

Evaluation Board for the 24-Lead LGA Devices in the Switches and Multiplexers Portfolio

FEATURES

- ▶ 24-lead, 5mm × 4mm LGA evaluation board
- ▶ Easily changeable socket for the main device
- ▶ SMA connectors for the input and output of signals
- ▶ Integrated Arduino shield support

EVALUATION KIT CONTENTS

- ▶ EVAL-24LGA54EBZ

DOCUMENTS NEEDED

- ▶ Data sheet for the device being evaluated

EQUIPMENT NEEDED

- ▶ A compatible 24-lead 5mm × 4mm LGA device
- ▶ DC power supply for external voltage input (if not using the on-board Micro-USB port)
- ▶ Signal generator for applying analog or digital input signals
- ▶ Digital multimeter (DMM) for measuring voltages across test points or device pins

GENERAL DESCRIPTION

The EVAL-24LGA54EBZ enables easy evaluation of the 24-lead land grid array (LGA) package devices in the [Switches and Multiplexers Portfolio](#) that are purchased separately. The EVAL-24LGA54EBZ is supplied with a socket to secure a 24-lead LGA device to the evaluation board without the need for soldering.

Figure 1 shows the EVAL-24LGA54EBZ. A 24-lead LGA device can be easily inserted into the central socket of the evaluation board that is designed for flexible testing of various switch configurations. Each device pin connects to a header (K1 to K17), allowing users to route signals, tie pins to ground, or configure the pins as needed. K7 to K13 support general input/output (I/O) or ground connections. The EVAL-24LGA54EBZ supports the following two control modes: internal logic using K14 to K17 or serial peripheral interface (SPI) using K1 to K4. The control mode is selected through K5, where connecting it to GND enables internal control and connecting it to VDD enables SPI. The EVAL-24LGA54EBZ has Subminiature Version A (SMA) connectors (J1 to J11) that connect directly to the device pins and are used for signal access, allowing users to easily apply or monitor control signals during testing.

The full specifications of the device under test (DUT) are available in the corresponding product data sheet, which must be consulted with the EVAL-24LGA54EBZ user guide when using the EVAL-24LGA54EBZ.

EVALUATION BOARD PHOTOGRAPH

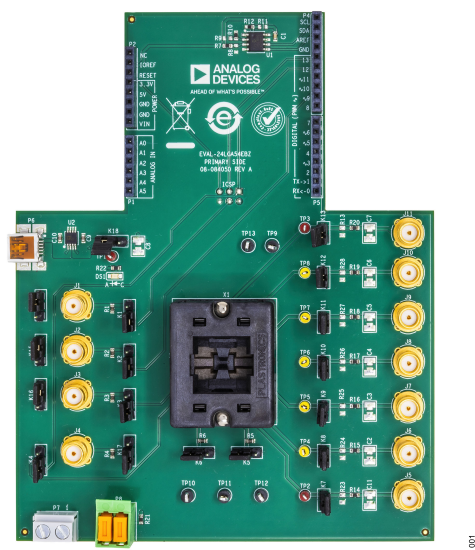


Figure 1. EVAL-24LGA54EBZ Evaluation Board Photograph

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REVISION HISTORY

10/2025—Revision 0: Initial Version

EVALUATION BOARD HARDWARE

POWER SUPPLY

Power for the EVAL-24LGA54EBZ can be supplied via Micro-USB or an external source connected to the P7 screw terminal. This allows flexibility when the Micro-USB power is insufficient or isolation is needed. Header K18 selects the power source, switching between Micro-USB derived 3.3V and external input.

LINK HEADERS

The EVAL-24LGA54EBZ includes link headers K1 to K18, each corresponding to a pin on the 24-lead LGA device, allowing flexible configuration for evaluation. Headers K7 to K13 are 2-pin links typically used to tie pins to GND or leave them floating for signal input via the associated SMA connectors. K5 selects the control mode, connecting it to GND enables internal control while VDD enables SPI control. K1 to K4 are designated for SPI communication lines when SPI mode is selected. K14 to K17 allow manual control of internal logic inputs (IN1 to IN4) by connecting them to either VDD or GND. K6 is attached to external voltage drive enable (EXTD_EN) pin. If the EXTD_EN pin is high, the internal voltage boost circuitry disables, and an 80V DC voltage must be input into VCP pin to drive the switches via the logic interface. Finally, header K18 selects the power source, switching between Micro-USB derived 3.3V and external input. A summary of these functions is provided in [Table 1](#).

Table 1. Link Header Descriptions

Label	Position	Description
K1 to K4	A	Routes SPI signals (SDO, CSB, SCK, SDI) to the DUT
	B	Routes internal logic inputs (IN1 to IN4) to the DUT
K5	A	Enables SPI control mode
	B	Enables internal logic control mode

Table 1. Link Header Descriptions (Continued)

Label	Position	Description
K6	A	Disables the internal 10MHz oscillator and driver boost circuitry
	B	Enables the internal 10MHz oscillator and driver boost circuitry
K7 to K13	Inserted	Connects the device under test (DUT) pin to GND
	Removed	Leaves the pin floating for external signal input
K14 to K17	A	VDD
	B	GND
K18	A	USB +3.3V
	B	EXT_VDD

SMA CONNECTORS

The EVAL-24LGA54EBZ features SMA connectors (J1 to J11), each mapped to a pin on the 24-lead LGA device, enabling direct access for injecting or monitoring DC signals without soldering. This is especially useful when pins are configured as inputs or outputs. The EVAL-24LGA54EBZ also includes 13 labeled test points (TP1 to TP13) for easy probing of key signals and power rails. Test points are color-coded for quick identification: yellow for signals, black for ground, and red for VDD. Combined with configurable link headers, this setup supports flexible and efficient evaluation.

INPUT SIGNAL TRACES

Each trace includes three sets of 0805- and 0603-compatible pads, two for placing loads to ground and one in series with the signal path. A 0 Ω resistor is preinstalled in series and can be replaced with a user-defined value, allowing the implementation of a simple RC filter.

EVALUATION BOARD SCHEMATIC AND ARTWORK

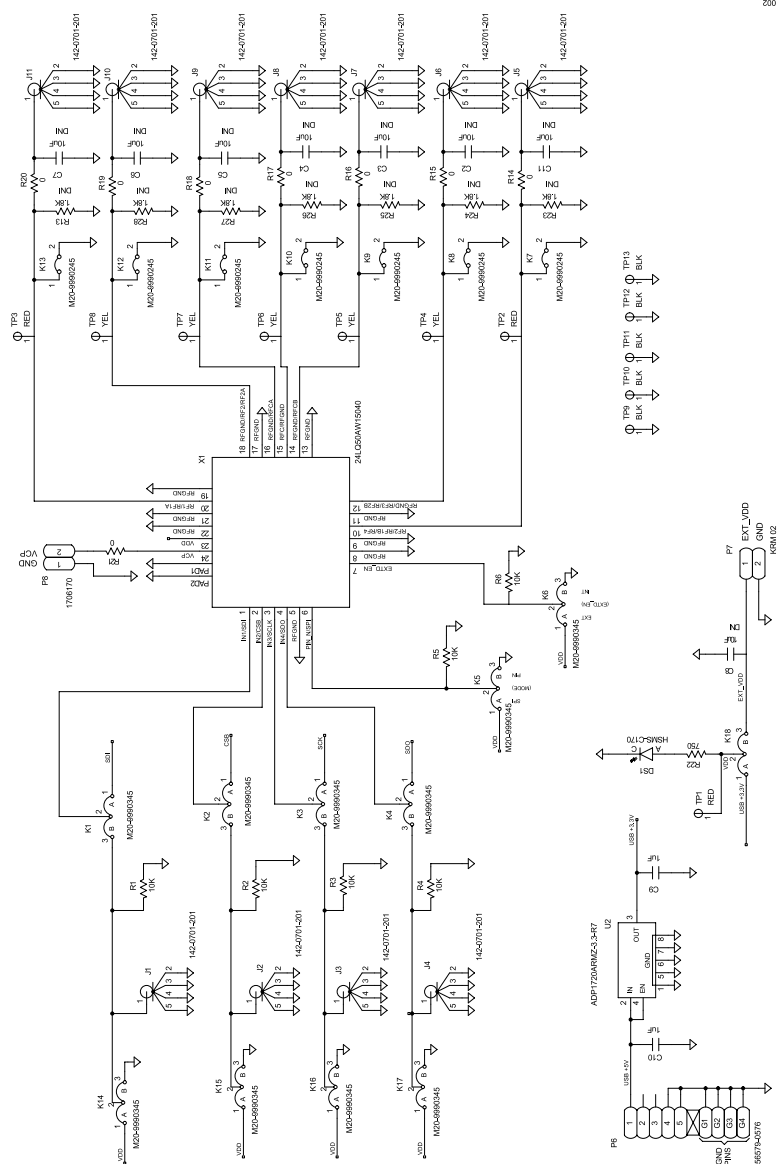


Figure 2. EVAL-24LGA54EBZ Schematic, Page 1

EVALUATION BOARD SCHEMATIC AND ARTWORK

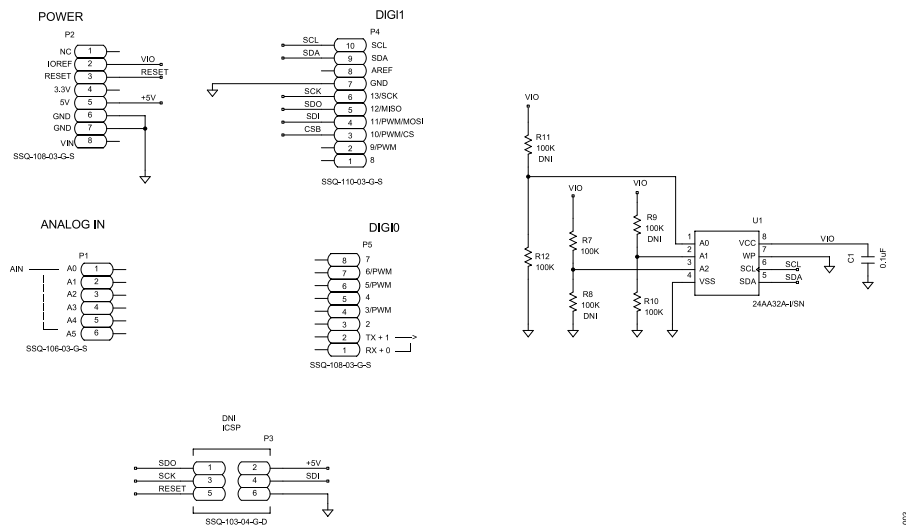


Figure 3. EVAL-24LGA54EBZ Schematic, Page 2

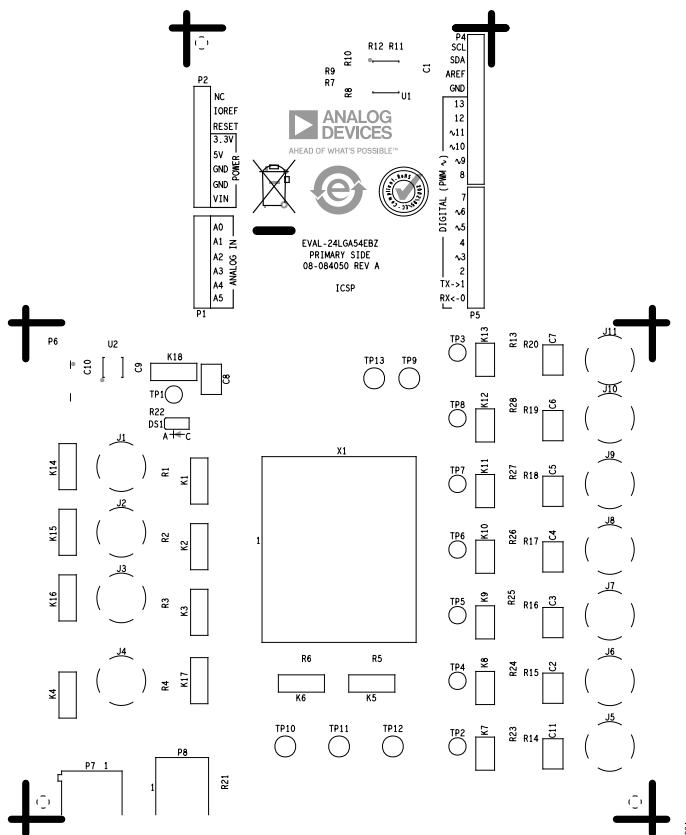


Figure 4. EVAL-24LGA54EBZ Silkscreen

EVALUATION BOARD SCHEMATIC AND ARTWORK

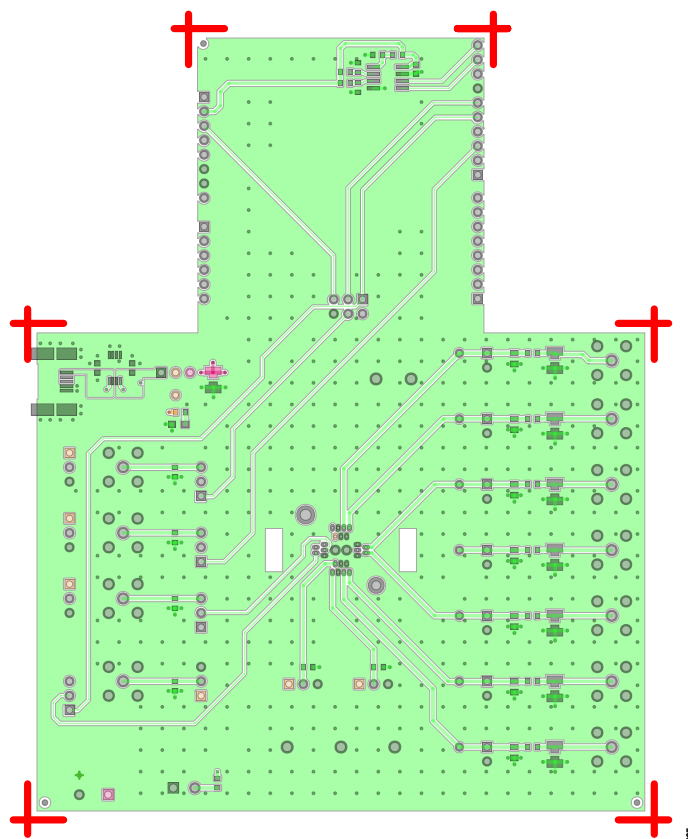


Figure 5. EVAL-24LGA54EBZ Top Layer

EVALUATION BOARD SCHEMATIC AND ARTWORK

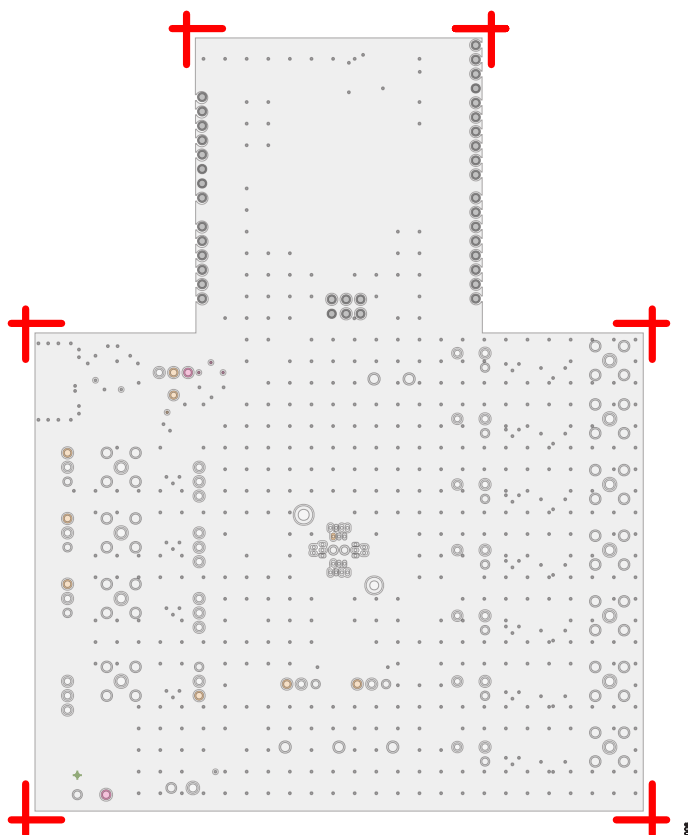


Figure 6. EVAL-24LGA54EBZ Layer 2

EVALUATION BOARD SCHEMATIC AND ARTWORK

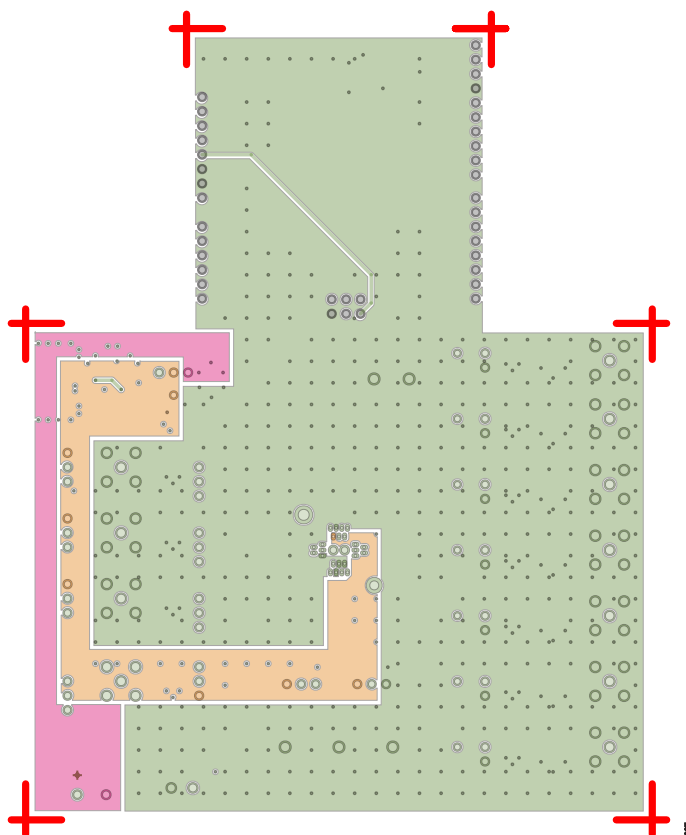


Figure 7. EVAL-24LGA54EBZ Layer 3

EVALUATION BOARD SCHEMATIC AND ARTWORK

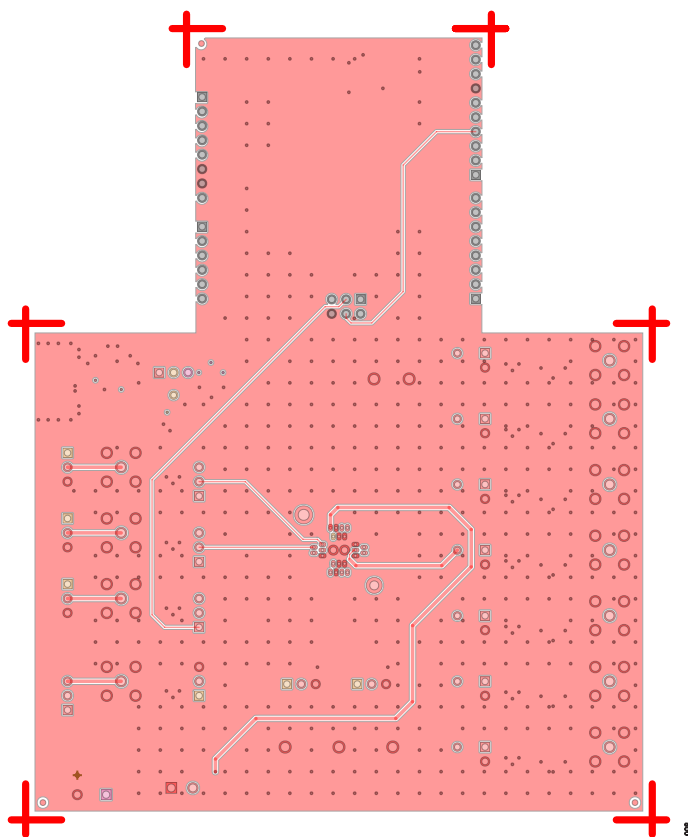


Figure 8. EVAL-24LGA54EBZ Bottom Layer

ORDERING INFORMATION

BILL OF MATERIALS

Reference Designator	Description	Manufacturer	Part Number
C1	0.1µF, ±10%, 50V ceramic capacitor, X7R, 0603	Samsung	CL10B104KB8NNNC
C2 to C8, C11	10µF capacitors—do not install (DNI)	Not Applicable	Not Applicable
C9 TO C10	1µF, ±10%, 16V ceramic capacitors, X7R, 0603	Kyocera Avx	0603YC105KAT2A
DS1	Red 626nm LED indication	Broadcom Limited	HSMS-C170
J1 TO J11	SMA connector jacks, female socket 50Ω through hole solder	Cinch Connectivity Solutions Johnson	142-0701-201
K1 to K6, K14 to K18	Connector headers, Through Hole 3 position, 0.100" (2.54mm)	Harwin Inc.	M20-9990345
K7 to K13	Connector headers, Through Hole 2 position, 0.100" (2.54mm)	Harwin Inc.	M20-9990245
P1	6-position receptacle connector, 0.100" (2.54mm) through hole gold	Samtec Inc.	SSQ-106-03-G-S
P2, P5	8-position receptacle connectors, 0.100" (2.54mm) through hole gold	Samtec Inc.	SSQ-108-03-G-S
P3	6-position receptacle connector, 0.100" (2.54mm) through hole gold	Samtec Inc.	SSQ-103-04-G-D
P4	1-position receptacle connector, 0.100" (2.54mm) through hole gold	Samtec Inc.	SSQ-110-03-G-S
P6	Mini-USB-A, Mini-USB-B, USB 2.0 on-the-go (OTG) receptacle connector 5-position surface mount	Molex	56579-0576
P7	2-position, wire to board, terminal block, horizontal with board 0.197" through hole	Lumberg Inc	KRM 02
P8	2-position, wire to board, terminal block, horizontal with board 0.150" through hole	Phoenix Contact	1706170
R1 to R6	Fixed resistors, thin film, 0.1W, 10kΩ, 100V	Multicomp (SPC)	MCTF0603TTX1002
R7, R10, R12	100kΩ, ±1%, 0.1W, 1/10W chip resistors, 0603 (1608 Metric), thick film	YAGEO	RC0603FR-07100KL
R8 to R9, R11	100kΩ resistors—DNI	YAGEO	RC0603FR-07100KL
R13, R23 to R28	1/10W, 1.8kΩ resistors—DNI		
R14 to R21	0Ω jumper, chip resistors, 0603 (1608 metric), automotive, AEC-Q200, thick film	Panasonic	ERJ-3GEY0R00V
R22	750Ω, ±1%, 0.1W, 1/10W chip resistor, 0603 (1608 metric), thick film	Vishay Dale	CRCW0603750RFKEA
TP1 to TP3	Red PCB test points	Vero Technologies	20-313137
TP9 to TP13	Black PC test points, compact, phosphor bronze, silver plating, through hole	Keystone Electronics	5006
TP4 to TP8	Yellow PC test points, miniature, phosphor bronze, silver plating, through hole	Keystone Electronics	5004
U1	Electrically erasable programmable read-only memory (EEPROM) Memory, IC, 32K-bit	Microchip Technology	24AA32A-I/SN
U2	50mA, high voltage, micropower linear regulator	Analog Devices Inc.	ADP1720ARMZ-3.3-R7
X1	24-pin, 5mm × 4mm socket	Plastronics	24LQ50AW15040

ORDERING INFORMATION

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.

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