



Mini-Circuits

COAXIAL

# Flexible Cable

**AP110-XXFT-W1M+**

50Ω DC to 110 GHz 1.0 mm-Male to 1.0 mm-Male

## KEY FEATURES

- Ultra-Wideband DC to 110 GHz
- High Return Loss, 28.6 dB Typ. Across Full Band
- Extremely Flexible

## APPLICATIONS

- Optical Communications
- Test & Measurement
- High-Speed Data Systems
- Instrumentation
- Precision Measurement



*Generic photo used for illustration purposes only*

### HANDLING INSTRUCTIONS

1.0 mm connectors require specific handling and torque values.  
See MiniCircuits Application Note AN-71-001 for details.

## PRODUCT OVERVIEW

The AP110 series carries on Mini-Circuits' commitment to quality, consistency, performance, and value. This series was designed primarily with the goal of exhibiting extreme flexibility for difficult routing challenges, while maintaining improved attenuation and unparalleled RF stability with excellent VSWR and low insertion loss properties. These DC-110 GHz test cable assemblies are designed for testing requirements where 1.0 mm connectors are utilized in various applications including lab testing, automotive testing, military radar testing, and semiconductor probe testing.

The AP110-XXFT-W1M+ 1.0 mm-Male to 1.0 mm-Male cable family is ideal for interconnecting coaxial components and subassemblies in a wide range of systems, including test and measurement, instrumentation, and more. Available in 0.5 FT and 1 FT lengths.

ABSOLUTE MAXIMUM RATINGS<sup>1</sup>

| Electrical Specifications         |     |
|-----------------------------------|-----|
| Operation Frequency (GHz)         | 110 |
| Impedance (Ω)                     | 50  |
| Velocity of Propagation (%)       | 70  |
| Shielding Effectiveness Min. (dB) | 90  |
| Voltage Withstand Min. (VDC)      | 500 |

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

| Mechanical & Environmental Specifications |                        |
|-------------------------------------------|------------------------|
| Operating Case Temperature <sup>2</sup>   | -45 °C to +80 °C       |
| Storage Temperature                       | -45 °C to +80 °C       |
| Bend Radius: Installation mm [in]         | 5 [0.20]               |
| Bend Radius: Repeated mm [in]             | 10 [0.39]              |
| Weight (g)                                | 8.0 + (1.68 x L) + 1.2 |

2. Temperature extremes are not intended for continuous normal operation.

| AP110-XXFT-W1M+ (Typical @ +25 °C) dB |                |      |      |             |      |      |       |
|---------------------------------------|----------------|------|------|-------------|------|------|-------|
| Frequency (GHz)                       | Insertion Loss |      |      | Return Loss |      |      | Units |
|                                       | Min.           | Typ. | Max. | Min.        | Typ. | Max. |       |
| AP110-0.5FT-W1M+                      |                |      |      |             |      |      |       |
| DC – 35                               | -              | 1.0  | 3.7  | 13.5        | 31.0 | -    | dB    |
| 35 – 75                               | -              | 1.8  | 3.7  | 13.5        | 28.5 | -    |       |
| 75 – 110                              | -              | 2.7  | 3.7  | 13.5        | 26.4 | -    |       |
| AP110-1FT-W1M+                        |                |      |      |             |      |      |       |
| DC – 35                               | -              | 1.8  | 6.3  | 14.0        | 32.2 | -    | dB    |
| 35 – 75                               | -              | 3.2  | 6.3  | 14.0        | 29.4 | -    |       |
| 75 – 110                              | -              | 4.8  | 6.3  | 14.0        | 25.9 | -    |       |

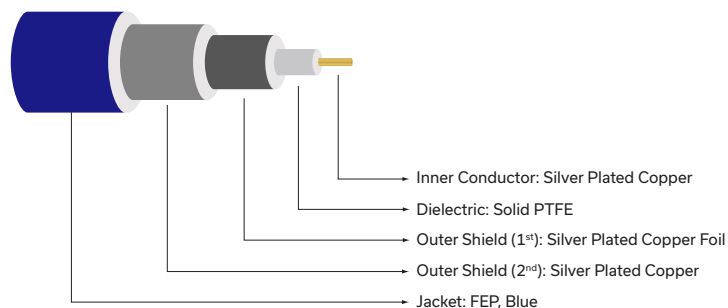
| Power (VSWR = 1.0; +25 °C; Sea Level) W |      |      |      |      |      |     |      |     |     |     |     |
|-----------------------------------------|------|------|------|------|------|-----|------|-----|-----|-----|-----|
| Frequency (GHz)                         | 2    | 4    | 6    | 8    | 10   | 18  | 26.5 | 40  | 50  | 67  | 110 |
| Avg. Power (W)                          | 25.8 | 17.9 | 14.4 | 12.3 | 10.9 | 7.9 | 6.3  | 5.0 | 4.3 | 3.6 | 2.7 |



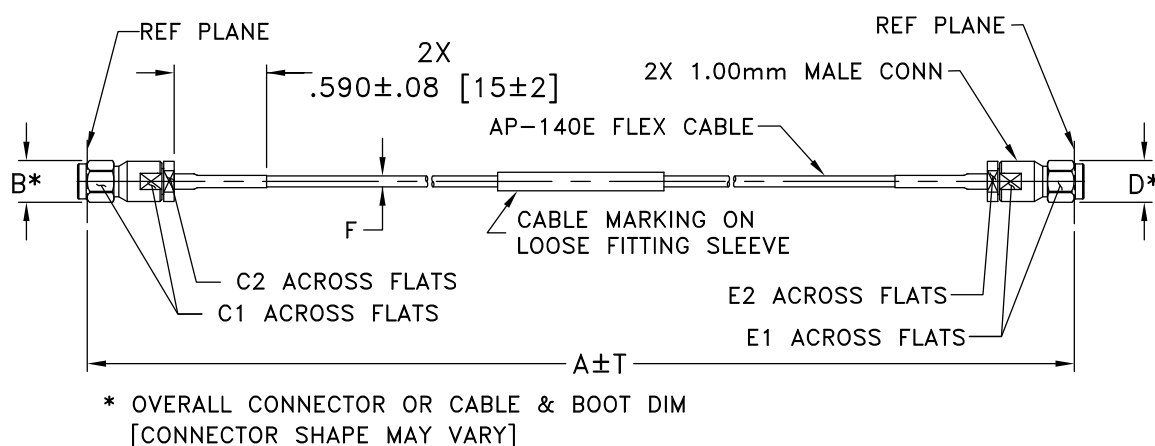
## COAXIAL CONNECTIONS

| Description    | Connector 1 | Connector 2 |
|----------------|-------------|-------------|
| Connector Type | 1.0 mm-Male | 1.0 mm-Male |
| Orientation    | Straight    | Straight    |

## CABLE CONSTRUCTION



## CASE STYLE DRAWING



Unless Otherwise Specified dimensions are in inches [mm],  
 Tolerances: 2 PL± .03; 3 PL± .015 inches

1. AP-140E Flexible Cable.
2. "A" Represents Length of Cable.

| A    |            | B             | C1             | C2             | D             | E1              | E2             | F              | T           |             | Weight (g) |
|------|------------|---------------|----------------|----------------|---------------|-----------------|----------------|----------------|-------------|-------------|------------|
| Inch | Millimeter |               |                |                |               |                 |                |                | Inch        | Millimeter  |            |
| 6    | 152.4      | .27<br>(6.90) | .236<br>(6.00) | .217<br>(5.50) | .27<br>(6.90) | 0.236<br>(6.00) | .217<br>(5.50) | .056<br>(1.42) | +0.10/-0.10 | +2.54/-2.54 | 10.04      |
| 12   | 304.8      |               |                |                |               |                 |                |                | +0.15/-0.15 | +3.81/-3.81 | 10.88      |

## PRODUCT MARKING\*: AP110-XXFT-W1M+

\*Marking may contain other features or characters for internal lot control.



Mini-Circuits

COAXIAL

# Flexible Cable

**AP110-XXFT-W1M+**

50Ω DC to 110 GHz 1.0 mm-Male to 1.0 mm-Male

ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD

[CLICK HERE](#)

|                           |                                              |
|---------------------------|----------------------------------------------|
| Performance Data & Graphs | Data                                         |
|                           | Graphs                                       |
|                           | S-Parameter (S2P Files) Data Set (.zip file) |
| Case Style                | BAV3742                                      |
| RoHS Status               | Compliant                                    |
| Environmental Ratings     | ENV143                                       |

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



## Flexible Cable 1.0 mm Male to 1.0 mm Male

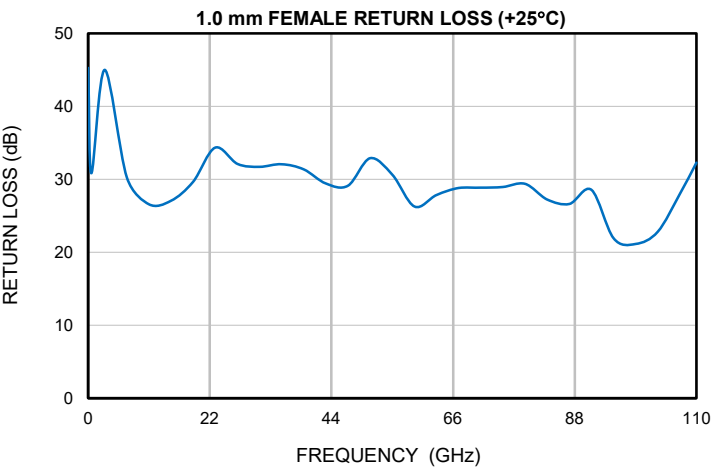
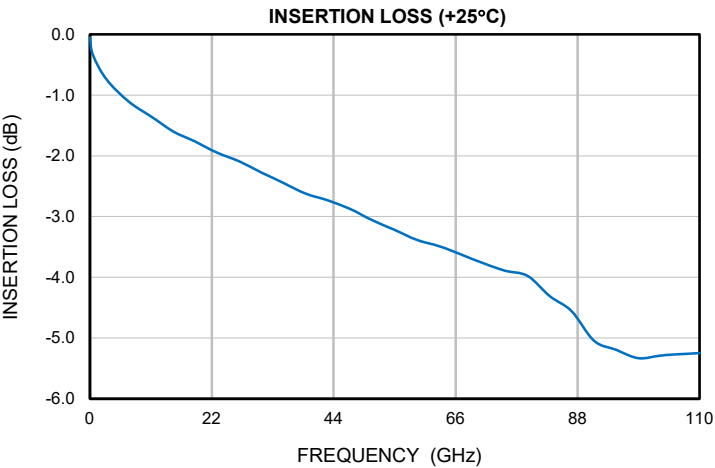
AP110-1FT-W1M+

## Typical Performance Data

| FREQ. | INSERTION LOSS | 1.0 mm FEMALE<br>RETURN LOSS | 1.0 mm FEMALE<br>RETURN LOSS |
|-------|----------------|------------------------------|------------------------------|
| (GHz) | (dB)           | (dB)                         | (dB)                         |
| 0     | 0.05           | 45.26                        | 46.79                        |
| 1     | 0.35           | 30.82                        | 31.12                        |
| 3     | 0.74           | 45.01                        | 44.85                        |
| 7     | 1.10           | 30.24                        | 34.42                        |
| 11    | 1.35           | 26.59                        | 28.75                        |
| 15    | 1.59           | 27.04                        | 29.79                        |
| 19    | 1.77           | 29.66                        | 31.48                        |
| 23    | 1.95           | 34.34                        | 37.72                        |
| 27    | 2.09           | 32.09                        | 35.16                        |
| 31    | 2.27           | 31.71                        | 31.74                        |
| 35    | 2.45           | 32.07                        | 25.74                        |
| 39    | 2.62           | 31.34                        | 22.12                        |
| 43    | 2.74           | 29.41                        | 25.53                        |
| 47    | 2.88           | 29.12                        | 31.19                        |
| 51    | 3.06           | 32.87                        | 28.60                        |
| 55    | 3.22           | 30.62                        | 30.28                        |
| 59    | 3.38           | 26.25                        | 28.55                        |
| 63    | 3.49           | 27.86                        | 28.18                        |
| 67    | 3.63           | 28.79                        | 31.37                        |
| 71    | 3.77           | 28.84                        | 34.09                        |
| 75    | 3.89           | 28.93                        | 30.27                        |
| 79    | 3.98           | 29.38                        | 26.82                        |
| 83    | 4.31           | 27.24                        | 25.38                        |
| 87    | 4.56           | 26.60                        | 27.27                        |
| 91    | 5.05           | 28.53                        | 27.64                        |
| 95    | 5.20           | 21.91                        | 23.72                        |
| 99    | 5.33           | 21.11                        | 21.21                        |
| 103   | 5.29           | 22.79                        | 22.09                        |
| 107   | 5.26           | 27.98                        | 28.90                        |
| 110   | 5.25           | 32.26                        | 24.79                        |



Typical Performance Curves







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 80°C<br>Ambient Environment                                                    | Individual Model Data Sheet |
| Storage Temperature   | -45° to 80°C<br>Ambient Environment                                                    | Individual Model Data Sheet |
| Thermal Shock         | -45° to 80°C, 100 cycles                                                               | MIL-STD-202; Method 107G    |
| Mechanical Flexing    | 1000 cycles<br>During each cycle, cable flexed from 90° through 0° to -90°<br>and back | ----                        |