



COAXIAL

# Precision Fixed Attenuator

# BW-N40W50+

50Ω 50 W 40 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-N40W50+         |
| <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-N40W50+ 40 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-N40W50+ 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-N40W50+ 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-N40W50+ 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-N40W50+  
MCL NY  
260420





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### ELECTRICAL SPECIFICATIONS AT +25°C

| Parameter                | Condition (GHz) | Min. | Typ. | Max. | Unit |
|--------------------------|-----------------|------|------|------|------|
| Frequency Range          | -               | DC   | -    | 18   | GHz  |
| Attenuation              | DC - 18         | 38.5 | 40.0 | 41.5 | dB   |
| VSWR                     | IN              | -    | -    | 1.45 | :1   |
|                          | OUT             | -    | -    | 1.5  |      |
| Input Power <sup>1</sup> | DC - 18         | -    | -    | 50   | W    |

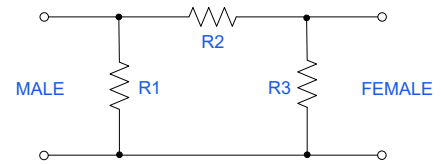
1. Max. power at +25°C ambient, derate linearly to 20 W at +100°C. Peak power 500 W Max. 5 μsec. pulse width, 100 Hz PRF, input N-Male. 5 W max. at N-Female.

### 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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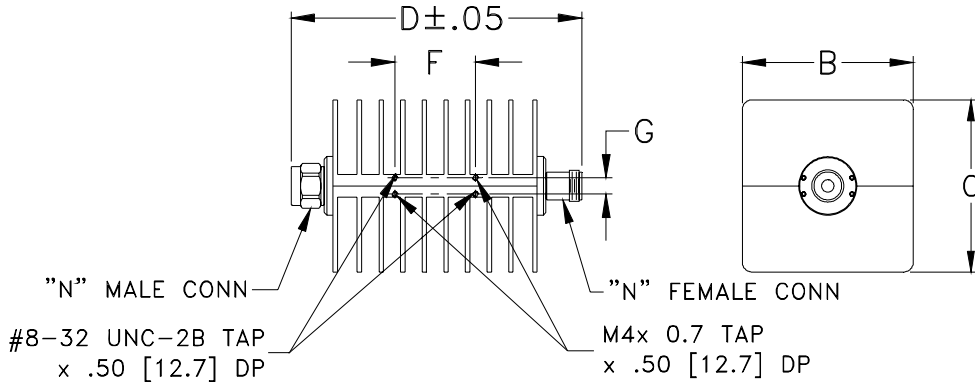
# Precision Fixed Attenuator

## BW-N40W50+

Mini-Circuits

50Ω 50 W 40 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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# Precision Fixed Attenuator

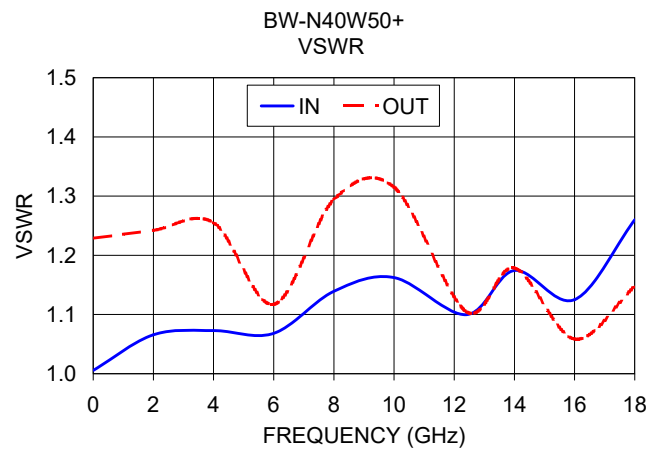
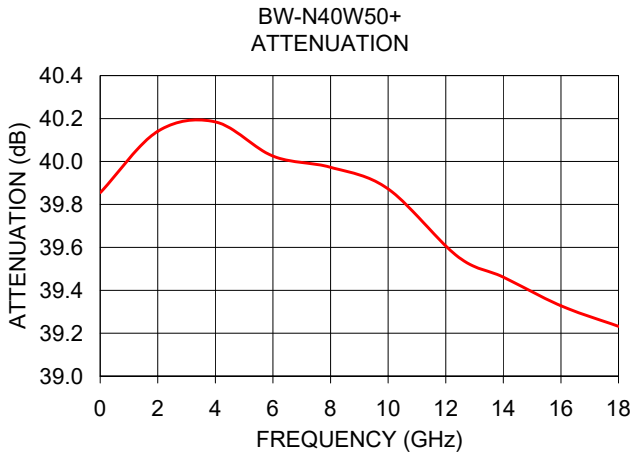
## BW-N40W50+

Mini-Circuits

50Ω 50 W 40 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            | 39.86            | 1.01      | 1.23 |
| 2.0             | 40.14            | 1.07      | 1.24 |
| 4.0             | 40.18            | 1.07      | 1.26 |
| 6.0             | 40.03            | 1.07      | 1.12 |
| 8.0             | 39.97            | 1.14      | 1.29 |
| 10.0            | 39.87            | 1.16      | 1.32 |
| 12.4            | 39.56            | 1.10      | 1.10 |
| 14.0            | 39.46            | 1.17      | 1.18 |
| 16.0            | 39.33            | 1.13      | 1.06 |
| 18.0            | 39.23            | 1.26      | 1.15 |



#### 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-Circuits' 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/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)

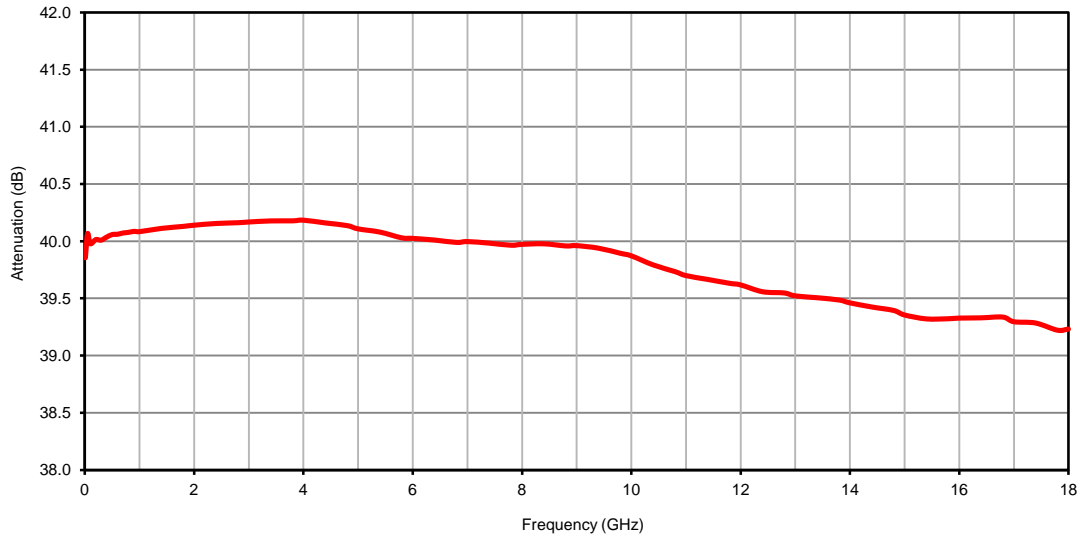


## Typical Performance Data

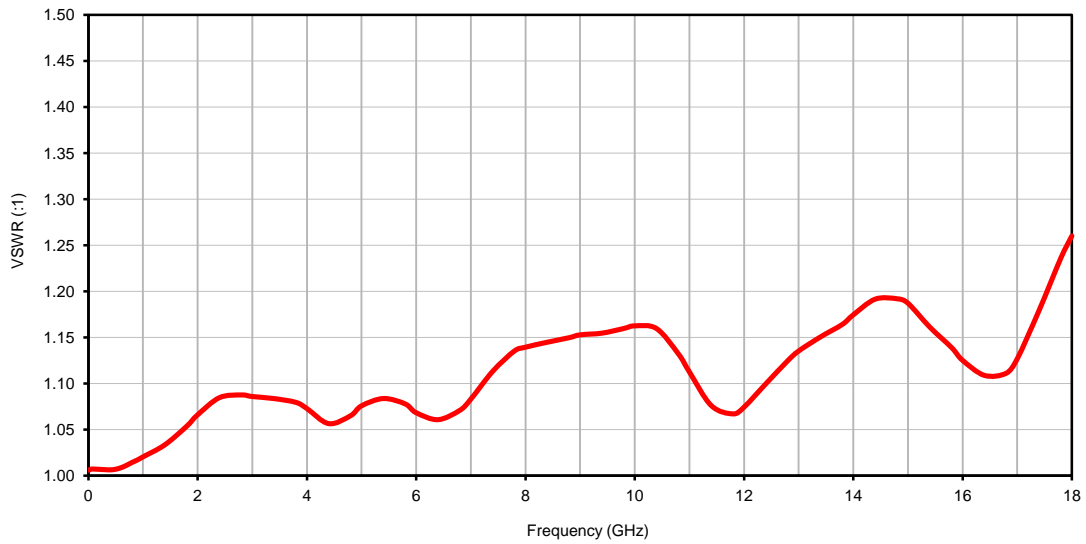
| FREQUENCY<br>(GHz) | ATTENUATION<br>(dB) | VSWR<br>(:1) |
|--------------------|---------------------|--------------|
| 0.01               | 39.86               | 1.01         |
| 0.05               | 40.07               | 1.01         |
| 0.1                | 39.98               | 1.01         |
| 0.2                | 40.01               | 1.01         |
| 0.3                | 40.01               | 1.01         |
| 0.4                | 40.04               | 1.01         |
| 0.5                | 40.06               | 1.01         |
| 0.6                | 40.06               | 1.01         |
| 0.7                | 40.07               | 1.01         |
| 0.8                | 40.08               | 1.01         |
| 0.9                | 40.09               | 1.02         |
| 1.0                | 40.08               | 1.02         |
| 1.4                | 40.11               | 1.03         |
| 1.8                | 40.13               | 1.05         |
| 2.0                | 40.14               | 1.07         |
| 2.4                | 40.16               | 1.08         |
| 2.8                | 40.16               | 1.09         |
| 3.0                | 40.17               | 1.09         |
| 3.4                | 40.18               | 1.08         |
| 3.8                | 40.18               | 1.08         |
| 4.0                | 40.18               | 1.07         |
| 4.4                | 40.16               | 1.06         |
| 4.8                | 40.14               | 1.06         |
| 5.0                | 40.11               | 1.08         |
| 5.4                | 40.08               | 1.08         |
| 5.8                | 40.03               | 1.08         |
| 6.0                | 40.03               | 1.07         |
| 6.4                | 40.01               | 1.06         |
| 6.8                | 39.99               | 1.07         |
| 7.0                | 40.00               | 1.08         |
| 7.4                | 39.98               | 1.11         |
| 7.8                | 39.97               | 1.14         |
| 8.0                | 39.97               | 1.14         |
| 8.4                | 39.98               | 1.14         |
| 8.8                | 39.96               | 1.15         |
| 9.0                | 39.96               | 1.15         |
| 9.4                | 39.94               | 1.15         |
| 9.8                | 39.89               | 1.16         |
| 10.0               | 39.87               | 1.16         |
| 10.4               | 39.79               | 1.16         |
| 10.8               | 39.73               | 1.13         |
| 11.0               | 39.70               | 1.11         |
| 11.4               | 39.67               | 1.08         |
| 11.8               | 39.63               | 1.07         |
| 12.0               | 39.62               | 1.07         |
| 12.4               | 39.56               | 1.10         |
| 12.8               | 39.55               | 1.12         |
| 13.0               | 39.52               | 1.14         |
| 13.4               | 39.51               | 1.15         |
| 13.8               | 39.49               | 1.16         |
| 14.0               | 39.46               | 1.17         |
| 14.4               | 39.43               | 1.19         |
| 14.8               | 39.40               | 1.19         |
| 15.0               | 39.36               | 1.19         |
| 15.4               | 39.32               | 1.16         |
| 15.8               | 39.32               | 1.14         |
| 16.0               | 39.33               | 1.13         |
| 16.4               | 39.33               | 1.11         |
| 16.8               | 39.34               | 1.11         |
| 17.0               | 39.30               | 1.13         |
| 17.4               | 39.28               | 1.18         |
| 17.8               | 39.22               | 1.24         |
| 18.0               | 39.23               | 1.26         |

## Typical Performance Curves

Attenuation



VSWR

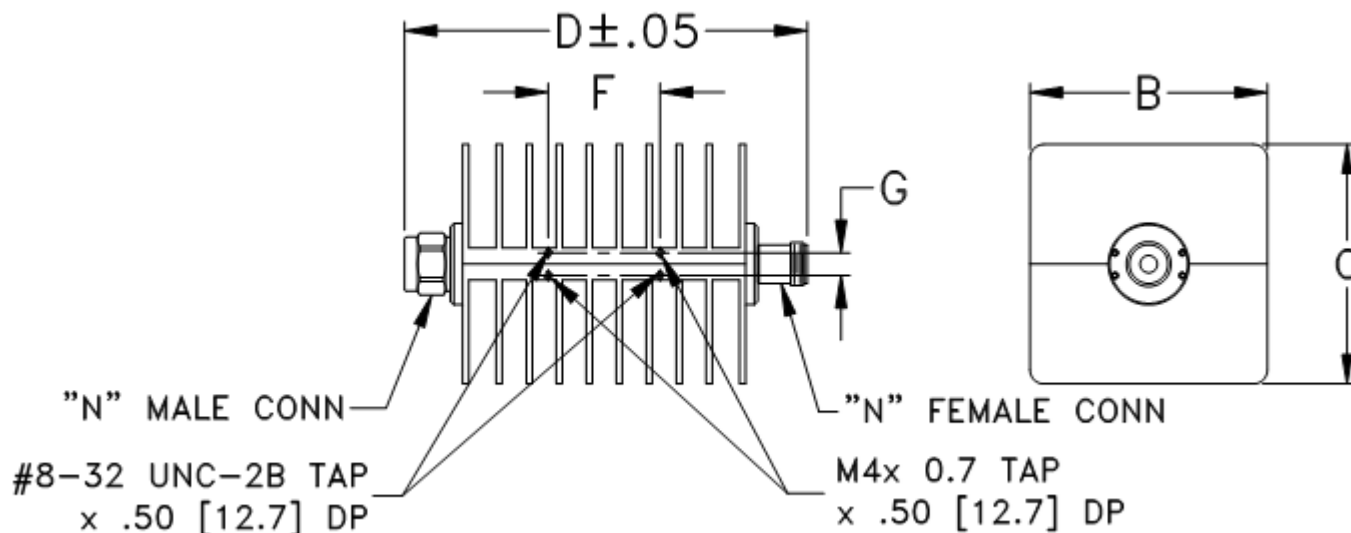


# Case Style

# GH

## Outline Dimensions

## GH1788



| CASE #. | A  | B               | C               | D                | E  | F               | G             | H  | J  | WT. GRAM |
|---------|----|-----------------|-----------------|------------------|----|-----------------|---------------|----|----|----------|
| GH1788  | -- | 2.65<br>(67.31) | 2.65<br>(67.31) | 4.50<br>(114.30) | -- | 1.25<br>(31.76) | .25<br>(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**<sup>®</sup>

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P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

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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<br>Ambient Environment                                                   | Individual Model Data Sheet          |
| Storage Temperature        | -55° to 100° C<br>Ambient Environment                                                  | Individual Model Data Sheet          |
| Barometric Pressure        | 100,000 Feet                                                                           | MIL-STD-202, Method 105, Condition D |
| Humidity                   | 90% RH, 65°C<br>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 |