



COAXIAL

# Precision Fixed Attenuator

# BW-N20W50+

50Ω 50 W 20 dB DC to 18 GHz N-Male to N-Female

### THE BIG DEAL

- DC to 18 GHz
- High Power Handling, 50 W
- Excellent VSWR, 1.30:1 Typ.
- Passivated Stainless Steel N-Type Connectors
- Uni-Directional

### APPLICATIONS

- Impedance Matching
- Instrumentation
- Test Setups
- High Power Measurements



Generic photo used for illustration purposes only

<b>Model No.</b>	BW-N20W50+
<b>Case Style</b>	GH1788
<b>Connectors</b>	N-Male to N-Female

#### +RoHS Compliant

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

### PRODUCT OVERVIEW

The BW-N20W50+ 20 dB precision fixed attenuator achieves great flatness versus frequency from DC to 18 GHz and handles high power signals up to 50 W. High power handling, excellent VSWR, and precise performance make the BW-N20W50+ ideal for applications including high power measurement, improving matching, test setups, and other functions demanding accurate attenuation and high power capability.

### KEY FEATURES

Feature	Advantages
Wide Frequency Range	DC to 18 GHz frequency range gives the BW-N20W50+ attenuator versatile application functionality.
Excellent VSWR, 1.30 Typ.	Well-matched for 50Ω systems; reduces effects of phase variation.
Flat Attenuation	Accurate performance within ±0.5 dB over the full frequency range.
Rugged Construction	Excellent durability for a long lifetime of use.
Heat Dissipation Fins	Designed to dissipate heat efficiently, the BW-N20W50+ requires no external cooling equipment.
Compact Size (2.65" x 2.65" x 4.5")	Outstanding performance capability and power handling without prohibitive space constraints.

REV. B  
ECO-024522  
BW-N20W50+  
MCL NY  
260420





### ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Condition (GHz)	Min.	Typ.	Max.	Unit
Frequency Range	-	DC	-	18	GHz
Attenuation	DC - 18	19.0	20.0	21.0	dB
VSWR	IN	-	-	1.45	:1
	OUT	-	-	1.5	
Input Power <sup>1</sup>	DC - 18	-	-	50	W

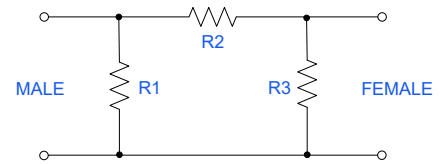
1. Max. power at +25°C ambient, derate linearly to 20 W at +100°C. Peak power 500 W Max. 5 μsec. pulse width, 100 Hz PRF, input N-Male. 5 W max. at N-Female.

### ABSOLUTE MAXIMUM RATINGS<sup>2</sup>

Parameter	Ratings
Operating Temperature <sup>3</sup>	-55°C to +100°C
Storage Temperature	-55°C to +100°C

2. Permanent damage may occur if any of these limits are exceeded.  
3. +85°C with output into open or short.

### ELECTRICAL SCHEMATIC





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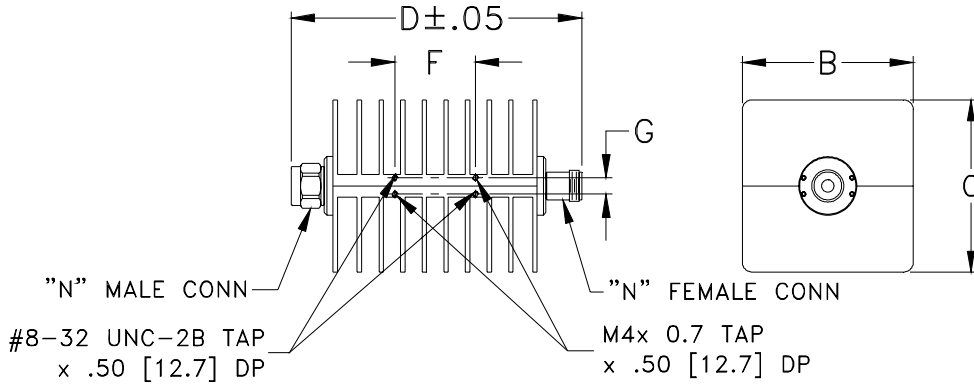
# Precision Fixed Attenuator

## BW-N20W50+

Mini-Circuits

50Ω 50 W 20 dB DC to 18 GHz N-Male to N-Female

### OUTLINE DRAWING



### OUTLINE DIMENSIONS (Inch/mm)

B	C	D	E	F	G	wt.
2.65	2.65	4.50	--	1.25	.25	grams
67.31	67.31	114.30	--	31.75	6.35	720.0



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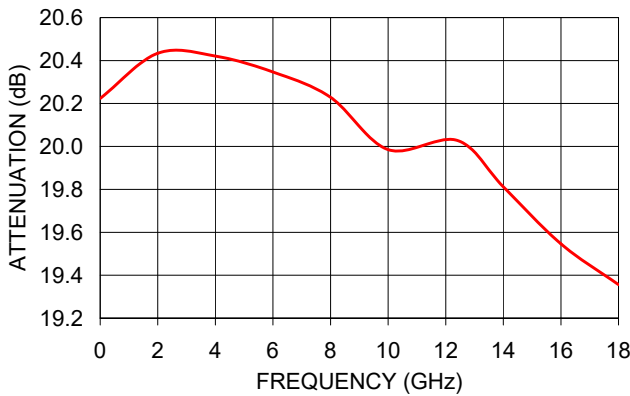
Mini-Circuits

50Ω 50 W 20 dB DC to 18 GHz N-Male to N-Female

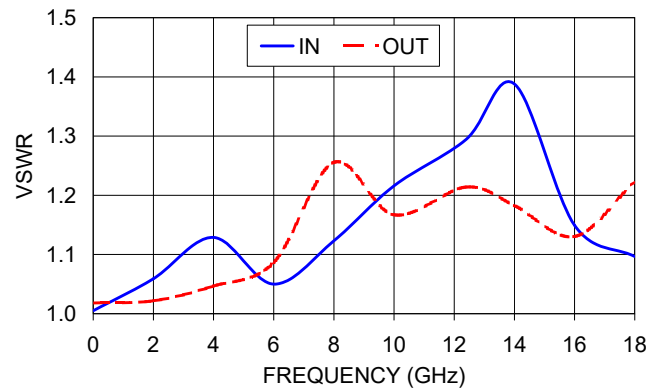
### TYPICAL PERFORMANCE DATA AND CHARTS

Frequency (GHz)	Attenuation (dB)	VSWR (:1)	
		IN	OUT
0.01	20.22	1.01	1.02
2.0	20.43	1.06	1.02
4.0	20.42	1.13	1.05
6.0	20.35	1.05	1.09
8.0	20.23	1.12	1.26
10.0	19.99	1.22	1.17
12.4	20.03	1.29	1.21
14.0	19.81	1.39	1.18
16.0	19.55	1.15	1.13
18.0	19.36	1.10	1.22

BW-N20W50+ ATTENUATION



BW-N20W50+ VSWR



#### NOTES

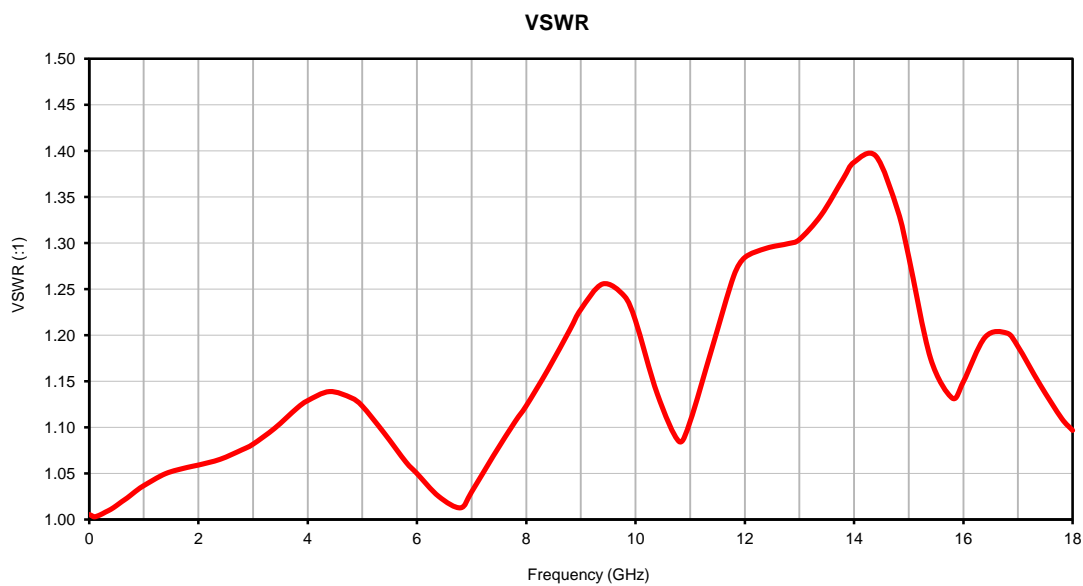
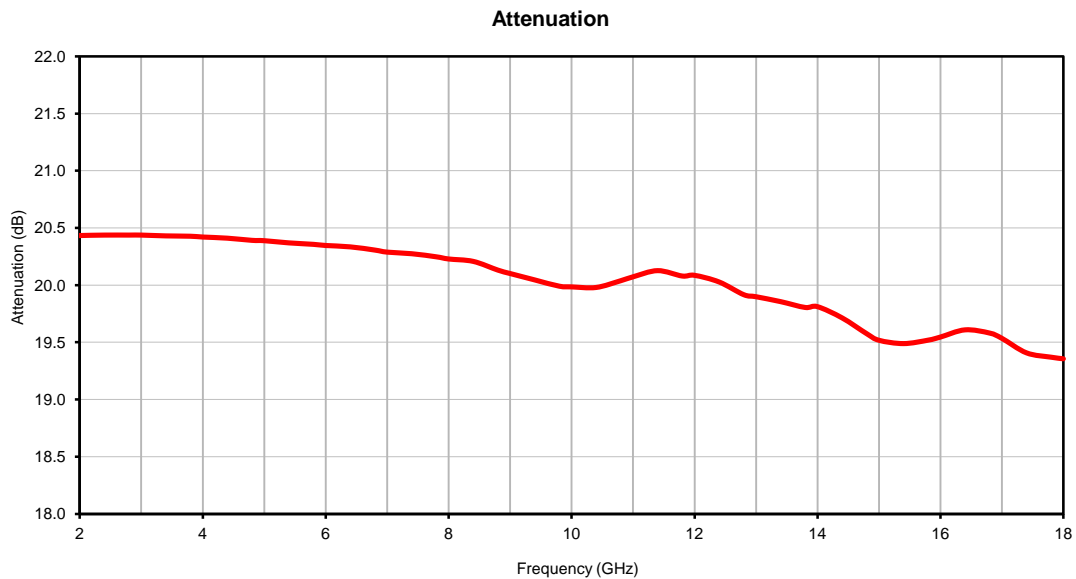
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## Typical Performance Data

FREQUENCY (GHz)	ATTENUATION (dB)	VSWR (:1)
0.01	20.22	1.01
0.05	20.30	1.00
0.1	20.29	1.00
0.2	20.31	1.00
0.3	20.33	1.01
0.4	20.35	1.01
0.5	20.36	1.01
0.6	20.37	1.02
0.7	20.37	1.02
0.8	20.38	1.03
0.9	20.38	1.03
1.0	20.39	1.04
1.4	20.41	1.05
1.8	20.43	1.06
2.0	20.43	1.06
2.4	20.44	1.07
2.8	20.44	1.08
3.0	20.44	1.08
3.4	20.43	1.10
3.8	20.43	1.12
4.0	20.42	1.13
4.4	20.41	1.14
4.8	20.39	1.13
5.0	20.39	1.12
5.4	20.37	1.09
5.8	20.36	1.06
6.0	20.35	1.05
6.4	20.34	1.02
6.8	20.31	1.01
7.0	20.29	1.03
7.4	20.28	1.07
7.8	20.25	1.11
8.0	20.23	1.12
8.4	20.21	1.16
8.8	20.13	1.21
9.0	20.10	1.23
9.4	20.05	1.26
9.8	19.99	1.24
10.0	19.99	1.22
10.4	19.98	1.14
10.8	20.04	1.08
11.0	20.07	1.11
11.4	20.13	1.19
11.8	20.08	1.26
12.0	20.09	1.28
12.4	20.03	1.29
12.8	19.92	1.30
13.0	19.90	1.30
13.4	19.86	1.33
13.8	19.81	1.37
14.0	19.81	1.39
14.4	19.71	1.39
14.8	19.58	1.34
15.0	19.52	1.29
15.4	19.49	1.18
15.8	19.52	1.13
16.0	19.55	1.15
16.4	19.61	1.20
16.8	19.58	1.20
17.0	19.54	1.19
17.4	19.41	1.15
17.8	19.37	1.11
18.0	19.36	1.10

## Typical Performance Curves

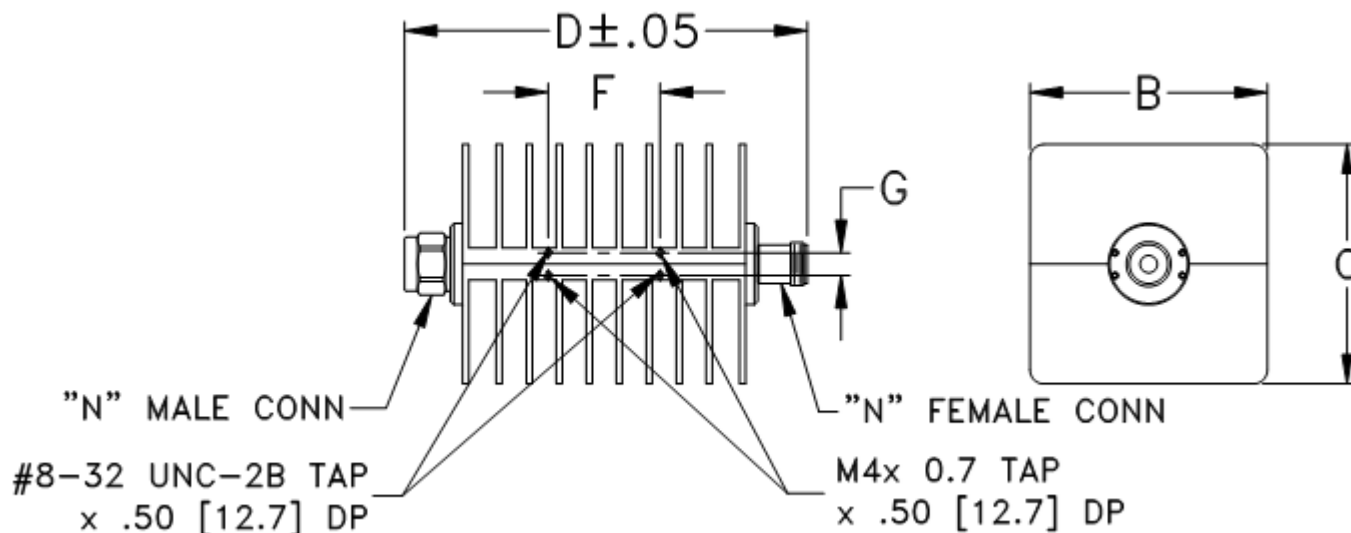


# Case Style

# GH

## Outline Dimensions

## GH1788



CASE #.	A	B	C	D	E	F	G	H	J	WT. GRAM
GH1788	--	2.65 (67.31)	2.65 (67.31)	4.50 (114.30)	--	1.25 (31.76)	.25 (6.35)	--	--	720

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

### Notes:

1. Case Material: Aluminum alloy.
2. Case finish: Black anodize.

**Mini-Circuits®**

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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.

<b>Specification</b>	<b>Test/Inspection Condition</b>	<b>Reference/Spec</b>
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