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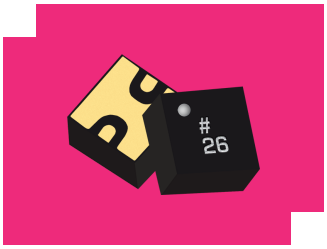
# ATN00-0070CSP1

## Chip Scale Package MMIC DC - 70 GHz 0dB Attenuator

## DEVICE OVERVIEW

### General Description

The ATN00-0070CSP1 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 ATN00-0070CSP1 features a typical 0.3 dB attenuation with 0.1 dB attenuation flatness and 20 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
- 0.3 dB attenuation
- 0.1 dB attenuation flatness
- 20 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 |
|---|---|---|---|---|---|
| ATN00-0070CSP1 | Chip Scale Package MMIC DC - 70 GHz 0dB Attenuator | CSP1 | REACH RoHS | Released | EAR99 |
| EVB-ATN00-0070 | Evaluation Board, Chip Scale Package MMIC DC - 70 GHz 0dB Attenuator | EVB | REACH RoHS | Released | EAR99 |

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## Table Of Contents

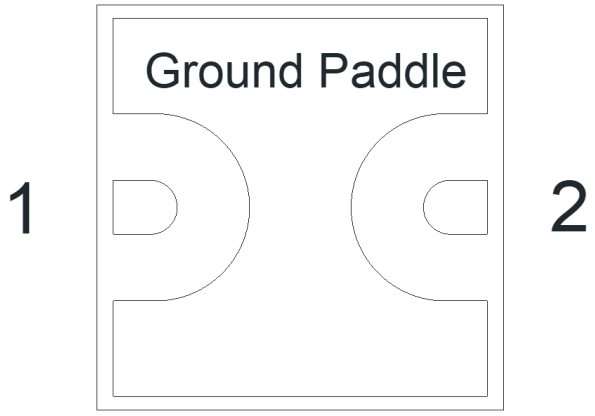


## Revision History

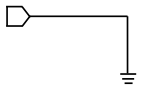
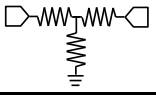
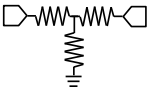
| Revision Code | Revision Date | Comment |
|---|---|---|
| - | 2024-10-31 | Initial Release |

## 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 |

## Electrical Specifications

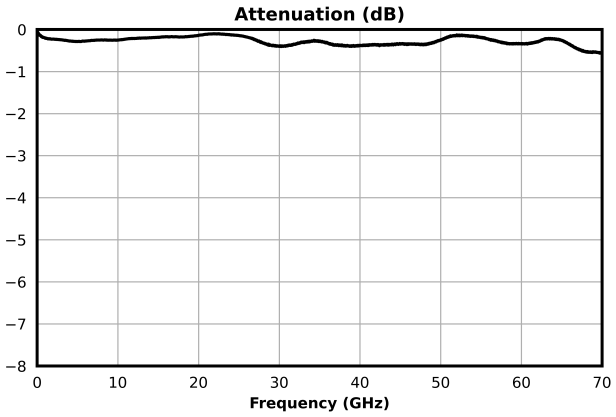
The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the attenuator in a CSP1 package with a sine wave input applied to port 1.

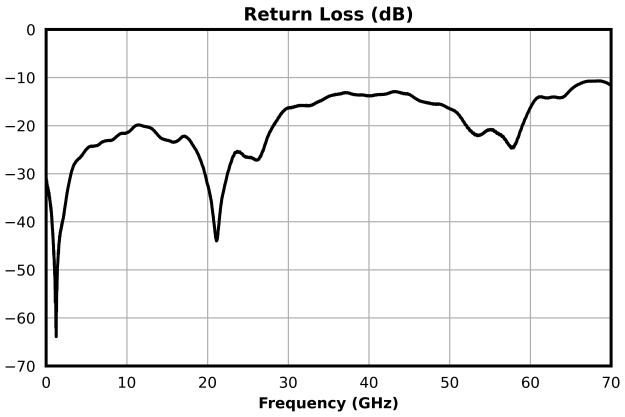
| Parameter | Test Conditions | Minimum Frequency (GHz) | Maximum Frequency (GHz) | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Attenuation | Configuration A, Temp = 25°C | 0 | 70 | - | 0.3 | - | dB |
| Return Loss | Configuration A, Temp = 25°C | 0 | 70 | - | 20 | - | dB |
| Attenuation Flatness [1] | Configuration A, Temp = 25°C | 0 | 70 | - | 0.5 | - | dB |
| Impedance | - | 0 | 70 | - | 50 | - | Ω |

[1] Attenuation Flatness = Max(Insertion Loss) - Min(Insertion Loss)

## Typical Performance Plots

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

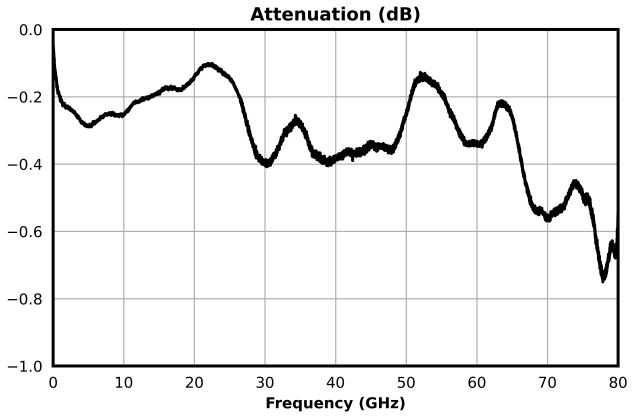


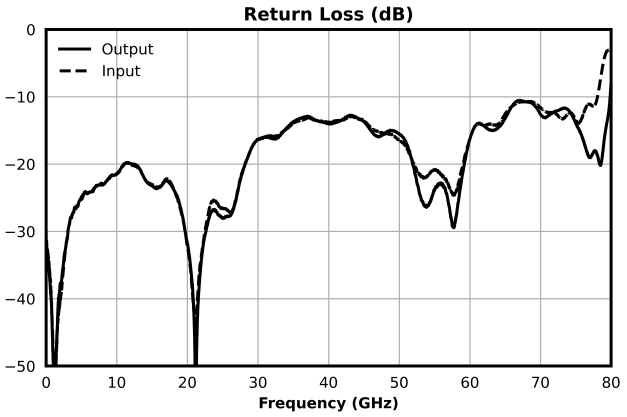



# ATN00-0070CSP1

## Chip Scale Package MMIC DC - 70 GHz 0dB Attenuator

## Typical Performance Plot



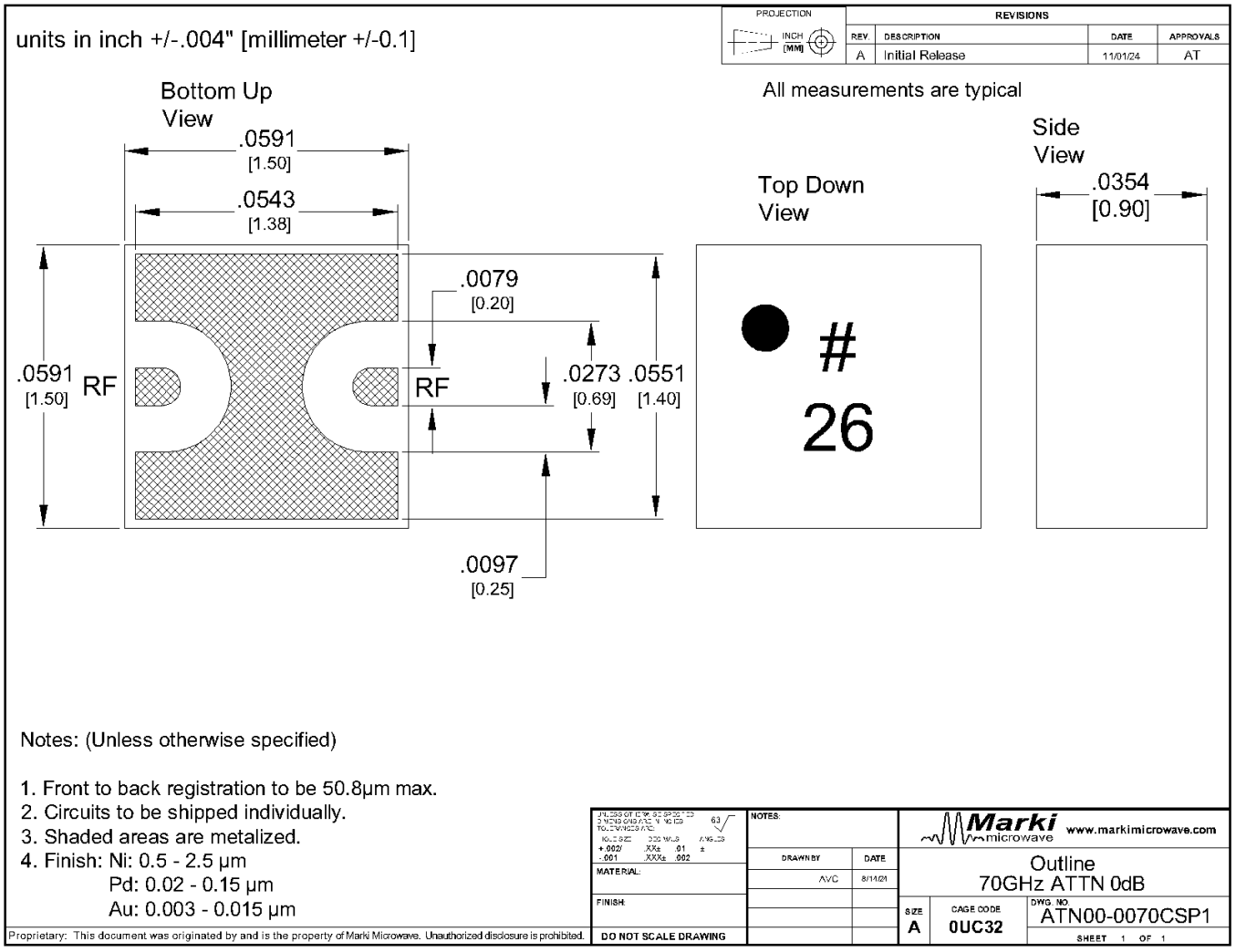
# ATN00-0070CSP1

## Chip Scale Package MMIC DC - 70 GHz 0dB Attenuator

## Mechanical Data

### Outline Drawing

Download : Outline 2D Drawing | Outline 3D Drawing | Outline 3D STP

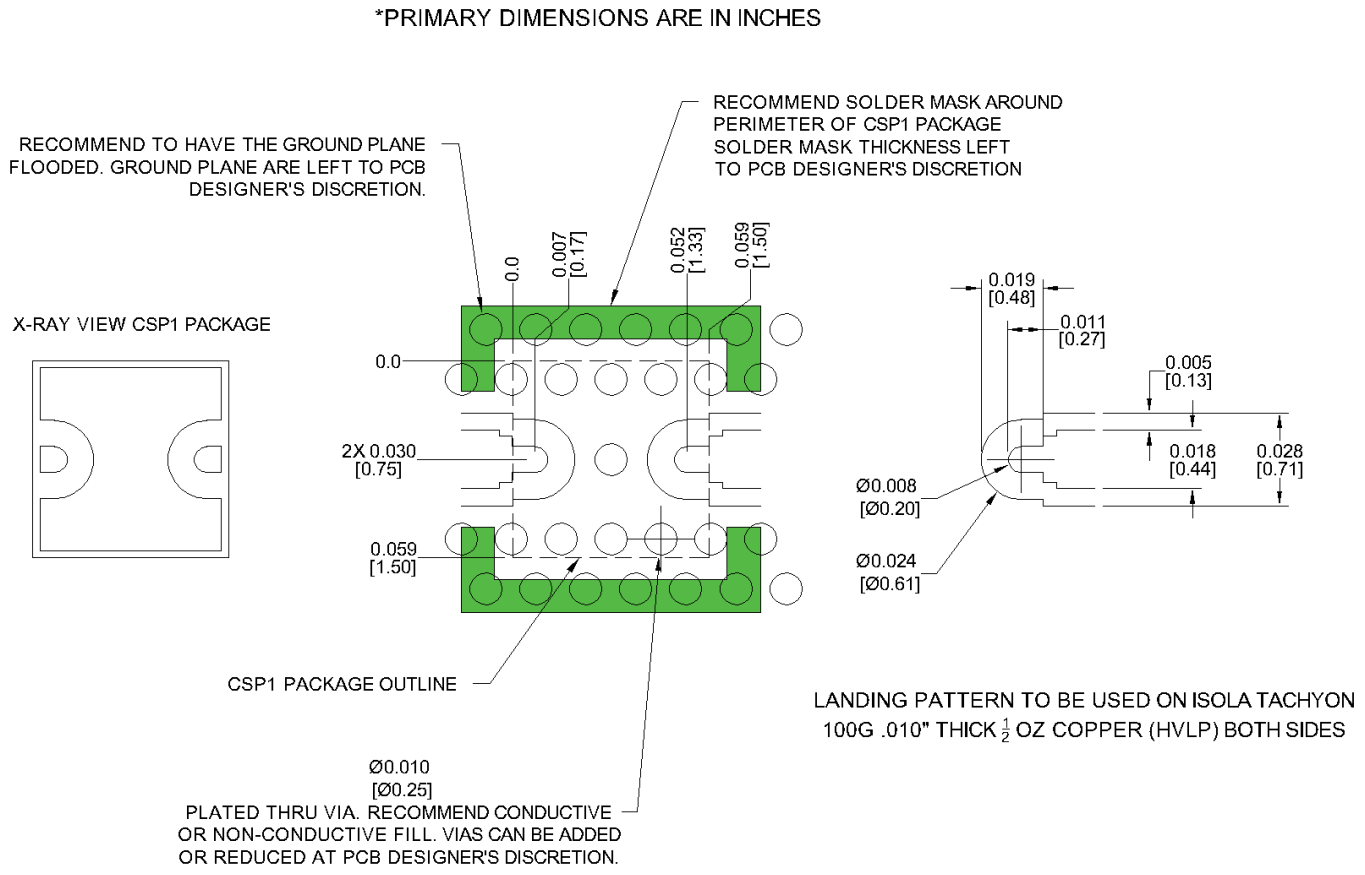


# ATN00-0070CSP1

## Chip Scale Package MMIC DC - 70 GHz 0dB Attenuator

### Footprint Image

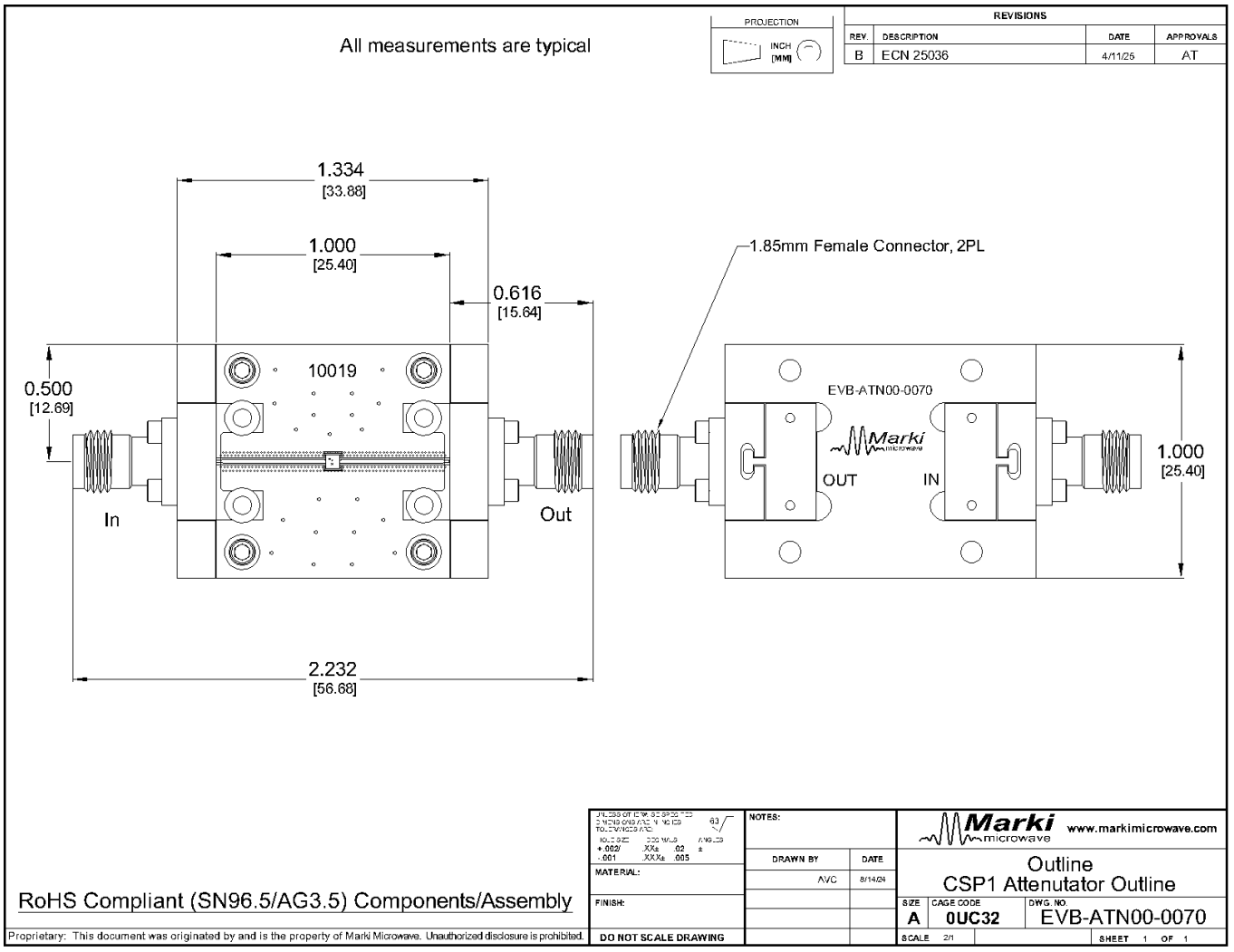
Download : Footprint Drawing



# ATN00-0070CSP1

## Chip Scale Package MMIC DC - 70 GHz 0dB Attenuator

## Evaluation Board - Outline Drawing



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