

Cavity Bandpass Filters

50Ω DC to 27.125 GHz



The Big Deal

- Very low insertion loss with excellent power handling
- Very fast roll-off with wide stopband
- Passbands up to 27.125 GHz
- Stopbands up to 37 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-10R7G-S+

50Ω 10450 to 10950 MHz



Generic photo used for illustration purposes only

CASE STYLE: UY3145

Connectors SMA-F Model ZVBP-10R7G-S+

Features

- Low insertion loss, 0.6 dB typ.
- Broad stopband up to 20 GHz.
- High rejection, 67dB typ.
- Good VSWR, 1.2:1 typ.

Applications

- Satellite communication
- Mobile communication
- Radiolocation
- Space research
- Radio Astronomy

Electrical Specifications at 25°C

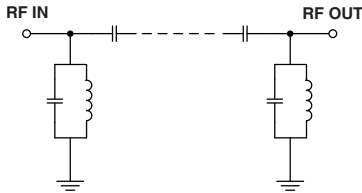
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	Fc	-	10700	-	MHz
	Insertion Loss	F1-F2	10450 - 10950	0.6	1.0	dB
	VSWR	F1-F2	10450 - 10950	1.2	1.5	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 9300	60	66	dB
Stop Band, Upper	Insertion Loss	F4-F5	12300 - 20000	60	67	dB

Maximum Ratings

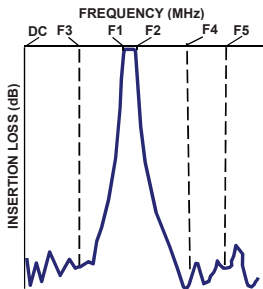
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	10W max.

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

Functional Schematic



Typical Frequency Response

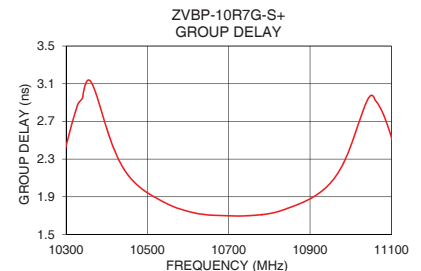
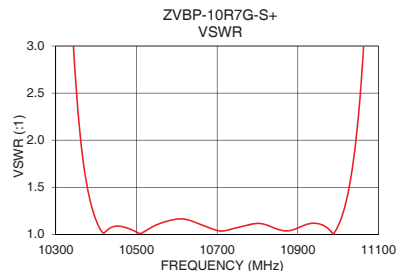
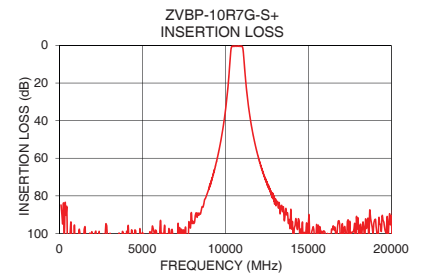
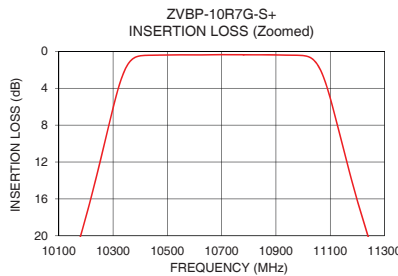


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
100	84.89	1767.02	10450	2.14
500	115.61	208.84	10480	2.01
3000	110.27	311.17	10510	1.92
9300	67.60	161.65	10550	1.82
10065	30.28	104.84	10580	1.77
10180	20.03	67.59	10600	1.75
10265	10.39	21.92	10630	1.72
10330	3.01	4.30	10650	1.71
10450	0.42	1.09	10680	1.70
10600	0.39	1.16	10700	1.70
10700	0.36	1.04	10720	1.70
10800	0.38	1.12	10740	1.70
10950	0.42	1.11	10760	1.70
11080	3.17	4.58	10780	1.71
11145	10.13	21.92	10800	1.72
11240	20.11	80.47	10830	1.76
11365	30.28	111.17	10860	1.80
12300	68.46	164.85	10890	1.86
15000	95.88	169.12	10920	1.93
20000	90.79	71.09	10950	2.05

+RoHS Compliant

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



Notes

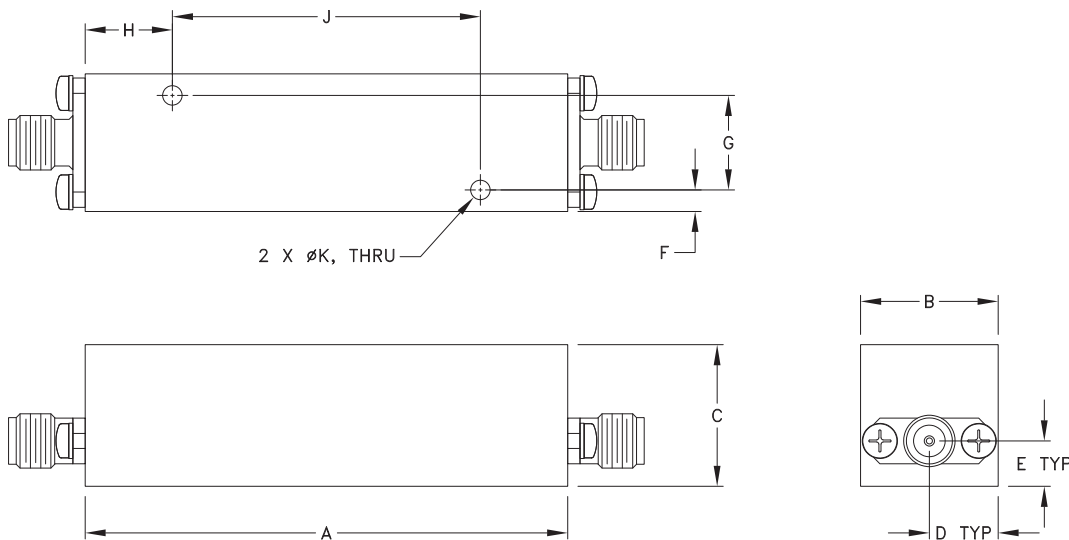
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Coaxial Connections

PORT-1	SMA-Female
PORT-2	SMA-Female

Outline Drawing



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

A	B	C	D	E	F
2.35	.67	.69	.34	.22	.11
59.7	17.0	17.5	8.5	5.6	2.7
G	H	J	K	Wt.	
.460	.43	1.500	.095	grams	
11.68	10.8	38.10	2.41	130	

Note: Please refer to case style drawing for details

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Cavity Bandpass Filter

ZVBP-10R7G-S+

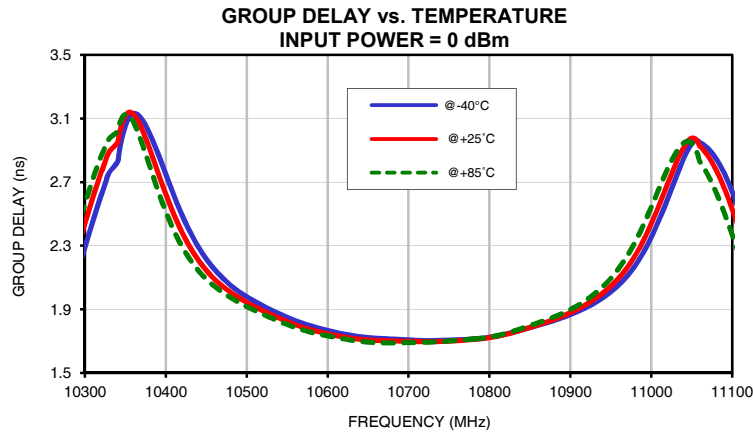
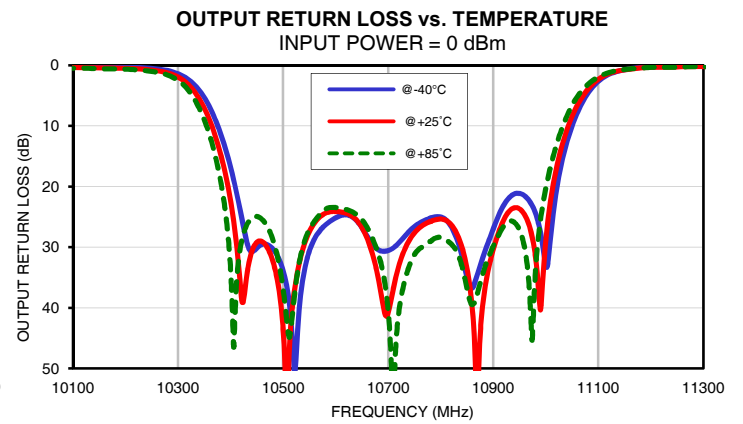
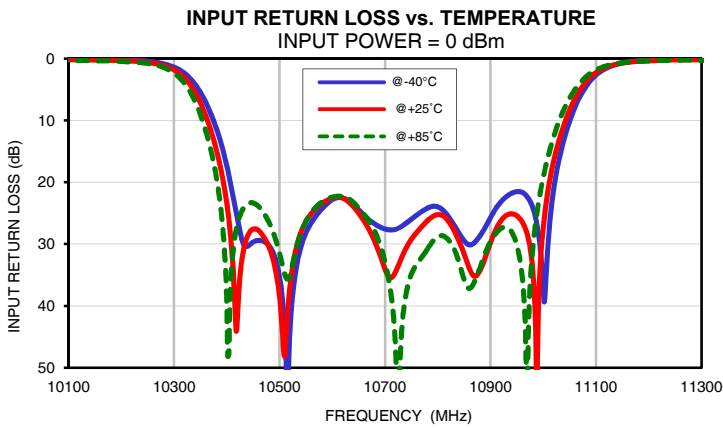
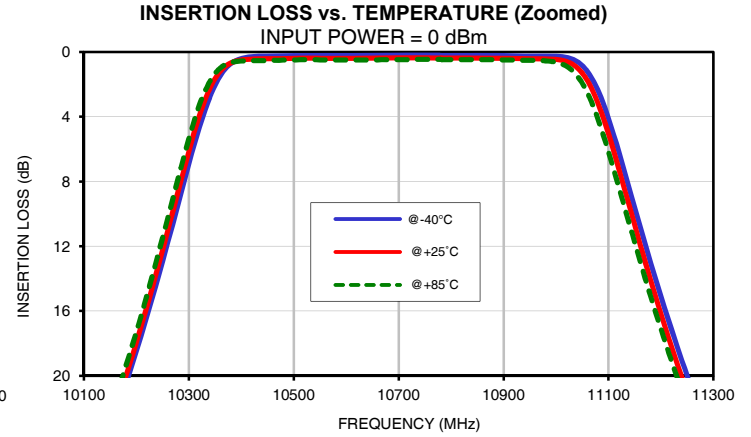
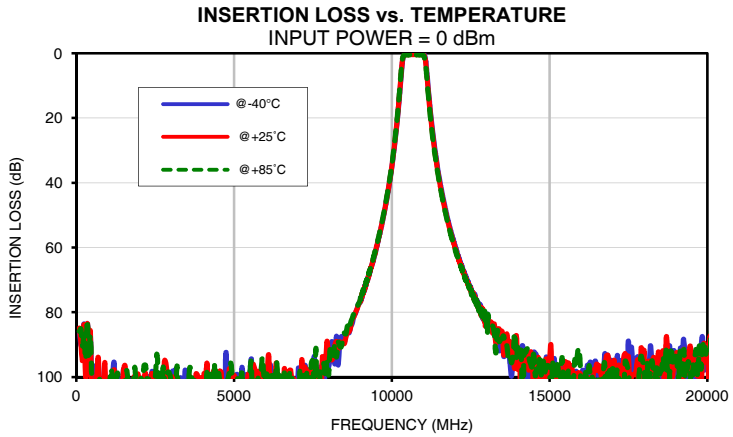
Typical Performance Data

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	85.89	84.89	85.90	0.01	0.01	0.02	0.00	0.01	0.01
200	89.25	94.81	90.45	0.04	0.04	0.05	0.04	0.04	0.04
500	101.87	115.61	102.67	0.07	0.08	0.09	0.09	0.10	0.10
1000	110.83	100.72	107.82	0.08	0.10	0.12	0.10	0.12	0.13
1500	97.61	97.61	106.07	0.05	0.09	0.11	0.08	0.12	0.13
2000	102.50	101.63	103.89	0.03	0.08	0.09	0.05	0.11	0.13
2500	98.21	119.78	102.55	0.01	0.06	0.08	0.03	0.10	0.13
3000	108.63	110.27	101.11	0.02	0.06	0.09	0.01	0.09	0.14
3500	103.97	109.11	101.19	0.03	0.06	0.10	0.01	0.10	0.16
4000	102.05	117.69	108.70	0.02	0.07	0.12	0.02	0.12	0.18
4500	103.26	106.81	98.38	0.01	0.09	0.15	0.06	0.15	0.22
5000	101.25	99.63	103.80	0.03	0.11	0.16	0.08	0.17	0.23
5500	99.95	99.79	99.85	0.05	0.13	0.16	0.10	0.19	0.23
6000	103.14	110.59	102.45	0.06	0.14	0.16	0.09	0.18	0.22
6500	100.75	104.17	110.01	0.06	0.15	0.16	0.08	0.18	0.21
7000	104.80	104.13	103.43	0.04	0.15	0.16	0.08	0.18	0.21
7500	104.53	98.35	94.99	0.02	0.15	0.17	0.08	0.18	0.20
8000	96.74	94.60	99.38	0.00	0.14	0.18	0.08	0.19	0.22
8500	89.38	89.66	86.41	0.03	0.13	0.17	0.07	0.18	0.22
9300	67.73	67.60	67.41	0.07	0.11	0.18	0.09	0.23	0.29
10065	30.59	30.28	29.78	0.00	0.17	0.27	0.18	0.36	0.49
10180	20.51	20.03	19.39	0.12	0.26	0.37	0.26	0.48	0.63
10265	11.13	10.39	9.61	0.57	0.79	1.02	0.66	0.99	1.25
10330	3.64	3.01	2.46	3.12	4.12	5.24	3.13	4.22	5.42
10450	0.26	0.42	0.53	29.69	27.59	23.35	30.14	29.20	24.94
10550	0.22	0.39	0.49	28.20	26.36	26.33	30.62	27.42	27.07
10600	0.22	0.39	0.49	22.82	22.54	22.40	25.17	24.11	23.47
10650	0.21	0.38	0.49	24.42	24.98	24.16	26.77	26.75	25.48
10700	0.20	0.36	0.47	27.57	34.03	32.92	30.55	40.96	40.36
10750	0.20	0.37	0.46	25.96	29.23	34.88	26.60	27.63	31.21
10800	0.21	0.38	0.47	23.98	25.24	28.78	25.02	25.36	28.39
10850	0.21	0.38	0.47	29.47	31.61	35.79	34.92	33.39	36.75
10900	0.23	0.39	0.49	25.74	29.79	29.62	26.99	30.43	29.84
10950	0.26	0.42	0.52	21.51	25.41	30.21	21.13	23.68	27.17
11080	2.38	3.17	4.16	4.61	3.85	3.02	4.66	3.96	3.19
11145	9.05	10.13	11.21	0.75	0.79	0.71	0.84	0.84	0.77
11240	19.07	20.11	20.95	0.05	0.22	0.25	0.18	0.30	0.34
11365	29.32	30.28	30.94	0.03	0.16	0.21	0.07	0.19	0.24
11800	52.07	52.74	53.26	0.10	0.11	0.20	0.09	0.25	0.31
12000	59.22	59.88	60.28	0.10	0.09	0.18	0.09	0.28	0.37
12300	67.93	68.46	68.85	0.08	0.11	0.22	0.11	0.29	0.39
12500	72.12	72.44	73.25	0.09	0.09	0.19	0.11	0.30	0.41
12800	78.47	79.50	79.29	0.05	0.11	0.21	0.12	0.32	0.46
13200	83.60	86.48	84.25	0.05	0.09	0.19	0.13	0.35	0.51
13500	87.88	85.94	87.88	0.03	0.11	0.22	0.15	0.36	0.52
13800	99.71	94.63	95.63	0.01	0.10	0.21	0.15	0.35	0.52
14200	93.00	95.95	92.04	0.02	0.11	0.20	0.15	0.34	0.53
14500	92.35	105.29	92.97	0.00	0.12	0.20	0.17	0.36	0.54
14800	96.95	100.43	95.09	0.01	0.11	0.19	0.16	0.35	0.52
15200	100.67	99.56	100.52	0.01	0.11	0.16	0.15	0.34	0.47
15500	110.37	95.25	99.04	0.00	0.11	0.18	0.14	0.32	0.46
16000	105.35	99.41	102.23	0.03	0.11	0.16	0.10	0.29	0.41
16500	98.04	95.99	105.13	0.06	0.10	0.12	0.04	0.27	0.38
17000	99.87	102.52	95.98	0.13	0.05	0.09	0.03	0.24	0.34
17500	88.90	93.56	98.14	0.23	0.02	0.04	0.11	0.19	0.32
18000	97.42	92.02	96.94	0.31	0.03	0.02	0.17	0.16	0.32
18500	104.10	97.32	98.85	0.44	0.12	0.02	0.18	0.13	0.32
19000	100.35	92.79	93.48	0.49	0.13	0.03	0.25	0.09	0.34
19500	118.49	92.95	105.43	0.55	0.22	0.08	0.18	0.08	0.29
20000	97.13	90.79	90.66	0.52	0.24	0.08	0.09	0.08	0.21

Typical Performance Data

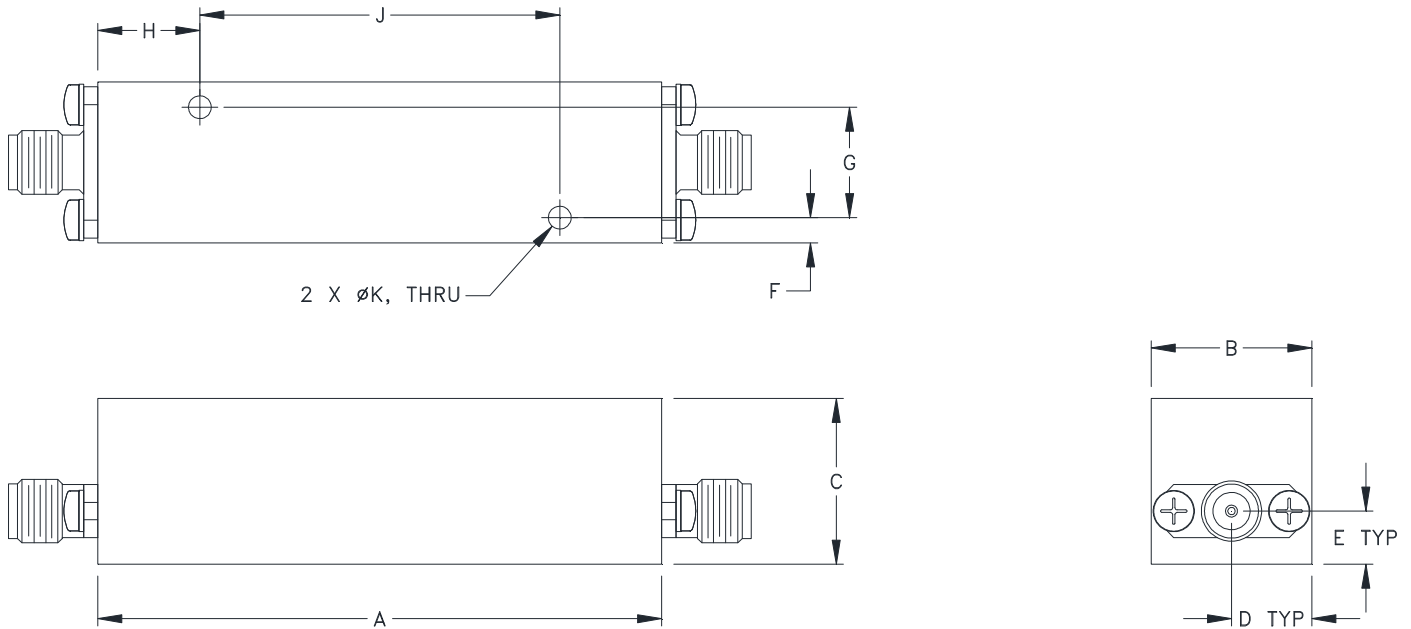
FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
10450	2.22	2.14	2.09
10456	2.18	2.11	2.06
10460	2.15	2.09	2.04
10466	2.12	2.06	2.02
10472	2.09	2.04	2.00
10478	2.06	2.01	1.98
10484	2.03	1.99	1.96
10490	2.01	1.97	1.94
10496	1.99	1.95	1.93
10500	1.98	1.94	1.92
10510	1.95	1.92	1.89
10520	1.92	1.89	1.87
10530	1.90	1.87	1.85
10540	1.87	1.84	1.82
10550	1.85	1.82	1.80
10560	1.83	1.80	1.79
10570	1.81	1.79	1.77
10580	1.79	1.77	1.76
10590	1.78	1.76	1.74
10600	1.77	1.75	1.73
10610	1.75	1.74	1.72
10620	1.74	1.73	1.71
10630	1.73	1.72	1.71
10640	1.73	1.71	1.70
10650	1.72	1.71	1.69
10660	1.72	1.70	1.69
10670	1.72	1.70	1.69
10680	1.71	1.70	1.69
10690	1.71	1.70	1.69
10700	1.71	1.70	1.69
10710	1.70	1.70	1.69
10720	1.70	1.70	1.69
10730	1.70	1.70	1.69
10740	1.70	1.70	1.70
10750	1.71	1.70	1.70
10760	1.71	1.70	1.70
10770	1.71	1.71	1.71
10780	1.71	1.71	1.71
10790	1.72	1.72	1.72
10800	1.72	1.72	1.73
10810	1.73	1.73	1.74
10820	1.74	1.74	1.75
10830	1.76	1.76	1.76
10840	1.77	1.77	1.78
10850	1.78	1.79	1.80
10860	1.80	1.80	1.82
10870	1.81	1.82	1.83
10880	1.83	1.84	1.85
10890	1.85	1.86	1.87
10900	1.87	1.88	1.90
10904	1.88	1.89	1.91
10910	1.89	1.90	1.93
10914	1.90	1.91	1.94
10920	1.91	1.93	1.96
10924	1.92	1.94	1.97
10930	1.94	1.96	2.00
10934	1.95	1.98	2.01
10940	1.97	2.00	2.04
10944	1.99	2.02	2.06
10950	2.01	2.05	2.09

Typical Performance Curves



Outline Dimensions

UY3145



CASE#	A	B	C	D	E	F
UY3145	2.35 (59.7)	.67 (17.0)	.69 (17.5)	.34 (8.5)	.22 (5.6)	.11 (2.7)

CASE#	G	H	J	K	WT. GRAMS
UY3145	.460 (11.68)	.43 (10.8)	1.500 (38.10)	.095 (2.41)	130

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

Notes:

1. Case material: Brass alloy.
2. Case Finish: Powder coated over silver plating.
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