COAXIAL

Fixed Attenuator

HAT-12A+

50Ω Up to 1.1 W DC to 2000 MHz 12 dB Attenuation

THE BIG DEAL

- Wideband Coverage, DC to 2000 MHz
- Up to 1.1 Watt Power Handling
- Rugged Unibody Construction
- Excellent VSWR
- Excellent Flatness



Generic photo used for illustration purposes only

APPLICATIONS

- Signal Level Adjustment
- Impedance Matching

Model No.	HAT-12A+
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 1.1 Watt power handling	Good power handling
Excellent VSWR	Well matched for 50 Ω systems
Flat attenuation	Good performance over the band

COAXIAL

Fixed Attenuator

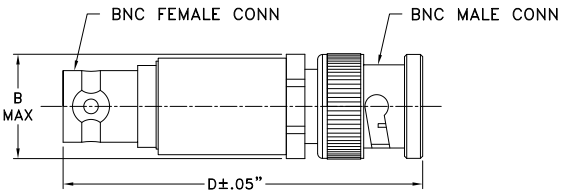
HAT-12A+

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

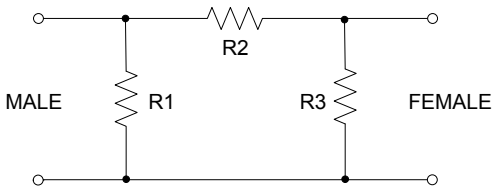


OUTLINE DIMENSIONS (Inch / mm)

B	D	wt
.62	1.94	grams
15.75	49.28	30.0

Note: Please refer to case style drawing for details

ELECTRICAL SCHEMATIC



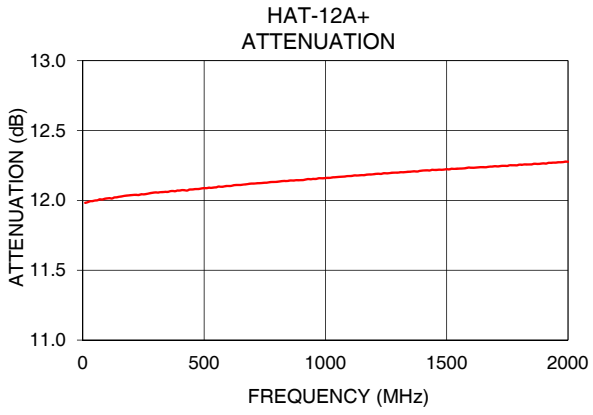
ELECTRICAL SPECIFICATIONS AT 25°C

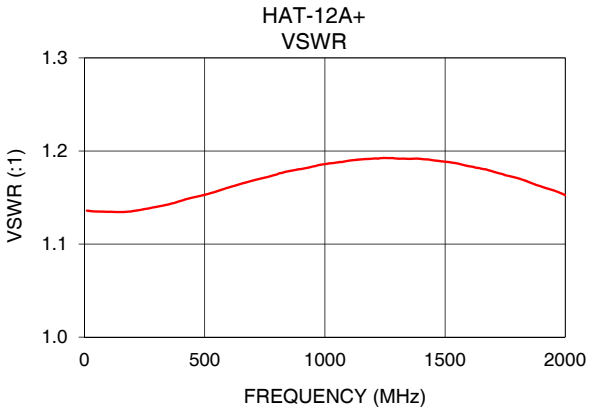
Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		DC	-	2000	MHz
Attenuation[1] nominal[3]	10	-	12 ± 0.3	-	dB
Attenuation Flatness[2]	DC - 500	-	0.20	-	dB
	DC - 1000	-	0.20	-	
	DC - 2000	-	0.30	-	
VSWR	DC - 500	-	1.30	-	:1
	DC - 1000	-	1.30	-	
	DC - 2000	-	1.35	-	
Input Power[4]		-	-	1.1	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. Maximum RF power at 25°C is 1.1 W; Derate linearly to 0.8 W at 85°C

TYPICAL PERFORMANCE DATA

Frequency (MHz)	Attenuation (dB)	VSWR (:1)
10	11.98	1.14
50	12.00	1.14
100	12.01	1.13
250	12.04	1.14
400	12.07	1.15
500	12.09	1.15
600	12.10	1.16
800	12.13	1.17
1000	12.16	1.19
1200	12.19	1.19
1300	12.20	1.19
1500	12.22	1.19
1700	12.25	1.18
1800	12.26	1.17
2000	12.28	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-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/MCLStore/terms.jsp

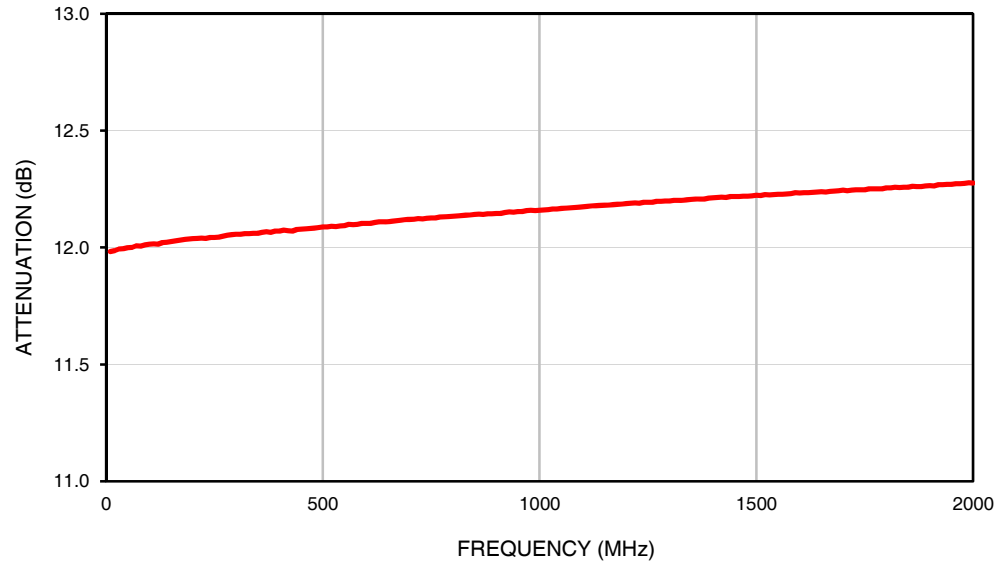
Coaxial Fixed Attenuator HAT-12A+

Typical Performance Data

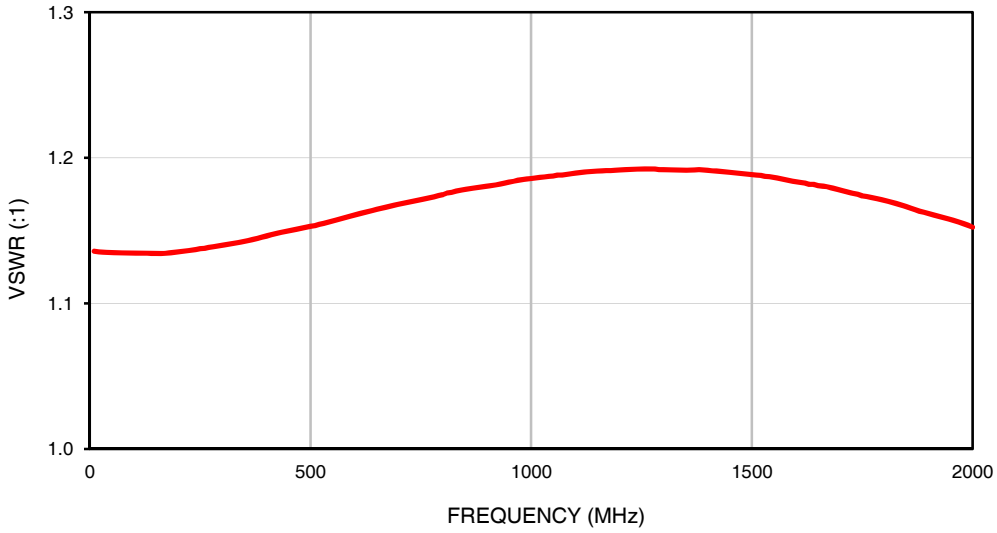
FREQ. (MHz)	ATTENUATION (dB)	VSWR (:1)
10	11.98	1.14
20	11.99	1.14
50	12.00	1.14
80	12.01	1.13
100	12.01	1.13
120	12.01	1.13
150	12.03	1.13
180	12.03	1.13
210	12.04	1.14
240	12.04	1.14
270	12.05	1.14
300	12.06	1.14
330	12.06	1.14
360	12.07	1.14
390	12.07	1.15
420	12.07	1.15
450	12.08	1.15
480	12.08	1.15
500	12.09	1.15
530	12.09	1.16
560	12.10	1.16
590	12.10	1.16
620	12.11	1.16
650	12.11	1.16
680	12.12	1.17
710	12.12	1.17
750	12.13	1.17
780	12.13	1.17
810	12.14	1.18
840	12.14	1.18
890	12.14	1.18
920	12.15	1.18
950	12.15	1.18
980	12.16	1.19
1000	12.16	1.19
1030	12.16	1.19
1050	12.17	1.19
1080	12.17	1.19
1110	12.18	1.19
1150	12.18	1.19
1180	12.19	1.19
1200	12.19	1.19
1230	12.19	1.19
1250	12.19	1.19
1280	12.20	1.19
1300	12.20	1.19
1350	12.21	1.19
1400	12.21	1.19
1450	12.22	1.19
1500	12.22	1.19
1550	12.23	1.19
1600	12.23	1.18
1650	12.24	1.18
1700	12.25	1.18
1750	12.25	1.17
1800	12.26	1.17
1850	12.26	1.17
1900	12.27	1.16
1950	12.27	1.16
2000	12.28	1.15

Typical Performance Curves

ATTENUATION

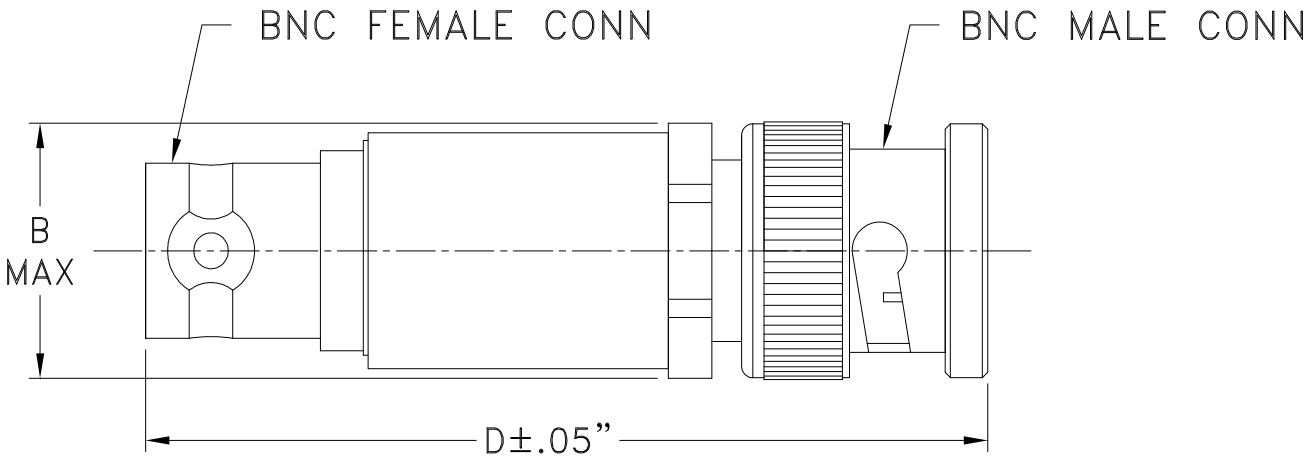


VSWR



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. ± .04; 3Pl. ± .030

Notes:

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

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Mini-Circuits

Environmental Specifications **ENV28T6**

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

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