

# ATN06-0050CSP1 Chip Scale Package MMIC 50 GHz 6dB Attenuator

## DEVICE OVERVIEW

### General Description

The ATN06-0050CSP1 is a surface mount GaAs MMIC 6dB 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 CSP allows for extreme miniaturization of SMT footprint while providing die-like performance. GaAs MMIC technology provides consistent unit-to-unit performance in a small, low-cost form factor. Compensates for high frequency board losses with a positive gain slope. A 50-ohm match is maintained over the entire operating frequency range.



[Download s-parameters here](#)

### Features

- Small 1.5 x 1.5 mm package size
- 3dB attenuation from DC to 50 GHz
- 15dB typical return loss over operatingband
- 1W RF Power

### Applications

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

### Functional Block Diagram



## Part Ordering Options

| Part Number                    | Description                                                     | Package | Packing Size | Green Status | Product Lifecycle | Export Classification |
|--------------------------------|-----------------------------------------------------------------|---------|--------------|--------------|-------------------|-----------------------|
| <a href="#">EVB-ATN06-0050</a> | Evaluation Board, Chip Scale Package MMIC 50 GHz 6dB Attenuator | -       | -            | RoHS         | Released          | EAR99                 |
| ATN06-0050CSP1                 | Chip Scale Package MMIC 50 GHz 6dB Attenuator                   | CSP1    | -            | RoHS REACH   | Released          | EAR99                 |

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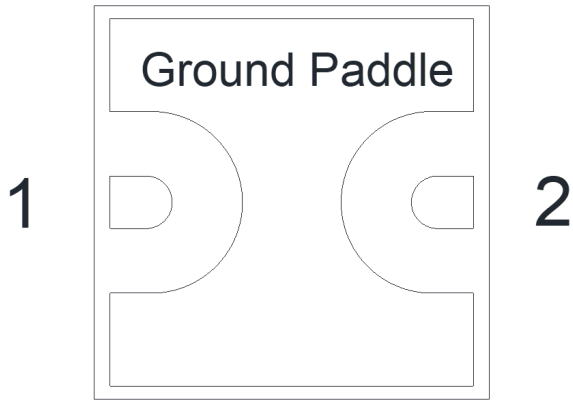
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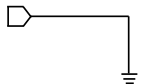
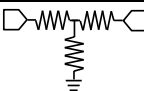
Port Configuration and Functions

Port Diagram



Port Functions

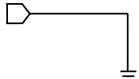
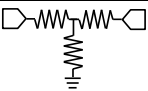
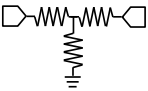
Configuration A

| Port  | Function     | Description                                                                                 | Equivalent Circuit for Package                                                        |
|-------|--------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| GND   | Ground       | CPS1 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. |  |

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### Configuration A

| Port          | Function     | Description                                                                                 | Equivalent Circuit for Package                                                      |
|---------------|--------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Ground Paddle | Ground       | CSP1 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 |

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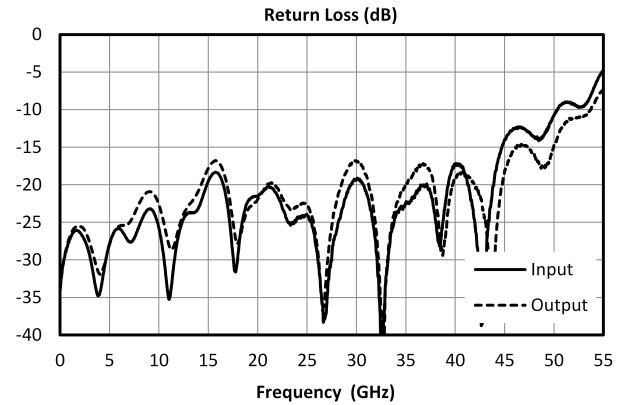
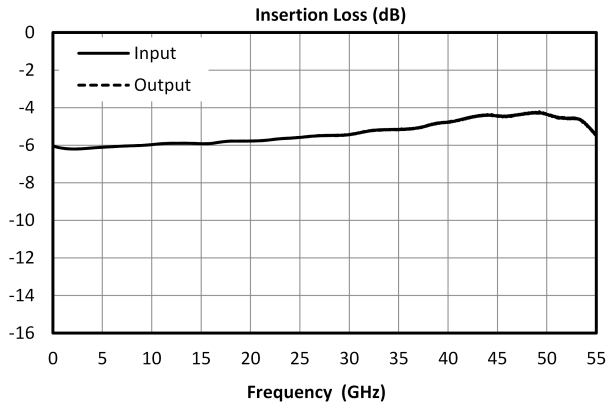
### Electrical Specifications

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

| Parameter   | Port Configuration | Test Conditions | Minimum Frequency (GHz) | Maximum Frequency (GHz) | Min | Typ  | Max | Unit |
|-------------|--------------------|-----------------|-------------------------|-------------------------|-----|------|-----|------|
| Attenuation | -                  | -               | 0                       | 30                      | -   | 5.9  | -   | dB   |
| Attenuation | -                  | -               | 30                      | 50                      | -   | 4.75 | -   | dB   |
| Return Loss | -                  | -               | 0                       | 40                      | 13  | 20   | -   | dB   |
| Return Loss | -                  | -               | 40                      | 50                      | -   | 14   | -   | dB   |
| Impedance   | -                  | -               | 0                       | 50                      | -   | 50   | -   | Ω    |

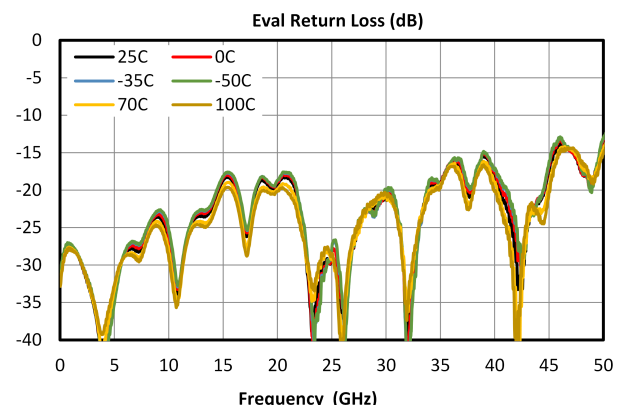
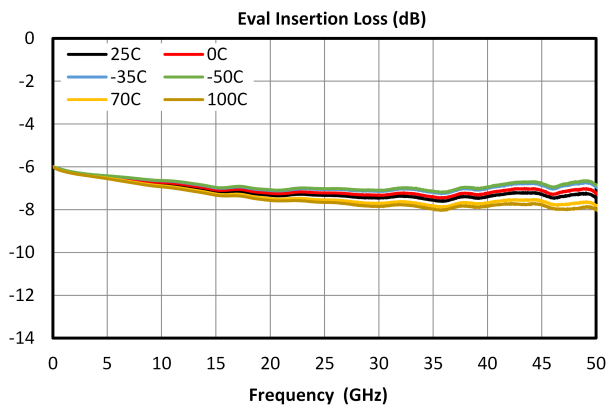
### Typical Performance Plots

Electrical Performance Data is de-embedded to the CSP package ports.



### Electrical Performance Over Temperature

Evaluation board performance is shown as a proxy for device performance due to fixturing variability over temperature

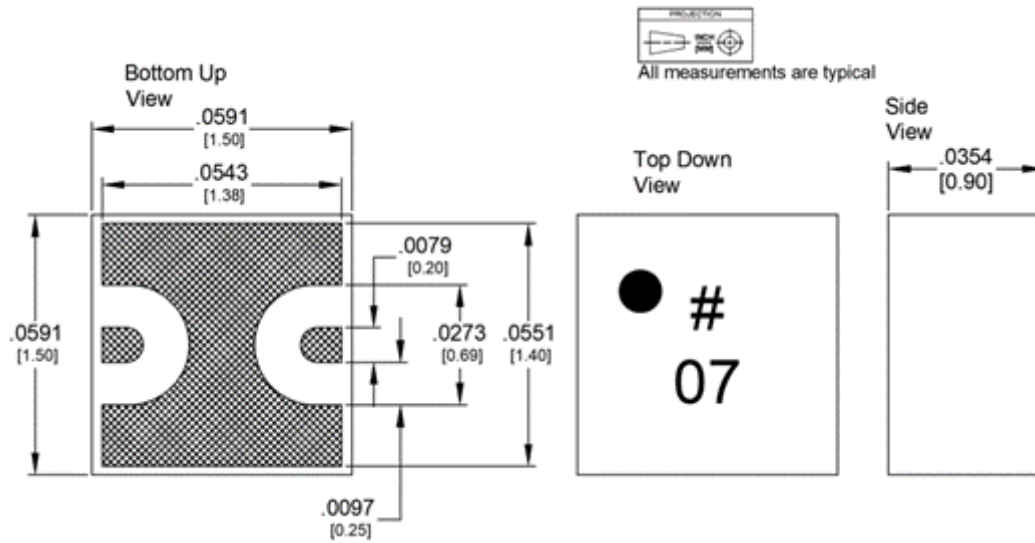


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### Mechanical Data

### Outline Drawing

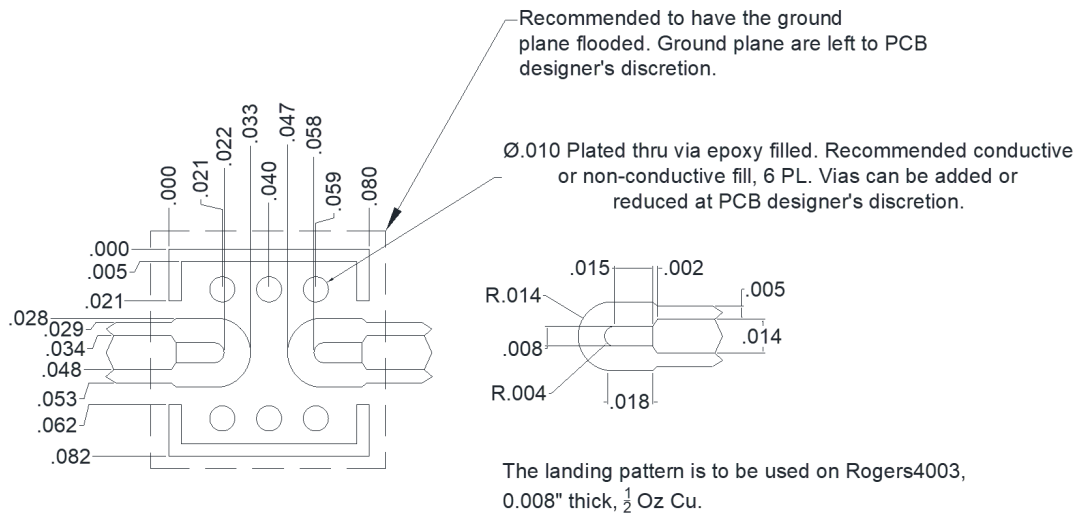




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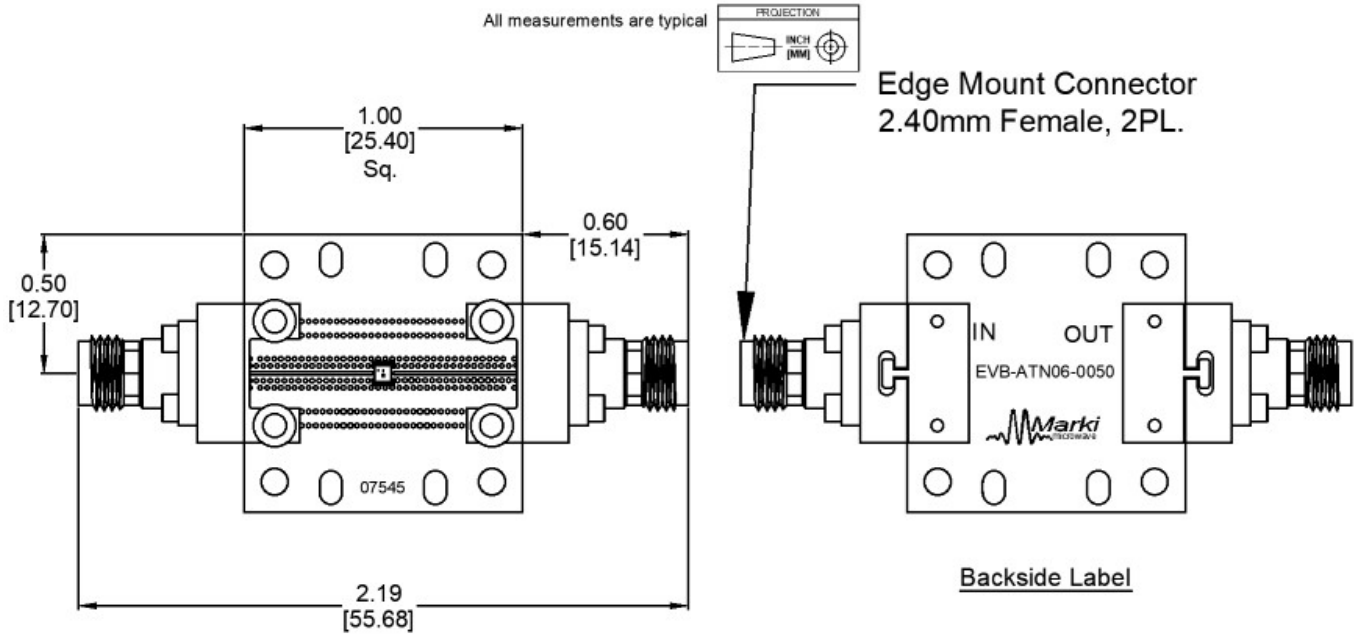
Chip Scale Package MMIC 50 GHz 6dB  
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### Footprint Image



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Chip Scale Package MMIC 50 GHz 6dB  
Attenuator



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### Chip Scale Package MMIC 50 GHz 6dB Attenuator

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