

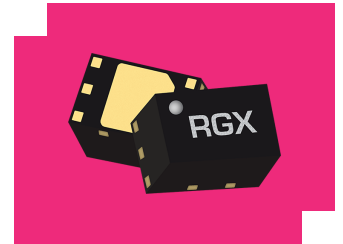
# ATD06-0040PSM

## 6dB DC - 40GHz MMIC Differential Attenuator

### DEVICE OVERVIEW

#### General Description

The ATD06-0040PSM is a surface mount GaAs MMIC 6dB 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](#)

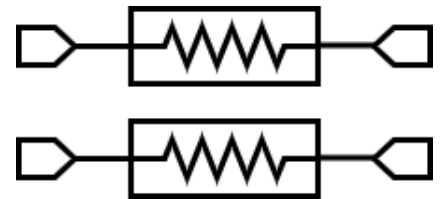
#### Features

- Small 1.3 x 2.0 mm Package Size
- 6dB 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
ATD06-0040PSM	6dB DC - 40GHz MMIC Differential Attenuator	DFN	REACH RoHS	Released	EAR99
EVB-ATD06-0040P	Evaluation Board, 6dB DC-40 GHz Differential Attenuator	EVB	REACH RoHS	Released	EAR99

### Table Of Contents

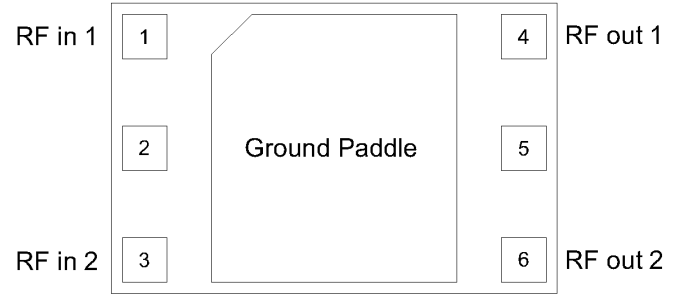
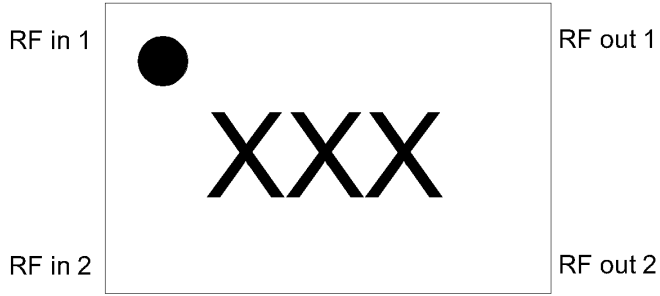
- **Device Overview**
  - General Description
  - Features
  - Applications
  - Functional Block Diagram
- **Port Configuration and Functions**
  - Port Diagram
  - Port Functions
- **Revision History**
- **Specifications**
  - Absolute Maximum Ratings
  - Package Information
  - Electrical Specifications
  - Typical Performance Plot
  - Typical Mixed Mode Performance Plots
- **Mechanical Data**
  - Outline Drawing
- **Footprint Image**
- **Evaluation Board**
  - Evaluation Board Outline Drawing

### Revision History

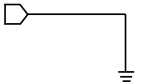
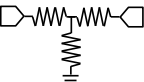

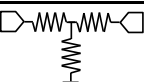
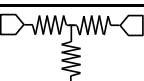
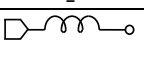
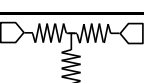
Revision Code	Revision Date	Comment
-	2026-06-02	Initial Release

## 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 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.	

## 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	50	mA
RF Power Handling	2	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

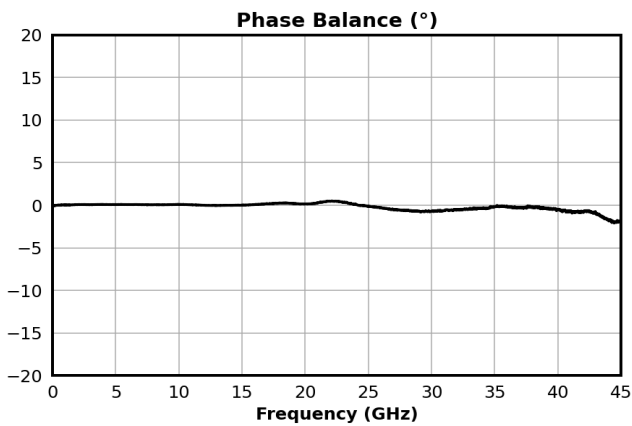
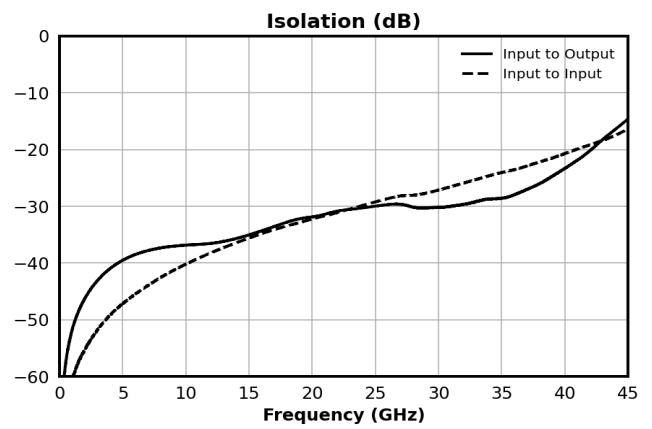
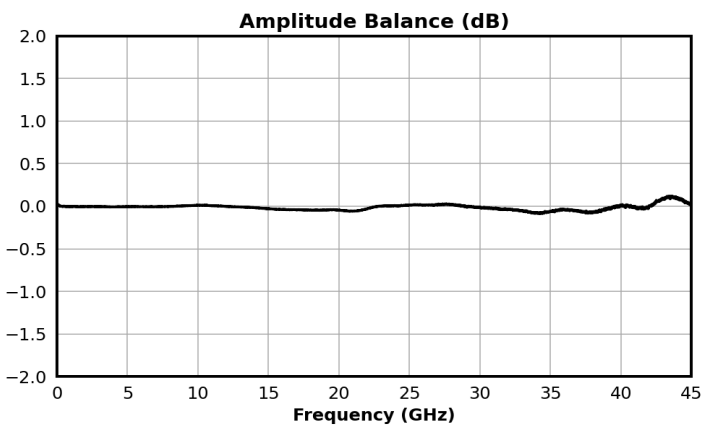
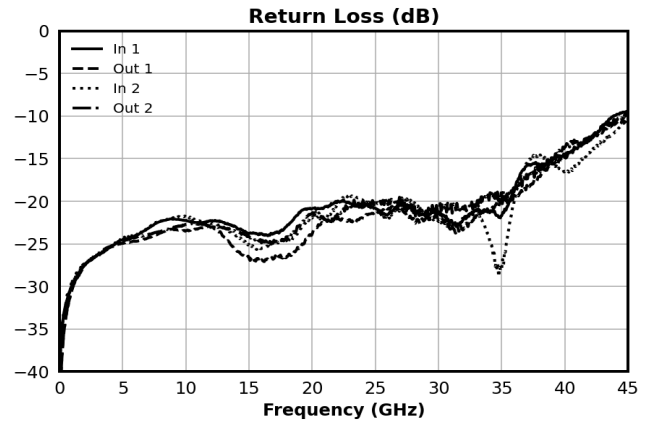
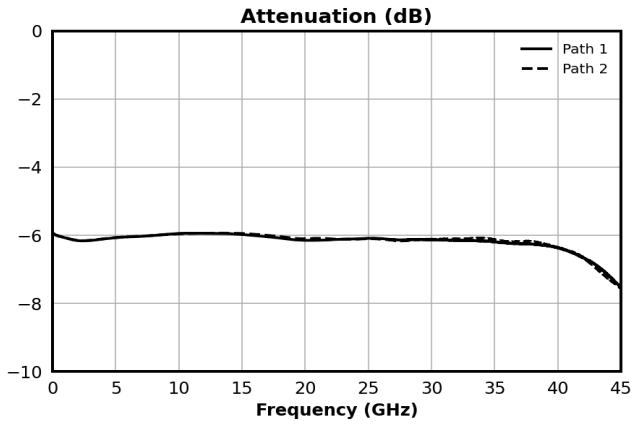
**Electrical Specifications**

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	Temp = 25°C	0	40	-	6.1	-	dB
Return Loss	Temp = 25°C	0	40	-	23	-	dB
Attenuation Flatness <sup>1</sup>	Temp = 25°C	0	40	-	0.4	-	dB
Phase Balance	-	0	40	-	0.2	-	°
Amplitude Balance	-	0	40	-	0	-	dB

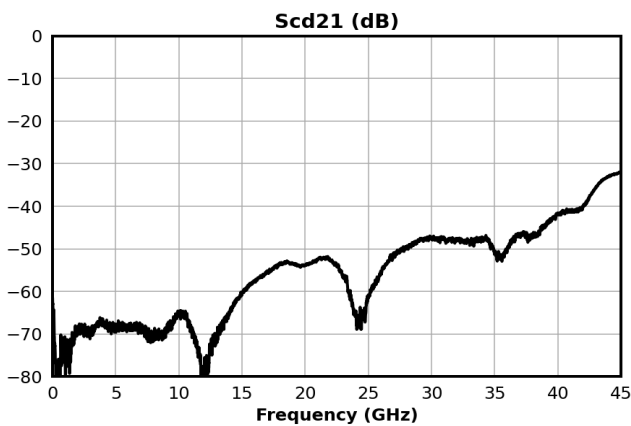
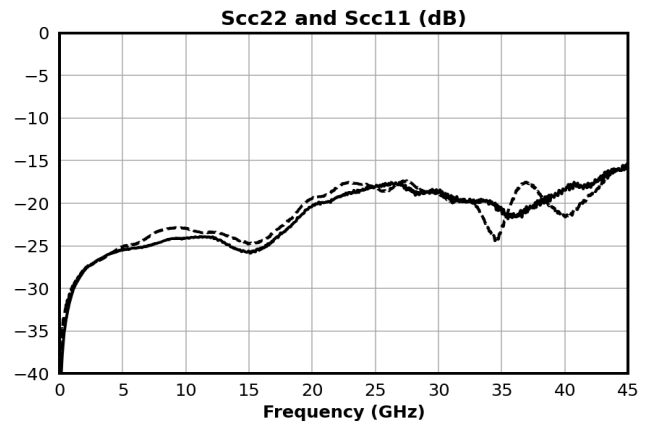
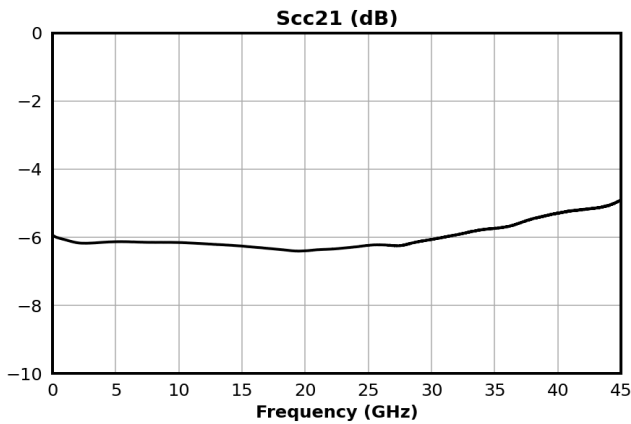
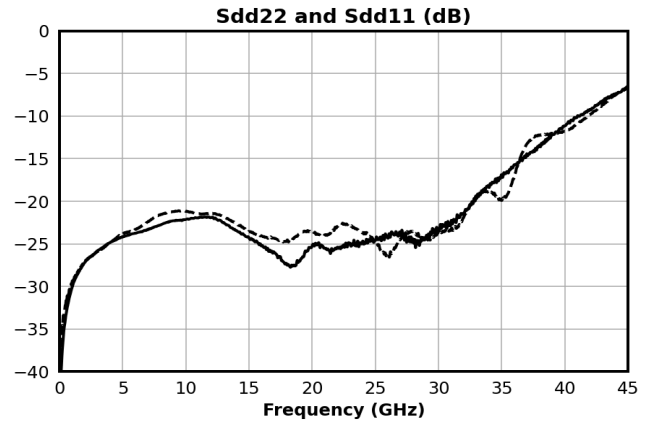
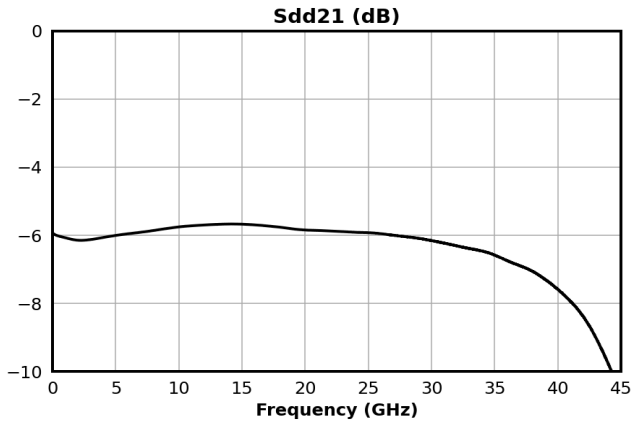
<sup>[1]</sup> Attenuation Flatness = Max(Insertion Loss) - Min(Insertion Loss)

### 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

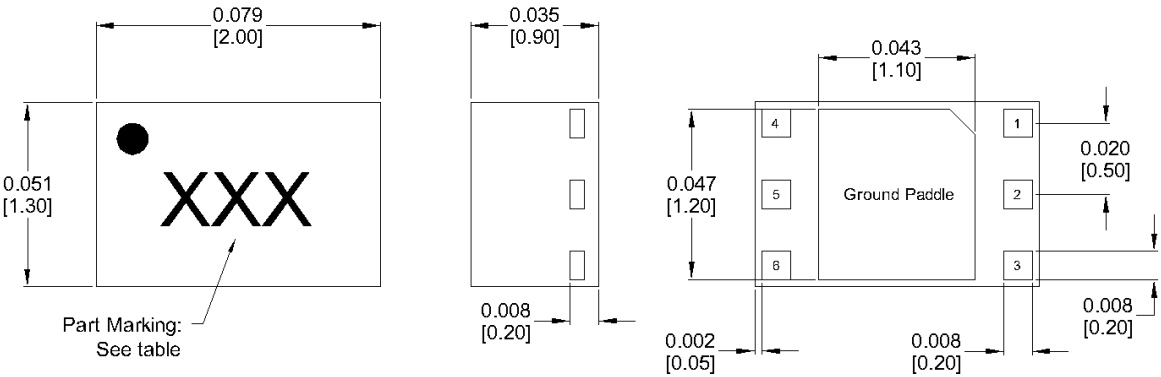
### Outline Drawing

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

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.

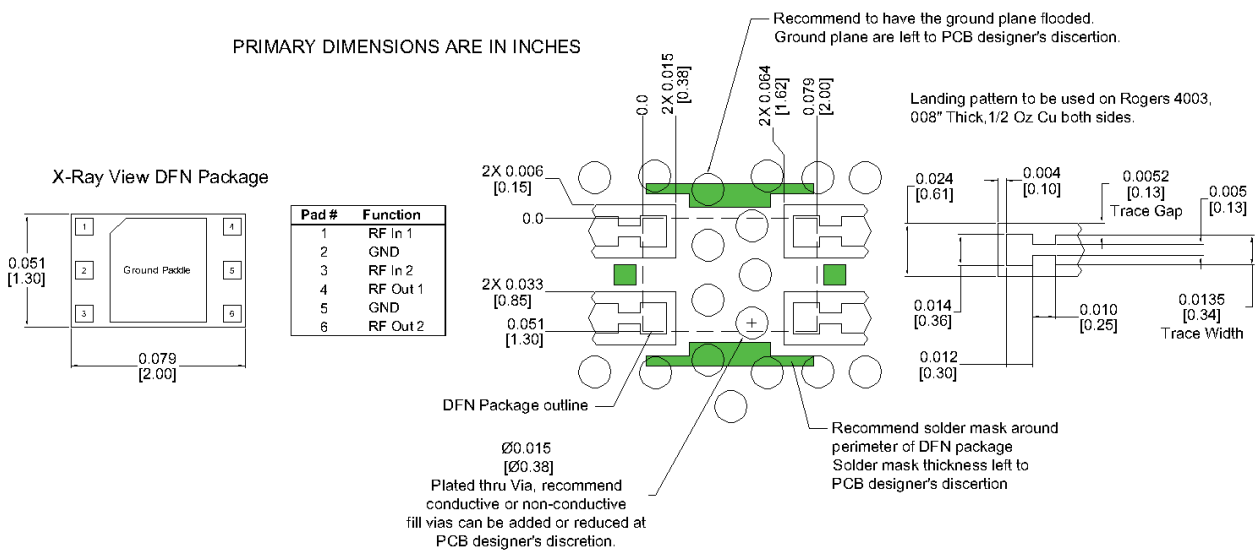
MATERIAL:		FINISH:		NOTES:		Marki microwave www.markimicrowave.com	
						Outline DFN 1.3mm X 2mm Attenuator	
						DWG. NO. ATD##-0040PSM	
						SHEET 1 OF 1	

Proprietary: This document was originated by and is the property of Marki Microwave. Unauthorized disclosure is prohibited.

DO NOT SCALE DRAWING

### Footprint Image

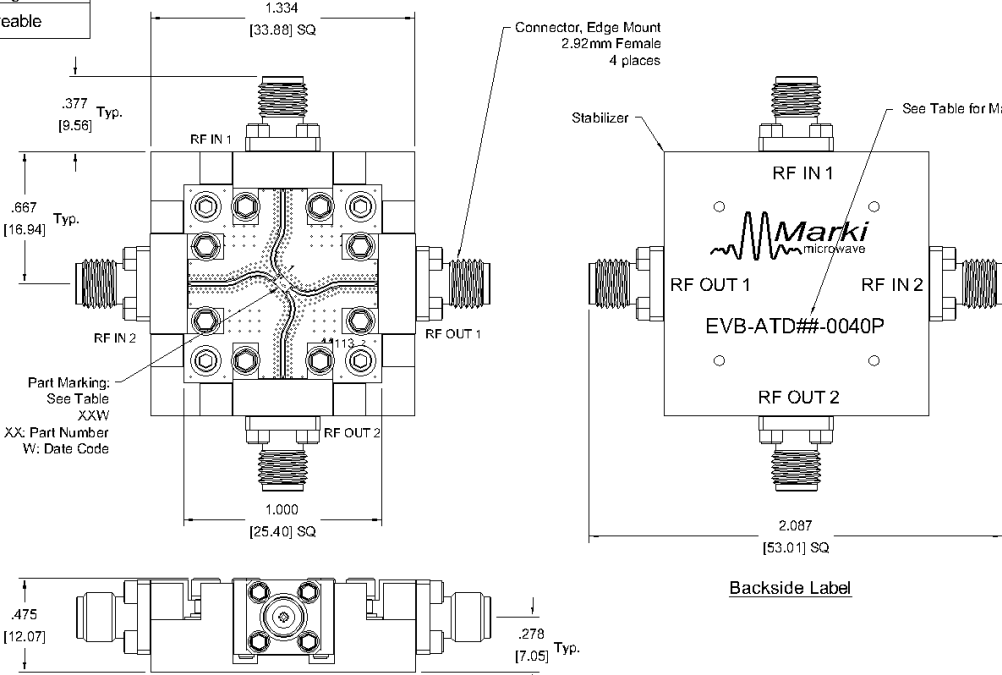
Download : [Footprint Drawing](#)



### Evaluation Board - Outline Drawing

Port	Connector Type
Pin 1-RF in 1	2.92 mm F Edge Mount
Pin 3-RF in 2	2.92 mm F Edge Mount
Pin 4-RF out 1	2.92 mm F Edge Mount
Pin 6-RF out 2	2.92 mm F Edge Mount

**All measurements are typical**



Connector, Edge Mount  
2.92mm Female  
4 places

Stabilizer

See Table for Marking

**Backside Label**

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

<b>EVB-ATD##-0040P</b>	Surface Mount PN	XXW
EVB-ATD01-0040P	ATD01-0040PSM	REW
EVB-ATD03-0040P	ATD03-0040PSM	RFW
EVB-ATD06-0040P	ATD06-0040PSM	RGW
EVB-ATD10-0040P	ATD10-0040PSM	RHW
EVB-ATD20-0040P	ATD20-0040PSM	RIW

NOTES:		DRAWN BY		DATE	
J1, 255 OF E.W. 52 9P 25 11 10 2 INCHES OVER 1 INCHES TOL: ±0.025 / ±0.010 FINISH: XXW, 02, 010 +.002 XXW, 02 -.001 XXW, 010		Tnn	09-22-2025		
		AC	11-03-2025		
		OAS	01-05-2026		

Marki microwave www.markimicrowave.com			
Outline ATD PSM Eval Board			
SIZE	CAGE CODE	DWG. NO.	
A	0UC32	EVB-ATD##-0040P	

Proprietary: This document was originated by and is the property of Marki Microwave. Unauthorized disclosure is prohibited.

DO NOT SCALE DRAWING

SHEET 1 OF 1

**DISCLAIMER**

MARKI MICROWAVE, LLC., ("MARKI") PROVIDES TECHNICAL SPECIFICATIONS AND DATA (INCLUDING DATASHEETS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, AND OTHER INFORMATION AND RESOURCES "AS IS" AND WITH ALL FAULTS. MARKI DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

These resources are intended for developers skilled in the art designing with Marki products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards and other requirements. Marki makes no guarantee regarding the suitability of its products for any particular purpose, nor does Marki assume any liability whatsoever arising out of your use or application of any Marki product.

Marki grants you permission to use these resources only for development of an application that uses Marki products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Marki intellectual property or to any third-party intellectual property. Marki reserves the right to make changes to the product(s) or information contained herein without notice.

MARKI MICROWAVE and T3 MIXER are trademarks or registered trademarks of Marki Microwave, LLC. All other trademarks used are the property of their respective owners.

© 2026, Marki Microwave, LLC