

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

FEATURES

- ▶ 24-lead, 3mm × 3mm 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-24LGA33EBZ

DOCUMENTS NEEDED

- ▶ Data sheet for the device being evaluated

EQUIPMENT NEEDED

- ▶ A compatible 24-lead 3mm × 3mm 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

EVALUATION BOARD PHOTOGRAPH

GENERAL DESCRIPTION

The EVAL-24LGA33EBZ 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-24LGA33EBZ 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-24LGA33EBZ. 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 K24), allowing users to route signals, tie pins to ground, or configure the pins as needed. K1 to K15 support general input/output (I/O) or ground connections. The EVAL-24LGA33EBZ supports two control modes: internal logic using K20 to K23, or serial peripheral interface (SPI) using K16 to K19. The control mode is selected through K24, where connecting it to GND enables internal control and connecting it to VDD enables SPI. The EVAL-24LGA33EBZ has Subminiature Version A (SMA) connectors (J1 to J19) 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-24LGA33EBZ user guide when using the EVAL-24LGA33EBZ.

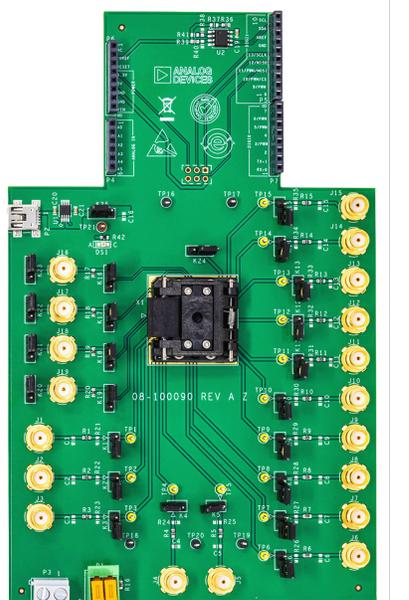


Figure 1. EVAL-24LGA33EBZ Evaluation Board Photograph

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REVISION HISTORY**10/2025—Revision 0: Initial Version**

EVALUATION BOARD HARDWARE

POWER SUPPLY

Power for the EVAL-24LGA33EBZ can be supplied via Micro-USB or an external source connected to the P3 screw terminal. This allows flexibility when Micro-USB power is insufficient or isolation is needed. Header K25 selects the power source, switching between Micro-USB derived 3.3V and external input.

LINK HEADERS

The EVAL-24LGA33EBZ includes link headers K1 to K24, each corresponding to a pin on the 24-lead LGA device, allowing flexible configuration for evaluation. Headers K1 to K15 are 2-pin links typically used to tie pins to GND or leave them floating for signal input via the associated SMA connectors. K24 selects the control mode: connecting it to GND enables internal control, while VDD enables SPI control. K16 to K19 are designated for SPI communication lines when SPI mode is selected. K20 to K23 allow manual control of internal logic inputs (IN1 to IN4) by connecting them to either VDD or GND. Finally, header K25 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 K15	Inserted	Connects the DUT pin to GND
	Removed	Leaves the pin floating for external signal input
K16 to K19	A	Routes SPI signals (SDO, SCLK, CS_B, SDI) to the DUT
	B	Routes internal logic inputs (IN1 to IN4) to the DUT

Table 1. Link Header Descriptions (Continued)

Label	Position	Description
K20 to K23	A	VDD
	B	GND
K24	A	Enables SPI control mode
	B	Enables internal logic control mode
K25	A	USB +3.3V
	B	EXT_VDD

SMA CONNECTORS

The EVAL-24LGA33EBZ features 19 SMA connectors (J1 to J19), 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-24LGA33EBZ also includes 21 labeled test points (TP1 to TP21) 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 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

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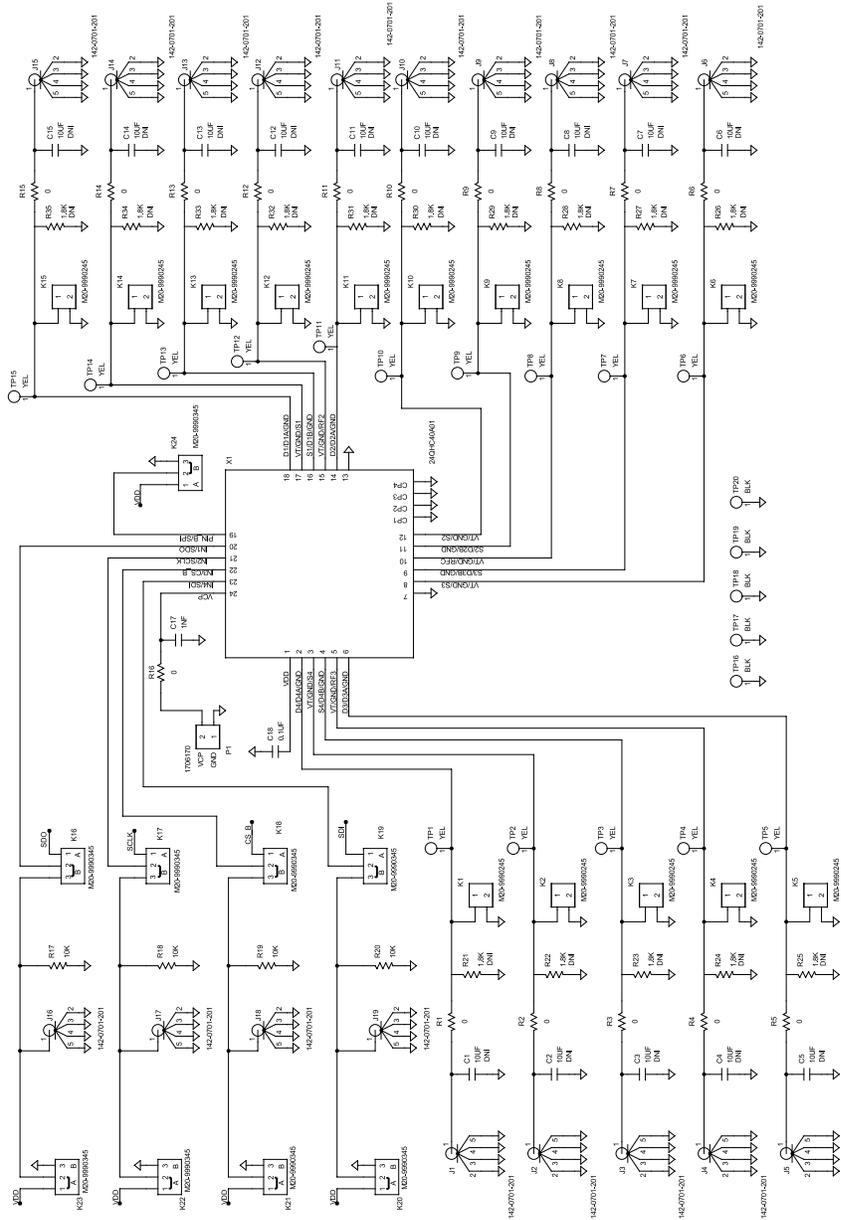
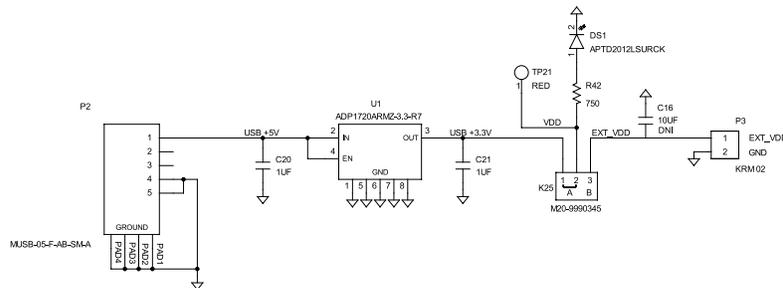


Figure 2. EVAL-24LGA33EBZ Schematic, Page 1



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Figure 3. EVAL-24LGA33EBZ Schematic, Page 2

EVALUATION BOARD SCHEMATIC AND ARTWORK

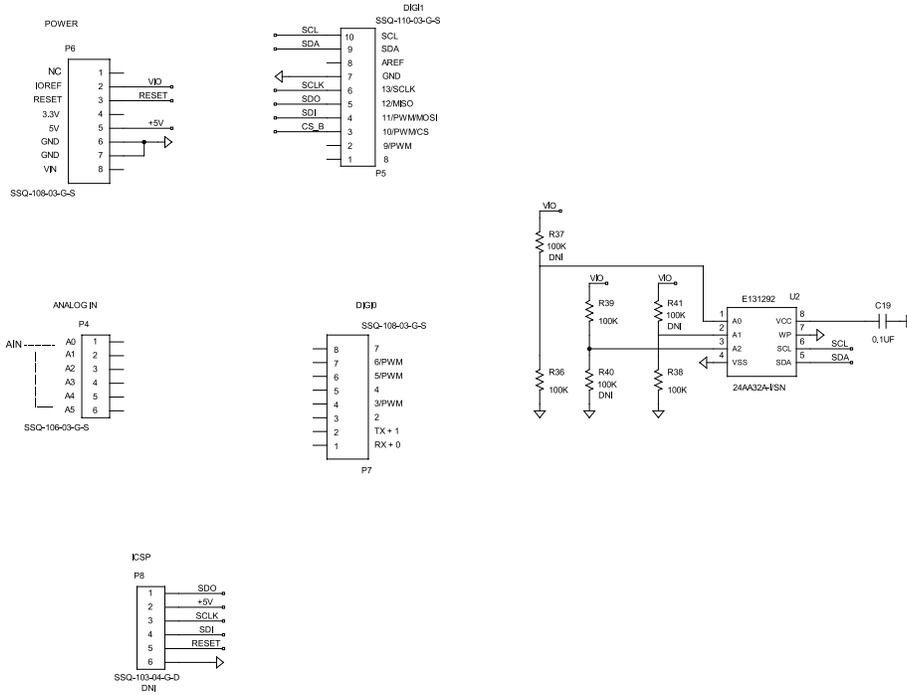


Figure 4. EVAL-24LGA33EBZ Schematic, Page 3

EVALUATION BOARD SCHEMATIC AND ARTWORK

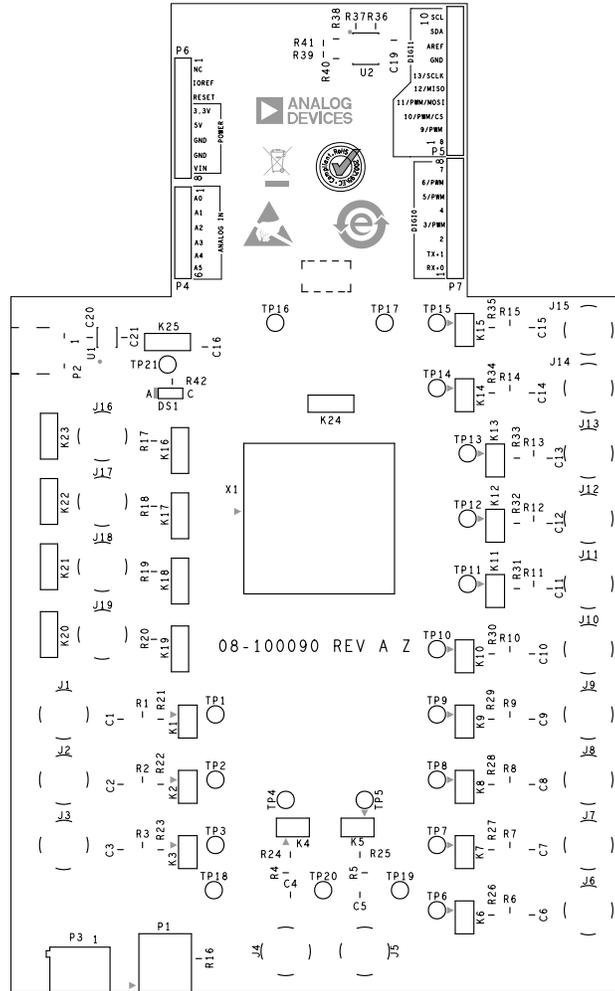


Figure 5. EVAL-24LGA33EBZ Silkscreen

EVALUATION BOARD SCHEMATIC AND ARTWORK

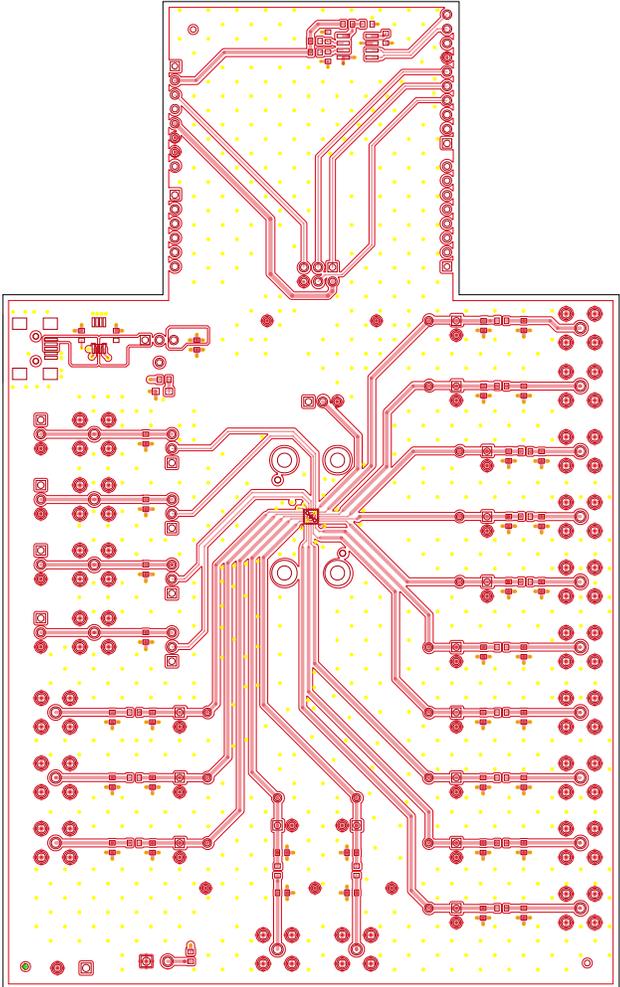


Figure 6. EVAL-24LGA33EBZ Top Layer

EVALUATION BOARD SCHEMATIC AND ARTWORK

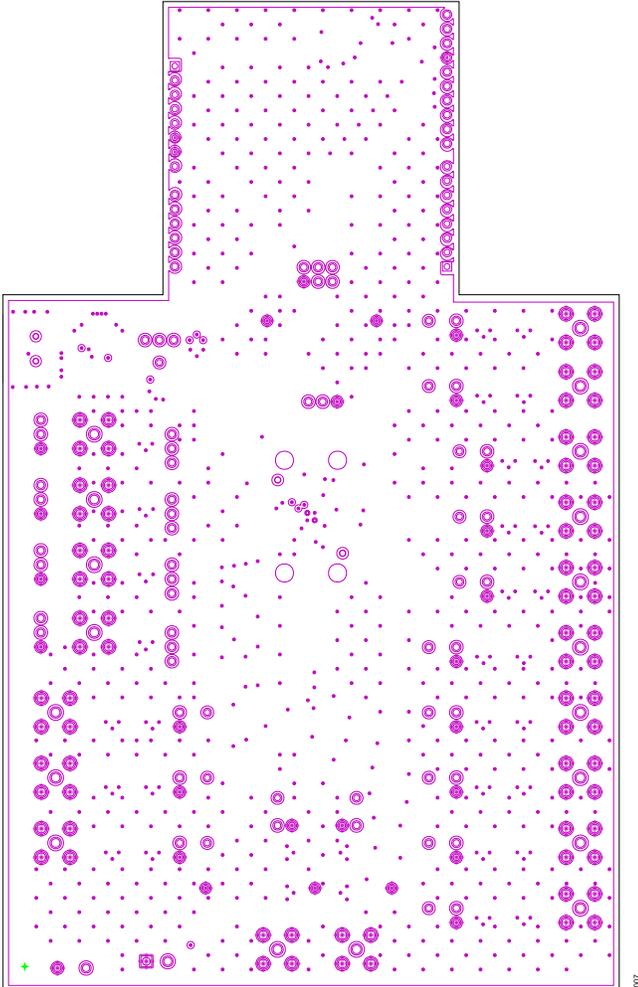


Figure 7. EVAL-24LGA33EBZ Layer 2

EVALUATION BOARD SCHEMATIC AND ARTWORK

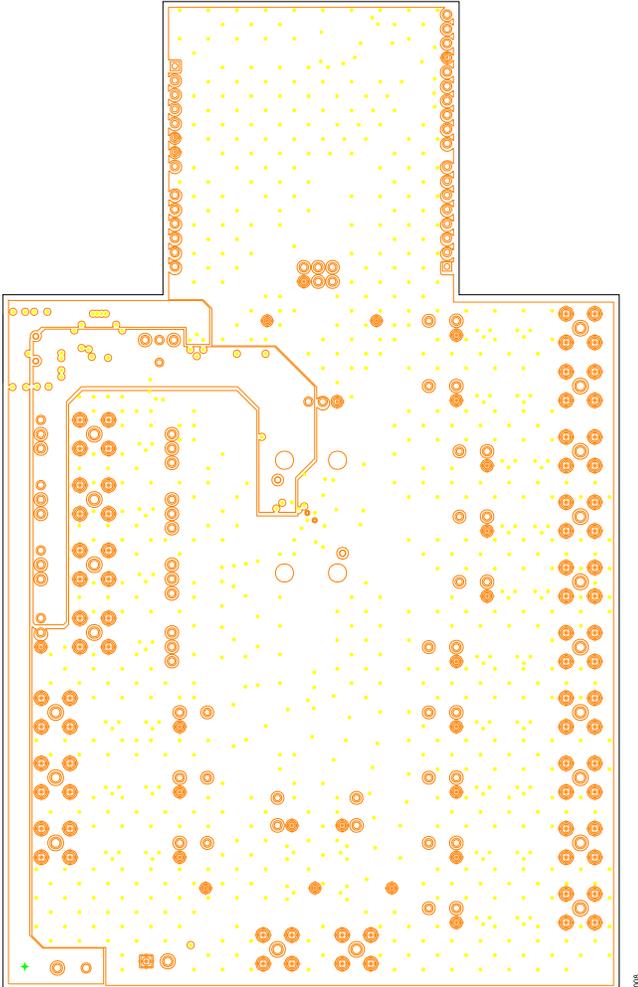


Figure 8. EVAL-24LGA33EBZ Layer 3

EVALUATION BOARD SCHEMATIC AND ARTWORK

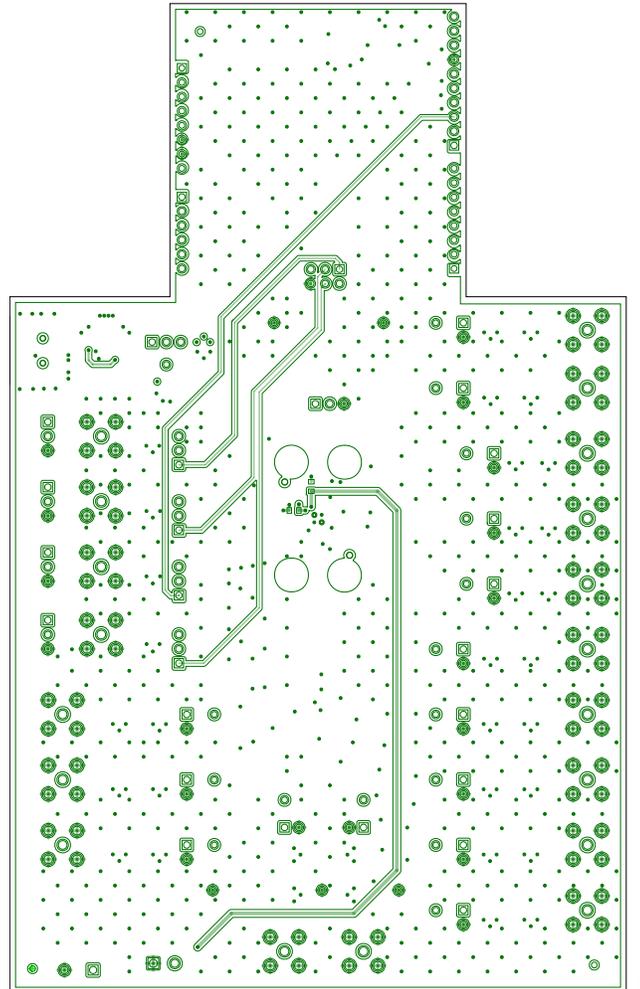


Figure 9. EVAL-24LGA33EBZ Bottom Layer

ORDERING INFORMATION

BILL OF MATERIALS

Reference Designator	Description	Manufacturer	Part Number
C1 to C16	10 μ F, 10V, X5R, ceramic capacitors, do not insert (DNI)	TDK	C1608X5R1A106M080AC
C17	1nF, 100V, X7R, ceramic capacitor	AVX Corporation	06031C102KAT2A
C18 to C19	0.1 μ F, 50V, X7R, ceramic capacitors	Samsung	CL10B104KB8NNNC
C20 to C21	1 μ F, 16V, X7R, ceramic capacitors	Murata	GCM188R71C105KA64
DS1	Red, 630nm, light-emitting diode (LED) indication	Kingbright Electronic	APTD2012LSURCK
J1 to J19	SMA connectors, jack, female socket, 50 Ω	Cinch Connectivity Solutions	142-0701-201
K1 to K15	Connector headers, through hole, 2-position	Harwin	M20-9990245
K16 to K25	Connector headers, through hole, 3-position	Harwin	M20-9990345
P1	2-position wire to board terminal block (screwless)	Phoenix Contact	1706170
P2	Mini-USB AB, USB 2.0 receptacle connector, 5-position, surface mount, right angle	Samtec Inc.	MUSB-05-F-AB-SM-A
P3	2-position wire to board terminal block (screw)	Lumberg	KRM 02
P4	6-position receptacle connector	Samtec Inc.	SSQ-106-03-G-S
P5	10-position receptacle connector	Samtec Inc.	SSQ-110-03-G-S
P6 to P7	8-position receptacle connectors	Samtec Inc.	SSQ-108-03-G-S
P8	6-position receptacle connector (three positions per row) (DNI)	Samtec Inc.	SSQ-103-04-G-D
R1 to R16	0 Ω jumper chip resistors	Vishay	ERJ-3GEY0R00V
R17 to R20	10k Ω thin film resistors	Multicomp (SPC)	MCTF0603TTX1002
R21 to R35	1.8k Ω , \pm 1%, 0.1W, 1/10W chip resistors (DNI)	Yageo	RC0603FR-071K8L
R36	100k Ω , \pm 1%, 0.1W, 1/10W chip resistor	Yageo	RC0603FR-07100KL
R37 to R41	100k Ω , \pm 1%, 0.1W, 1/10W chip resistors (DNI)	Yageo	RC0603FR-07100KL
R42	750 Ω , \pm 1%, 0.1W, 1/10W chip resistor	Vishay	CRCW0603750RFKEA
TP1 to TP15	Test points (yellow)	Keystone Eelectronics	5004
TP16 to TP20	Test points (black)	Keystone Eelectronics	5001
TP21	Test point (red)	Vero Technologies	20-313137
U1	50 mA, high voltage, micropower linear regulator	Analog Devices, Inc.	ADP1720ARMZ-3.3-R7
U2	Electrically erasable programmable read-only memory (EEPROM) IC, 32Kbit	Microchip Technology	24AA32A-I/SN
X1	24-pin LGA, 3 \times 3 socket	Plastronics	24QHC40A01

**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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