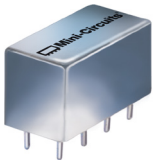
Plug-In

Low Pass Filter

PBLP-39+
PBLP-39

50Ω Flat Time Delay DC to 23 MHz



CASE STYLE: A01

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5W max.

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

Pin Connections

INPUT	1
OUTPUT	8
GROUND	2,3,4,5,6,7
CASE GROUND	2,3,4,5,6,7

Features

- flat group delay for low pulse distortion
- rugged shielded case, hermetic
- other PBLP models available with wide selection of cut-off frequencies

Applications

- linear modulation techniques
- voice transmission applications
- digital communications

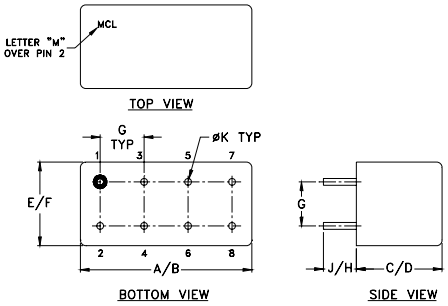
+RoHS Compliant

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

Low Pass Filter Electrical Specifications

PASSBAND (MHz) (loss <1.2 dB) Min.	fco, MHz Nom. (loss 3 dB)	STOPBAND (MHz) (loss > 10 dB)	STOPBAND (MHz) (loss > 20 dB)	VSWR (:1) DC-0.2fco $\overline{X}$	VSWR (:1) DC-0.6fco $\overline{X}$	GROUP DELAY VARIATION (nsec) DC-fco $\overline{X}$	GROUP DELAY VARIATION (nsec) DC-2fco $\overline{X}$	GROUP DELAY VARIATION (nsec) DC-2.67fco $\overline{X}$
DC-23	39	78-117	117	1.3:1	2.3:1	0.7	4.0	5.0

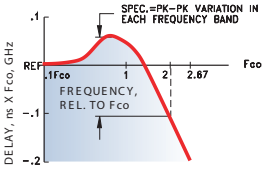
Outline Drawing



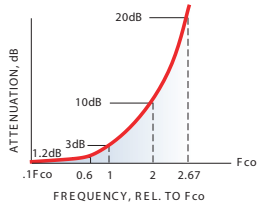
Outline Dimensions (inch / mm)

A	B	C	D	E	F
.770	.800	.385	.400	.370	.400
19.56	20.32	9.78	10.16	9.40	10.16
G	H	J	K		wt
.200	.20	.14	.031		grams
5.08	5.08	3.56	0.79		5.2

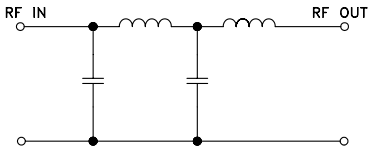
TYPICAL GROUP DELAY



TYPICAL FREQUENCY RESPONSE INSERTION LOSS



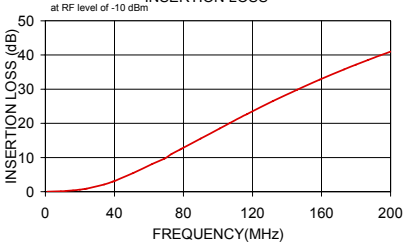
electrical schematic



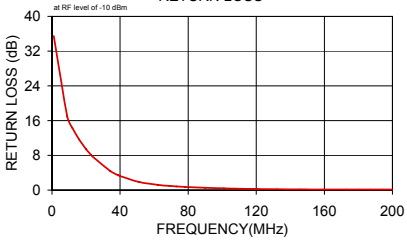
Typical Performance Data

Frequency (MHz)	Insertion Loss (dB) $\overline{x}$	Insertion Loss (dB) σ	Return Loss (dB)	Frequency (MHz)	Group Delay (nsec)
1.0	0.02	0.00	35.5	1.0	8.012
9.0	0.14	0.00	17.0	5.0	8.243
12.0	0.23	0.01	14.3	9.0	7.823
16.0	0.38	0.01	11.6	12.0	8.199
20.0	0.60	0.02	9.4	16.0	8.305
23.0	0.82	0.02	8.1	20.0	8.466
24.0	0.91	0.02	7.7	23.0	8.623
34.0	2.11	0.03	4.5	24.0	8.392
39.0	2.95	0.04	3.4	29.0	8.899
40.0	3.14	0.04	3.2	34.0	8.378
51.0	5.48	0.06	1.9	39.0	8.392
62.0	8.15	0.07	1.2	40.0	8.247
69.0	9.69	0.08	1.0	46.0	7.722
73.0	11.00	0.09	0.8	51.0	7.336
78.0	12.33	0.10	0.7	57.0	6.804
79.0	12.60	0.10	0.7	62.0	6.487
90.0	15.56	0.13	0.5	68.0	6.306
101.0	18.53	0.15	0.4	73.0	5.277
107.0	20.14	0.16	0.3	78.0	5.124
112.0	21.46	0.16	0.3	79.0	5.489
117.0	22.76	0.17	0.3	85.0	5.101
118.0	23.02	0.17	0.3	90.0	4.784
132.0	26.55	0.17	0.2	96.0	4.054
146.0	29.88	0.17	0.2	101.0	3.996
159.0	32.80	0.17	0.1	107.0	3.275
173.0	35.76	0.16	0.1	112.0	3.856
180.0	37.17	0.15	0.1	117.0	2.547
187.0	38.55	0.16	0.1	118.0	2.738
194.0	39.89	0.15	0.1	125.0	2.216
200.0	41.00	0.16	0.1	132.0	2.576

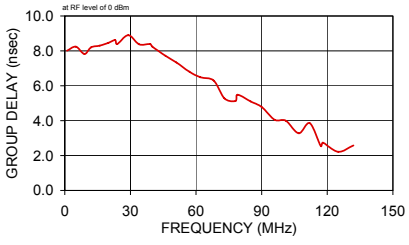
INSERTION LOSS



RETURN LOSS



GROUP DELAY



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

Plug-In Low Pass Filter (Flat Time Delay) PBLP-39

Typical Performance Data

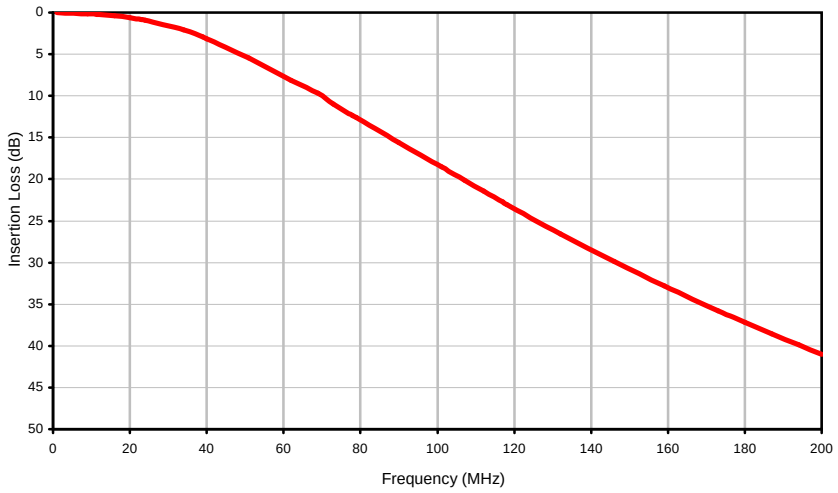
FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)
1	0.02	35.50
9	0.14	17.00
12	0.23	14.30
16	0.38	11.60
20	0.60	9.40
23	0.82	8.10
24	0.91	7.70
34	2.11	4.50
39	2.95	3.40
40	3.14	3.20
51	5.48	1.90
62	8.15	1.20
69	9.69	1.00
73	11.00	0.80
78	12.33	0.70
79	12.60	0.70
90	15.56	0.50
101	18.53	0.40
107	20.14	0.30
112	21.46	0.30
117	22.76	0.30
118	23.02	0.30
132	26.55	0.20
146	29.88	0.20
159	32.80	0.10
173	35.76	0.10
180	37.17	0.10
187	38.55	0.10
194	39.89	0.10
200	41.00	0.10

FREQUENCY (MHz)	GROUP DELAY (nsec)
1	8.012
5	8.243
9	7.823
12	8.199
16	8.305
20	8.466
23	8.623
24	8.392
29	8.899
34	8.378
39	8.392
40	8.247
46	7.722
51	7.336
57	6.804
62	6.487
68	6.306
73	5.277
78	5.124
79	5.489
85	5.101
90	4.784
96	4.054
101	3.996
107	3.275
112	3.856
117	2.547
118	2.738
125	2.216
132	2.576

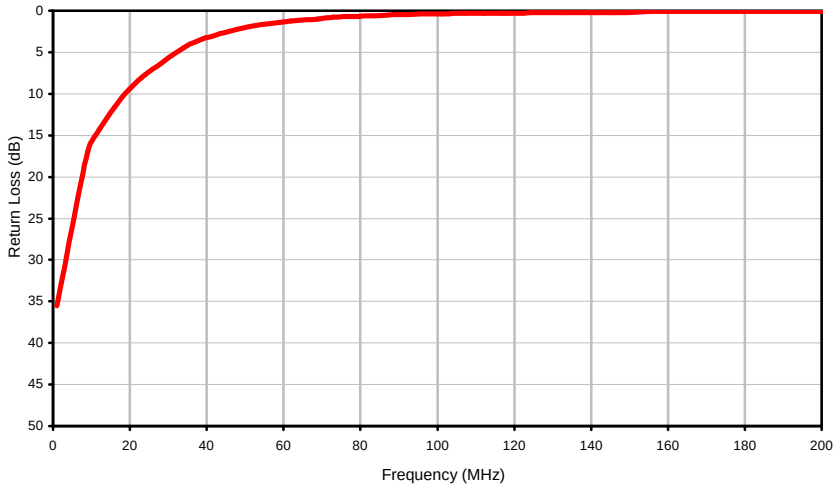
Plug-In Low Pass Filter (Flat Time Delay) PBLP-39

Typical Performance Curves

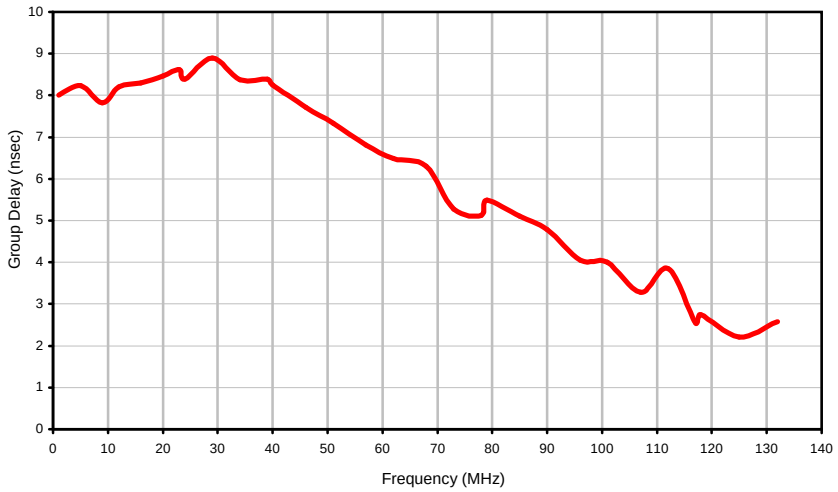
Insertion Loss



Return Loss



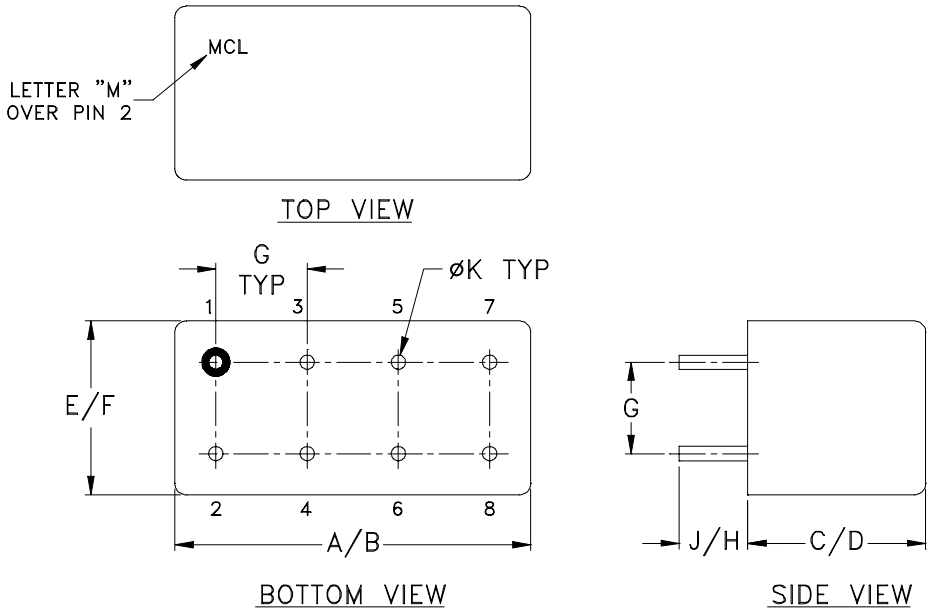
Group Delay



Case Style A

A01
A04
A05
A06

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	WT, GRAM
A01	.770 (19.56)	.800 (20.32)	.385 (9.78)	.400 (10.16)	.370 (9.40)	.400 (10.16)	.200 (5.08)	.20 (5.08)	.14 (3.56)	.031 (.79)	5.2
A04			.200 (5.08)	.210 (5.33)							3.7
A05			.240 (6.10)	.250 (6.35)							3.7
A06			.285 (7.24)	.310 (7.87)							5.2

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .015

Notes:

1. Header material: C.R.S.
   Pin material: #52 alloy.
   Cover material: Cupro-Nickel.
2. Pin finish: Electro Tin-Silver.
3. Insulated spacer available. Request P/N B14-045-01.
4. Tolerance on pin diameter +/-.005 inch.
5. Glass meniscus 0.015 inch max.
6. Blue bead indicates Pin 1. Pin numbers do not appear on unit, for reference only.

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INTERNET http://www.minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
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Environmental Specifications ENV01

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
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, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Moisture Resistance	10 cycles, 24 hours per cycle	MIL-STD-202, Method 106, Condition A, except 50°C and end point electrical test done within 12 hours
Solderability	10X Magnification	J-STD-002, 95% Coverage
Resistance to Solder Heat	260°C for 10 seconds	MIL-STD-202, Method 210, Condition B
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215
Terminal Strength	4 1/2 Pound Pull	MIL-STD-202, Method 211, Condition A

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
Gross Leak	125°C Bubble Test	MIL-STD-202, Method 112, Condition D
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D