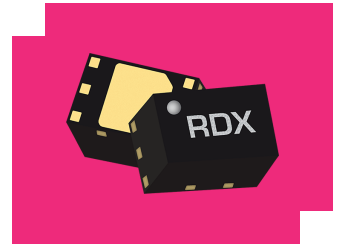


# **ATD00-0040PSM** **0dB DC - 40GHz MMIC Differential Attenuator**

## **DEVICE OVERVIEW**

### **General Description**

The ATD00-0040PSM is a surface mount GaAs MMIC 0dB differential attenuator housed in a DFN package. This attenuator provides a through line that is form fit to the ATD##-0040PSM family of attenuators. The compact DFN package allows for extreme miniaturization of SMT footprints. 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](#)

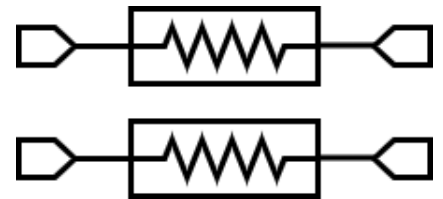
### **Features**

- Small 1.3 x 2.0 mm Package Size
- 0dB Attenuation From DC to 40 GHz
- 17dB Typical Return Loss Over Operating Band

### **Applications**

- Test Equipment
- Electronic Warfare
- Radar and satellite communications
- High Channel Count Systems

### **Functional Block Diagram**



### **Part Ordering Options**

| Part Number   | Description                                 | Package | Green Status  | Product Lifecycle | Export Classification |
|---------------|---------------------------------------------|---------|---------------|-------------------|-----------------------|
| ATD00-0040PSM | 0dB DC - 40GHz MMIC Differential Attenuator | DFN     | REACH<br>RoHS | Released          | EAR99                 |

**Table Of Contents**

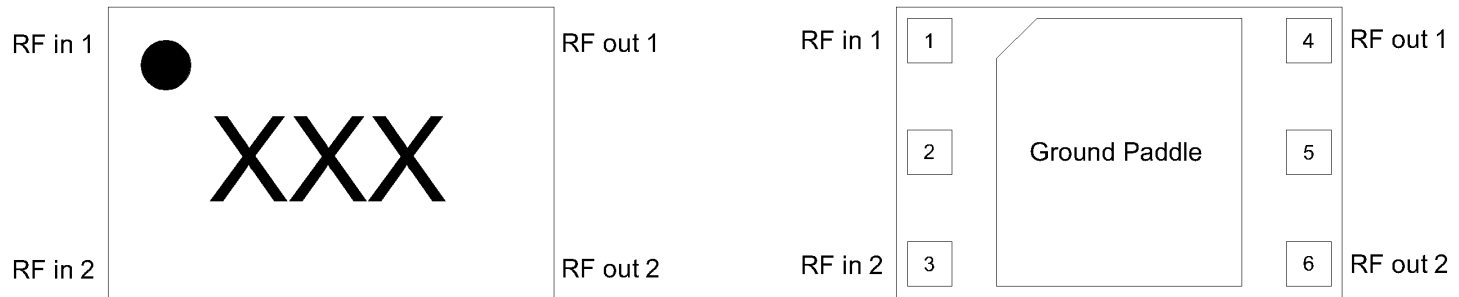
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| <ul style="list-style-type: none"> <li>■ <b>Device Overview</b> <ul style="list-style-type: none"> <li>General Description</li> <li>Features</li> <li>Applications</li> <li>Functional Block Diagram</li> </ul> </li> <li>■ <b>Port Configuration and Functions</b> <ul style="list-style-type: none"> <li>Port Diagram</li> <li>Port Functions</li> </ul> </li> <li>■ <b>Revision History</b></li> </ul> | <ul style="list-style-type: none"> <li>■ <b>Specifications</b> <ul style="list-style-type: none"> <li>Absolute Maximum Ratings</li> <li>Package Information</li> <li>Electrical Specifications</li> <li>Typical Performance Plot</li> <li>Typical Mixed Mode Performance Plots</li> </ul> </li> <li>■ <b>Mechanical Data</b> <ul style="list-style-type: none"> <li>Outline Drawing</li> </ul> </li> <li>■ <b>Footprint Image</b></li> </ul> |
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**Revision History**

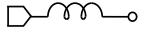
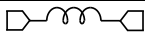
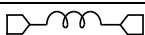
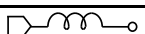
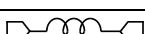
| Revision Code | Revision Date | Comment         |
|---------------|---------------|-----------------|
| -             | 2026-08-03    | Initial Release |

### Port Configuration and Functions

#### Port Diagram



## Port Functions

| Port          | Function         | Description                                                        | DC Equivalent Circuit                                                                 |
|---------------|------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Ground Paddle | Gnd              | Ground paddle should be connected to RF ground                     |    |
| Pin 1         | Input/Output 1   | Pin 1 is DC short to Pin 4                                         |    |
| Pin 2         | Non-connect (NC) | Pin 2 is not connected internally and should be tied to RF ground. |    |
| Pin 3         | Input/Output 2   | Pin 3 is DC short to Pin 6                                         |    |
| Pin 4         | Input/Output 1   | Pin 4 is DC short to Pin 1                                         |    |
| Pin 5         | Non-connect (NC) | Pin 5 is not connected internally and should be tied to RF ground. |    |
| Pin 6         | Input/Output 2   | Pin 6 is DC short to Pin 3                                         |  |

**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   |
| DC Current                    | 200            | mA   |

**Package Information**

| Parameter                  | Details            | Rating       |
|----------------------------|--------------------|--------------|
| ESD                        | 250 to < 500 Volts | HBM Class 1A |
| Dimensions                 | -                  | 2.0 x 1.3 mm |
| Moisture Sensitivity Level | -                  | MSL 1        |

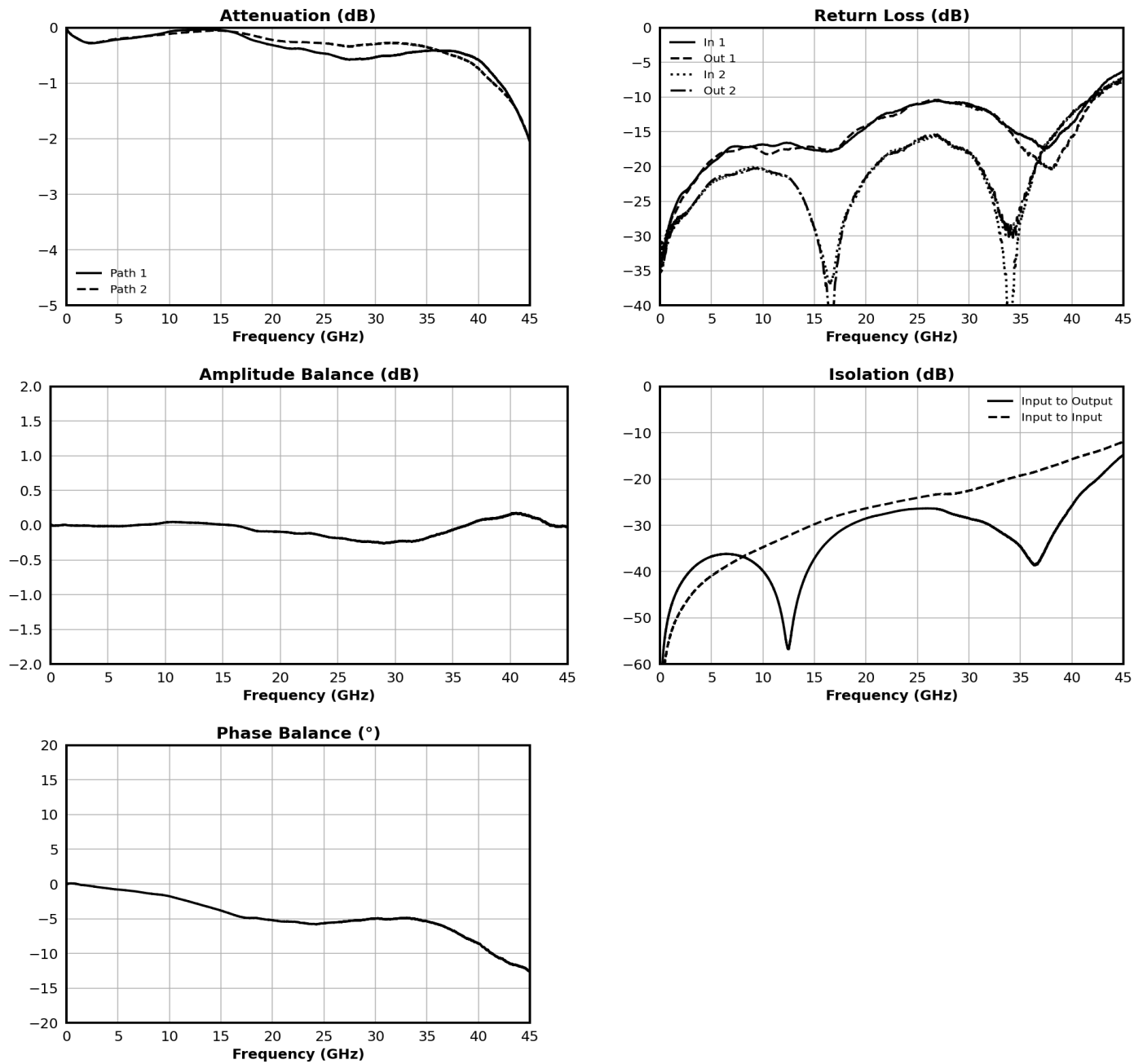
## Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system. Min and Max limits are guaranteed at TA=+25°C.

| Parameter                         | Test Conditions | Minimum Frequency (GHz) | Maximum Frequency (GHz) | Min | Typ | Max | Unit |
|-----------------------------------|-----------------|-------------------------|-------------------------|-----|-----|-----|------|
| Attenuation                       | Temp = 25°C     | 0                       | 40                      | -   | 0.3 | -   | dB   |
| Return Loss                       | Temp = 25°C     | 0                       | 40                      | -   | 17  | -   | dB   |
| Attenuation Flatness <sup>1</sup> | Temp = 25°C     | 0                       | 40                      | -   | 0.6 | -   | dB   |
| Phase Balance                     | -               | 0                       | 40                      | -   | 4   | -   | °    |
| Amplitude Balance                 | -               | 0                       | 40                      | -   | 0.1 | -   | dB   |

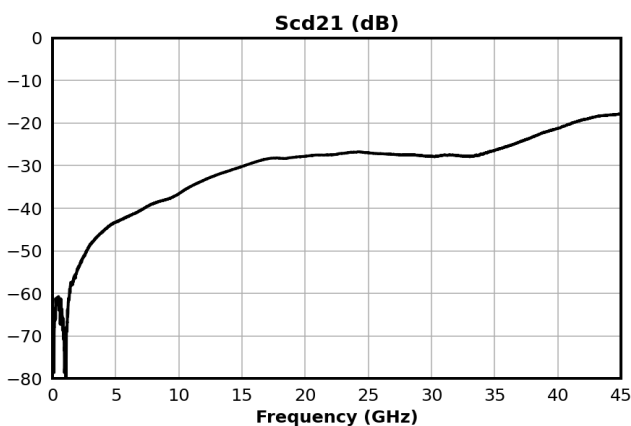
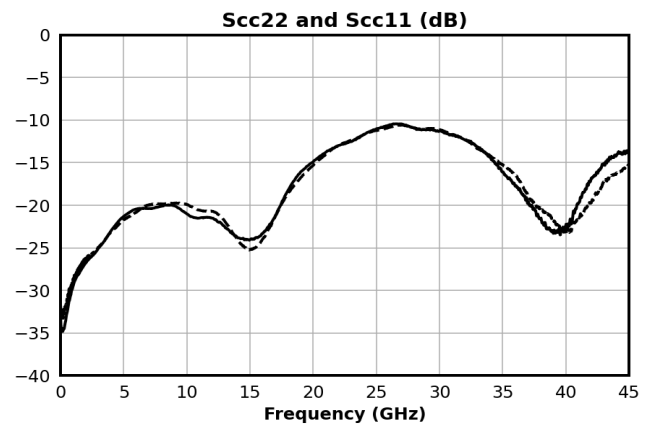
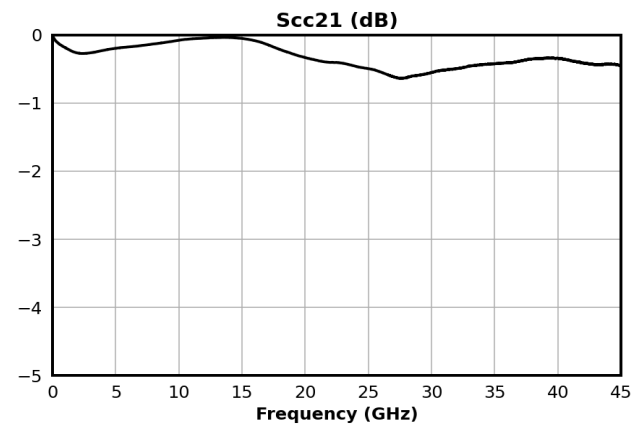
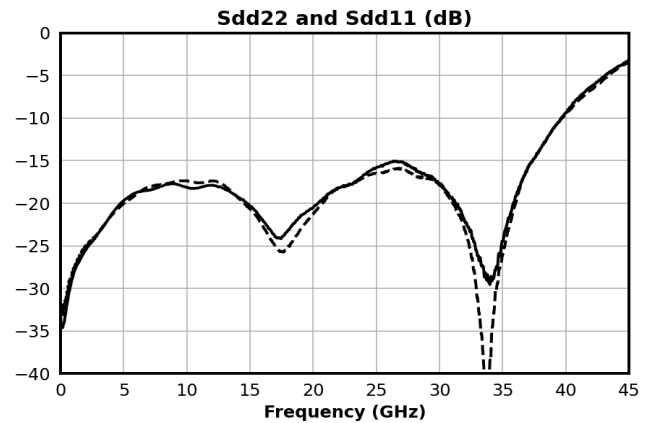
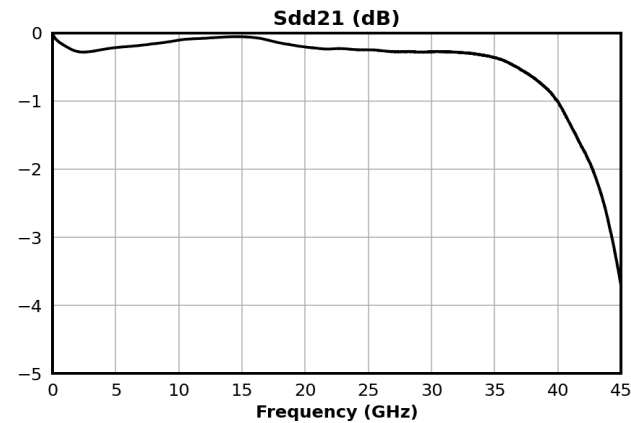
<sup>[1]</sup> Attenuation Flatness = Max(Insertion Loss) - Min(Insertion Loss)

### Typical Performance Plot



### Typical Mixed Mode Performance Plots

Mixed mode scattering parameters are used to characterize differential circuits. For differential attenuators this means that the 2 input ports become a single 100Ω differential port and the 2 output ports become a single 100Ω differential port. The two-port s-parameters of the differential attenuators are then characterized based on differential (d) signals.

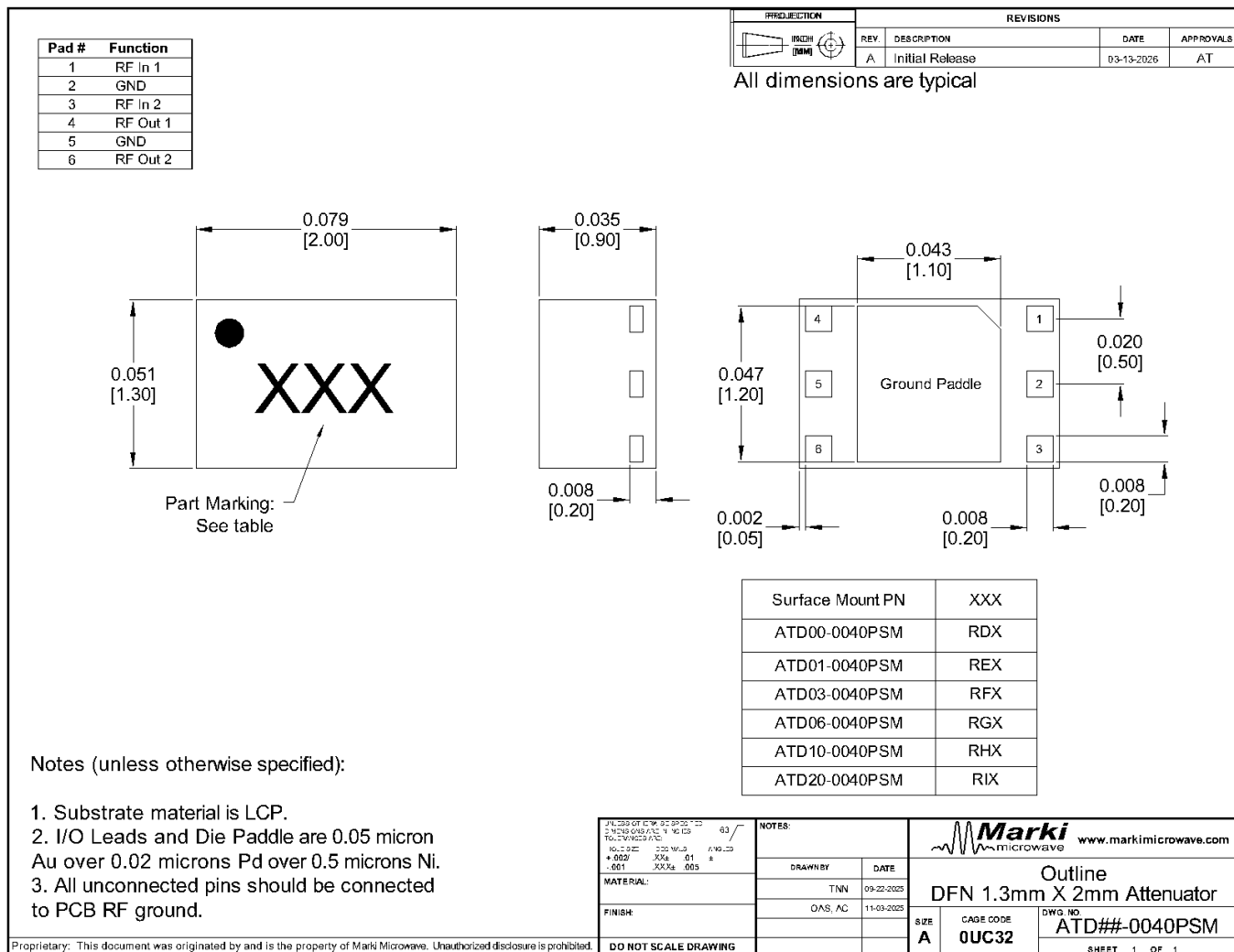


Measured data is de-embedded from fixture using AFR.

### Mechanical Data

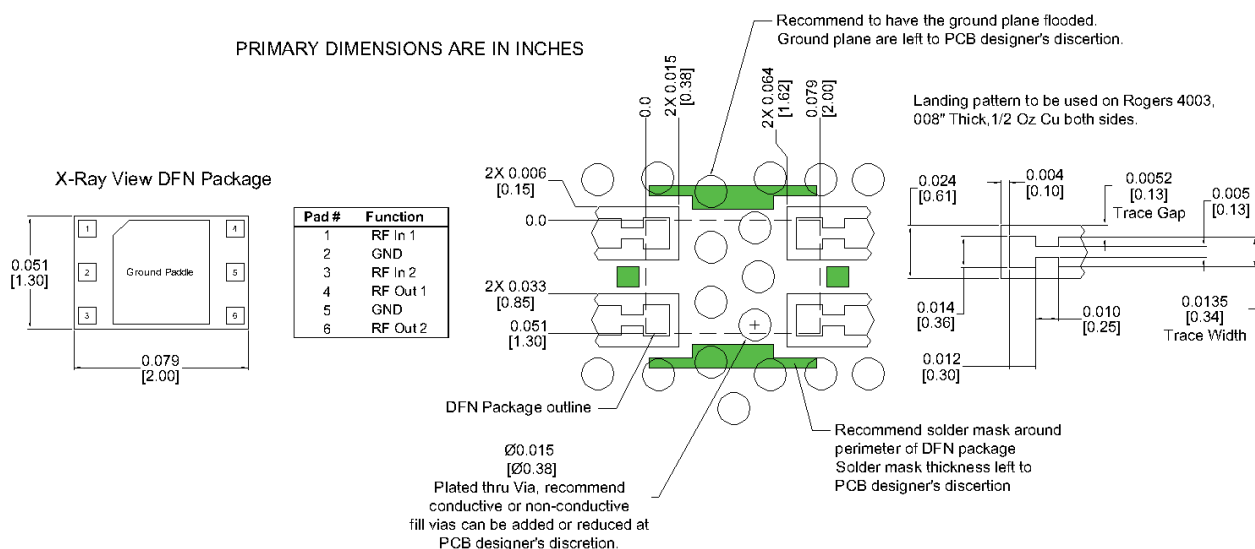
### Outline Drawing

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



## Footprint Image

Download : [Footprint Drawing](#)



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