

Low Pass Filter

50Ω DC to 12 MHz

NBLP-20-1+



Features

- Flat group delay for low pulse distortion
- Rugged shielded case
- Other NBLP models available with wide selection of cut-off frequencies

Applications

- Linear modulation techniques
- Voice transmission applications
- Digital communications

Connectors	Model	Price	Qty.
N Male/Female	NBLP-20-1+	\$76.95 ea.	(10)
		\$69.95 ea.	(25)

Electrical Specifications at 25°C

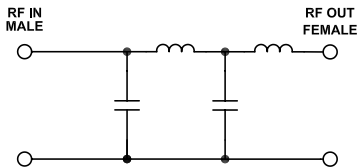
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F2	DC-12	—	1	dB
	Freq. Cut-Off	F4	20	—	3	dB
	VSWR	DC-F1	DC-4	—	1.4	:1
	VSWR	DC-F3	DC-12	—	2.8	:1
Stop Band	Rejection Loss	F5	40	10	13	dB
	VSWR	F5	40	—	50	:1
Group Delay Variation		DC-F4	DC-20	—	0.7	ns

Maximum Ratings

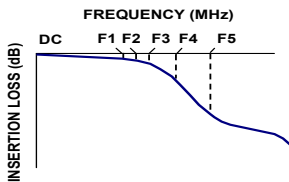
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5W max.

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

Functional Schematic



Typical Frequency Response

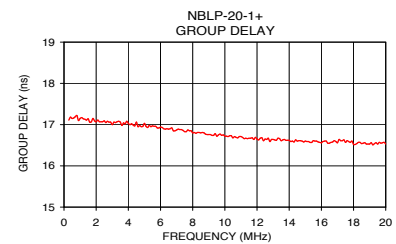
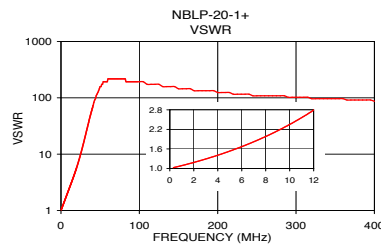
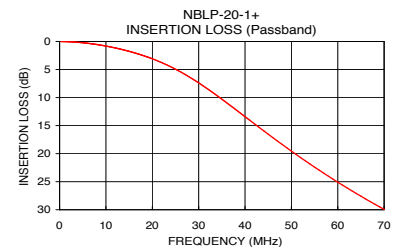
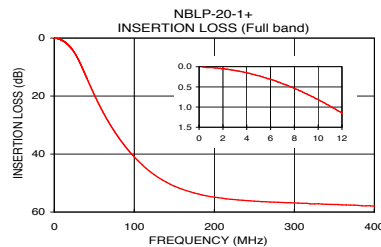


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1.0	0.02	1.09	1.00	17.15
2.0	0.05	1.19	2.00	17.07
4.0	0.15	1.41	3.00	17.00
6.0	0.31	1.67	4.00	17.03
8.0	0.54	1.98	5.00	17.03
10.0	0.81	2.35	6.00	16.94
12.0	1.15	2.79	7.00	16.87
15.0	1.75	3.62	8.00	16.80
20.0	3.09	5.77	9.00	16.76
22.0	3.76	7.08	10.00	16.72
28.0	6.34	14.15	11.00	16.71
30.0	7.38	18.30	12.00	16.65
35.0	10.29	35.46	13.00	16.64
40.0	13.40	64.35	14.00	16.62
50.0	19.54	157.93	15.00	16.60
100.0	41.01	193.02	16.00	16.56
150.0	51.06	144.77	17.00	16.56
300.0	56.85	102.19	18.00	16.52
350.0	57.39	96.51	19.00	16.53
400.0	58.02	86.86	20.00	16.53

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.



Mini-Circuits®
ISO 9001 ISO 14001 AS 9100 CERTIFIED

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IFIRF MICROWAVE COMPONENTS

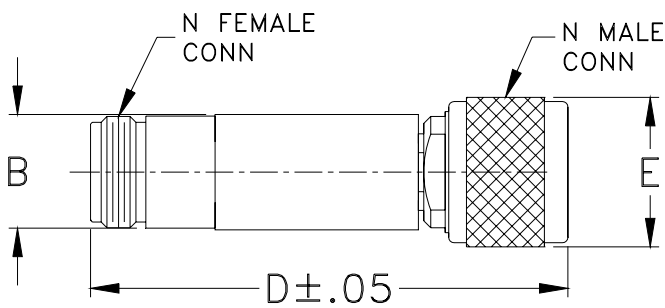
Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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.

For detailed performance specs & shopping online see web site

Coaxial Connections

INPUT	N-Male
OUTPUT	N-Female

Outline Drawing



Outline Dimensions (^{inch}/_{mm})

B	D	E	wt
.67	2.90	.82	grams
17.02	73.66	20.83	90.0

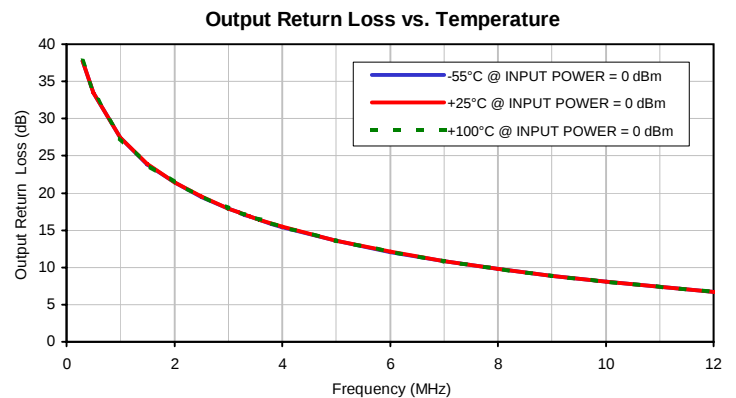
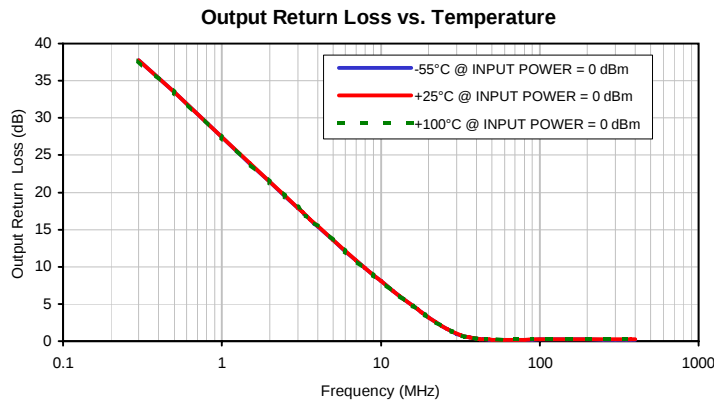
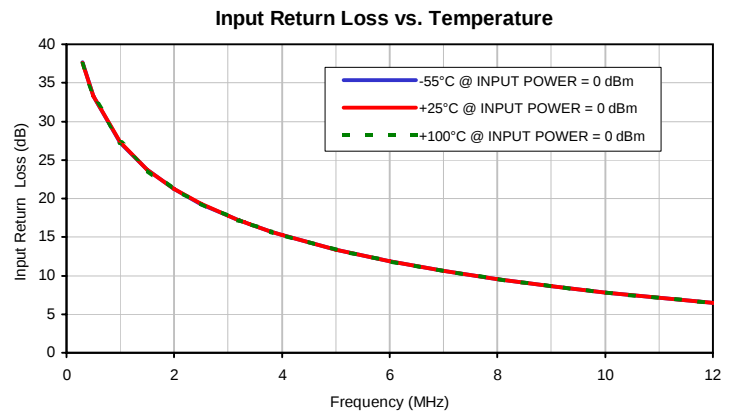
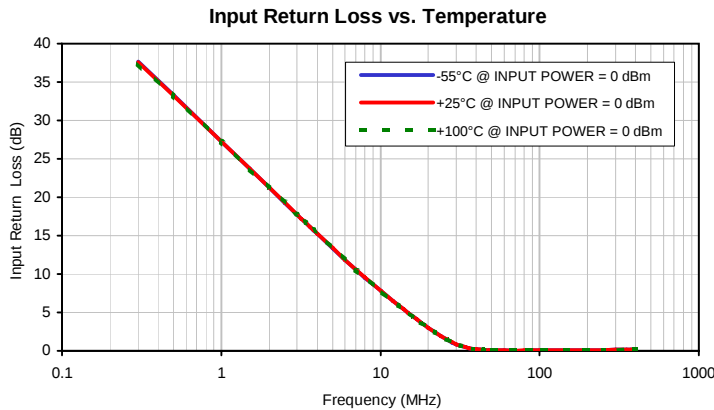
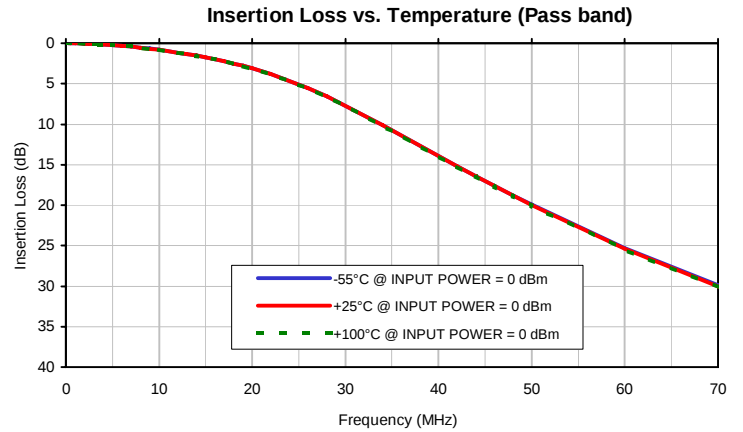
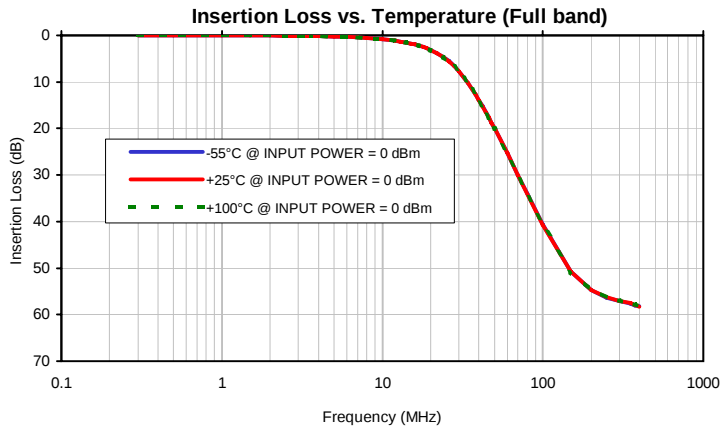
Typical Performance Data

FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C
0.3	0.01	0.01	0.01	37.64	37.57	37.45	37.75	37.77	37.74
0.5	0.01	0.01	0.02	33.30	33.28	33.21	33.43	33.45	33.46
1.0	0.02	0.02	0.02	27.26	27.27	27.26	27.40	27.43	27.45
1.5	0.03	0.03	0.03	23.73	23.75	23.75	23.87	23.91	23.93
2.0	0.05	0.05	0.05	21.23	21.25	21.26	21.38	21.42	21.44
2.5	0.07	0.07	0.07	19.29	19.32	19.33	19.45	19.49	19.52
3.0	0.09	0.09	0.09	17.72	17.74	17.75	17.89	17.92	17.95
3.2	0.10	0.10	0.11	17.16	17.18	17.19	17.34	17.37	17.40
3.3	0.11	0.11	0.11	16.90	16.92	16.93	17.07	17.11	17.14
3.4	0.11	0.11	0.12	16.64	16.66	16.67	16.82	16.85	16.88
3.6	0.12	0.13	0.13	16.15	16.17	16.18	16.33	16.37	16.40
3.8	0.14	0.14	0.14	15.69	15.71	15.72	15.87	15.91	15.94
4.0	0.15	0.15	0.16	15.26	15.27	15.29	15.44	15.47	15.50
5.0	0.23	0.23	0.23	13.37	13.39	13.40	13.57	13.61	13.63
6.0	0.32	0.32	0.32	11.86	11.87	11.88	12.07	12.10	12.12
7.0	0.42	0.43	0.43	10.61	10.62	10.62	10.83	10.85	10.87
8.0	0.54	0.54	0.55	9.54	9.55	9.55	9.77	9.79	9.81
9.0	0.67	0.68	0.68	8.63	8.63	8.62	8.86	8.88	8.89
10.0	0.82	0.82	0.83	7.82	7.82	7.82	8.06	8.08	8.09
12.0	1.15	1.15	1.16	6.48	6.47	6.47	6.72	6.73	6.74
13.0	1.33	1.34	1.35	5.91	5.90	5.89	6.15	6.15	6.16
14.0	1.53	1.54	1.55	5.39	5.38	5.37	5.63	5.63	5.63
15.0	1.75	1.75	1.77	4.91	4.90	4.89	5.15	5.14	5.15
16.0	1.98	1.99	2.00	4.47	4.46	4.45	4.70	4.70	4.70
17.0	2.23	2.24	2.25	4.07	4.06	4.05	4.29	4.28	4.29
18.0	2.50	2.51	2.52	3.69	3.68	3.67	3.90	3.90	3.90
19.0	2.79	2.80	2.82	3.33	3.33	3.31	3.54	3.53	3.54
20.0	3.10	3.12	3.13	3.00	3.00	2.99	3.20	3.20	3.20
22.0	3.81	3.82	3.84	2.41	2.40	2.40	2.59	2.59	2.59
24.0	4.63	4.64	4.66	1.90	1.90	1.90	2.07	2.06	2.07
26.0	5.56	5.57	5.58	1.47	1.47	1.47	1.62	1.63	1.64
28.0	6.59	6.60	6.61	1.12	1.13	1.13	1.27	1.27	1.28
30.0	7.71	7.72	7.73	0.85	0.85	0.86	0.98	0.99	1.00
32.0	8.91	8.91	8.92	0.64	0.64	0.65	0.76	0.77	0.79
34.0	10.14	10.14	10.16	0.48	0.49	0.49	0.60	0.61	0.63
36.0	11.40	11.41	11.42	0.36	0.37	0.37	0.48	0.49	0.51
38.0	12.67	12.68	12.69	0.28	0.28	0.28	0.39	0.40	0.42
40.0	13.93	13.95	13.97	0.21	0.22	0.22	0.33	0.34	0.36
42.0	15.18	15.20	15.23	0.17	0.17	0.17	0.28	0.29	0.31
44.0	16.42	16.44	16.47	0.14	0.14	0.14	0.25	0.26	0.28
46.0	17.62	17.65	17.69	0.11	0.11	0.11	0.23	0.24	0.26
48.0	18.80	18.84	18.88	0.09	0.09	0.10	0.21	0.22	0.24
50.0	19.95	20.00	20.05	0.08	0.08	0.08	0.20	0.21	0.24
60.0	25.28	25.36	25.43	0.05	0.05	0.05	0.18	0.20	0.21
70.0	29.92	30.03	30.12	0.04	0.04	0.05	0.19	0.20	0.22
80.0	33.98	34.10	34.21	0.04	0.05	0.05	0.20	0.21	0.22
90.0	37.53	37.65	37.76	0.05	0.05	0.05	0.21	0.22	0.23
100.0	40.61	40.74	40.85	0.05	0.05	0.05	0.22	0.23	0.24
150.0	50.68	50.72	50.75	0.08	0.07	0.06	0.23	0.24	0.25
200.0	54.76	54.74	54.75	0.10	0.09	0.08	0.22	0.23	0.25
250.0	56.32	56.29	56.20	0.12	0.11	0.10	0.21	0.23	0.25
300.0	57.06	57.04	57.00	0.13	0.13	0.12	0.21	0.23	0.26
350.0	57.60	57.55	57.56	0.15	0.15	0.14	0.21	0.23	0.26
375.0	57.97	57.86	57.82	0.16	0.17	0.16	0.21	0.24	0.27
400.0	58.21	58.29	58.23	0.16	0.18	0.17	0.21	0.24	0.27

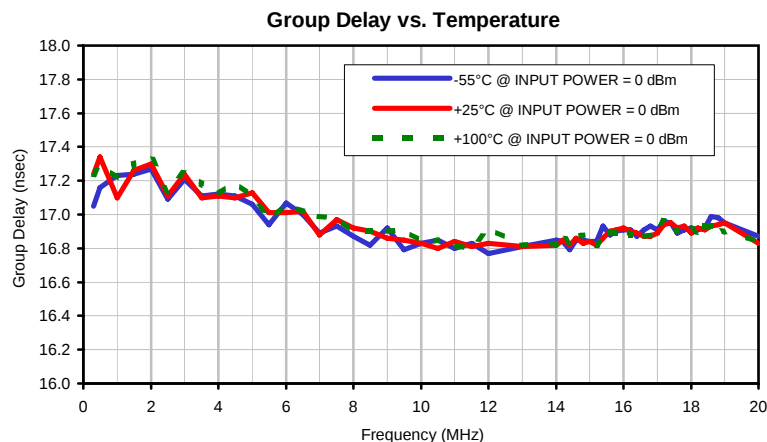
Typical Performance Data

FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-55°C	@+25°C	@+100°C
0.3	17.05	17.24	17.24
0.5	17.16	17.34	17.29
1.0	17.23	17.10	17.22
1.5	17.24	17.26	17.30
2.0	17.27	17.30	17.34
2.5	17.09	17.11	17.13
3.0	17.21	17.24	17.25
3.5	17.11	17.10	17.18
4.0	17.12	17.11	17.12
4.5	17.11	17.10	17.19
5.0	17.06	17.13	17.11
5.5	16.94	17.01	16.97
6.0	17.07	17.01	17.06
6.5	17.00	17.02	17.02
7.0	16.89	16.88	16.99
7.5	16.93	16.97	16.98
8.0	16.87	16.92	16.90
8.5	16.82	16.90	16.90
9.0	16.92	16.86	16.90
9.5	16.79	16.85	16.91
10.0	16.83	16.83	16.84
10.5	16.85	16.80	16.85
11.0	16.80	16.84	16.82
11.5	16.83	16.81	16.80
12.0	16.77	16.83	16.92
13.0	16.81	16.81	16.82
14.0	16.85	16.82	16.83
14.2	16.84	16.85	16.88
14.4	16.79	16.82	16.83
14.6	16.85	16.86	16.87
14.8	16.85	16.83	16.88
15.0	16.84	16.84	16.85
15.2	16.84	16.82	16.82
15.4	16.93	16.86	16.88
15.6	16.88	16.90	16.89
15.8	16.90	16.91	16.89
16.0	16.91	16.92	16.91
16.2	16.91	16.90	16.88
16.4	16.87	16.89	16.88
16.6	16.91	16.87	16.87
16.8	16.93	16.87	16.88
17.0	16.91	16.89	16.90
17.2	16.96	16.94	16.96
17.4	16.95	16.95	16.91
17.6	16.89	16.92	16.90
17.8	16.91	16.93	16.91
18.0	16.92	16.89	16.92
18.2	16.91	16.92	16.88
18.4	16.92	16.91	16.93
18.6	16.99	16.93	16.93
18.8	16.98	16.94	16.94
19.0	16.95	16.95	16.90
20.0	16.87	16.83	16.84

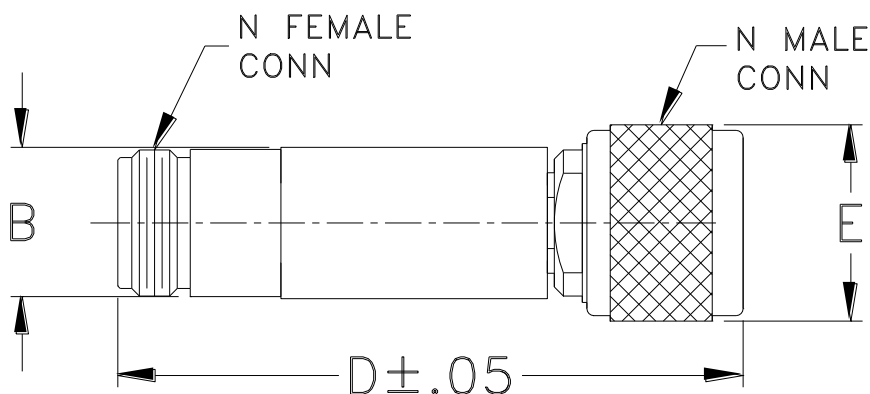
Typical Performance Curves



Typical Performance Curves



Outline Dimensions



CASE #.	A	B	C	D	E	WT GRAMS
FF57	--	.70 (17.78)	--	2.90 (73.66)	.82 (20.83)	90.0

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

Note:

1. Case material: Stainless steel.



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
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
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	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I