

Evaluating the ADG1534 4.5 Ω R_{ON} , 1.8 V Logic-Compatible, Quad SPDT Switch
FEATURES

- ▶ Asymmetrical supply voltages
 - ▶ $V_{DD} = +5\text{ V}$
 - ▶ $V_{SS} = -8\text{ V}$
- ▶ Single inline headers provide flexibility for the field programmable gate array (FPGA) or microcontroller 1.8 V logic-input signals
- ▶ On board [ADP7142](#) for 1.8 V logic-input supply
- ▶ SMD pin resistor or capacitor sockets available for the addition of passive components
- ▶ SMB connector sockets provide flexibility for the input and output signals

EVALUATION KIT CONTENTS

- ▶ EVAL-ADG1534EBZ evaluation board

DOCUMENTS NEEDED

- ▶ [ADG1534](#) data sheet

EQUIPMENT NEEDED

- ▶ DC voltage source (V_{DD} and V_{SS})
 - ▶ 5 V positive power supply
 - ▶ -5 V to -8 V negative power supply
- ▶ Optional digital logic supply (V_L)
 - ▶ 1.65 V to 1.95 V for 1.8 V logic
- ▶ Analog signal source
- ▶ Method to measure voltage, such as a digital multimeter (DMM)

GENERAL DESCRIPTION

The EVAL-ADG1534EBZ is the evaluation board for the ADG1534, an analog switch containing four independent SPDT switches that can be controlled by logic inputs IN1, IN2, IN3, and IN4. The enable pin (\overline{EN}) is used to enable or disable the device. When disabled, all switches are switched off. When enabled, each channel conducts equally well in both directions and has an input signal range that extends to the supplies.

[Figure 1](#) shows the EVAL-ADG1534EBZ in a typical evaluation setup. The ADG1534 is located in the center of the evaluation board. Blue three-screw terminals are provided to connect to each of the source and drain pins, and a green four-screw terminal block is provided to connect to the supply voltages. The first three terminals power the device, while the fourth terminal provides users with a defined digital logic supply voltage, if required. Alternatively, the digital logic-supply voltage can be supplied from the on board [ADP7142](#).

Full specifications on the ADG1534 are available in the ADG1534 data sheet available from Analog Devices, Inc., and should be consulted in conjunction with this user guide when using the EVAL-ADG1534EBZ.

TABLE OF CONTENTS

Features.....	1	Power Supply.....	4
Evaluation Kit Contents.....	1	Link Headers.....	4
Documents Needed.....	1	Input Signals.....	4
Equipment Needed.....	1	Digital Interface Options.....	4
General Description.....	1	Evaluation Board Schematic and Artwork.....	5
Evaluation Board Photograph.....	3	Ordering Information.....	10
Evaluation Board Hardware.....	4	Bill of Materials.....	10

REVISION HISTORY**10/2023—Revision 0: Initial Version**

EVALUATION BOARD PHOTOGRAPH

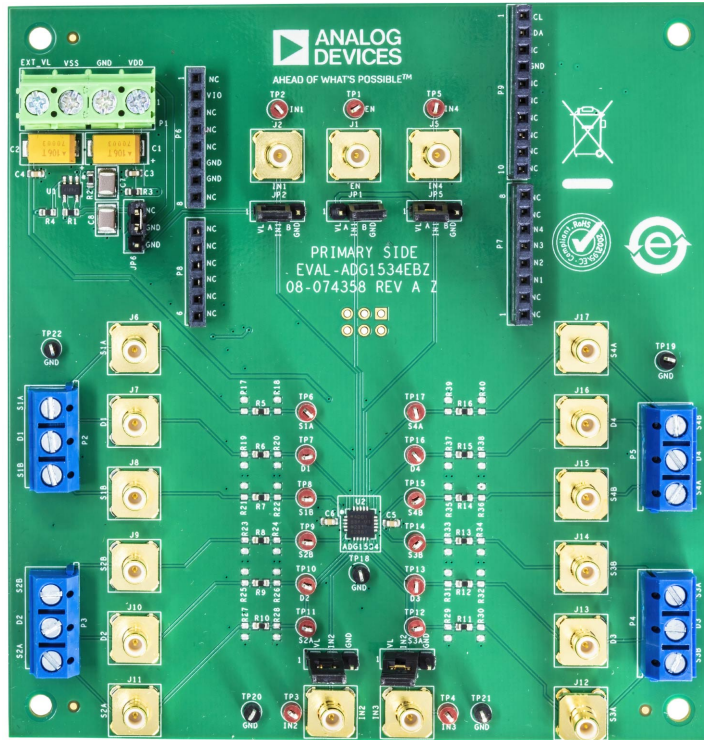


Figure 1. Evaluation Board Photograph

EVALUATION BOARD HARDWARE

POWER SUPPLY

The P1 connector provides access to the supply pins on the [ADG1534](#). The VDD pin, the GND pin, and the VSS pin on the P1 terminal block link to the appropriate pins on the ADG1534. For dual-supply voltages, the EVAL-ADG1534EBZ can be powered at +5 V for VDD and -8 V for VSS.

The on-board [ADP7142](#) low-dropout (LDO) regulator provides 1.8 V for the INx logic pins of the ADG1534 via Link IN1, Link IN2, Link IN3, and Link IN4. The output voltage of the LDO regulator can be adjusted by changing the ratio of R1 and R2. An external digital control voltage supply can be connected to the EXT_VL pin of the P1 connector. To use the external supply, move the JP6 jumper from the LDO position to the EXT_VL position.

LINK HEADERS

The EVAL-ADG1534EBZ provides several link options that must be set for the required operating conditions before using.

[Table 1](#) describes the positioning of the links necessary for controlling the EVAL-ADG1534EBZ via the link headers. The functions of these link options are described in detail in [Table 2](#).

Table 1. Link Header Descriptions

Link	Position	Description
JP1 to JP5	A	VL
	B	GND
JP6	LDO	On-board LDO regulator digital voltage
	EXT_VL	EXT_VL digital voltage

Table 2. Link Header Functions

Link	Function
JP1 to JP5	Selects the source of the INx voltage supplied to the ADG1534 Position A selects VL Position B selects 0 V or GND

INPUT SIGNALS

Four screw connectors (P3, P4, P5, and P6) are provided to connect to both the source and drain pins of the ADG1534. Additional subminiature version B (SMB) connector pads are available to connect cables to the source and drain pins.

Each trace on the source and drain side includes two sets of 0603 pads that can place a load on the signal path to ground. A 0 Ω resistor is placed in the signal path and can be replaced with a user-defined value. The resistor combined with the 0603 pads can create a simple RC filter.

DIGITAL INTERFACE OPTIONS

The digital interface of the ADG1534 can be controlled manually using the JP1, JP2, JP3, JP4, and JP5 link headers or accessed by using the J1, J2, J3, J4 and J5 SMB connectors. To use the SMB connectors, remove the JP1, JP2, JP3, JP4, and JP5 link headers.

Connectors P6, P7, P8, and P9 can also be used with a controller board such as the SDP-K1 or Arduino. If a controller board is used to control the ADG1534, remove the JP2, JP3, JP4, and JP5 link headers.

EVALUATION BOARD SCHEMATIC AND ARTWORK

200

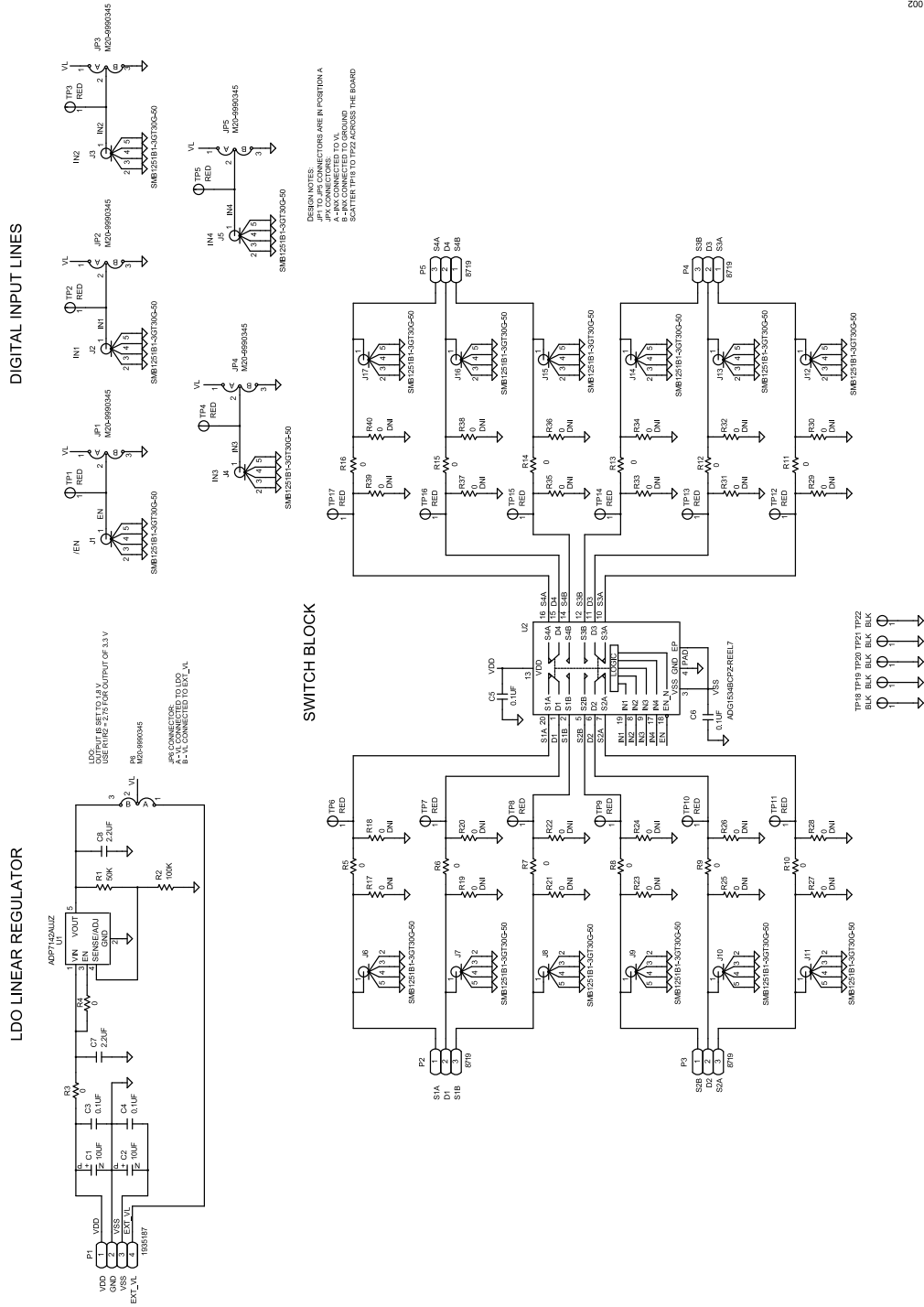


Figure 2. EVAL-ADG1534EBZ Evaluation Board Schematic, Part 1

EVALUATION BOARD SCHEMATIC AND ARTWORK

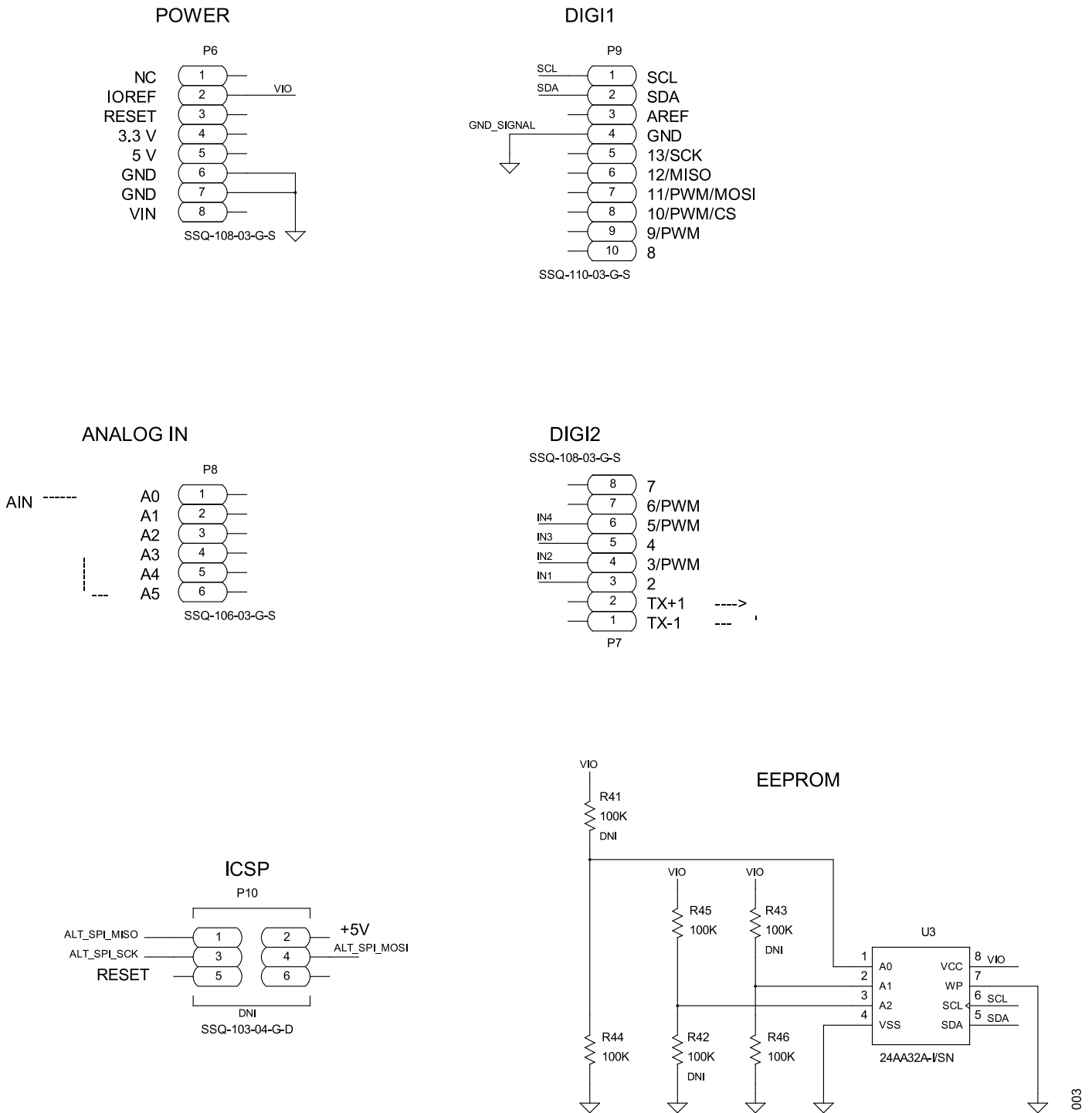


Figure 3. EVAL-ADG1534EBZ Evaluation Board Schematic, Part 2

EVALUATION BOARD SCHEMATIC AND ARTWORK

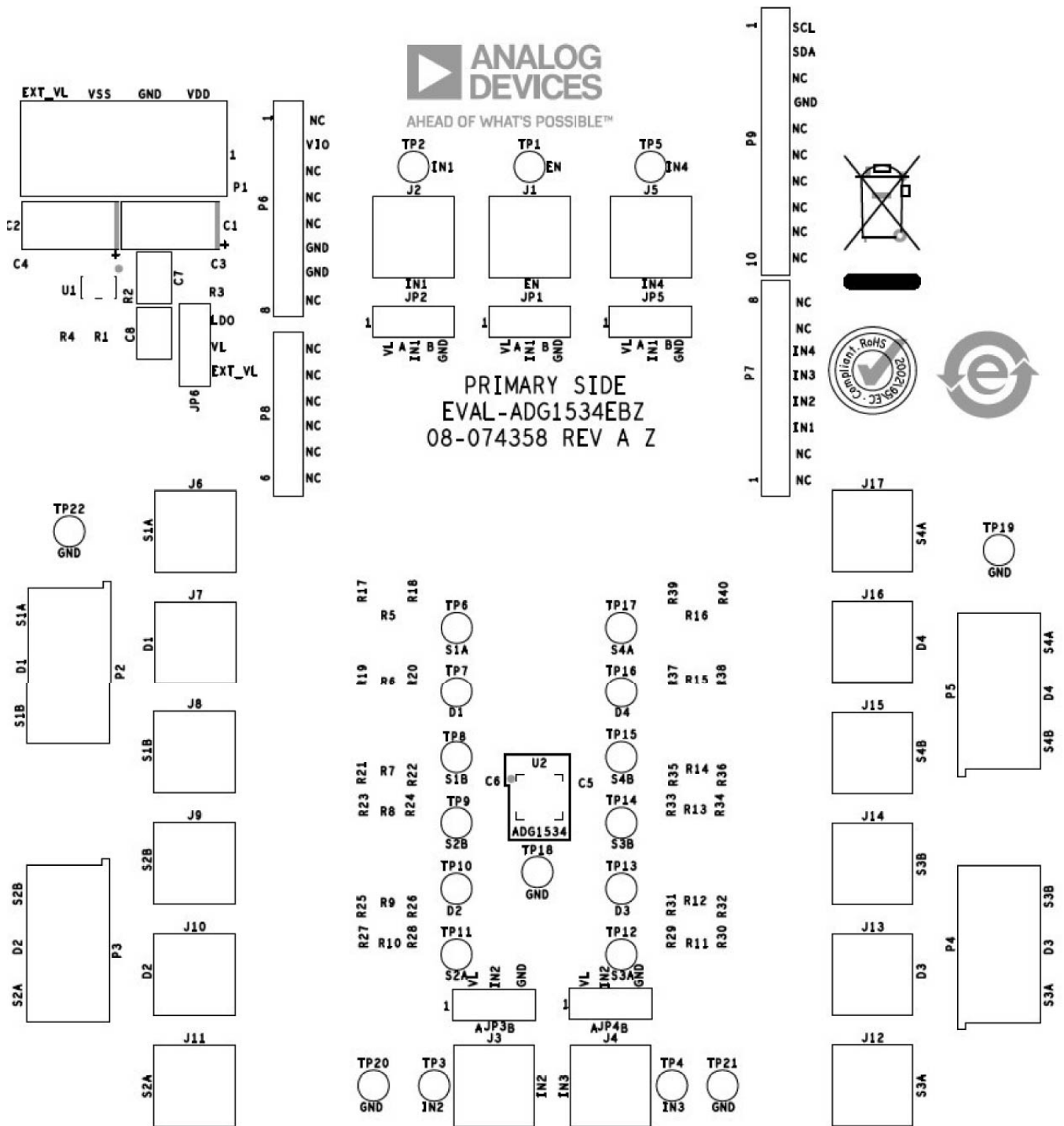


Figure 4. EVAL-ADG1534EBZ Silkscreen

EVALUATION BOARD SCHEMATIC AND ARTWORK

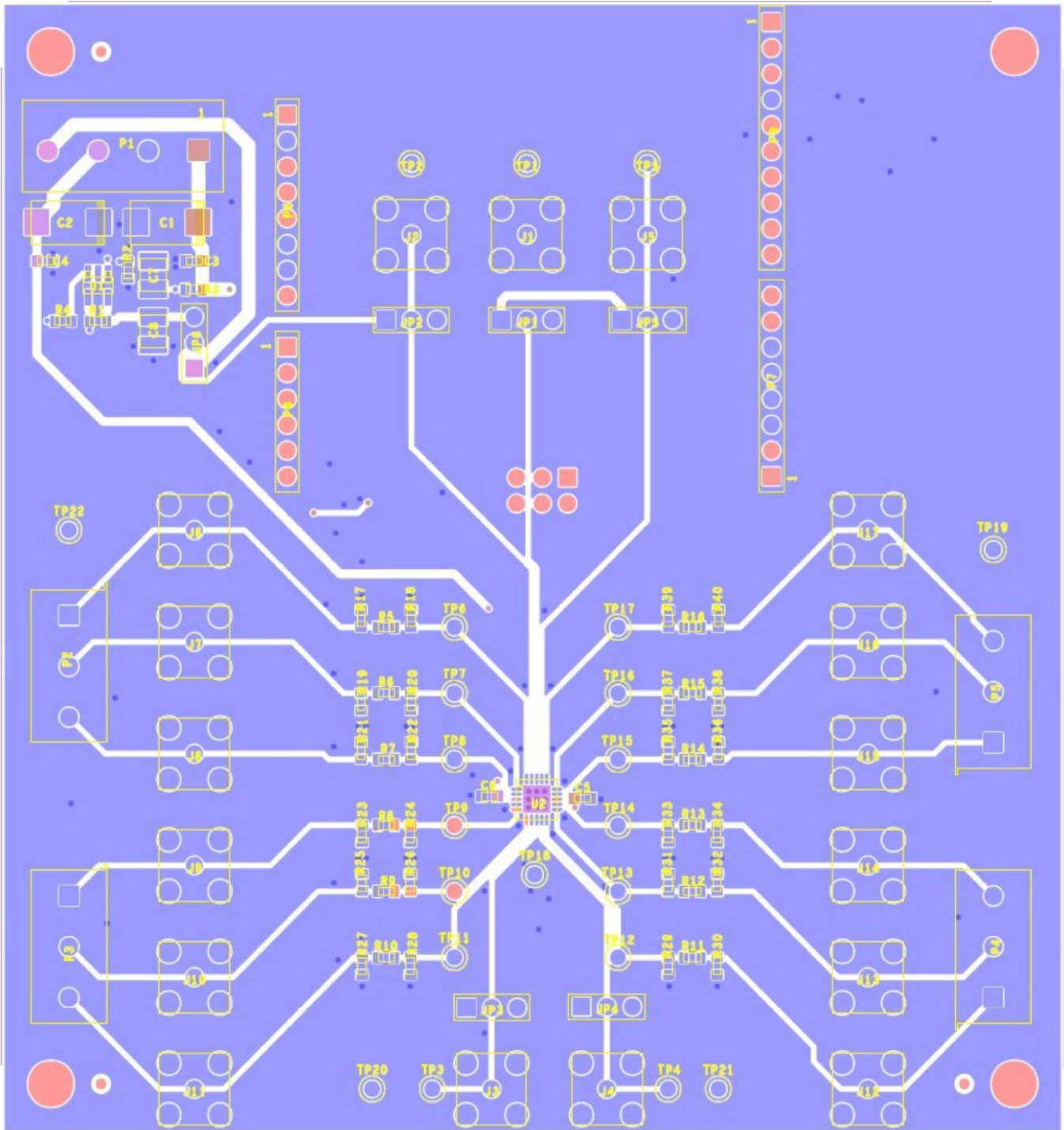
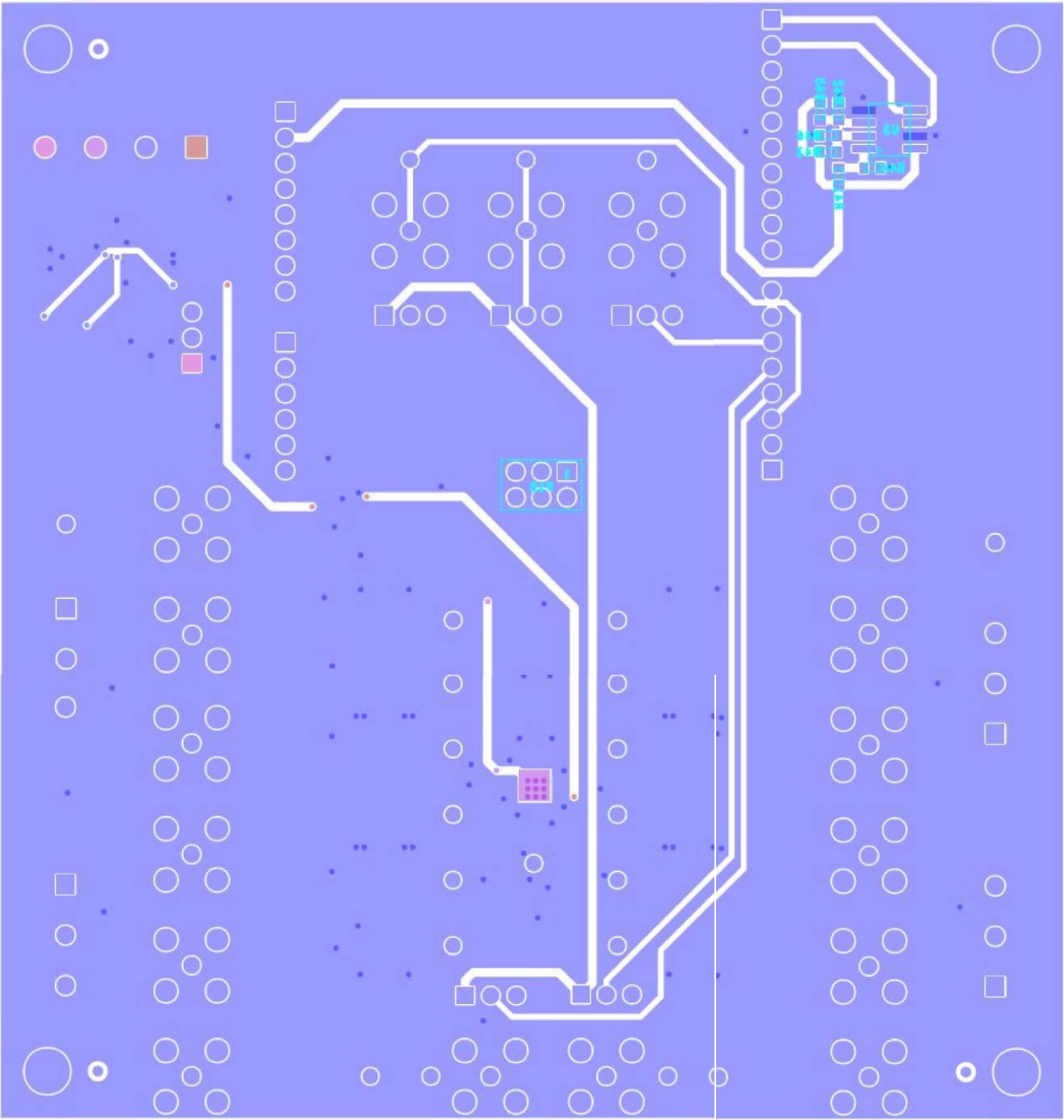


Figure 5. EVAL-ADG1534EBZ Top Layer

005

EVALUATION BOARD SCHEMATIC AND ARTWORK



900

Figure 6. EVAL-ADG1534EBZ Bottom Layer

ORDERING INFORMATION

BILL OF MATERIALS

Reference Designator	Description	Manufacturer	Part Number
C1, C2	50 V, 10 μ F, tantalum capacitors, 7343-31, 0.8 Ω	Avx	TAJD106M050RNJ
C3 to C6	>0.1 μ F, 50 V, ceramic capacitors, X7R, 0603	Samsung	CL10B104KB8NNNC
C7, C8	2.2 μ F, 100 V, ceramic capacitors, X7R, >1210	TDK Corporation	CGA6N3X7R2A225K230AB
J1 to J17	50 Ω , SMB sockets, not placed	Amphenol	SMB1251B1-3GT30G-50
JP1 to JP6	Jumper blocks using 3-pin SIP header	Harwin	M20-9990345
P1	4-pin terminal block, 5 mm	Phoenix Contact	1935187
P2 to P5	3-pin terminal block, 5 mm	Keystone Electronics, Inc.	8719
P6, P7	Socket strips, square tails, 2.54 mm pitch	Samtec	SSQ-108-03-G-S
P8	Socket strip, square tails, 2.54 mm pitch	Samtec	SSQ-106-03-G-S
P9	Socket strip, square tails, 2.54 mm pitch	Samtec	SSQ-110-03-G-S
R1	50 k Ω resistor, surface-mount device (SMD), 1%, 1/10 W, 0603	Bourns, Inc.	CR0603-FX-5002ELF
R2	100 k Ω resistor, SMD, 1%, 1/10 W, 0603, AEC-Q200	Panasonic	ERJ-3EKF1003V
R3 to R16	0 Ω jumpers, SMD, 1/4 W, 0603, AEC-2Q200	Vishay Intertechnology	CRCW06030000Z0EAHP
R44 to R46	100 k Ω resistors, SMD, 1%, 1/16 W, 0603	Multicomp (SPC)	MC 0.063W 0603 1% 100K
TP1 to TP 17	PCB test points, red	Keystone Electronics, Inc.	5000
TP18 to TP 22	PCB test points, black	Components Corporation	TP-105-01-00
U1	40 V, 200 mA, low noise, CMOS, LDO regulator	Analog Devices, Inc.	ADP7142AUJZ-R7
U2	4.7 Ω R _{ON} , 1.8 V logic-compatible, quad SPDT switch	Analog Devices	ADG1534BCPZ-REEL7
U3	Serial EEPROM	Microchip Technologies	24AA32A-I/5N

**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 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.

