

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

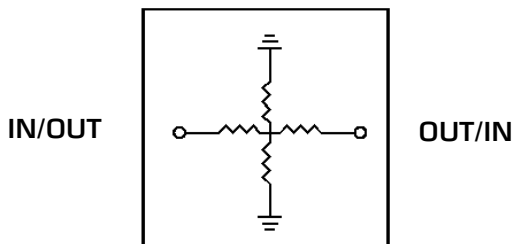
1.2 Features

- 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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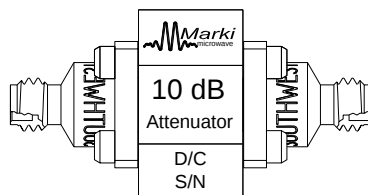
Revision History

Revision Code	Revision Date	Comment
-	October 2020	Initial Datasheet Release

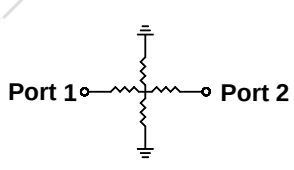
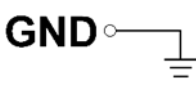
2 Port Configurations and Functions

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
Port 1 DC Current	100	mA
Port 2 DC Current	100	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 $T_A = +25^\circ\text{C}$.

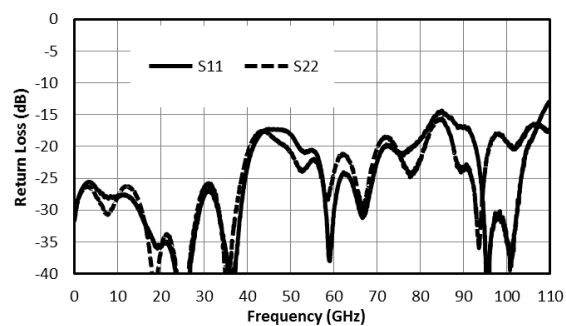
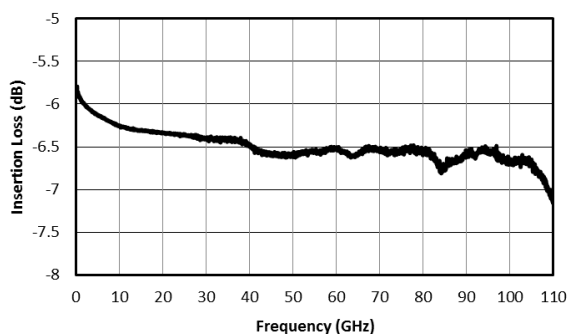
Model	Attenuation (dB)	Frequency (GHz)	Attenuation accuracy (Typical)	Return loss (dB) (Typical)	Impedance (Ω)
ATN10-00110	10.5	DC-81	± 0.4	22	50
		81-100	± 1	20	
		100-110	± 1.2	15	
ATN06-00110	6.5	DC-81	± 0.4	22	50
		81-100	± 1	20	
		100-110	± 1.2	15	

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

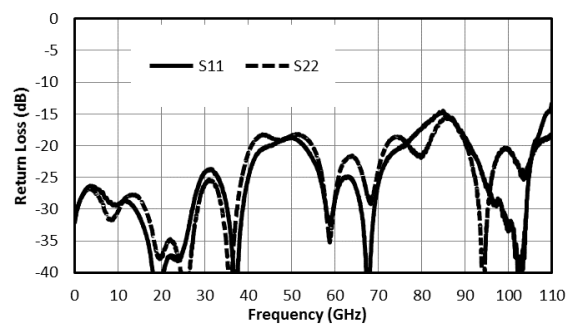
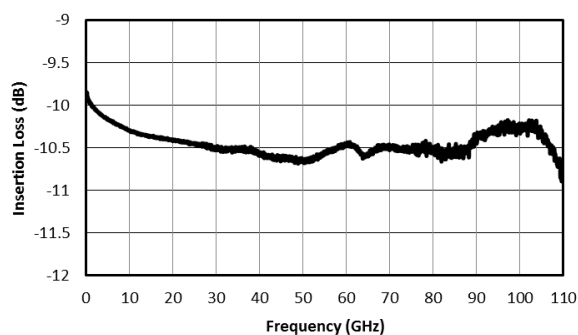
⁴ Actual failure observed at 4W at 2 GHz with a baseplate temperature of 23°C . Power handling will derate with frequency and temperature.

3.4 Typical Performance Plots

3.4.1 6 dB Attenuator performance plots



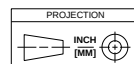
3.4.2 10 dB Attenuator performance plots



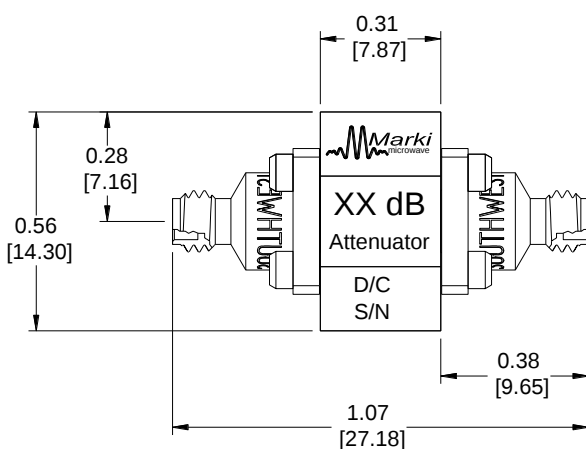
4 Mechanical Data

4.1 M Package Outline Drawing

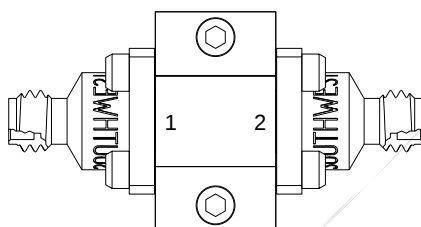
All Measurements are typical



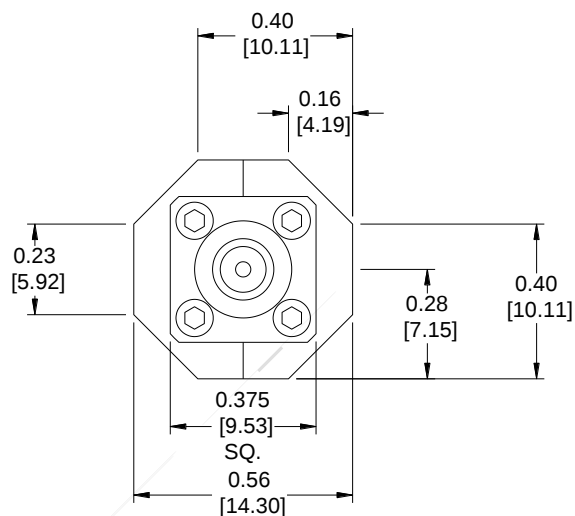
Bottomside View



Topside View



Side View



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

Port	Connector Type
1	1.0 mm Female
2	1.0 mm Female

XX	Part Number
6	ATN06-00110
10	ATN10-00110