

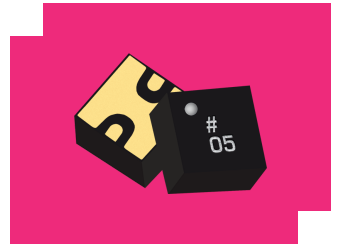
ATN03-0050CSP1

Chip Scale Package MMIC 50 GHz 3dB Attenuator

DEVICE OVERVIEW

General Description

The ATN03-0050CSP1 is a surface mount GaAs MMIC 3dB 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.



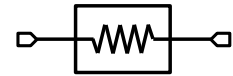
Features

- 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 Handling
- Low SWaP

Applications

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

Functional Block Diagram



- This product embodies Marki Microwave's U.S. Pat. 11,869,858.

Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification	Recommended Replacement
ATN03-0050CSP1	Chip Scale Package MMIC 50 GHz 3dB Attenuator	CSP1	REACH RoHS	Not Recommended for New Design	EAR99	ATN03-0070CSP1
EVB-ATN03-0050	Evaluation Board, Chip Scale Package MMIC 50 GHz 3dB 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 Plots
- Performance Over Temperature

■ Mechanical Data

- Outline Drawing

■ Footprint Image

■ Evaluation Board

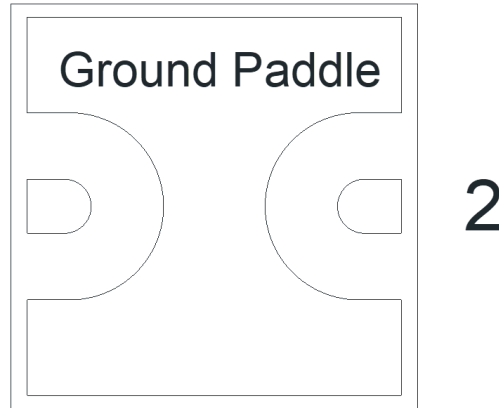
- Evaluation Board Outline Drawing

Revision History

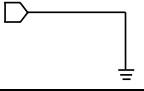
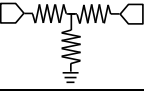
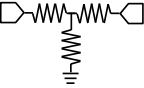
Revision Code	Revision Date	Comment
-	2022-08-11	Initial Release
A	2025-04-15	NRND

Port Configuration and Functions

Port Diagram



Port Functions

Port	Function	Description	DC Equivalent Circuit
Ground Paddle	Ground	CSP 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
Moisture Sensitivity Level	-	MSL 3

NOT RECOMMENDED FOR NEW DESIGN

Electrical Specifications

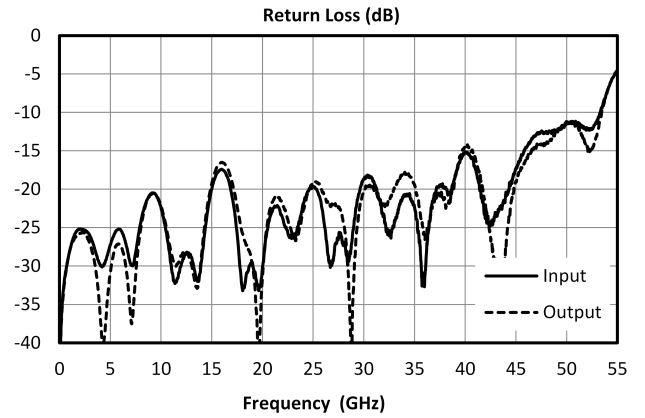
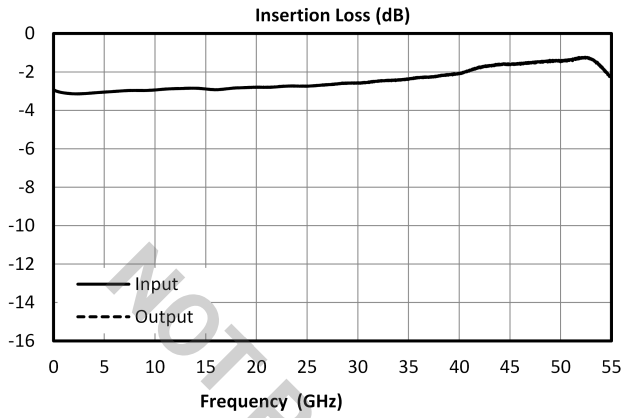
The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the attenuator in a CSP package with a sine wave input applied to port 1.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Attenuation	-	0	30	-	2.85	-	dB
Attenuation	-	30	50	-	2	-	dB
Impedance	-	0	50	-	50	-	Ω
Return Loss	-	0	40	13	20	-	dB
Return Loss	-	40	50	-	15	-	dB

NOT RECOMMENDED FOR NEW DESIGN

Typical Performance Plots

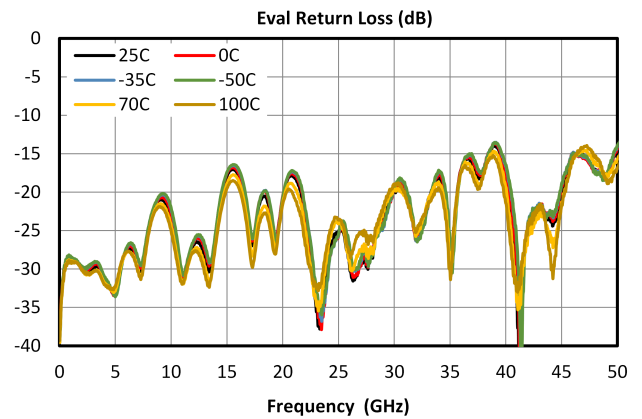
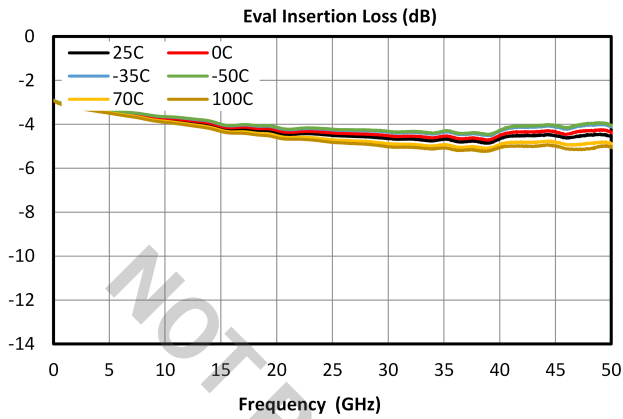
Electrical performance data is de-embedded to the CSP package ports.



NOT RECOMMENDED FOR NEW DESIGN

Performance Over Temperature

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



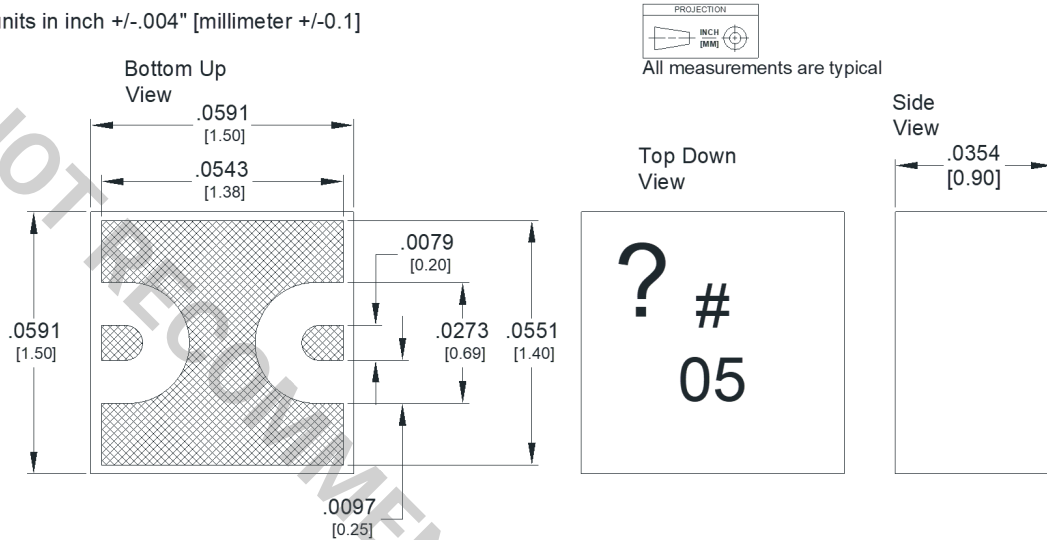
NOT RECOMMENDED FOR NEW DESIGN

Mechanical Data

Outline Drawing

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

units in inch +/- .004" [millimeter +/- 0.1]



Notes: (Unless otherwise specified)

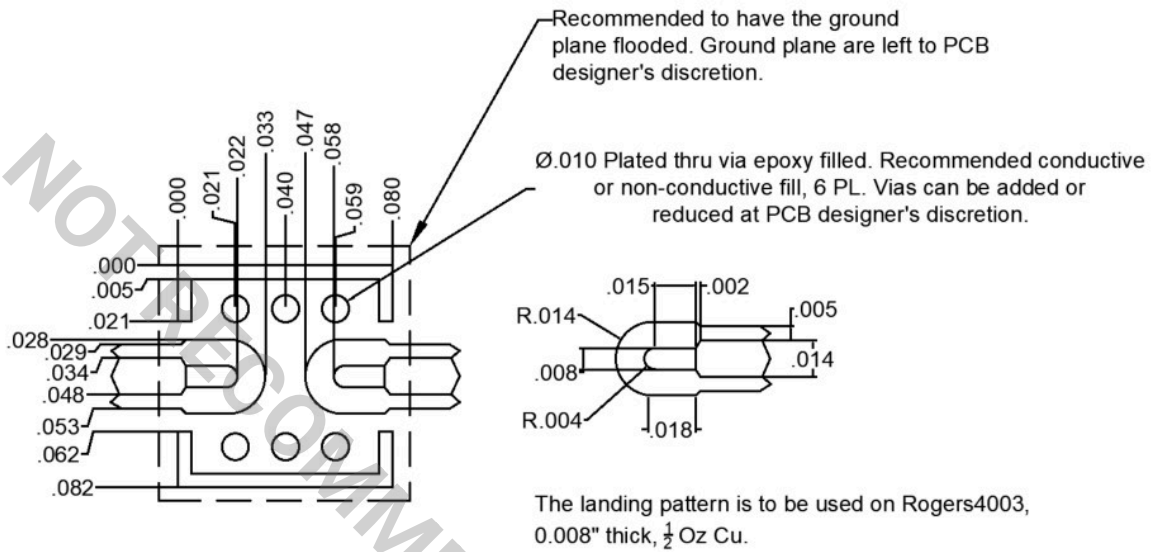
1. Front to back registration to be 50.8µm max.
2. Circuits to be shipped individually.
3. Shaded areas are metalized.
4. Finish: Ni: 0.5 - 2.5 µm
Pd: 0.02 - 0.15 µm
Au: 0.003 - 0.015 µm

ATN03-0050CSP1

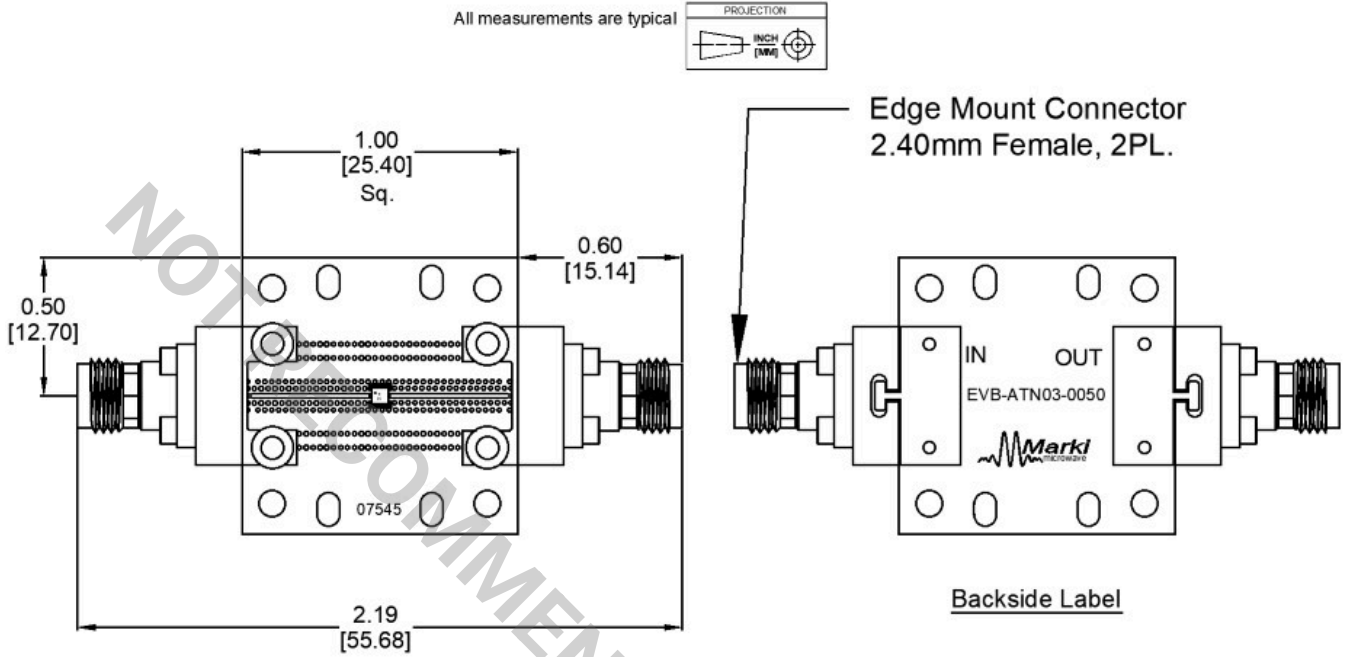
Chip Scale Package MMIC 50 GHz 3dB Attenuator

Footprint Image

Download : [Footprint Drawing](#)



Evaluation Board - Outline Drawing



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.

© 2022, 2025, Marki Microwave, LLC

NOT RECOMMENDED FOR NEW DESIGN