

Evaluation Board for the **ADG888** CMOS, Dual DPDT Switch in the WLCSP Package

FEATURES

Evaluation board for the **ADG888**

Various linking options

INTRODUCTION

The **EVAL-ADG888EBZ** evaluation board was designed to test the **ADG888** dual, double pole, double throw (DPDT), CMOS switch with a minimum of effort.

The **ADG888** is a low voltage dual, DPDT CMOS device available in WLCSP, TSSOP, and LFCSP packages. It has been optimized for high performance audio switching, and due to its low power and small physical size, it is ideal for portable devices.

This device has ultralow on resistance of less than $0.8\ \Omega$ over the full temperature range and exhibits break-before-make switching action.

Full data on the **ADG888** is available in the **ADG888** data sheet available from Analog Devices, Inc., and should be consulted in conjunction with this user guide when using the evaluation board.

EVALUATION BOARD PICTURE

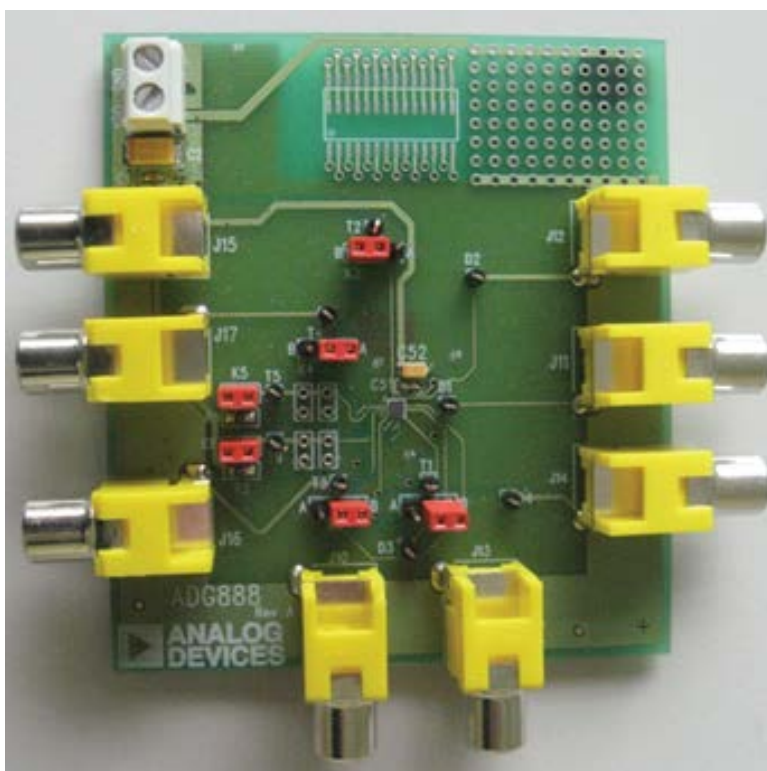


Figure 1.

TABLE OF CONTENTS

Features	1	Evaluation Board Hardware.....	3
Introduction	1	Operating the EVAL-ADG888EBZ Evaluation Board	3
Evaluation Board Picture.....	1	Evaluation Board Schematics and Artwork.....	4
Revision History	2	Component List.....	7

REVISION HISTORY

8/12—Revision 0: Initial Version

EVALUATION BOARD HARDWARE

The [EVAL-ADG888EBZ](#) evaluation board has been designed for testing the functionality of the device. Test points have been placed on each audio jack to measure the voltage level at each pin.

OPERATING THE [EVAL-ADG888EBZ](#) EVALUATION BOARD

Power Supplies

The [EVAL-ADG888EBZ](#) evaluation board has one analog power supply connector. VDD can vary from 1.8 V to 5.5 V, and GND must be connected to ground on the power supply.

V_{DD} is decoupled to ground via a 10 μ F tantalum capacitor (C2) and a 0.1 μ F ceramic capacitor (C1) at the input to the evaluation board.

Source and Drain Pins

There are eight audio jacks available on the [EVAL-ADG888EBZ](#) evaluation board to test the capabilities of the [ADG888](#) chip. Four of the jacks (J10, J15, J16, and J17) connect to the eight source pins on the [ADG888](#), and four of the jacks (J11, J12, J13, and J14) connect to the four drain pins. The chip is bidirectional; therefore, each jack can function as either an input or an output.

The four link connections, K1 to K4, on the board are associated with the four source jacks and determine which source pins are connected to the jacks. In Position A, the first DPDT source pins, controlled by IN1, are connected to the jacks. In Position B, the second DPDT source pins, controlled by IN2, are connected to the jacks. Table 1 shows the options for these links.

Table 1. Source Jack Link Options

Link Number	Source Jack	Function	
		Position A	Position B
K1	J10	Selects S1A	Selects S3A
K2	J15	Selects S1B	Selects S3B
K3	J16	Selects S2A	Selects S4A
K4	J17	Selects S2B	Selects S4B

IN Pins

The remaining two links, K5 and K9, control the logic inputs, IN1 and IN2, respectively, of the [ADG888](#). The input is set logic high by removing the link header, and the input is set logic low by inserting the link header.

The connections between source and drain audio jacks are detailed in Table 2.

Table 2. Audio Jack Connections

Source Link Position	IN Link State	ADG888 Switch States		Board Connections
Position A (K1, K2, K3, K4)	K5 (inserted)	S1A, S2A (off)	S1B, S2B (on)	J15 to J11, J17 to J12
	K5 (removed)	S1A, S2A (on)	S1B, S2B (off)	J10 to J11, J16 to J12
Position B (K1, K2, K3, K4)	K9 (inserted)	S3A, S4A (off)	S3B, S4B (on)	J15 to J13, J17 to J14
	K9 (removed)	S3A, S4A (on)	S3B, S4B (off)	J10 to J13, J16 to J14

EVALUATION BOARD SCHEMATICS AND ARTWORK

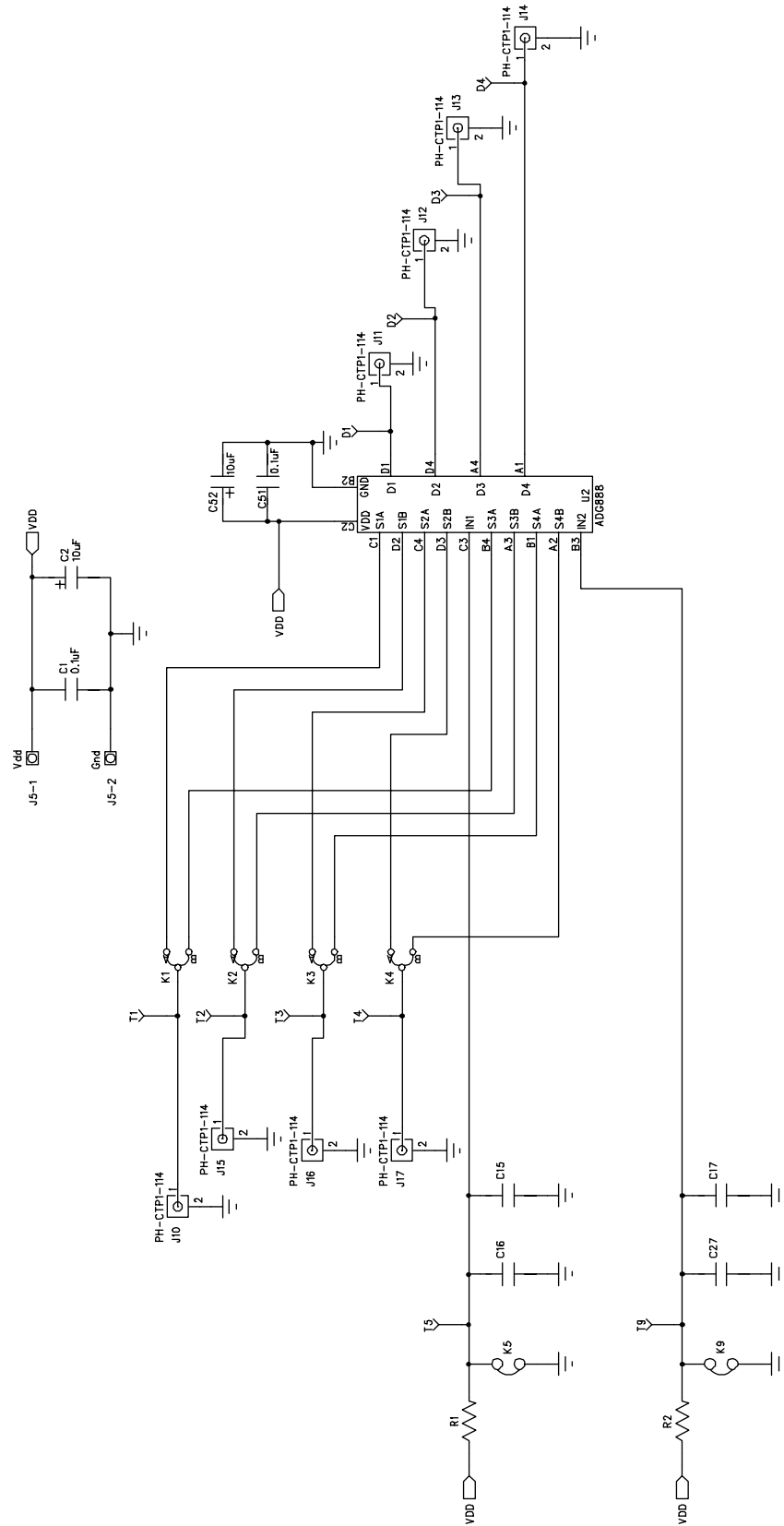


Figure 2. EVAL-ADG888EBZ Evaluation Board Schematic

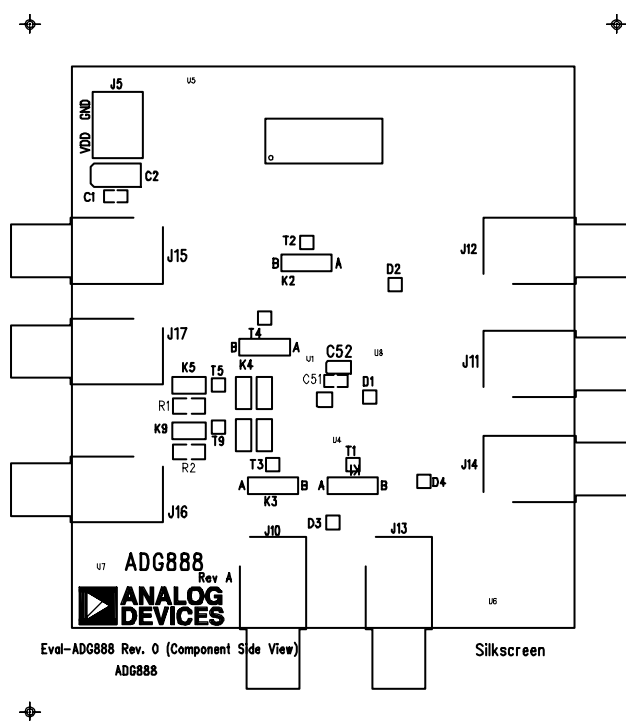


Figure 3. EVAL-ADG888EBZ Evaluation Board, Component Placement Drawing

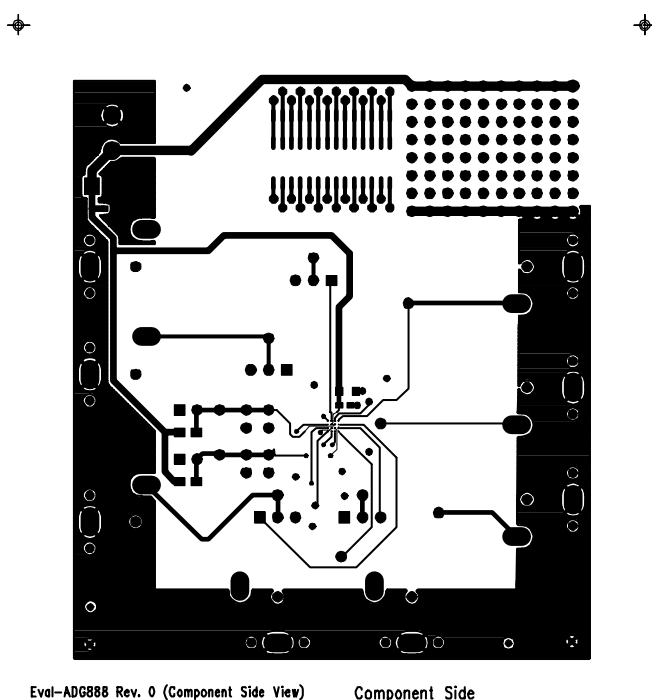


Figure 4. EVAL-ADG888EBZ Evaluation Board, Component Side Printed Circuit Board (PCB) Drawing

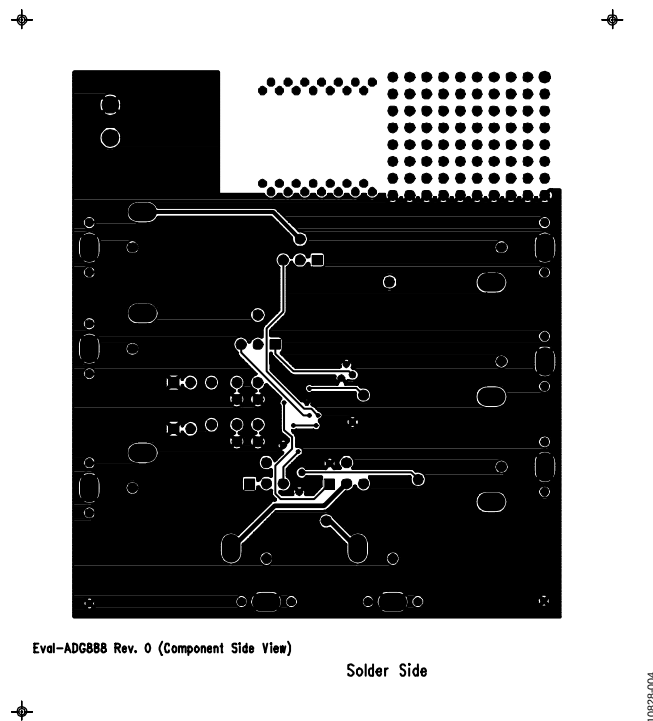


Figure 5. [EVAL-ADG888EBZ](#) Evaluation Board, Solder Side PCB Drawing

COMPONENT LIST

Table 3.

Item	Quantity	Reference	Description	Supplier Number
1	2	C1, C51	0.1 μ F capacitors	FEC 753-567
2	1	C2	10 μ F capacitor	FEC 197-518
3	4	C15, C16, C17, C27	CAP\MR04	Low profile sockets
4	1	C52	10 μ F capacitor, CAP\TAJ_A	FEC 197-130
5	4	D1 to D4	Test points	FEC 873-1128
6	1	J5	CON\POWER	FEC 151-789
7	6	J10 to J17	Phono sockets	PH-CTP1-114
8	4	K1 to K4	Link-3P_TEXT_INV	FEC 1022248 and FEC 150-412
9	2	K5, K9	SIP-2P	FEC 1022247 and FEC 150-411
10	2	R1, R2	10 k Ω resistors	FEC 9333720
10	6	T1 to T5, T9	Test points	FEC 873-1128
11	1	U2	ADG888 , 16-ball WLCSP	ADG888BCBZ
12	1	U3	SO28WB_NB	Pads to be kept free of solder

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.