COAXIAL

Precision Fixed Attenuator BW-20N250W+

50Ω 250W 20dB DC to 8000 MHz N-Male to N-Female

THE BIG DEAL

- Wideband Operation, DC to 8000 MHz
- High Power Handling, 250W
- Excellent VSWR, 1.14 Typ.
- Excellent Flatness, ±0.6 dB Typ.
- Uni-directional power rating

Generic photo used for illustration purposes only

Model No.	BW-20N250W+
Case Style	GH3249
Connectors	N-Male to N-Female

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

APPLICATIONS

- Test and Measurement Equipment
- LTE & 5G MIMO Infrastructure
- Satellite Communications
- Radar, EW, and ECM Defense Systems

PRODUCT OVERVIEW

Mini-Circuits' BW-20N250W+ is a 20 dB coaxial precision fixed unidirectional attenuator providing high power handling of up to 250W over the DC to 8 GHz frequency range. This model supports many of high-power applications requiring precise attenuation over a broad frequency range including high-power measurement, instrumentation and more. It provides excellent VSWR (1.14 typ.), outstanding attenuation flatness (±0.6 dB) and excellent thermal stability from -55 to 125˚C. It features rugged construction with N-male to N-female connectors and heat dissipation fins for efficient cooling.

KEY FEATURES

Features	Advantages
Wideband Operation, DC to 8000 MHz	Wide frequency range makes the BW-20N250W+ suitable for a wide variety of applications.
High power handling to 250W	Supports high-power test lab and system applications by protecting sensitive test equipment that is often damaged when exposed to high RF input power.
Excellent VSWR, 1.14:1 typ.	Well-matched for 50Ω systems; reduces effects of phase variation
Excellent flatness, ±0.6 dB	Provides consistent attenuation performance across the entire frequency band.
Rugged construction	Excellent durability for a long lifetime of use
Wide operating temperature range, -55 to 125˚C	Designed with heat dissipation fins for efficient cooling, the BW-20N250W+ provides reliable performance over extreme operating conditions. Note: See max power derating at high temperature.

REV. OR
ECO-016158
BW-20N250W+
MCL NY
221215

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ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range	-	DC	-	8000	MHz
Attenuation	DC-2000	19	19.8	21	dB
	2000-4000	19	20.0	21	
	4000-6000	18.5	20.3	21.5	
	6000-8000	17.5	20.7	22.5	
Attenuation Flatness (±)	DC-8000	-	0.6	-	dB
VSWR	DC-2000	-	1.06	1.20	:1
	2000-4000	-	1.12	1.35	
	4000-6000	-	1.19	1.40	
	6000-8000	-	1.18	1.50	
Input Power (N- Male Input)[1]	DC-8000	-	-	250	W
Input Power (N- Female Output)	DC-8000	-	-	15	W

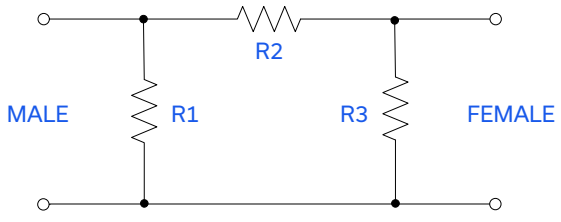
1. Max. input power at 25°C ambient, derate to 25W at 125°C.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Case Temperature	-55 °C to +125 °C
Storage Temperature	-55 °C to +125 °C
Input Power (N-Male Input)	250 Watt
Input Power (N-Female Output)	15 Watt
Input Peak Power[2]	1000 Watt.

1. Permanent damage may occur if any of these limits are exceeded.
2. Peak power <5 µSEC. PW, /<0.1% duty cycle.
⚠This model is uni-directional relative to the specific power rating i.e the power rating at the N-Male port is not equal to the power rating for signals input to the N-Female port.

FUNCTIONAL DIAGRAM



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COAXIAL CONNECTIONS

Input	N-Male
Output	N-Female

CONNECTOR SPECIFICATIONS

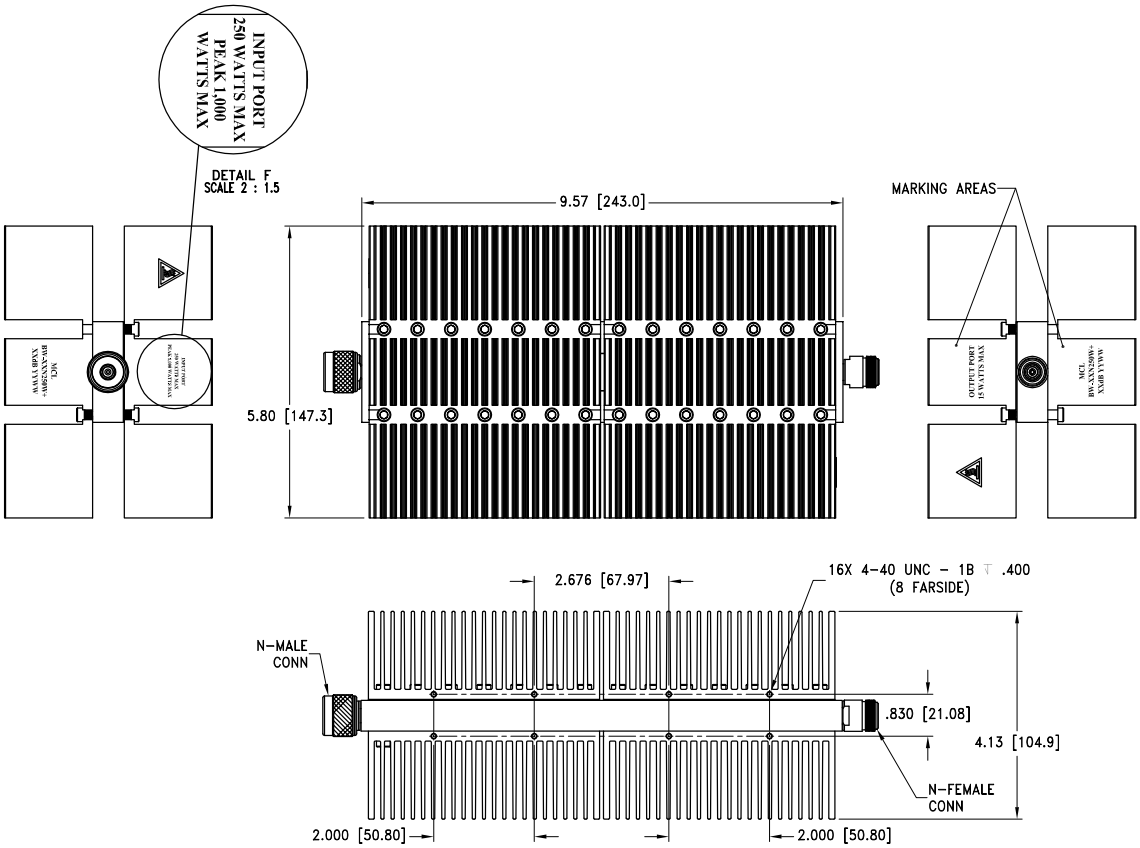
Description	Connector 1	Connector 2
Type	N-Male	N-Female
Orientation	Straight	
Mounting Type	Standard	
Impedance	50 Ω	
Coupling Nuts	Stainless Steel, Silver Plated	
Center Contacts	BeCu, Silver Plated	

MECHANICAL SPECIFICATIONS

Housing	Aluminum Alloy, Chemical Conversion Coat
Heat Sinks	Aluminum Alloy, Black Anodize Finish (0.5°C/Watt)[1]
Internal Resistive Elements	Beryllium Oxide Or Aluminum Nitride Ceramic With Thick Film And/Or Thin Film Resistor

1. Heat sink thermal rise (calculated)

OUTLINE DRAWING



Weight (MAX.): 3820 grams
Dimensions are in inches (mm). Tolerances: 2 Pl.±.05[1.27]; 3 PL ±.030[.77]

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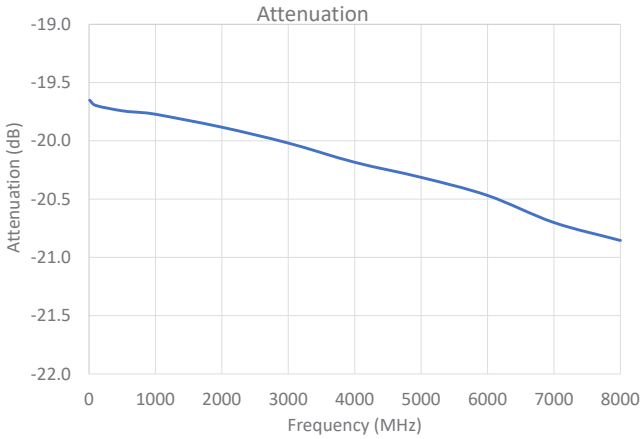
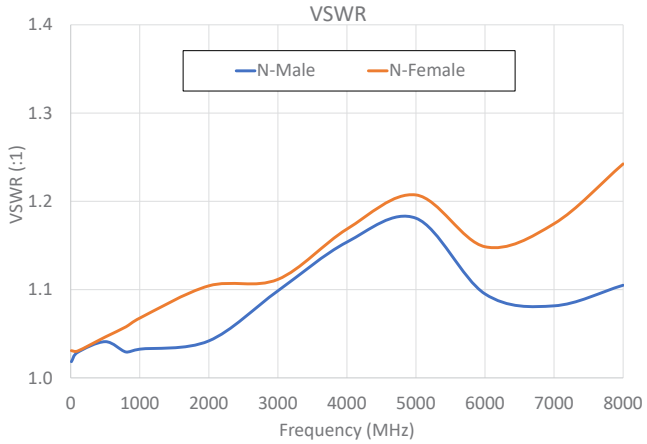
TYPICAL PERFORMANCE CURVES





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/terms/viewterm.html

Fixed Attenuator BW-20N250W+

Typical Performance Data

FREQUENCY (MHz)	ATTENUATION (dB)	VSWR (:1) N-Male	VSWR (:1) N-Female
10	19.65	1.02	1.03
100	19.70	1.03	1.03
500	19.74	1.04	1.05
1000	19.77	1.03	1.07
1200	19.80	1.02	1.08
1400	19.84	1.03	1.09
1600	19.85	1.04	1.09
1800	19.86	1.04	1.10
2000	19.88	1.04	1.10
2200	19.90	1.06	1.11
2400	19.93	1.08	1.11
2600	19.96	1.06	1.11
2800	19.98	1.06	1.11
3000	20.02	1.10	1.11
3200	20.05	1.10	1.12
3400	20.09	1.08	1.13
3600	20.09	1.16	1.14
3800	20.16	1.18	1.16
4000	20.18	1.15	1.17
4200	20.20	1.21	1.18
4400	20.22	1.21	1.19
4600	20.24	1.16	1.20
4800	20.27	1.17	1.21
5000	20.31	1.18	1.21
5200	20.34	1.18	1.20
5400	20.35	1.14	1.19
5600	20.38	1.12	1.17
5800	20.42	1.08	1.16
6000	20.47	1.10	1.15
6200	20.52	1.13	1.14
6400	20.55	1.11	1.13
6600	20.58	1.08	1.14
6800	20.64	1.06	1.15
7000	20.70	1.08	1.17
7200	20.75	1.10	1.20
7400	20.77	1.08	1.22
7600	20.78	1.09	1.23
7800	20.80	1.11	1.24
8000	20.85	1.10	1.24

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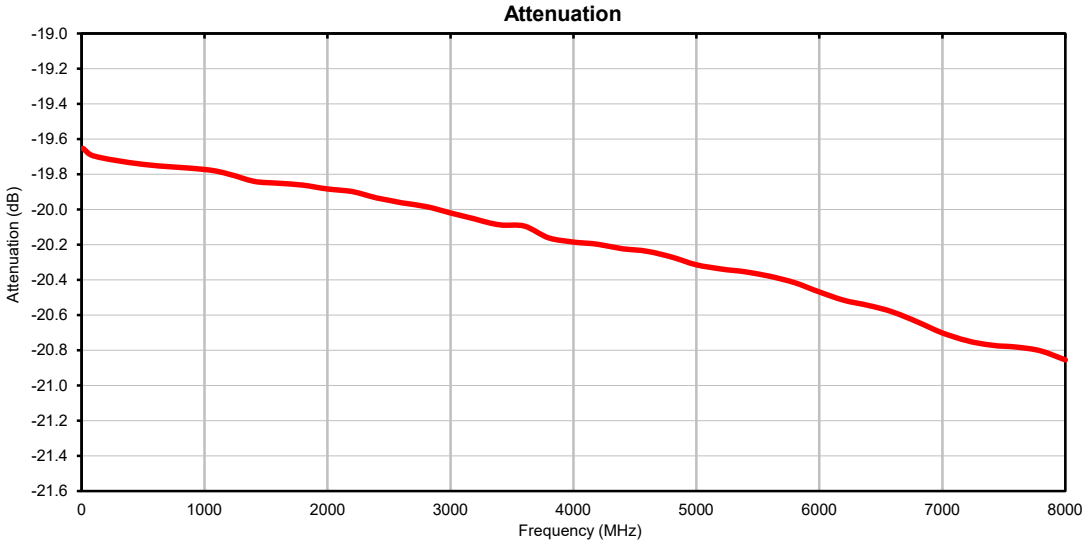
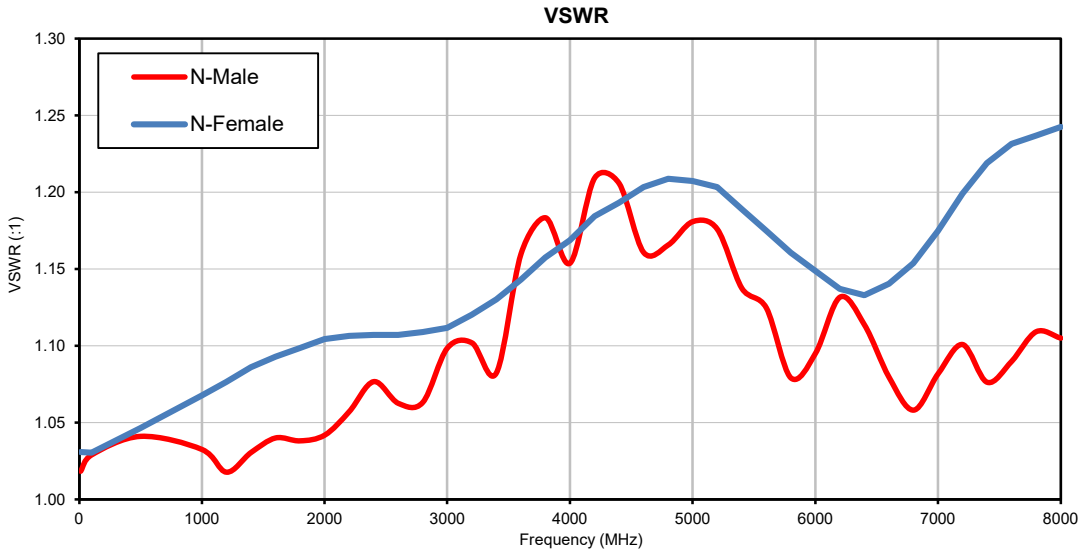
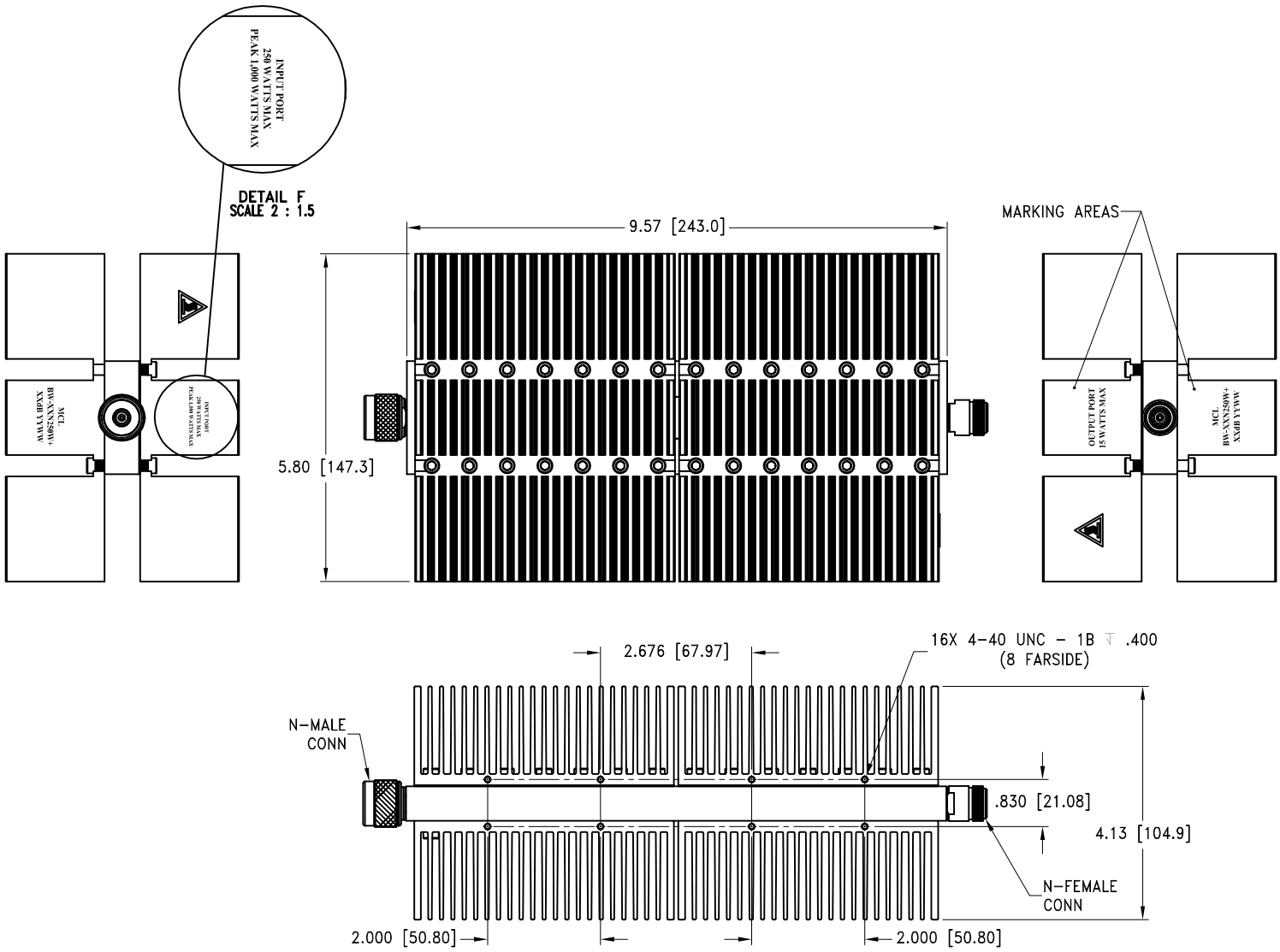
Typical Performance Curves





Case Style GH

Outline Dimensions GH3249



Weight (MAX.): 3820 grams

Dimensions are in inches (mm). Tolerances: 2 Pl.±.05[1.27]; 3 Pl. ±.030[.77]

Notes:

1. Case material: Aluminum alloy
2. Case Finish: Chemical conversion coat
3. Heat sinks material: Aluminum alloy
4. Heat sinks Finish: Black anodize

Mini-Circuits®

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Environmental Specifications ENV28T20

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 125° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 125° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 125°C, 5 cycles	MIL-STD-202, Method 107
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
Connector Durability	500 mating/unmating cycles	MIL-PRF-39012E, PARAGRAPH 4.6.12