



COAXIAL

Fixed Attenuator

HAT-A-SERIES

Mini-Circuits

50Ω

Up to 2W

DC to 2000 MHz

THE BIG DEAL

- Wideband coverage, DC to 2000 MHz
- Up to 2 Watt rating
- Rugged unibody construction
- Excellent VSWR
- Excellent flatness

APPLICATIONS

- Signal level adjustment
- Impedance matching



Generic photo used for illustration purposes only

| | |
|------------|---------------------|
| Model No. | HAT-A-SERIES |
| Case Style | FF747 |
| Connectors | BNC Male-BNC Female |

+RoHS Compliant

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

PRODUCT OVERVIEW

Mini-Circuits' HAT-A series are fixed attenuators from DC to 2000 MHz frequency range with excellent flatness in attenuation. HAT-A series is available with nominal attenuation of 1 to 30 dB. This attenuator series support testing and measurement application. Precise performance, excellent VSWR and rugged unibody construction makes this model ideal solution for systems requiring precise attenuation across very wide frequency range.

KEY FEATURES

| Feature | Advantages |
|---------------------|---|
| Rugged construction | Excellent durability for a long lifetime of use |
| Up to 2 Watt rating | Good power handling |
| Excellent VSWR | Well matched for 50 Ω systems |
| Flat attenuation | Good performance over the band. |

Mini-Circuits



COAXIAL

Fixed Attenuator

HAT-7A+

MAXIMUM RATINGS

| | |
|-----------------------|----------------|
| Operating Temperature | -45°C to 100°C |
| Storage Temperature | -55°C to 100°C |

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

OUTLINE DRAWING

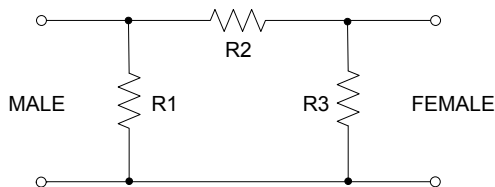


OUTLINE DIMENSIONS (Inch/mm)

| | | |
|-------|-------|-------|
| B | D | wt |
| .62 | 1.94 | grams |
| 15.75 | 49.28 | 30.0 |

Note: Please refer to case style drawing for details

ELECTRICAL SCHEMATIC



ELECTRICAL SPECIFICATIONS AT 25°C

| Parameter | Condition (MHz) | Min. | Typ. | Max. | Unit |
|---|-----------------|------|---------|------|------|
| Frequency Range | | DC | - | 2000 | MHz |
| Attenuation ¹ nominal ³ | 10 | - | 7 ± 0.3 | - | dB |
| Attenuation Flatness ² | DC - 500 | - | 0.15 | - | dB |
| | DC - 1000 | - | 0.15 | - | |
| | DC - 2000 | - | 0.20 | - | |
| VSWR | DC - 500 | - | 1.15 | - | :1 |
| | DC - 1000 | - | 1.20 | - | |
| | DC - 2000 | - | 1.20 | - | |
| Input Power ⁴ | | - | - | 1.3 | W |

1. Attenuation varies by 0.3 dB max. over temperature.

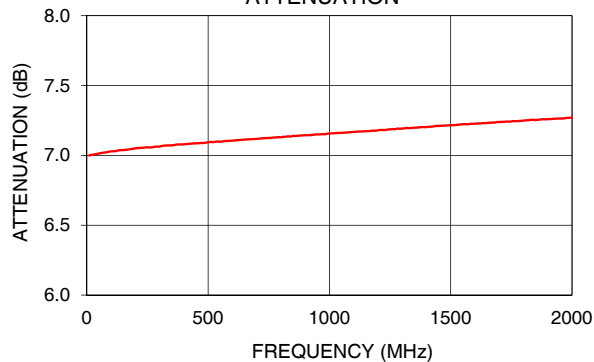
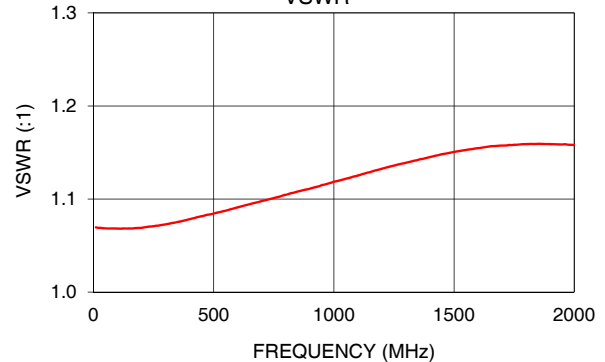
2. Flatness = variation over band divided by 2.

3. Nominal attenuation at 10 MHz

4. RF power at 25°C is 1.3W; Derate linearly to 1.0W at 85°C

TYPICAL PERFORMANCE DATA

| Frequency (MHz) | Attenuation (dB) | VSWR (:1) |
|-----------------|------------------|-----------|
| 10 | 7.00 | 1.07 |
| 50 | 7.01 | 1.07 |
| 100 | 7.03 | 1.07 |
| 250 | 7.06 | 1.07 |
| 400 | 7.08 | 1.08 |
| 500 | 7.09 | 1.08 |
| 600 | 7.11 | 1.09 |
| 800 | 7.13 | 1.10 |
| 1000 | 7.16 | 1.12 |
| 1200 | 7.18 | 1.13 |
| 1300 | 7.19 | 1.14 |
| 1500 | 7.22 | 1.15 |
| 1700 | 7.24 | 1.16 |
| 1800 | 7.25 | 1.16 |
| 2000 | 7.27 | 1.16 |

HAT-7A+
ATTENUATIONHAT-7A+
VSWR

NOTES

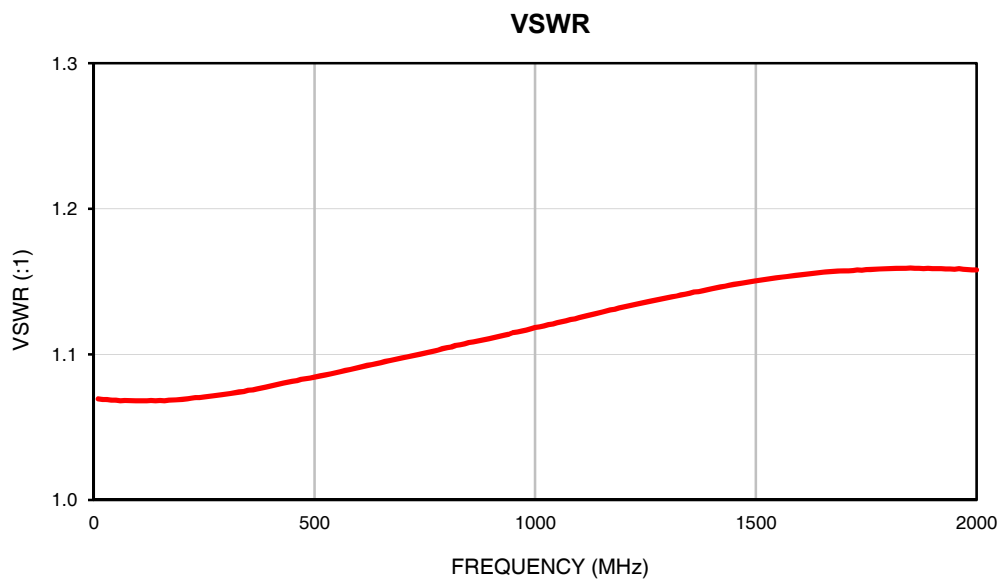
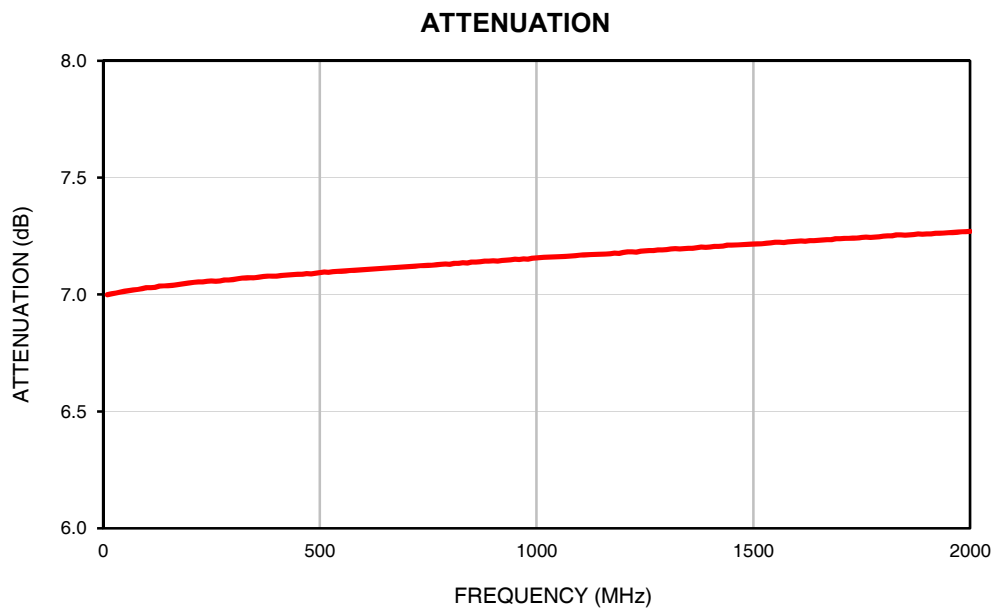
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Typical Performance Data

| FREQ. | ATTENUATION | VSWR |
|-------|-------------|------|
| (MHz) | (dB) | (:1) |
| 10 | 7.00 | 1.07 |
| 20 | 7.00 | 1.07 |
| 50 | 7.01 | 1.07 |
| 80 | 7.02 | 1.07 |
| 100 | 7.03 | 1.07 |
| 120 | 7.03 | 1.07 |
| 150 | 7.04 | 1.07 |
| 180 | 7.04 | 1.07 |
| 210 | 7.05 | 1.07 |
| 240 | 7.06 | 1.07 |
| 270 | 7.06 | 1.07 |
| 300 | 7.06 | 1.07 |
| 330 | 7.07 | 1.07 |
| 360 | 7.07 | 1.08 |
| 390 | 7.08 | 1.08 |
| 420 | 7.08 | 1.08 |
| 450 | 7.09 | 1.08 |
| 480 | 7.09 | 1.08 |
| 500 | 7.09 | 1.08 |
| 530 | 7.10 | 1.09 |
| 560 | 7.10 | 1.09 |
| 590 | 7.10 | 1.09 |
| 620 | 7.11 | 1.09 |
| 650 | 7.11 | 1.09 |
| 680 | 7.12 | 1.10 |
| 710 | 7.12 | 1.10 |
| 750 | 7.13 | 1.10 |
| 780 | 7.13 | 1.10 |
| 810 | 7.13 | 1.11 |
| 840 | 7.14 | 1.11 |
| 890 | 7.14 | 1.11 |
| 920 | 7.15 | 1.11 |
| 950 | 7.15 | 1.11 |
| 980 | 7.15 | 1.12 |
| 1000 | 7.16 | 1.12 |
| 1030 | 7.16 | 1.12 |
| 1050 | 7.16 | 1.12 |
| 1080 | 7.17 | 1.12 |
| 1110 | 7.17 | 1.13 |
| 1150 | 7.17 | 1.13 |
| 1180 | 7.18 | 1.13 |
| 1200 | 7.18 | 1.13 |
| 1230 | 7.18 | 1.13 |
| 1250 | 7.19 | 1.14 |
| 1280 | 7.19 | 1.14 |
| 1300 | 7.19 | 1.14 |
| 1350 | 7.20 | 1.14 |
| 1400 | 7.20 | 1.15 |
| 1450 | 7.21 | 1.15 |
| 1500 | 7.22 | 1.15 |
| 1550 | 7.22 | 1.15 |
| 1600 | 7.23 | 1.15 |
| 1650 | 7.23 | 1.16 |
| 1700 | 7.24 | 1.16 |
| 1750 | 7.24 | 1.16 |
| 1800 | 7.25 | 1.16 |
| 1850 | 7.25 | 1.16 |
| 1900 | 7.26 | 1.16 |
| 1950 | 7.26 | 1.16 |
| 2000 | 7.27 | 1.16 |

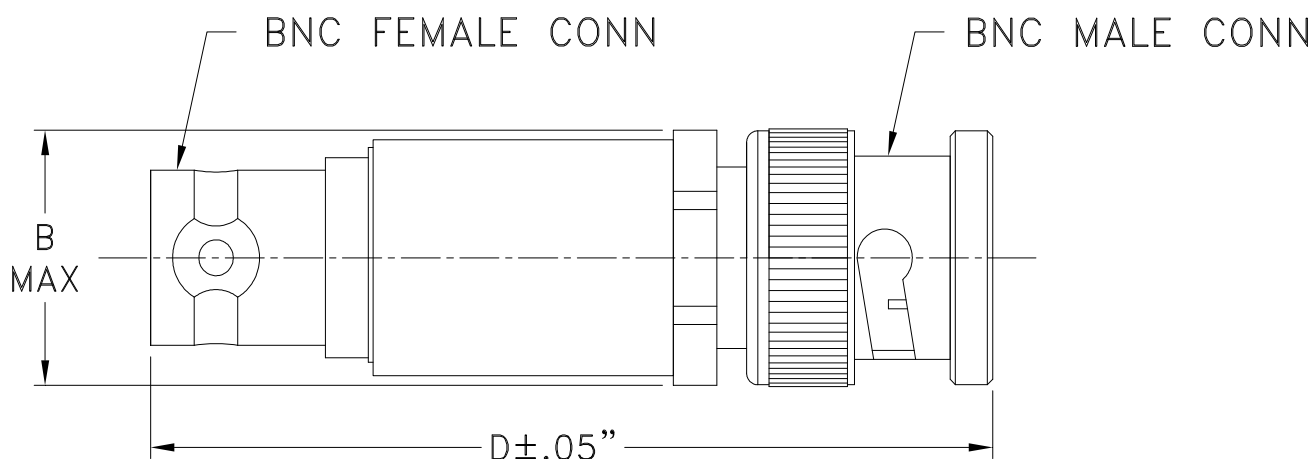
Typical Performance Curves



Case Style

FF

Outline Dimensions

FF747

| CASE #. | A | B | C | D | E | WT GRAMS |
|---------|----|----------------|----|-----------------|----|----------|
| FF747 | -- | .62 (15.75) | -- | 1.94 (49.28) | -- | 30.0 |

Dimensions are in inches (mm). Tolerances: 2Pl. $\pm .04$; 3Pl. $\pm .030$

Notes:

1. Case material: Brass.
2. Case finish: Nickel plate.



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The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS



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 | -45° 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 |