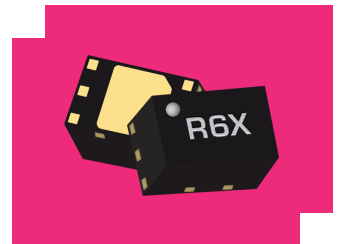


# **ATN06-0040PSM** **6dB DC-40GHz MMIC Attenuator**

## **DEVICE OVERVIEW**

### **General Description**

The ATN06-0040PSM is a surface mount GaAs MMIC 6dB attenuator in a DFN package. This attenuator is an ideal solution for attenuating a signal and can be used in a wide range of applications. The compact DFN package allows for extreme miniaturization of SMT footprint making this attenuator suitable for low SWaP applications. 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](#)

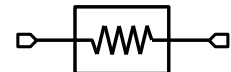
### **Features**

- Small 1.3 x 2.0 mm package size
- 6dB attenuation from DC to 40 GHz
- 22dB typical return loss over operating band
- Low SWaP

### **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 |
|-----------------|--------------------------------------------|---------|---------------|-------------------|-----------------------|
| EVB-ATN06-0040P | Evaluation Board, 6dB DC-40 GHz Attenuator | -       | REACH<br>RoHS | Released          | EAR99                 |
| ATN06-0040PSM   | 6dB DC-40GHz MMIC Attenuator               | DFN     | RoHS<br>REACH | Released          | EAR99                 |

## Table Of Contents

### ■ Device Overview

General Description  
Features  
Applications  
Functional Block Diagram

### ■ Port Configuration and Functions

Port Diagram  
Port Functions

### ■ Revision History

### ■ Specifications

Absolute Maximum Ratings  
Package Information  
Electrical Specifications  
Typical Performance Plots  
Electrical Performance Over Temperature

### ■ Mechanical Data

Outline Drawing

### ■ Footprint Image

## Revision History

| Revision Code | Revision Date | Comment                   |
|---------------|---------------|---------------------------|
| -             | 2023-10-30    | Datasheet Initial Release |

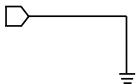
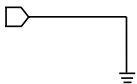
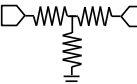
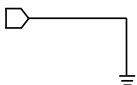
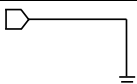
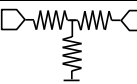
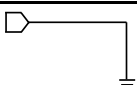
## Port Configuration and Functions

### Port Diagram

A top-down x-ray view of the package outline drawing is shown below.



## Port Functions

| Port  | Function         | Description                                                                                 | Equivalent Circuit for Package                                                        |
|-------|------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| GND   | Ground           | DFN package ground path is provided through the ground paddle.                              |    |
| Pin 1 | Non-connect (NC) | Pin 1 is not connected internally and can be tied to RF ground.                             |    |
| Pin 2 | Input/Output     | Pin 2 and Pin 5 are DC connected to each other and ground through a T-network of resistors. |    |
| Pin 3 | Non-connect (NC) | Pin 3 is not connected internally and can be tied to RF ground.                             |    |
| Pin 4 | Non-connect (NC) | Pin 4 is not connected internally and can be tied to RF ground.                             |    |
| Pin 5 | Input/Output     | Pin 2 and Pin 5 are DC connected to each other and ground through a T-network of resistors. |   |
| Pin 6 | Non-connect (NC) | Pin 6 is not connected internally and can be tied to RF ground.                             |  |

## 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 |
|-------------------------------|----------------|------|
| DC Current                    | 100            | mA   |
| Maximum Operating Temperature | 100            | °C   |
| Maximum Storage Temperature   | 125            | °C   |
| Minimum Operating Temperature | -55            | °C   |
| Minimum Storage Temperature   | -65            | °C   |
| RF Power                      | 2              | W    |

### Package Information

| Parameter  | Details | Rating       |
|------------|---------|--------------|
| Dimensions | -       | 2.0 x 1.3 mm |

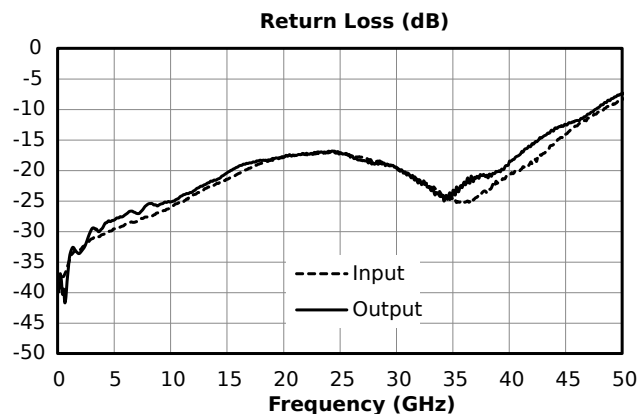
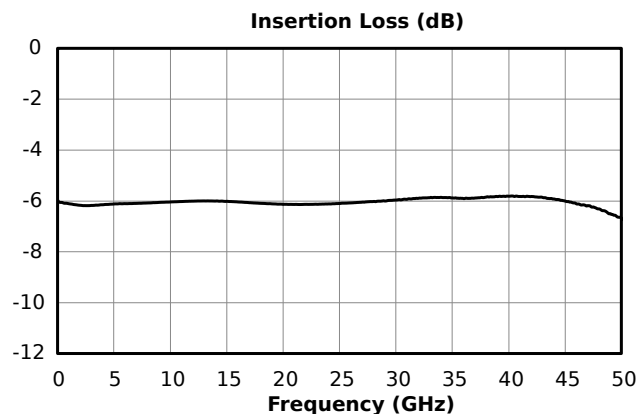
## Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the attenuator in a PSM package with a sine wave input applied to pin 2.

| Parameter            | Test Conditions | Minimum Frequency (GHz) | Maximum Frequency (GHz) | Min | Typ | Max | Unit |
|----------------------|-----------------|-------------------------|-------------------------|-----|-----|-----|------|
| Attenuation          | -               | 0                       | 40                      | -   | 6   | -   | dB   |
| Attenuation Accuracy | -               | 0                       | 40                      | -   | 0.2 | -   | dB   |
| Return Loss          | -               | 0                       | 40                      | 15  | 22  | -   | dB   |
| Impedance            | -               | 0                       | 40                      | -   | 50  | -   | Ω    |

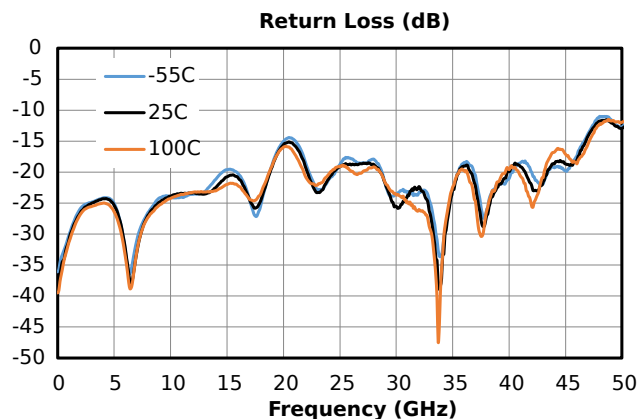
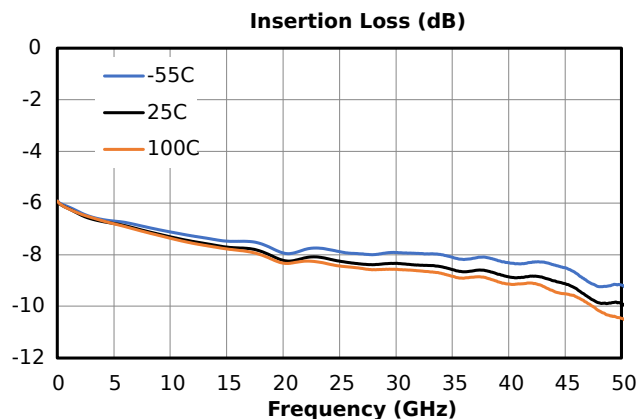
### Typical Performance Plots

Measured data is de-embedded from evaluation fixture using AFR.



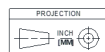
### Electrical Performance Over Temperature

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

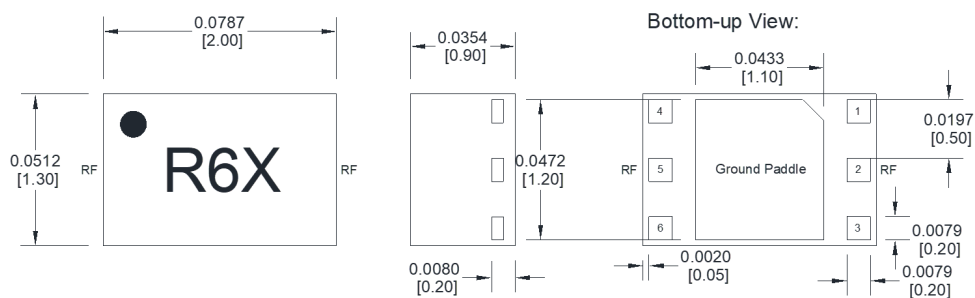


### Mechanical Data

### Outline Drawing



All dimensions are typical



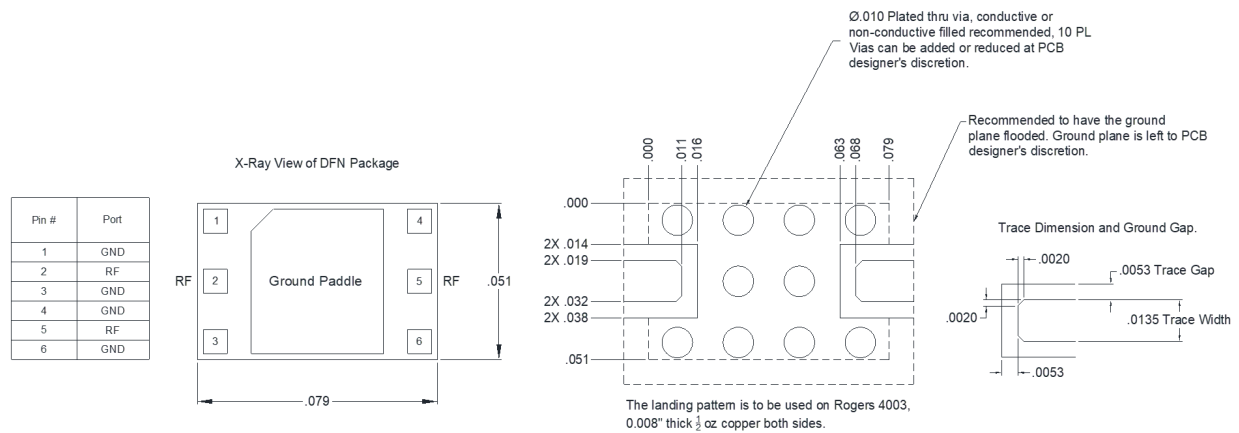
Notes (unless otherwise specified):

1. Substrate material is LCP.
2. I/O Leads and Die Paddle are 0.05 micron Au over 0.02 microns Pd over 0.5 microns Ni.
3. All unconnected pins should be connected to PCB RF ground.

| Pin # | Port |
|-------|------|
| 1     | GND  |
| 2     | RF   |
| 3     | GND  |
| 4     | GND  |
| 5     | RF   |
| 6     | GND  |



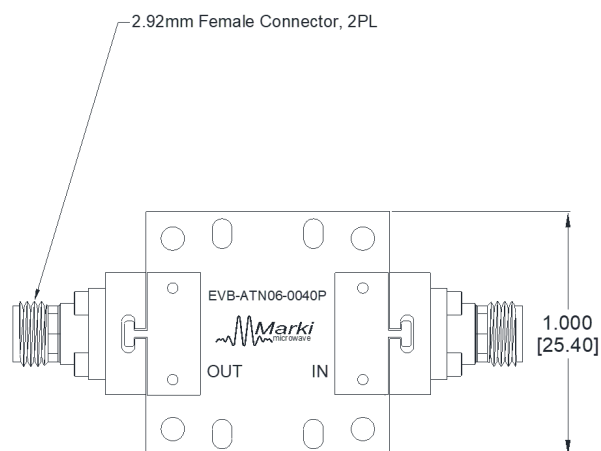
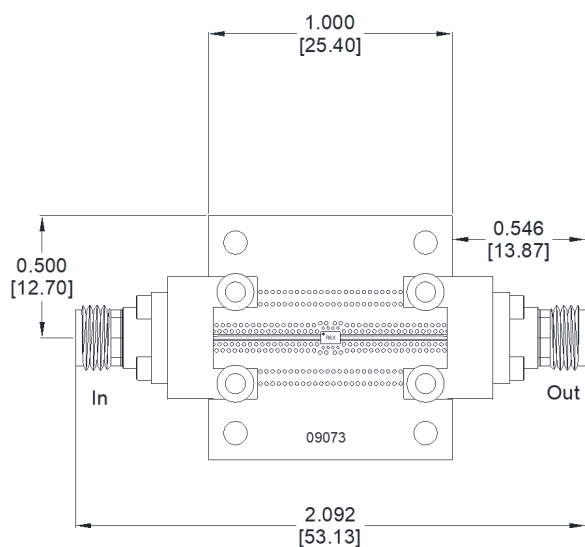
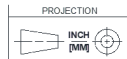
## Footprint Image



## ATN06-0040PSM

### 6dB DC-40GHz MMIC Attenuator

All measurements are typical



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