

GaAs MMIC DC to 110GHz Attenuator Family

ATNXX-00110

LEAD-FREE / RoHS-COMPLIANT

1 Device Overview

1.1 General Description

The ATNXX-00110 is a family of precision GaAs MMIC fixed attenuators. These attenuators are an ideal solution for attenuating a signal and they can be used in a wide range of applications. They are ideal for test equipment's protection and signal overload prevention in various RF circuitry. A 50-ohm match is maintained over the entire operating frequency range.



Module

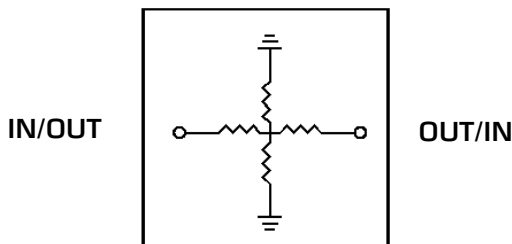
1.2 Features

- 6 or 10dB attenuation DC to 110 GHz
- Return loss: typical 20 dB over the entire band
- Serialized for traceability
- S2P data: [ATNXX-00110.s2p](#)

1.3 Applications

- 5G
- Automotive Radar
- Test Equipment
- Amplitude matching
- Precision characterization
- Wireless Backhaul

1.4 Functional Block Diagram



1.5 Part Ordering Options^{1,2}

Part Number	Attenuation (dB)	Description	Package	Green Status	Product Lifecycle	Export Classification
ATN06-00110	6.5	Connectorized Module 1.0 mm-F/F	Module	RoHS	Active	EAR99
ATN10-00110	10.5					
ATN06-00110-2W	6.5	Connectorized Module 1.0 mm-M/F	Module	RoHS	Active	EAR99
ATN10-00110-2W	10.5					
ATN06-00110-3W	6.5	Connectorized Module 1.0 mm-M/M	Module	RoHS	Active	EAR99
ATN10-00110-3W	10.5					

¹ Refer to our [website](#) for a list of definitions for terminology presented in this table.

² Default is 1.0 mm female connectors. Consult factory for other connector options.

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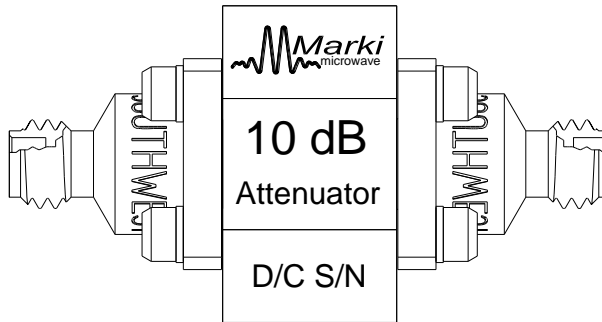
Revision History

Revision Code	Revision Date	Comment
-	October 2020	Initial Datasheet Release
A	November 2020	Updated outline Drawings

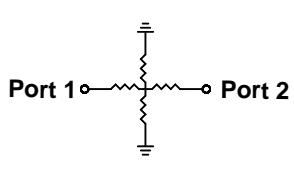
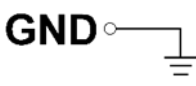
2 Port Configurations and Functions

2.1 Port Diagram

A bottom-up view of the ATN10-00110 M-package outline drawing is shown below.



2.2 Port Functions

Port	Function	Description	Equivalent Circuit
Port 1	Input/Output	Port 1 and port 2 are DC connected to each other and ground through a T-network of resistors.	
Port 2	Input/Output		
Pad	Ground	M package ground provided through metal housing and outer coax conductor.	

3 Specifications

3.1 Absolute Maximum Ratings³

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Units
DC Current at any port (6 dB attenuator)	100	mA
DC Current at any port (10 dB attenuator)	150	mA
Power Handling, at any Port ⁴	2	W
Operating Temperature	-55 to +100	°C
Storage Temperature	-65 to +125	°C

3.2 Package Information

Parameter	Details	Rating
ESD	Human Body Model (HBM), per MIL-STD-750, Method 1020	1A
Weight	M package	14.2 g

3.3 Electrical Specifications

The electrical specifications apply at $T_A=+25^{\circ}\text{C}$ in a 50Ω system. Typical data shown is for the attenuator in a M package with a sine wave input applied to port 1.

Min and Max limits are guaranteed at $T_A=+25^{\circ}\text{C}$.

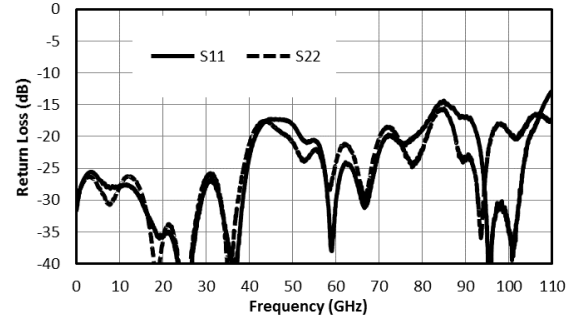
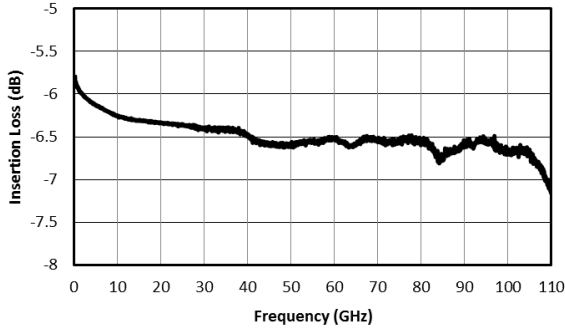
Model	Attenuation (dB)	Frequency (GHz)	Attenuation accuracy (Typical)	Return loss (dB) (Typical)	Impedance (Ω)
ATN10-00110	10.5	DC-81	± 0.4	22	50
		81-100	± 1	20	
		100-110	± 1.2	15	
ATN06-00110	6.5	DC-81	± 0.4	22	50
		81-100	± 1	20	
		100-110	± 1.2	15	

³ Reliability ratings are individual, a combination of stresses (DC current, RF power, and heat) may cause premature failure).

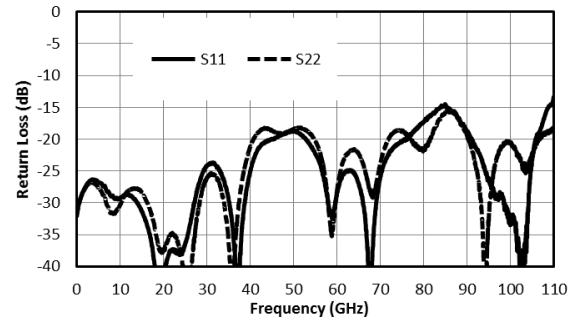
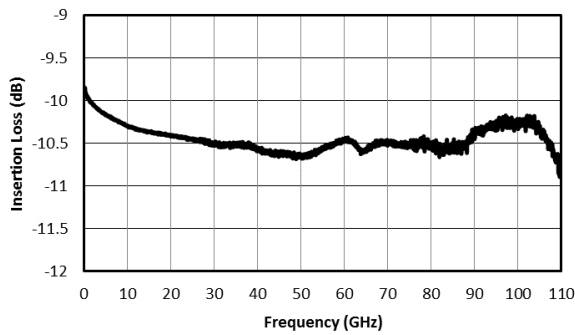
⁴ Actual failure observed at 4W at 2 GHz with a baseplate temperature of 23°C . Power handling will derate with frequency and temperature.

3.4 Typical Performance Plots

3.4.1 6 dB Attenuator performance plots



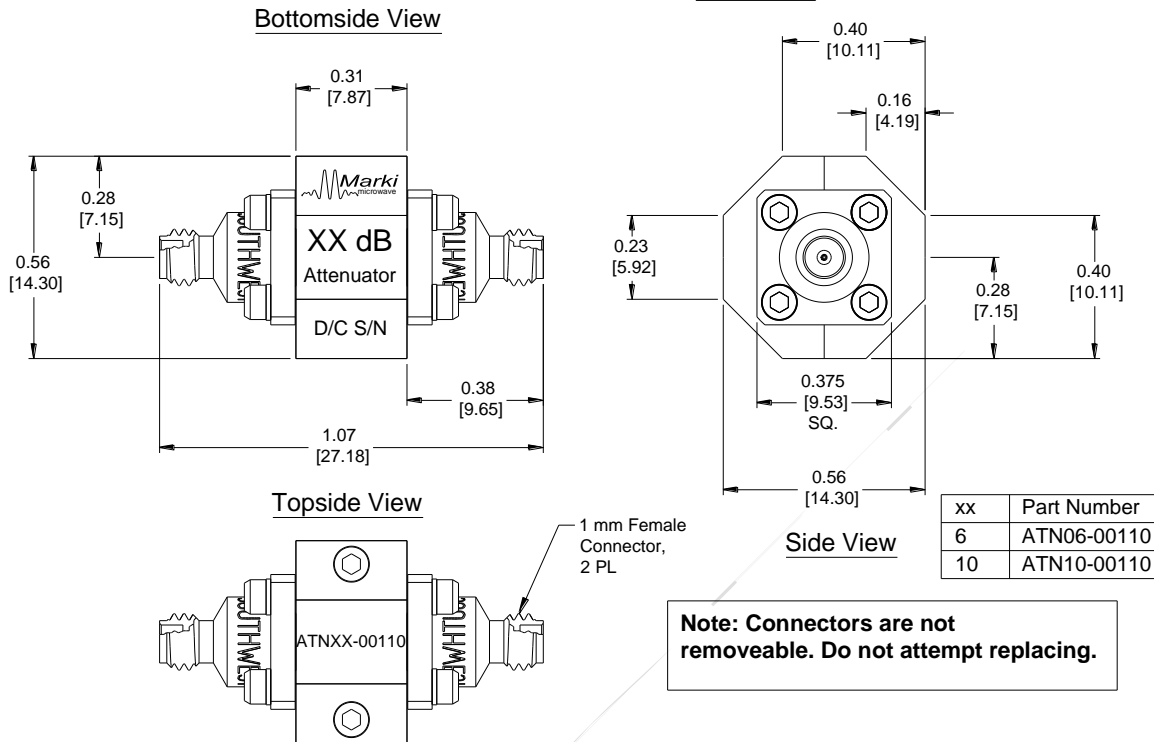
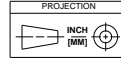
3.4.2 10 dB Attenuator performance plots



4 Mechanical Data

4.1 ATNXX-00110 Outline Drawing

All Measurements are typical

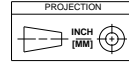


Note1: RoHS Compliant Assembly

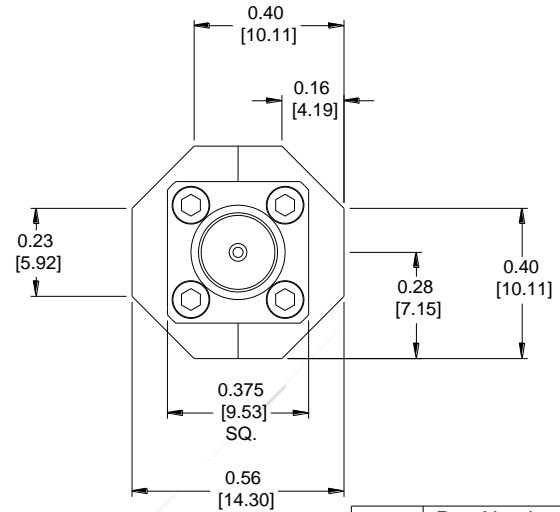
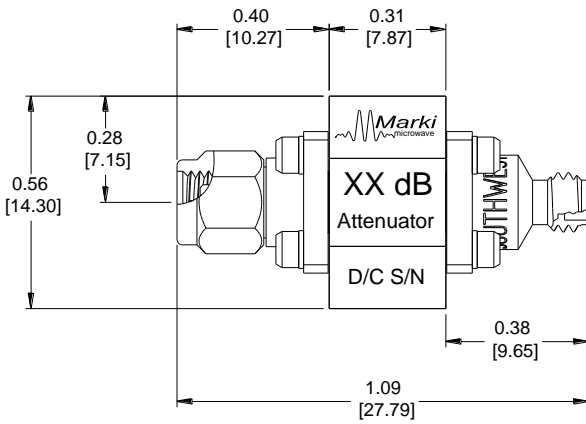
Note2: Use 9/16 fixed wrench to hold in place body of M housing while tightening connectors to 25Ncm

4.2 ATNXX-00110-2W Outline Drawing

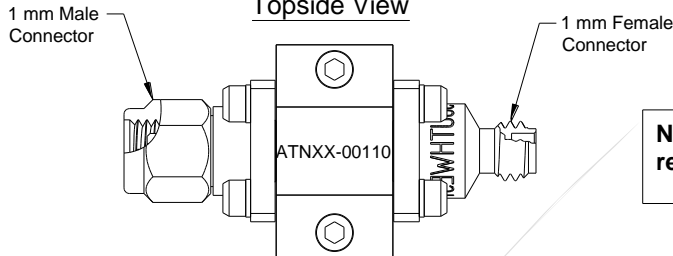
All Measurements are typical



Bottomside View



Topside View



Side View

xx	Part Number
6	ATN06-00110-2W
10	ATN10-00110-2W

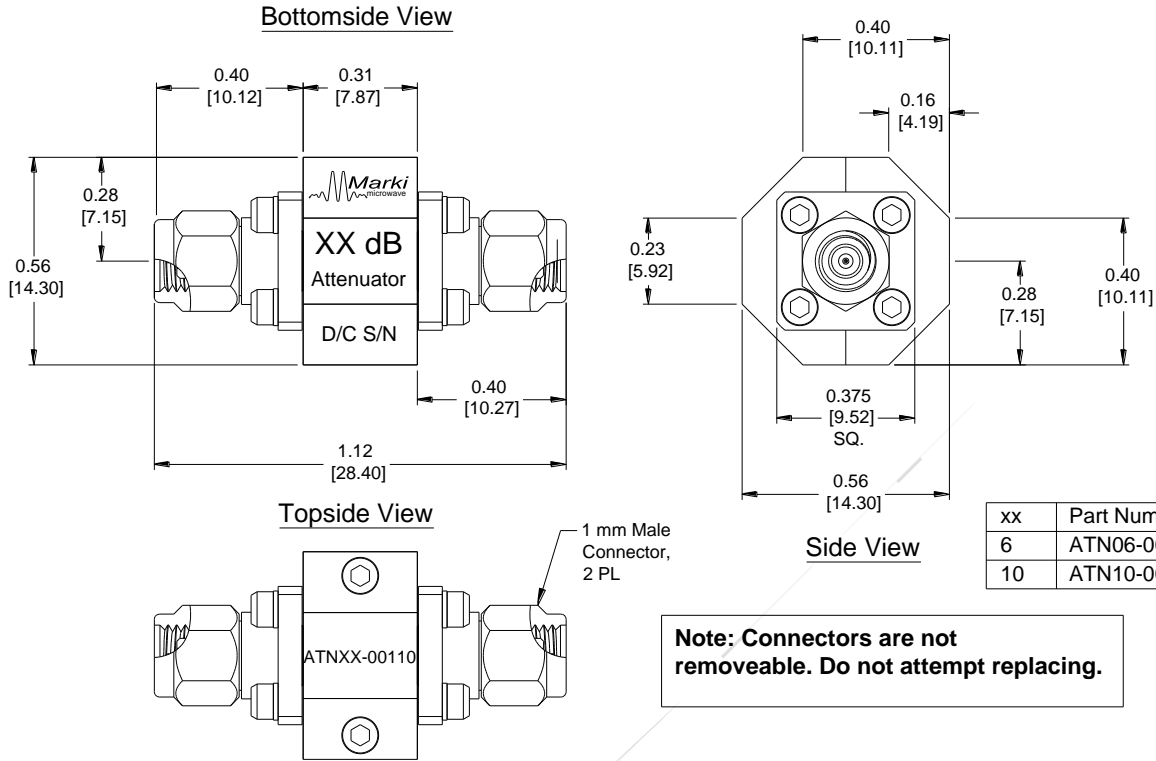
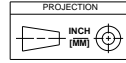
Note: Connectors are not removeable. Do not attempt replacing.

Note1: RoHS Compliant Assembly

Note2: Use 9/16 fixed wrench to hold in place body of M housing while tightening connectors to 25Ncm

4.3 ATNXX-00110-3W Outline Drawing

All Measurements are typical



Note: Connectors are not removable. Do not attempt replacing.

Note1: RoHS Compliant Assembly

Note2: Use 9/16 fixed wrench to hold in place body of M housing while tightening connectors to 25Ncm

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