



# ANALOG DEVICES EVAL-ADA4099-1HUIZ Evaluation Board User Guide

[Home](#) » [Analog Devices](#) » ANALOG DEVICES EVAL-ADA4099-1HUIZ Evaluation Board User Guide 



## EVAL-ADA4099-1HUIZ Evaluation Board User Guide

### Contents

- [1 FEATURES](#)
- [2 EVALUATION KIT CONTENTS](#)
- [3 GENERAL DESCRIPTION](#)
- [4 EVALUATION BOARD PHOTOGRAPHS](#)
- [5 EVALUATION BOARD QUICK START PROCEDURES](#)
- [6 POWER SUPPLY CONSIDERATION](#)
- [7 INITIAL BOARD CONFIGURATION](#)
- [8 USING THE EVALUATION BOARD FOR TESTING](#)
- [9 EVALUATION BOARD SCHEMATICS AND ARTWORK](#)
- [10 ORDERING INFORMATION BILL OF MATERIALS](#)
- [11 Documents / Resources](#)
  - [11.1 References](#)
- [12 Related Posts](#)

## FEATURES

Fully featured evaluation board for the ADA4099-1  
Enables efficient prototyping  
User-defined circuit configuration  
Simplified connection to test equipment and other circuits

## EVALUATION KIT CONTENTS

EVAL-ADA4099-1HUIZ  
EQUIPMENT NEEDED  
Dual-output dc power supply  
Dual-channel signal generator  
Oscilloscope  
Banana jack to grabber cables  
BNC to SMA cables  
DOCUMENTS NEEDED  
ADA4099-1 datasheet

## **GENERAL DESCRIPTION**

The EVAL-ADA4099-1HUIZ evaluates the ADA4099-1 6-lead, thin small outline transistor (TSOT), robust Over-The-Top™ the precision operational amplifier (op-amp). The EVALADA4099-1HUIZ is a prepopulated board using a gain of 1 configuration.

The EVAL-ADA4099-1HUIZ design allows simplified and efficient use. The EVAL-ADA4099-1HUIZ has edge-mounted Subminiature version A (SMA) connectors on the inputs and outputs to allow efficient connection to test equipment or other circuits. Bulk test points are also incorporated as an alternative option to be used for the inputs and outputs. The optimized EVAL-ADA4099-1HUIZ ground plane, component placement, and power supply allow maximum circuit flexibility and performance. The EVAL- ADA4099-1HUIZ combines surface-mount technology (SMT) with almost all components being 0805 in size to provide simplified installation and the option to replace and older when needed, except for the bypass capacitors (C1 to C4) that are fixed in 0603 sizes. The EVAL-ADA4099-1HUIZ also has an unpopulated resistor and capacitor pads, which provide the user with the options and flexibility to implement different application circuits and configurations.

Figure 1 shows the top view of the EVAL-ADA4099-1HUIZ and Figure 2 shows the bottom view of the EVAL-ADA4099-1HUIZ.

**PLEASE SEE THE LAST PAGE FOR AN IMPORTANT WARNING AND LEGAL TERMS AND CONDITIONS.**

## **EVALUATION BOARD PHOTOGRAPHS**

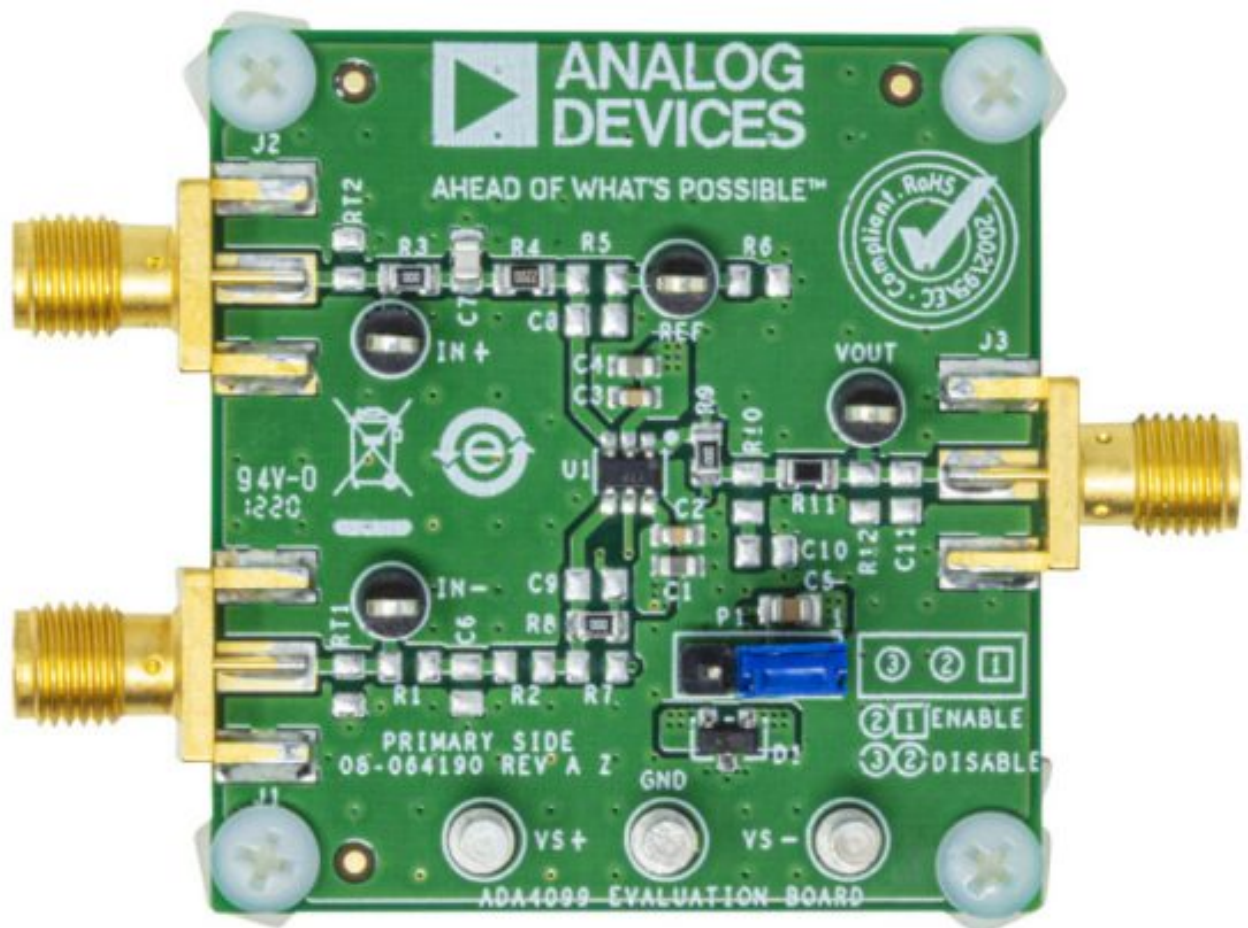
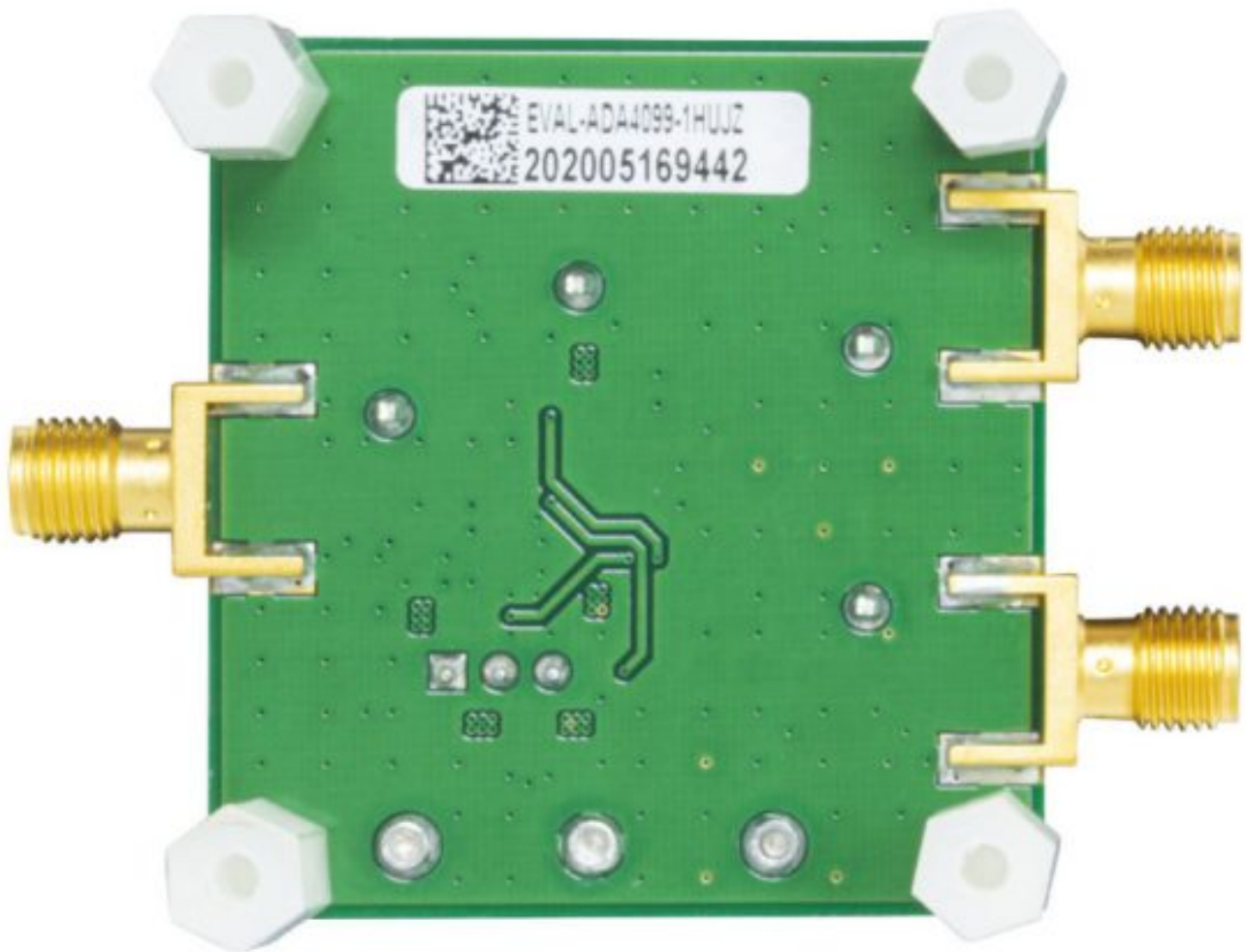


Figure 1. EVAL-ADA4099-1HJZ, Primary Side



*Figure 2. EVAL-ADA4099-1HUJZ, Secondary Side*

Refer to the ADA4099-1 data sheet for full specifications, details of the device operation, and application circuit configurations. Consult the datasheet in conjunction with this user guide when using the EVAL-ADA4099-1HUJZ.

## **EVALUATION BOARD QUICK START PROCEDURES**

The Power Supply Consideration section, the Initial Board Configuration section, and the Using the Evaluation Board for Testing section outline the basic, prepopulated EVALADA4099-1HUJZ configuration required to test the basic functionality of the device.

### **POWER SUPPLY CONSIDERATION**

Use the turret pins (VS+, VS–, and GND) to power up the EVAL-ADA4099-1HUJZ. Ensure that the correct polarity and voltage level is used to avoid reverse polarity and overvoltage, which can permanently damage the EVAL-ADA4099-1HUJZ. The operating supply voltage range is 3.15 V to 50 V. Higher voltages can damage the amplifier. Decoupling capacitors of 10  $\mu$ F and 0.1  $\mu$ F are preinstalled on the EVAL-ADA4099-1HUJZ for ready operation.

### **INITIAL BOARD CONFIGURATION**

To set up the initial EVAL-ADA4099-1HUJZ configuration, perform the following steps:

1. Ensure that all equipment is powered down, including the power supply and the signal generator. Use the banana jack to grabber cables to connect the positive supply, ground, and negative supply to the VS+, VS–,

and GND turret pins, respectively.

2. Verify that the P1 jumper for the SHDN pin on the evaluation board is in Position 1 (labeled ENABLE) so that the device is enabled.
3. Connect the signal generator at the IN+ SMA pad using a BNC to SMA cable or at the IN+ bulk test point and GND turret using a BNC to grabber cable.
4. Connect VOUT on the evaluation board to the oscilloscope using a BNC to SMA cable or connect an oscilloscope probe with a 10× attenuation factor to the VOUT bulk test point and clip the ground of the oscilloscope probe with a 10× attenuation factor to the GND turret pin.

## **USING THE EVALUATION BOARD FOR TESTING**

When the procedure in the Initial Board Configuration section is complete, implement the following settings and verify the expected output:

1. Set the power supply to +15 V for the positive supply and –15 V for the negative supply, and then turn on the power supply.
2. Configure the signal generator to output a 100 Hz sine wave with 0 V offset and 1 V p-p, and enable the generator.
3. Set the oscilloscope scaling to 200 mV/2 ms per division. If using a 10× probe instead of a BNC to SMA cable to monitor VOUT, set the oscilloscope input impedance to 1 MΩ, and the oscilloscope probe setting attenuation factor to 10×. Ensure that a 100 Hz, 1 V p-p sine wave centered at 0 V appears on the oscilloscope.
4. To evaluate the device shutdown performance, move the P1 jumper into Position 3 (labeled DISABLE) to tie SHDN to VS+. There is no output at the VOUT SMA pad or bulk test point. To reenabling the device, move the P1 jumper back into Position 1 (labeled ENABLE).

## **EVALUATION BOARD SCHEMATICS AND ARTWORK**



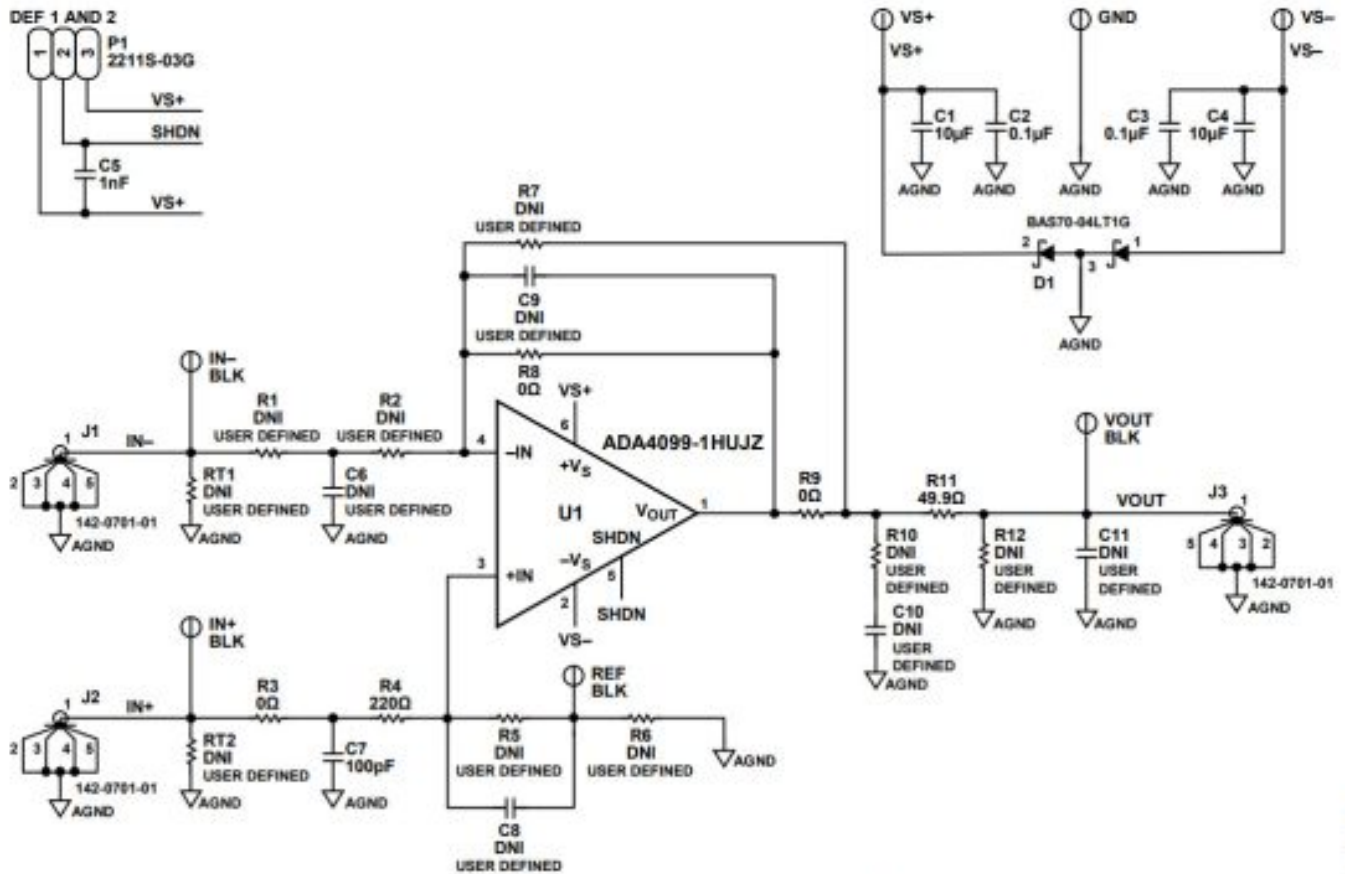


Figure 3. EVAL-ADA4099-1HUJZ Schematic

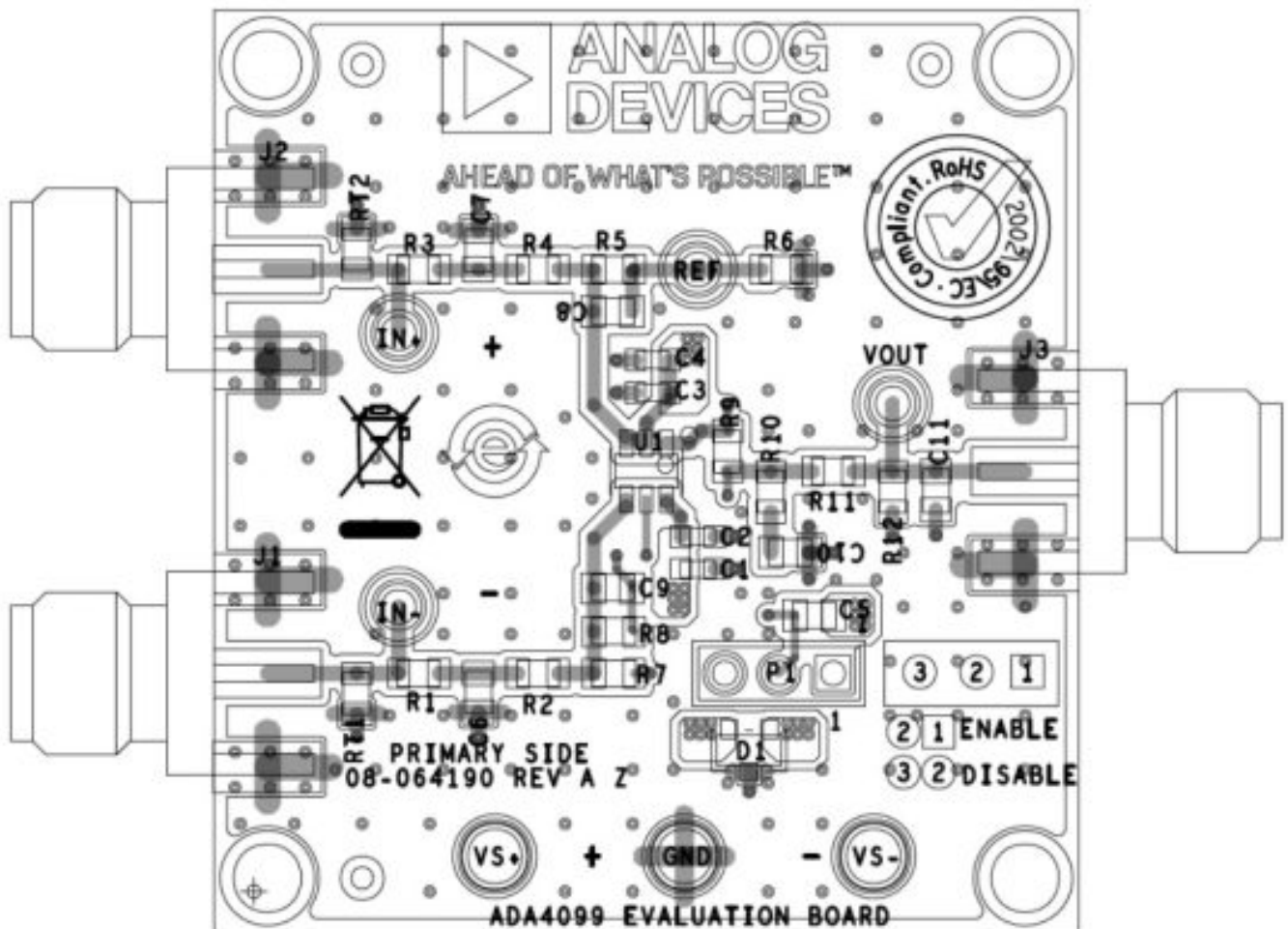


Figure 4. EVAL-ADA4099-1HUJZ Layout Pattern, Primary Side

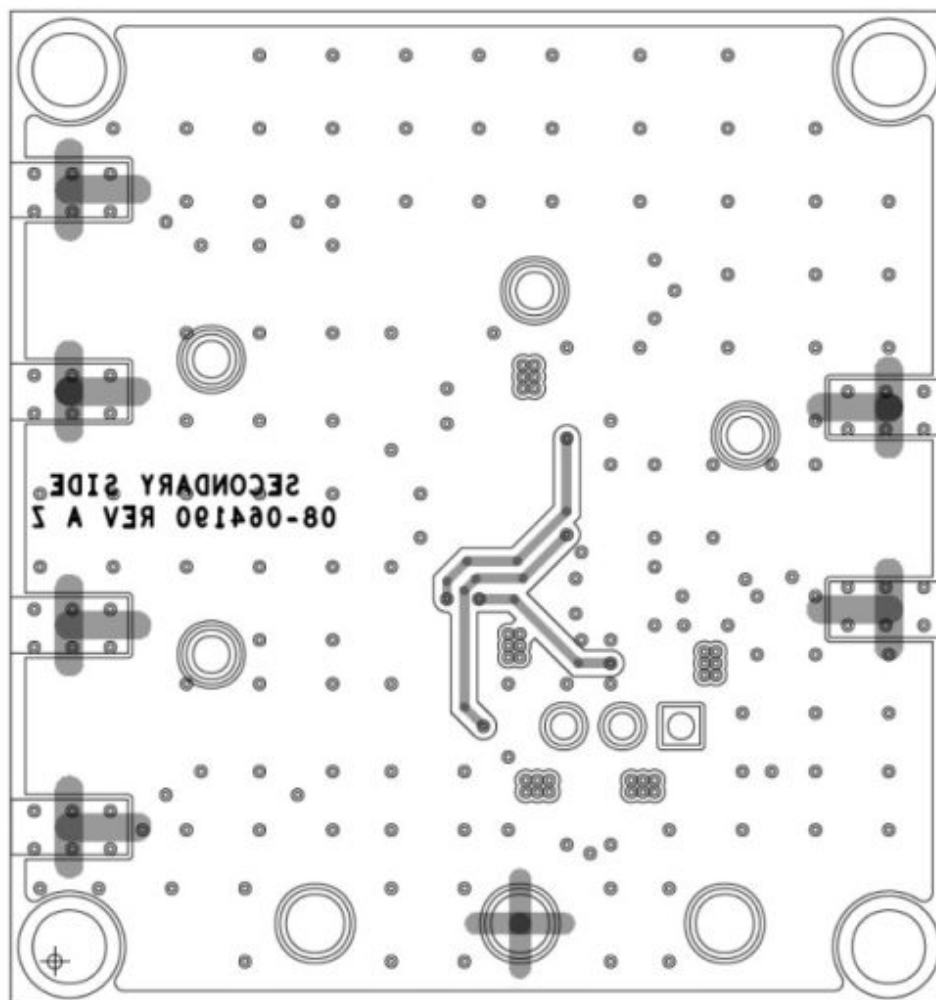


Figure 5. EVAL-ADA4099-1HUJZ Layout Pattern, Secondary Side

## ORDERING INFORMATION BILL OF MATERIALS

Table 1.

Q ty	Reference Designator	Description	Supplier	Part Number
		50 V, 8 MHz, 1.5 mA robust Over-The-Top precision op-amp	Supplier	
		Ceramic capacitors, X5R, 0603, 10 $\mu$ F	Analog Devices	
	U1		Murata	ADA4099-1HUJZ
1	C1, C4	Ceramic capacitors, X7R, 0603, 0.1 $\mu$ F	Kemet	
2	C2, C3		Wurth Elektronik	GRM188R61E106KA73D
2	C5	Ceramic capacitor, X7R, 0805, 1 nF	AVX	C0603C104K3RACTU
1	C7		Not applicable	885012207007
1	C6, C8 to C11	Ceramic capacitor, X7R, 0805, 100 pF		08051A101JAT2A
5	D1	Capacitors, 0805, do not install (DNI), user-defined	ON Semiconductor	Not applicable
1	GND, VS+, VS-			BAS70-04LT1G
3	IN+, IN-, REF, VOUT	Diode Schottky barrier	Mill-Max	Mill-Max 2501-2-00-80-00-00-07-0
4	J1, J2, J3	Printed circuit board (PCB) connector,	Keystone Electronics	5006
3	P1	terminal turrets	Cinch	142-0701-801
1	R4		Multicomp (S PC)	2211S-03G
1	R11	PCB connector, bulk test points	Multicomp (S PC)	MC 0.1 W 0805 1% 220R.
1	R1, R2, R5 to R7, R10, R12, RT1,	Coax SMA end launch	Multicomp (S PC)	ERA-6AEB49R9V
9	RT2	PCB connector, 3-position, male header	Panasonic	Not applicable
3	R3, R8, R9	Resistor, 220 $\Omega$	Not applicable	CRCW08050000Z0EA
		Resistor, 49.9 $\Omega$		
		Resistors, 0805, DNI, user-defined		
		Resistors, 0 $\Omega$	Vishay	



#### ESD Caution

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high-energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

#### Legal Terms and Conditions

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## Documents / Resources

	<p><a href="#">ANALOG DEVICES EVAL-ADA4099-1HUJZ Evaluation Board</a> [pdf] User Guide EVAL-ADA4099-1HUJZ, Evaluation Board, EVAL-ADA4099-1HUJZ Evaluation Board, Board</p>
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## References

-  [Mixed-signal and digital signal processing ICs | Analog Devices](#)