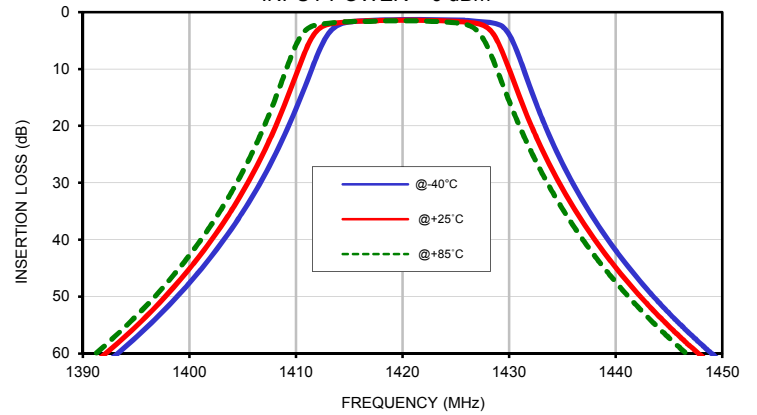
FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
1415.0	93.79	80.18	75.20
1415.6	86.54	77.12	72.90
1415.8	84.69	76.39	72.17
1416.0	82.95	75.43	71.47
1416.2	81.46	74.58	70.88
1416.4	80.19	73.99	70.40
1416.6	78.80	73.10	69.81
1416.8	77.84	72.51	69.41
1417.0	76.84	71.95	69.15
1417.2	75.80	71.25	68.80
1417.4	75.13	70.80	68.61
1417.6	74.25	70.31	68.53
1417.8	73.52	69.88	68.35
1418.0	72.94	69.58	68.34
1418.2	72.24	69.19	68.34
1418.4	71.73	69.05	68.34
1418.6	71.26	68.83	68.36
1418.8	70.75	68.63	68.41
1419.0	70.42	68.66	68.52
1419.2	70.04	68.49	68.57
1419.4	69.75	68.38	68.67
1419.6	69.56	68.54	68.83
1419.8	69.17	68.35	68.82
1420.0	69.14	68.45	68.98
1420.2	68.97	68.51	69.16
1420.4	68.71	68.41	69.25
1420.6	68.81	68.55	69.45
1420.8	68.62	68.59	69.75
1421.0	68.45	68.64	69.89
1421.3	68.40	68.81	70.35
1421.5	68.38	68.93	70.69
1421.7	68.26	69.03	71.13
1421.9	68.28	69.33	71.56
1422.0	68.18	69.33	71.80
1422.3	68.20	69.76	72.58
1422.5	68.30	70.26	73.25
1422.7	68.24	70.51	73.84
1422.9	68.45	70.99	74.55
1423.1	68.64	71.56	75.43
1424.0	70.18	74.39	79.97
1425.0	73.30	78.78	87.88

Typical Performance Curves

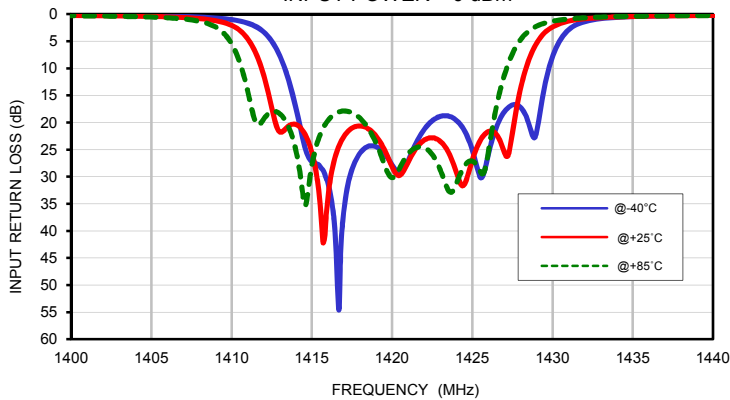
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



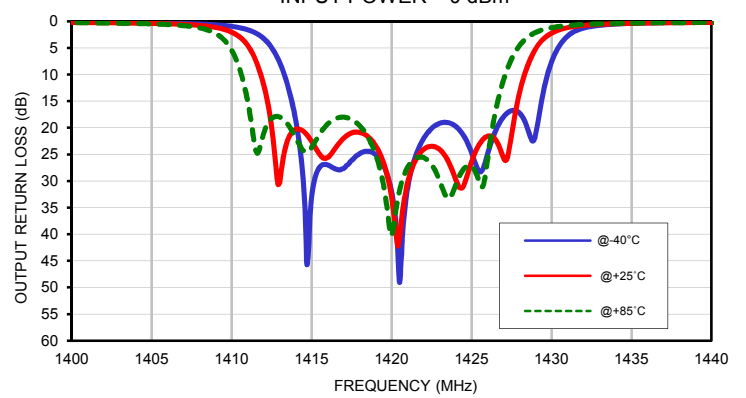
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



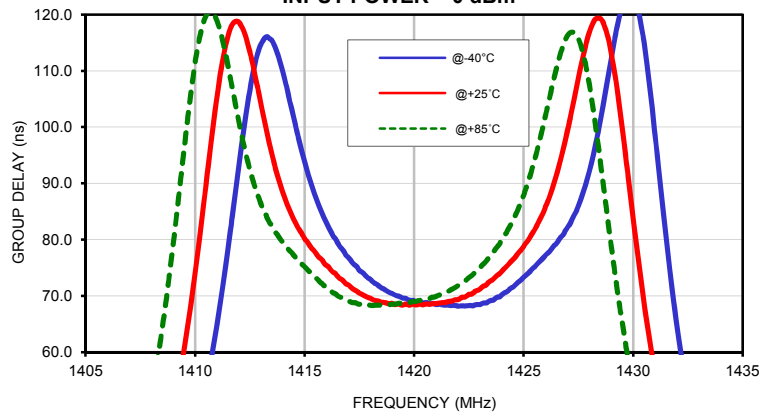
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm

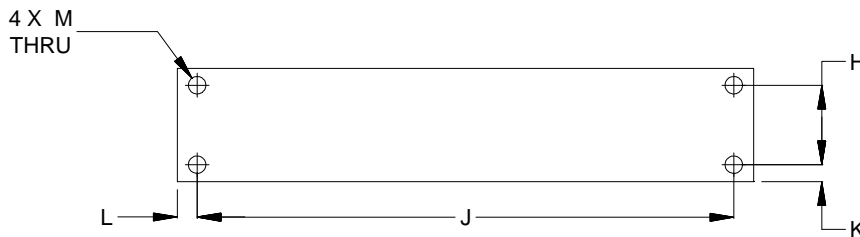
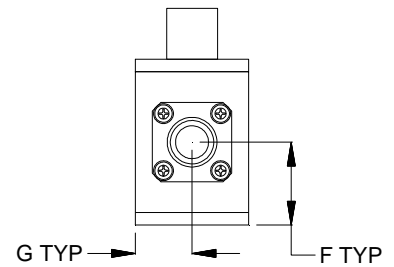
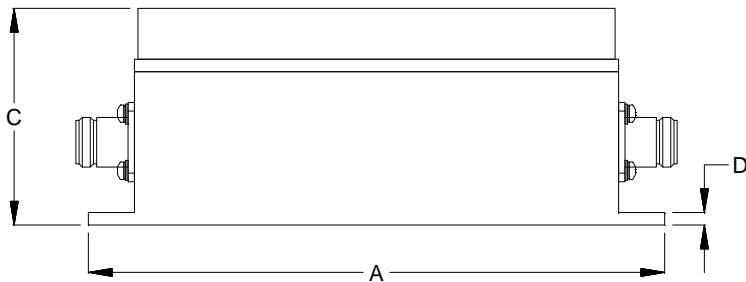
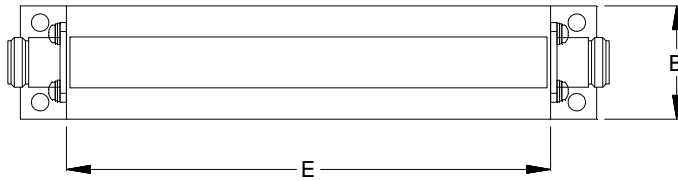


GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Outline Dimensions

SJ2566



CASE#	A	B	C	D	E	F	G	H
SJ2566	7.25 (184.15)	1.43 (36.20)	2.73 (69.22)	.16 (4.00)	6.09 (154.60)	1.04 (26.50)	.71 (18.10)	1.000 (25.40)

CASE#	J	K	L	M	WT. GRAMS
SJ2566	6.750 (171.45)	.21 (5.40)	.25 (6.35)	.220 (5.59)	640

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .10$; 3 Pl. $\pm .015$

Notes:

1. Case material: Aluminum alloy.
2. Case finish: Powder coated.
3. 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 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