

Evaluation Board for Differential Amplifiers Offered in 8-Lead SOIC Packages

FEATURES

Flexible board layout allows for various circuit configurations
Accommodates the [ADA4940-1](#) and the [AD813x](#) family of differential amplifiers in 8-lead SOIC packages
Enables quick breadboarding/prototyping
Edge-mounted SMA connector provisions
Easy connection to test equipment and other circuits
RoHS compliant

GENERAL DESCRIPTION

The Analog Devices, Inc., 8-lead SOIC evaluation board for differential drivers is designed to help users evaluate differential drivers offered in 8-lead standard small outline (SOIC) packages. The 8-lead SOIC differential driver evaluation board makes it easy for designers to obtain quick performance results for their specific differential driver application circuits.

The 8-lead SOIC evaluation board is a bare board (that is, no components are soldered to the board) that enables users to quickly prototype a variety of differential driver circuits, thereby minimizing risk and reducing time to market. The board layout is very flexible and allows for many circuit configurations, including traditional four-resistor circuits, circuits with two different feedback loops, filters, and many others. Most resistors and capacitors use 1206, 0402, 0508, and 0603 packages.

Figure 1 shows the component side of the bare evaluation board, and Figure 2 shows the circuit side of the evaluation board.

Because this universal evaluation board can be used with many Analog Devices differential amplifiers in 8-lead SOIC packages, the evaluation board label does not contain specific part numbers.

The board accommodates the [ADA4940-1](#), as well as many members of the [AD813x](#) family of differential amplifiers (see the Related Links section). The data sheets for these devices should be consulted in conjunction with this evaluation board user guide.

EVALUATION BOARD COMPONENT AND CIRCUIT SIDE DIAGRAMS

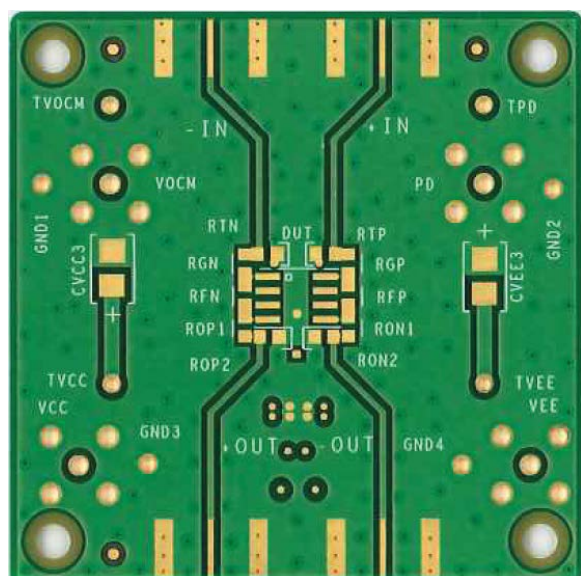


Figure 1. Evaluation Board, Component Side

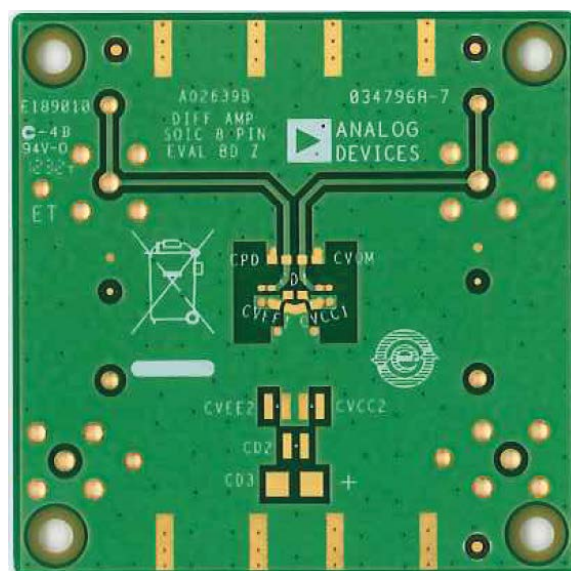


Figure 2. Evaluation Board, Circuit Side

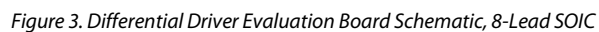
TABLE OF CONTENTS

Features	1	V _{OCM} Input.....	4
General Description	1	Common-Mode Voltage.....	4
Evaluation Board Component and Circuit Side Diagrams.....	1	SMA Input/Output Connectors	4
Revision History	2	Evaluation Board Silkscreens and Assembly Drawings	5
Evaluation Board Schematic	3	Ordering Information.....	6
Evaluation Board Hardware	4	Bill of Materials.....	6
Power Supplies	4	Related Links.....	6
Feedback Networks and Input/Output Terminations	4		

REVISION HISTORY

9/12—Revision 0: Initial Version

11013-003



EVALUATION BOARD HARDWARE

POWER SUPPLIES

Power is applied to the evaluation board through the TVCC and TVEE test points (see Figure 3). The board accommodates single or dual supplies. For single-supply operation, connect the negative supply to the ground plane.

It is very important that the power supply pins of the device under test (DUT) have broadband decoupling circuitry. The board layout facilitates this with footprints for 0508 ceramic capacitors (CVCC2 and CVEE2) on each supply, as well as 0402 ceramic capacitors (CVCC1 and CVEE1). Bulk decoupling is provided by CVCC3 and CVEE3; 10 μ F tantalum capacitors are recommended.

FEEDBACK NETWORKS AND INPUT/OUTPUT TERMINATIONS

Resistors RGN and RFN comprise the negative resistive feedback loop, and Resistors RGP and RFP comprise the positive feedback loop (see Figure 3). To minimize summing node capacitances, the ground plane under and around Pin 1 and Pin 8 of the DUT and the copper that connects to them have been removed.

Resistors RTN and RTP are included as input termination resistors for applications that have single-ended inputs.

V_{OCM} INPUT

An external voltage can be applied to the V_{OCM} pin via the TVOCM test point (referenced to the ground plane of the board). In ADC driver applications, it is convenient to apply the ADC dc reference voltage output directly. The CVOM component position can be used for both resistors and capacitors. A 0.1 μ F capacitor is used in normal applications to provide bypassing for the dc voltage applied to the V_{OCM} pin.

It is also possible to drive the V_{OCM} input from an external ac source. In this case, omit CVOM, or reduce it to a value that allows the desired signal to be passed.

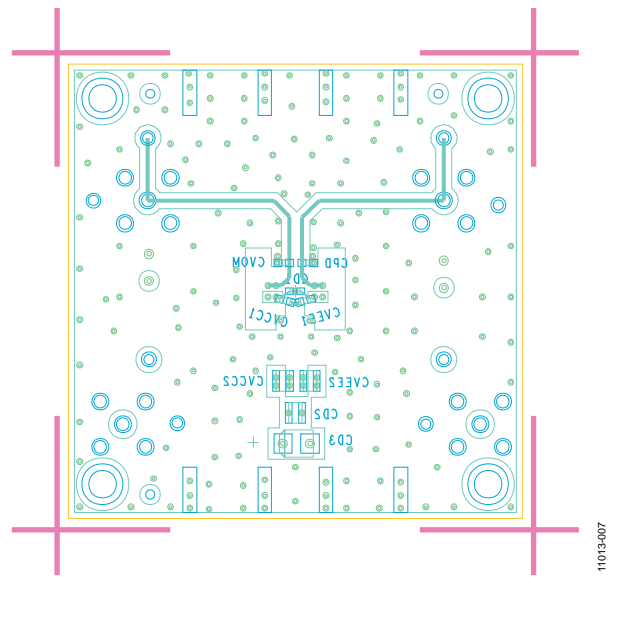
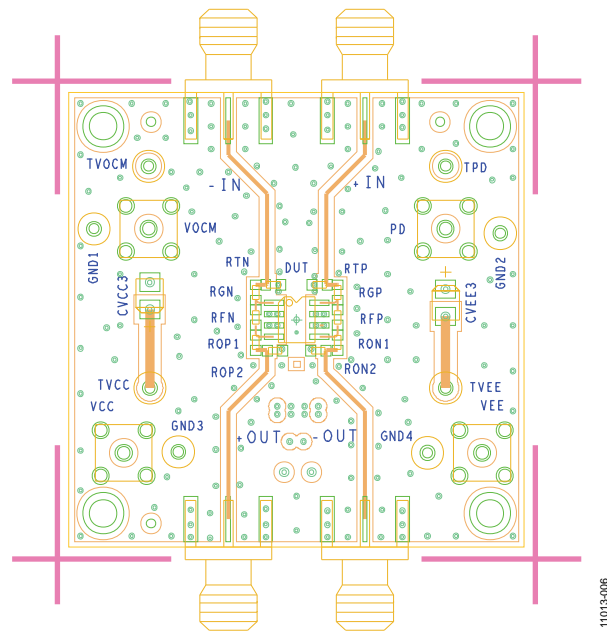
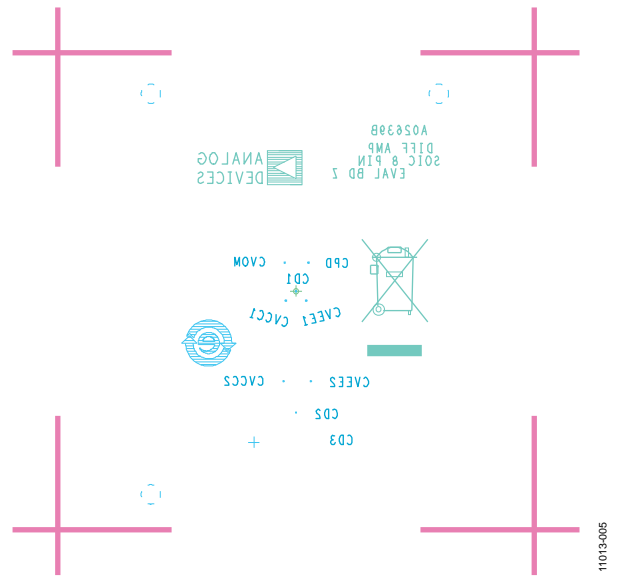
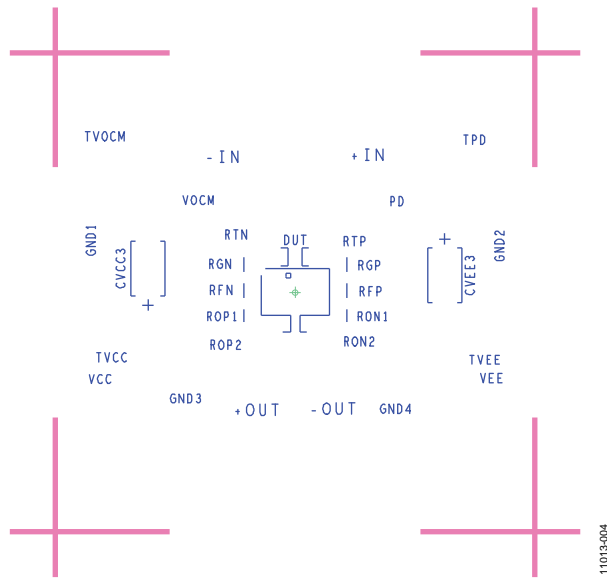
COMMON-MODE VOLTAGE

The internal common-mode feedback loop used in the differential drivers forces the output common-mode voltage to be equal to the voltage applied to the V_{OCM} input, thereby providing excellent output balance.

SMA INPUT/OUTPUT CONNECTORS

The inputs and outputs have edge-mounted SMA connectors for convenient connection to coaxial cables. The recommended connector is Part No. 142-0701-801 from Johnson Components, or equivalent.

EVALUATION BOARD SILKSCREENS AND ASSEMBLY DRAWINGS



ORDERING INFORMATION

BILL OF MATERIALS

Table 1.

Qty	Reference Designator	Description	Package
3	CVCC3, CVEE3, CD3	Capacitor, 10 μ F	C1206
3	CVCC2, CVEE2, CD2	Capacitor, 0.1 μ F	C0508
3	CVCC1, CVEE1, CD1	Capacitor, 0.1 μ F	C0402
2	CPD, CVOM	Capacitor/resistor	C0402
4	–IN, +IN, –OUT, +OUT	Side launch SMA connector	SMA/SMT
4	VCC, VEE, VOCM, PD	Vertical launch SMA connector	SMA/SMT
10	RTN, RTP, RGP, RGN, RFP, RFN, ROP1, RON1, ROP2, RON2	Resistor, user-defined value	R0603
8	TVCC, TVEE, TVOCM, TPD, GND1 to GND4	Test point	TP1
1	DUT	Device under test	8-lead SOIC
1	PCB	PC board	

RELATED LINKS

Table 2.

Resource	Description
ADA4940-1	Product Page, Ultralow Power, Low Distortion Differential ADC Driver
AD8131	Product Page, Low Cost, High Speed Differential Driver with a Fixed Gain of 2
AD8132	Product Page, Low Cost, High Speed Differential Amplifier
AD8137	Product Page, Low Cost, Low Power Differential ADC Driver
AD8138	Product Page, Low Distortion Differential ADC Driver
AD8139	Product Page, Ultralow Noise, Rail-to-Rail Differential ADC Driver

NOTES

NOTES

**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

By using the evaluation board discussed herein (together with any tools, components documentation or support materials, the "Evaluation Board"), you are agreeing to be bound by the terms and conditions set forth below ("Agreement") unless you have purchased the Evaluation Board, in which case the Analog Devices Standard Terms and Conditions of Sale shall govern. Do not use the Evaluation Board until you have read and agreed to the Agreement. Your use of the Evaluation Board shall signify your acceptance of the Agreement. This Agreement is made by and between you ("Customer") and Analog Devices, Inc. ("ADI"), with its principal place of business at One Technology Way, Norwood, MA 02062, USA. Subject to the terms and conditions of the Agreement, ADI hereby grants to Customer a free, limited, personal, temporary, non-exclusive, non-sublicensable, non-transferable license to use the Evaluation Board FOR EVALUATION PURPOSES ONLY. Customer understands and agrees that the Evaluation Board is provided for the sole and exclusive purpose referenced above, and agrees not to use the Evaluation Board for any other purpose. Furthermore, the license granted is expressly made subject to the following additional limitations: Customer shall not (i) rent, lease, display, sell, transfer, assign, sublicense, or distribute the Evaluation Board; and (ii) permit any Third Party to access the Evaluation Board. As used herein, the term "Third Party" includes any entity other than ADI, Customer, their employees, affiliates and in-house consultants. The Evaluation Board is NOT sold to Customer; all rights not expressly granted herein, including ownership of the Evaluation Board, are reserved by ADI. **CONFIDENTIALITY.** This Agreement and the Evaluation Board shall all be considered the confidential and proprietary information of ADI. Customer may not disclose or transfer any portion of the Evaluation Board to any other party for any reason. Upon discontinuation of use of the Evaluation Board or termination of this Agreement, Customer agrees to promptly return the Evaluation Board to ADI. **ADDITIONAL RESTRICTIONS.** Customer may not disassemble, decompile or reverse engineer chips on the Evaluation Board. Customer shall inform ADI of any occurred damages or any modifications or alterations it makes to the Evaluation Board, including but not limited to soldering or any other activity that affects the material content of the Evaluation Board. Modifications to the Evaluation Board must comply with applicable law, including but not limited to the RoHS Directive. **TERMINATION.** ADI may terminate this Agreement at any time upon giving written notice to Customer. Customer agrees to return to ADI the Evaluation Board at that time. **LIMITATION OF LIABILITY.** THE EVALUATION BOARD PROVIDED HEREUNDER IS PROVIDED "AS IS" AND ADI MAKES NO WARRANTIES OR REPRESENTATIONS OF ANY KIND WITH RESPECT TO IT. ADI SPECIFICALLY DISCLAIMS ANY REPRESENTATIONS, ENDORSEMENTS, GUARANTEES, OR WARRANTIES, EXPRESS OR IMPLIED, RELATED TO THE EVALUATION BOARD INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, TITLE, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. IN NO EVENT WILL ADI AND ITS LICENSORS BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES RESULTING FROM CUSTOMER'S POSSESSION OR USE OF THE EVALUATION BOARD, INCLUDING BUT NOT LIMITED TO LOST PROFITS, DELAY COSTS, LABOR COSTS OR LOSS OF GOODWILL. ADI'S TOTAL LIABILITY FROM ANY AND ALL CAUSES SHALL BE LIMITED TO THE AMOUNT OF ONE HUNDRED US DOLLARS (\$100.00). **EXPORT.** Customer agrees that it will not directly or indirectly export the Evaluation Board to another country, and that it will comply with all applicable United States federal laws and regulations relating to exports. **GOVERNING LAW.** This Agreement shall be governed by and construed in accordance with the substantive laws of the Commonwealth of Massachusetts (excluding conflict of law rules). Any legal action regarding this Agreement will be heard in the state or federal courts having jurisdiction in Suffolk County, Massachusetts, and Customer hereby submits to the personal jurisdiction and venue of such courts. The United Nations Convention on Contracts for the International Sale of Goods shall not apply to this Agreement and is expressly disclaimed.



**Стандарт
Электрон
Связь**

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331