

# ATN05-0070CSP1

## Chip Scale Package MMIC DC - 70 GHz 5dB Attenuator

### DEVICE OVERVIEW

#### General Description

The ATN05-0070CSP1 is a surface mount GaAs MMIC attenuator in a chip scale package (CSP). This attenuator is an ideal solution for attenuating a signal and can be used in a wide range of applications. The ATN05-0070CSP1 features a typical 5.2 dB attenuation with 0.2 dB attenuation flatness and 24 dB return loss across the DC-70 GHz bandwidth. The CSP allows for extreme miniaturization of SMT footprint while providing die-level performance. GaAs MMIC technology provides consistent unit-to-unit performance in a small, low-cost form factor. A 50-ohm match is maintained over the entire operating frequency range.



[Download s-parameters here](#)

#### Features

- 1.5 x 1.5 mm chip scale package
- 5.2 dB attenuation
- 0.2 dB attenuation flatness
- 24 dB return loss
- 1 W RF Power Handling
- This product embodies Marki Microwave's U.S. Pat. 11,869,858.

#### Applications

- 5G
- Test Equipment
- Precision Characterization
- Airborne Applications
- Amplitude Matching
- High Channel Count Systems

#### Functional Block Diagram



#### Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
ATN05-0070CSP1	Chip Scale Package MMIC DC - 70 GHz 5dB Attenuator	CSP1	REACH RoHS	Released	EAR99
<u>EVB-ATN05-0070</u>	Evaluation Board, Chip Scale Package MMIC DC - 70 GHz 5dB Attenuator	EVB	REACH RoHS	Released	EAR99

### Table Of Contents

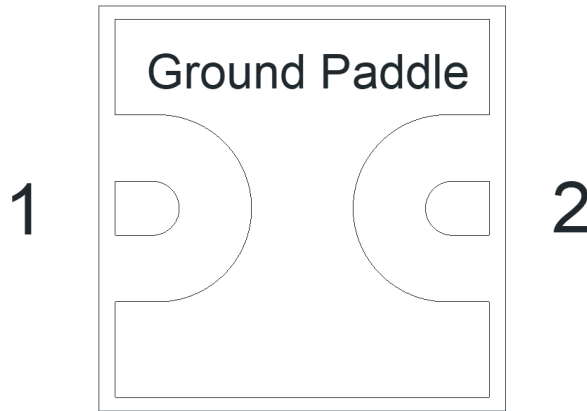
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### Revision History

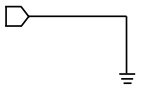
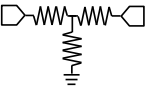
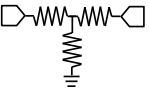
Revision Code	Revision Date	Comment
-	2025-03-19	Initial Release

**Port Configuration and Functions**

**Port Diagram**



**Port Functions**

Port	Function	Description	DC Equivalent Circuit
Ground Paddle	Ground	CSP package ground path is provided through the ground paddle.	
Pin 1	Input/Output	Pin 1 and Pin 2 are DC connected to each other and ground through a T-network of resistors.	
Pin 2	Input/Output	Pin 1 and Pin 2 are DC connected to each other and ground through a T-network of resistors.	

**Specifications**

**Absolute Maximum Ratings**

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	Unit
Maximum Operating Temperature	100	°C
Maximum Storage Temperature	125	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C
RF Power Handling	1	W

**Package Information**

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Dimensions	-	1.5 x 1.5 mm
Moisture Sensitivity Level	-	MSL 3

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#### Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the attenuator in a CSP1 package with a sine wave input applied to port 1.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Attenuation	Configuration A, Temp = 25°C	0	70	-	5.2	-	dB
Return Loss	Configuration A, Temp = 25°C	0	70	-	21	-	dB
Attenuation Flatness <sup>1</sup>	Configuration A, Temp = 25°C	0	70	-	0.7	-	dB
Impedance	-	0	70	-	50	-	Ω

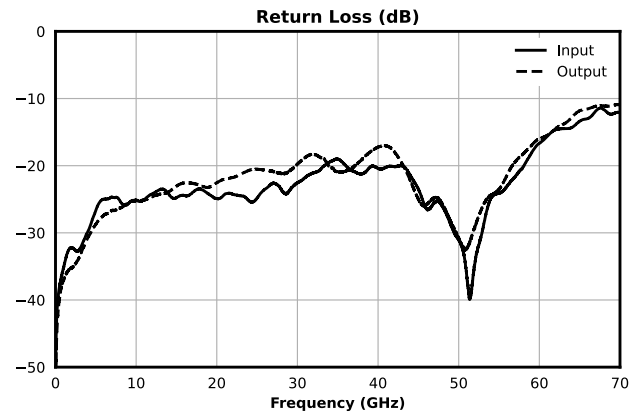
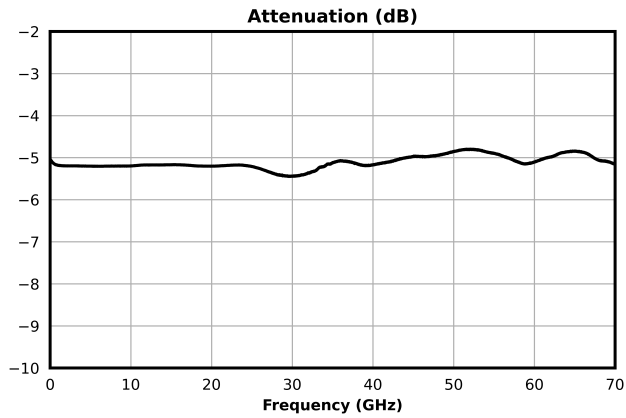
<sup>[1]</sup> Attenuation Flatness = Max(Insertion Loss) - Min(Insertion Loss)

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### Typical Performance Plots

Electrical performance data is de-embedded to the CSP package ports.



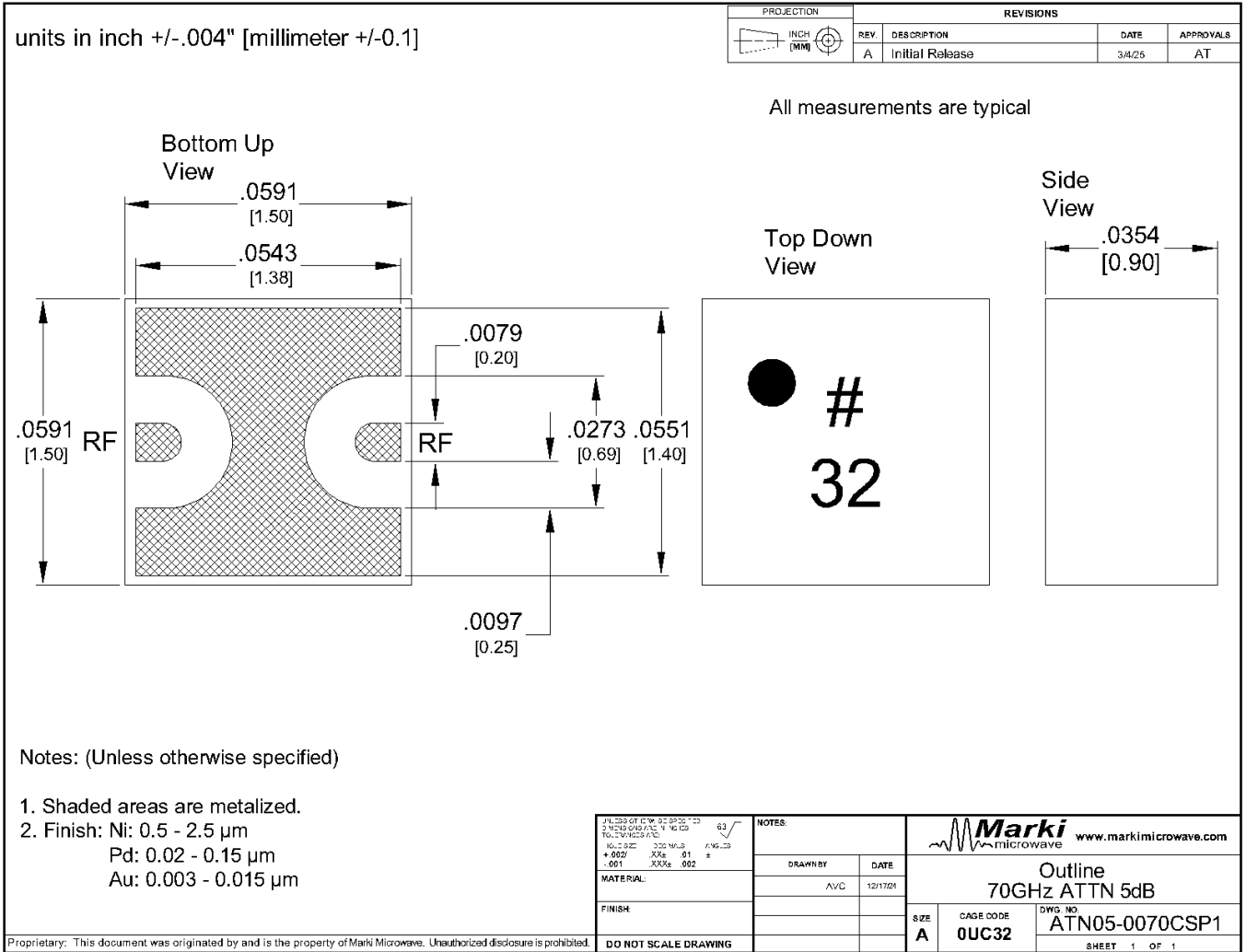
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Chip Scale Package MMIC DC - 70 GHz 5dB Attenuator

## Mechanical Data

### Outline Drawing

Download : [Outline 2D Drawing](#) | [Outline 3D Drawing](#) | [Outline 3D STP](#)



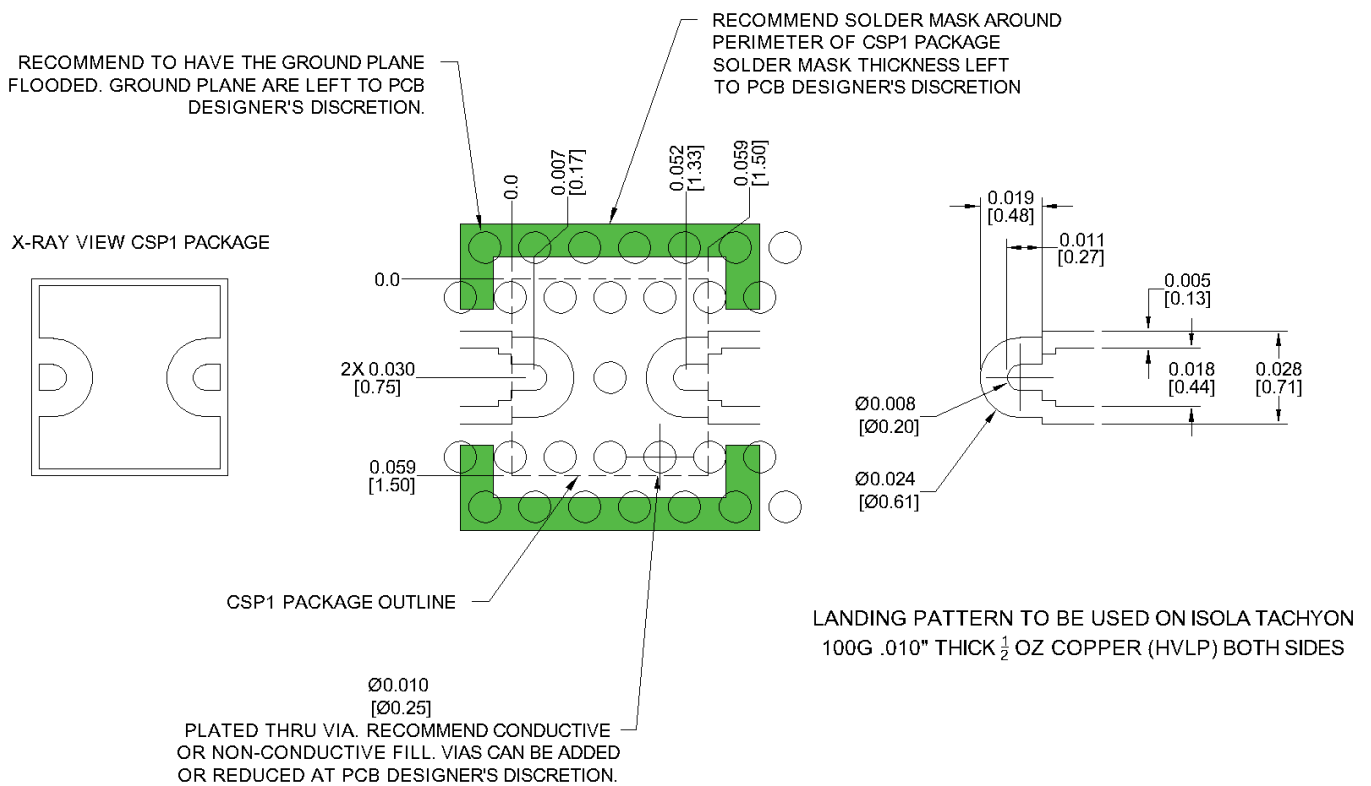
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### Footprint Image

Download : [Footprint Drawing](#)

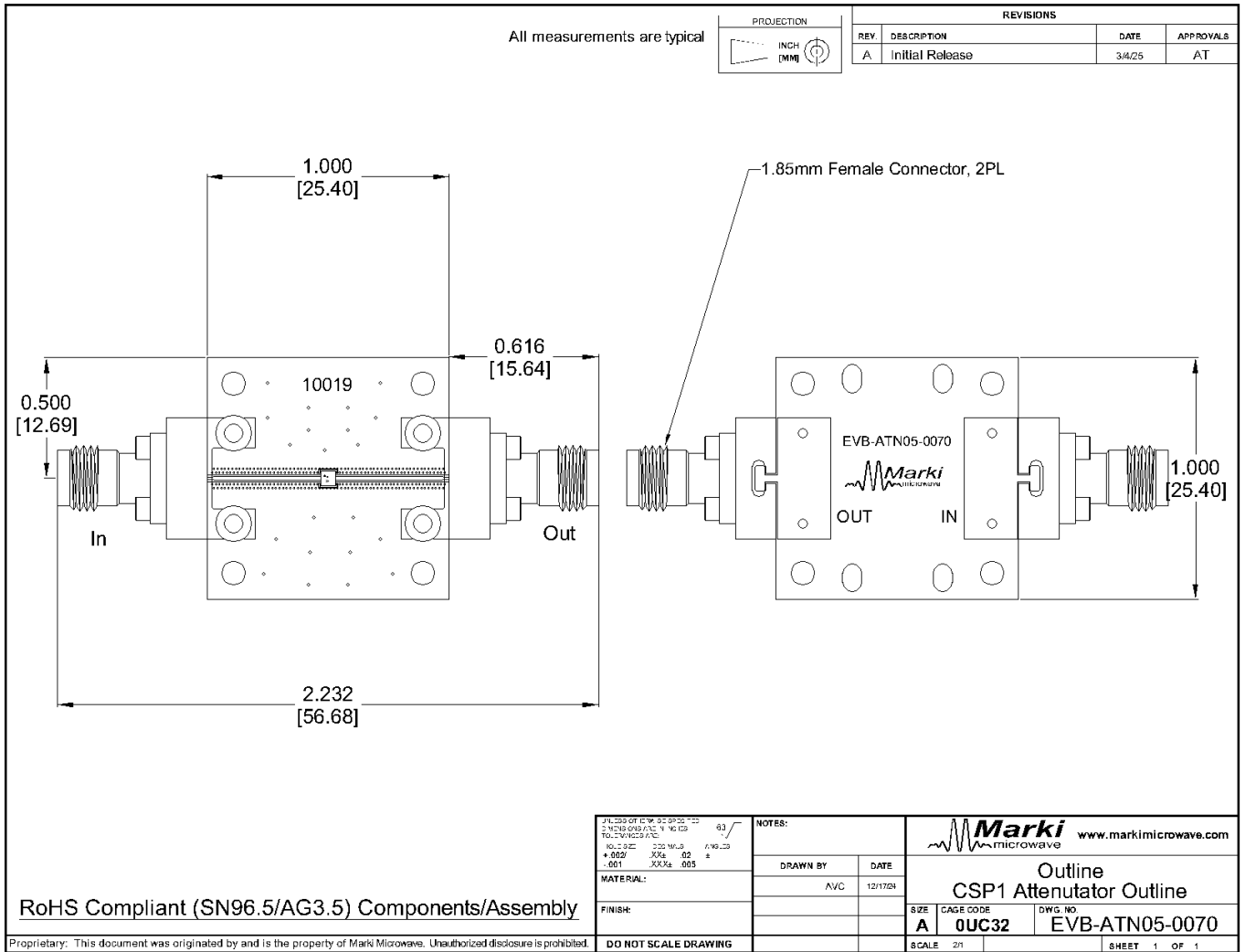
\*PRIMARY DIMENSIONS ARE IN INCHES



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## Evaluation Board - Outline Drawing



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