

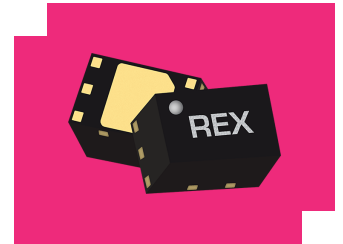
ATD01-0040PSM

1dB DC - 40GHz MMIC Differential Attenuator

DEVICE OVERVIEW

General Description

The ATD01-0040PSM is a surface mount GaAs MMIC 1dB differential attenuator housed in a DFN package. This attenuator is an ideal solution for attenuating differential signals and can be used in a wide range of applications. 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](#)

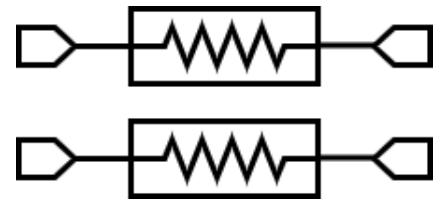
Features

- Small 1.3 x 2.0 mm Package Size
- 1dB Attenuation From DC to 40 GHz
- 23dB 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
ATD01-0040PSM	1dB DC - 40GHz MMIC Differential Attenuator	DFN	REACH RoHS	Pre-release	EAR99

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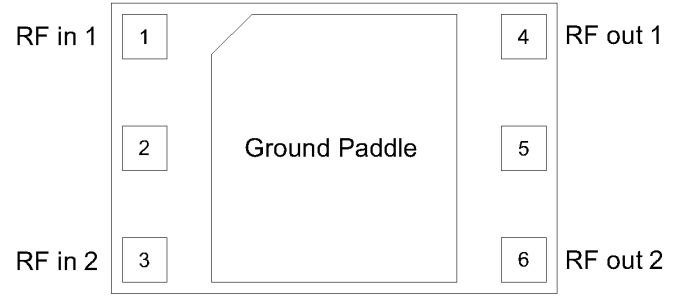
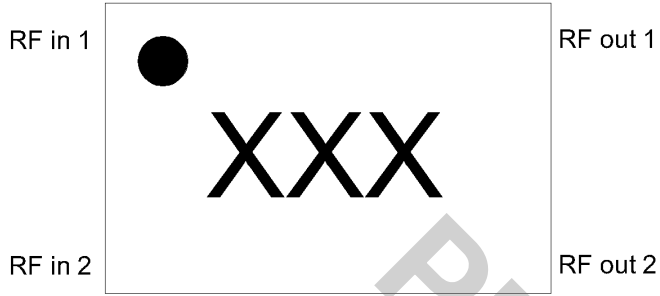
Revision History

Revision Code	Revision Date	Comment
G0	2025-10-15	Pre-Release

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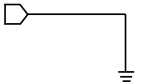
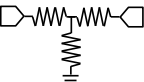

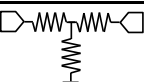
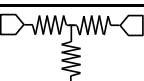
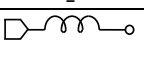
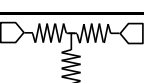
Port Configuration and Functions

Port Diagram



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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 and Pin 4 are DC connected to each other and ground through a T-network of resistors.	
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 and Pin 6 are DC connected to each other and ground through a T-network of resistors.	
Pin 4	Input/Output 1	Pin 4 and Pin 1 are DC connected to each other and ground through a T-network of resistors.	
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 and Pin 3 are DC connected to each other and ground through a T-network of resistors.	

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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	16	mA
RF Power Handling	8	W

Power handling tested with a continuous wave at 18GHz.

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

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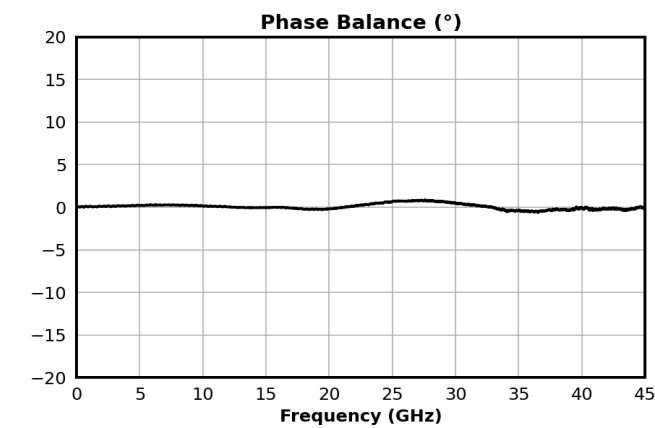
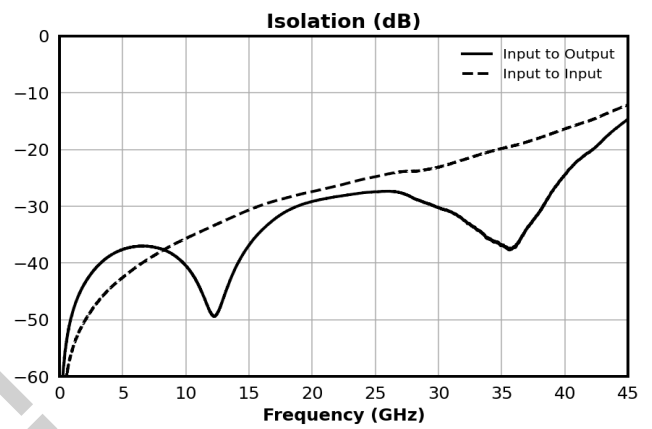
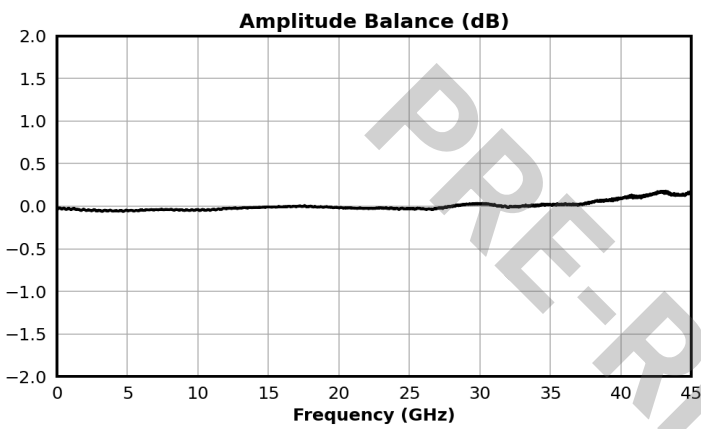
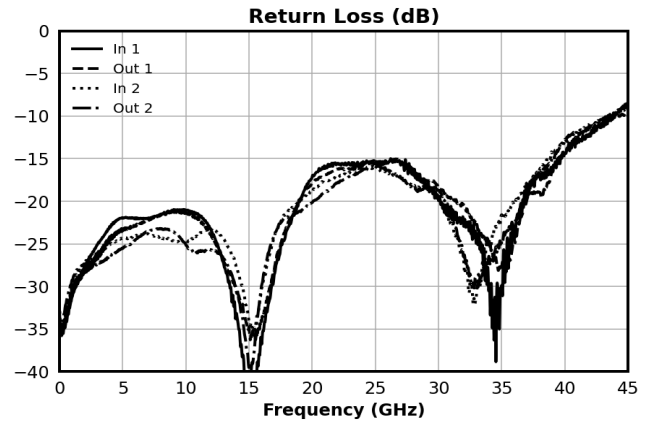
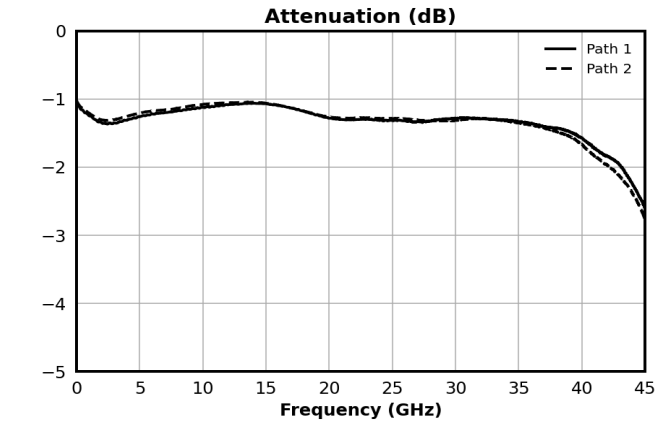
Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system. Min and Max limits are guaranteed at TA=+25°C. Attenuation paths 1 and 2 are symmetrical and have the same typical performance.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Attenuation	Configuration A, Temp = 25°C	0	40	-	1.3	-	dB
Return Loss	Configuration A, Temp = 25°C	0	40	-	23	-	dB
Attenuation Flatness	Configuration A, Temp = 25°C	0	40	-	0.7	-	dB
Phase Balance	-	0	40	-	0.3	-	°
Amplitude Balance	-	0	40	-	0	-	dB

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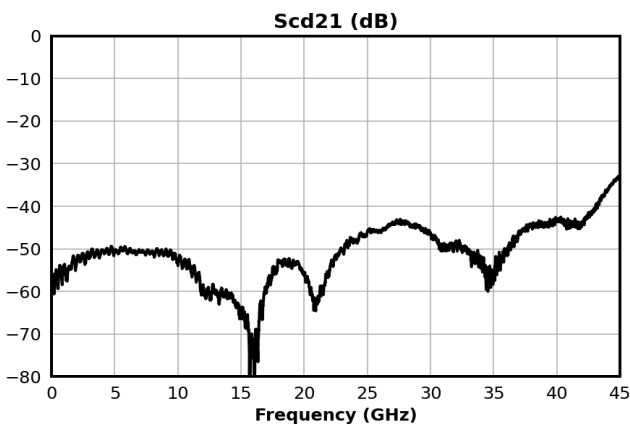
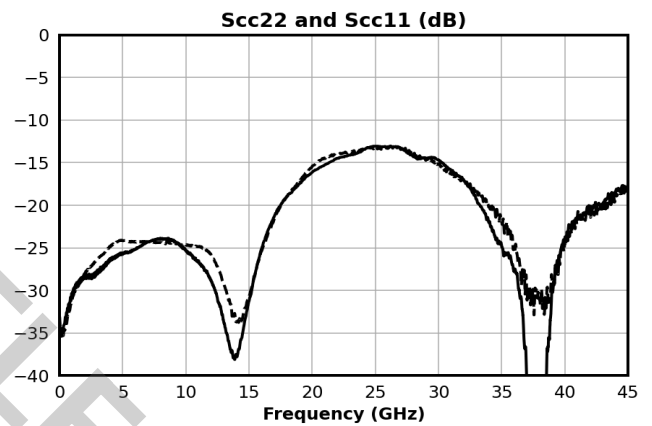
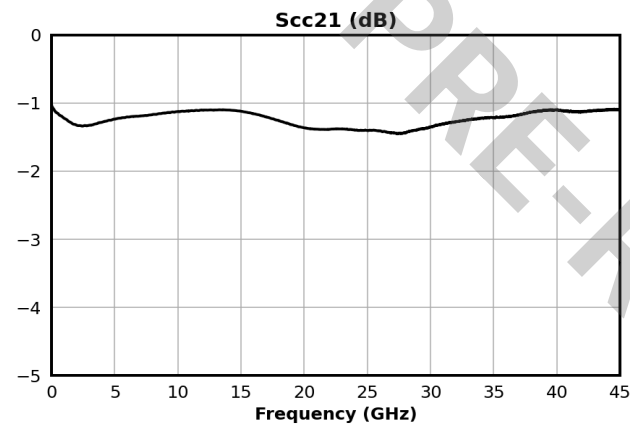
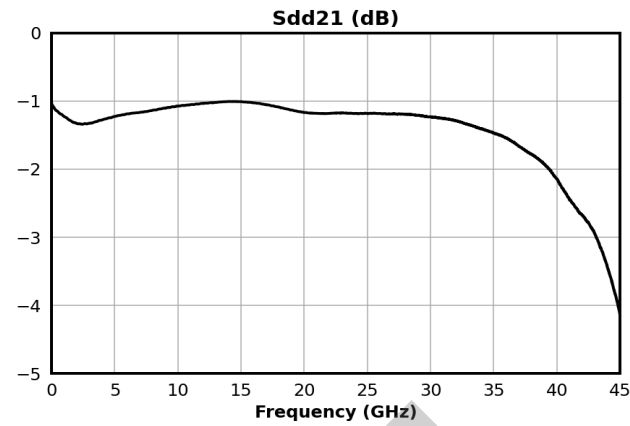
Typical Performance Plot



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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](#)

Pad #	Function
1	RF In 1
2	GND
3	RF In 2
4	RF Out 1
5	GND
6	RF Out 2

PROJECTION		REVISIONS		
REV.	DESCRIPTION	DATE	APPROVALS	
A	Initial Release	03-13-2026	AT	


All dimensions are typical



Surface Mount PN	XXX
ATD00-0040PSM	RDX
ATD01-0040PSM	REX
ATD03-0040PSM	RFX
ATD06-0040PSM	RGX
ATD10-0040PSM	RHX
ATD20-0040PSM	RIX

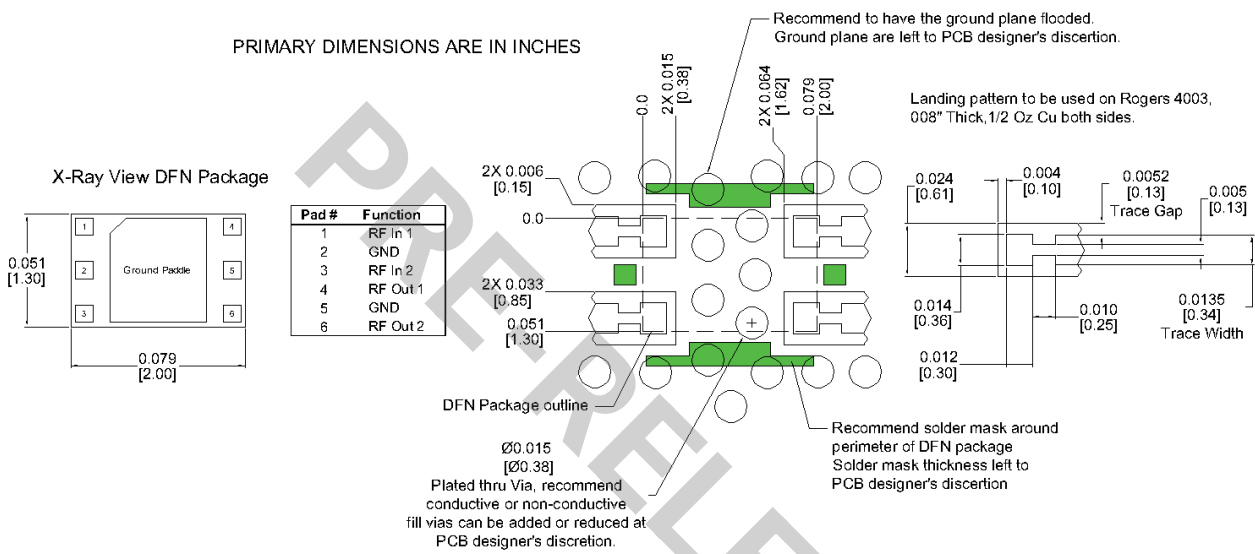
Notes (unless otherwise specified):

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

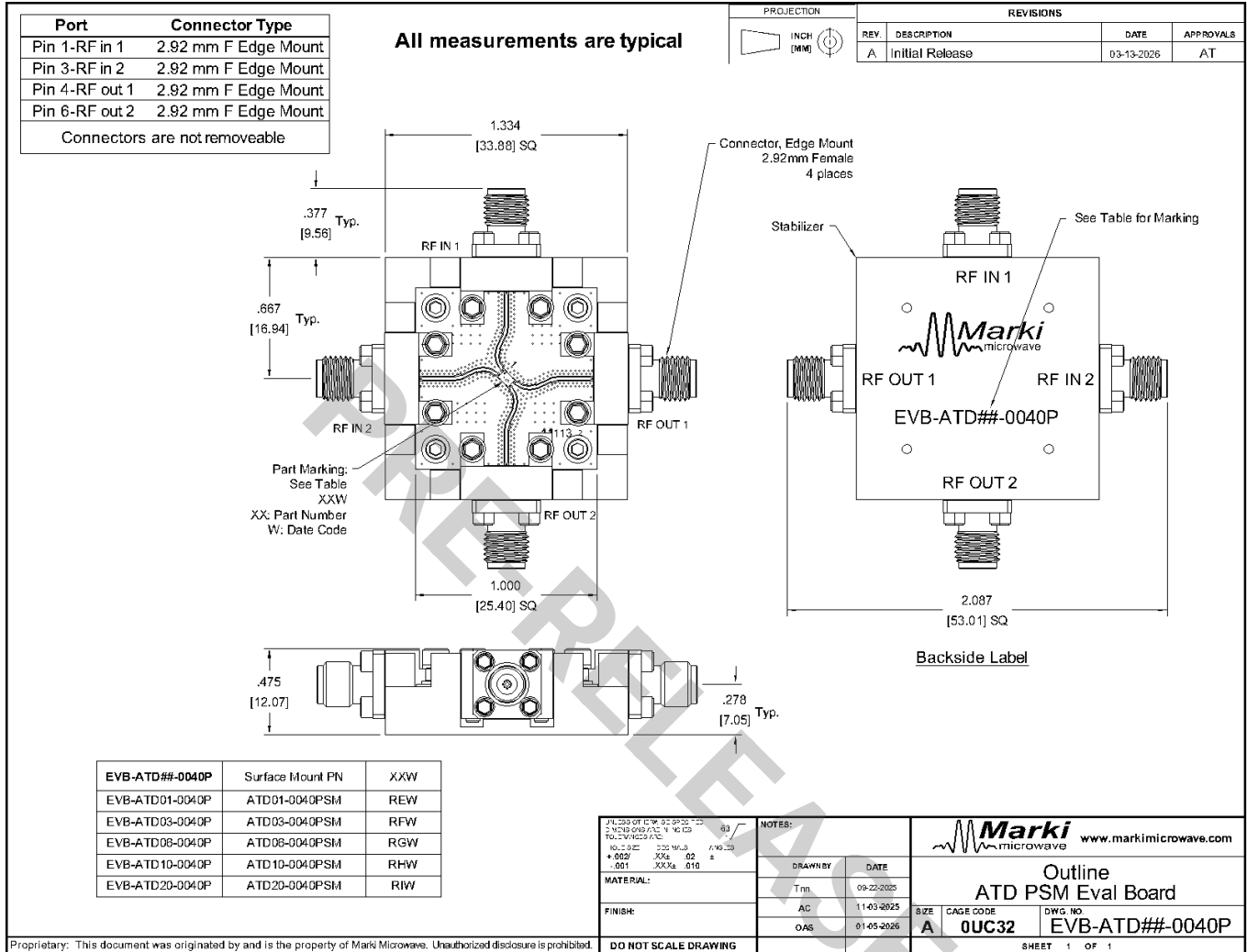
<small>JUL 2009 (REV. 02) 09-22-2025 3.14159 0.0001/0.0001 1.00 0.00 10.0000 0.0000 0.0000 0.0000 +0.0000 -0.0000 0.0000 0.0000 -0.0000 -0.0000 0.0000 0.0000</small>		NOTES: DRAWN BY: TNN DATE: 09-22-2025 OAS, AC 11-03-2025	 www.markimicrowave.com Outline DFN 1.3mm X 2mm Attenuator CAGE CODE: 0UC32 DWG. NO: ATD##-0040PSM
<small>Proprietary: This document was originated by and is the property of Marki Microwave. Unauthorized disclosure is prohibited.</small> DO NOT SCALE DRAWING		SIZE A	SHEET 1 OF 1

Footprint Image

Download : [Footprint Drawing](#)



Evaluation Board - Outline Drawing



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