19-4640; Rev 0; 9/09

# MAX9959 Evaluation Kit

Evaluates: MAX9959

## General Description

The MAX9959 evaluation kit (EV kit) provides a proven design to evaluate the MAX9959 device power supply (DPS). The EV kit also includes Windows® 2000/XP®- and Windows Vista®-compatible software that provides a simple graphical user interface (GUI) for exercising the features of the MAX9959. The MAX9959 EV kit PCB comes with a MAX9959DCCQ+ installed.

## Ordering Information

| PART | TYPE |
|---|---|
| MAX9959EVKIT+ | EV Kit |

*+Denotes lead(Pb)-free and RoHS compliant.*

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*SPI is a trademark of Motorola, Inc.*

## Features

- **Windows 2000/XP- and Windows Vista (32-Bit)-Compatible Software**
- **USB-PC Connection (Cable Included)**
- **SPI™ Interface Terminals**
- **Uses the MAX5735 to Provide Analog Input Settings**
- **Uses the MAX531 to Provide Ground-Sense Shifting**
- **On-Board Reference (MAX6126)**
- **On-Board Regulators Generate All Required Voltages from ±12V**
- **External Load Sensing**
- **Proven PCB Layout**
- **Includes Heatsink and Fan**
- **Lead(Pb)-Free and RoHS Compliant**
- **Fully Assembled and Tested**
- **Two On-Board MAX9959s Allow Master/Slave Capabilities**

## Component List

| DESIGNATION | QTY | DESCRIPTION |
|---|---|---|
| C1, C3–C10, C17, C24, C26, C32, C37, C49–C53, C55–C62 | 27 | 0.1µF ±10%, 16V X7R ceramic capacitors (0603) TDK C1608X7R1C104K |
| C2, C13, C15, C23, C25, C31, C36, C48 | 8 | 10µF ±20%, 6.3V X5R ceramic capacitors (0805) TDK C2012X5R0J106M |
| C11, C12 | 2 | 10pF ±5%, 50V C0G ceramic capacitors (0603) TDK C1608C0G1H100J |
| C14, C16, C27, C30, C35 | 5 | 1µF ±20%, 6.3V X5R ceramic capacitors (0603) TDK C1608X5R0J105M |
| C18, C19 | 2 | 22pF ±5%, 50V C0G ceramic capacitors (0603) TDK C1608C0G1H220J |
| C20 | 1 | 3300pF ±10%, 50V X7R ceramic capacitor (0603) TDK C1608X7R1H332K |
| C28, C33, C39, C41, C44–C47, C84–C87 | 12 | 0.1µF ±20%, 50V X7R ceramic capacitors (0603) TDK C1608X7R1H104M |
| C29, C34, C38, C40, C42, C43 | 6 | 10µF ±10%, 25V X5R ceramic capacitors (1210) TDK C3225X5R1E106K |
| C54, C88–C91 | 0 | Not installed, capacitors (0603) |
| C63 | 1 | 33µF ±20%, 6.3V X5R ceramic capacitor (1206) TDK C3216X5R0J336M |
| C64, C65, C81, C82 | 4 | 270pF ±5%, 50V C0G ceramic capacitors (0402) Taiyo Yuden UMK105CG271JV-F |
| C66, C83, C96–C99 | 6 | 330pF ±10%, 50V X7R ceramic capacitors (0603) TDK C1608X7R1H331K |
| C67, C74, C92, C93 | 4 | 1500pF ±10%, 50V X7R ceramic capacitors (0603) TDK C1608X7R1H152K |
| C68, C75 | 2 | 0.01µF ±10%, 50V X7R ceramic capacitors (0603) TDK C1608X7R1H103K |
| C69, C76 | 2 | 0.022µF ±10%, 50V X7R ceramic capacitors (0603) Murata GRM188R71H223K |
| C70, C71, C77, C78 | 4 | 4700pF ±10%, 50V X7R ceramic capacitors (0603) Murata GRM188R71H472K |

## Component List (continued)

| DESIGNATION | QTY | DESCRIPTION |
|---|---|---|
| C72, C73, C79, C80 | 4 | 100pF ±5%, 50V C0G ceramic capacitors (0603) Murata GRM1885C1H101J |
| C94, C95 | 2 | 3300pF ±10%, 50V X7R ceramic capacitors (0603) Murata GRM188R71H332K |
| D1 | 1 | Green LED (0603) |
| D2, D3 | 0 | Not installed, zener diodes |
| D4–D13 | 10 | Red LEDs (0603) |
| FB1–FB4 | 4 | Ferrite beads, 3A, 200Ω at 100MHz (0603) TDK MPZ1608S221A |
| J0 | 0 | Not installed, dual-row (2 x 5) 10-pin header |
| J2, J3 | 2 | Dual-row (2 x 8) 16-pin headers |
| J8, J9 | 2 | 3-pin headers |
| J10–J17 | 8 | Dual-row (2 x 5) 10-pin headers |
| JUA–JUE | 0 | Not Installed, PCB shorted trace |
| JU1–JU4 | 4 | 3-pin headers |
| JU5, JU10 | 2 | Triple-row (3 x 4) 12-pin headers |
| JU6, JU9, JU14–JU19 | 8 | 2-pin headers |
| JU11 | 1 | Triple-row (3 x 10) 30-pin header |
| P1 | 1 | USB type-B right-angle female receptacle |
| P2–P6, P8, P10, P11, P12, P14, P16 | 11 | Binding posts |
| R1 | 1 | 220Ω ±5% resistor (0603) |
| R2, R34, R35, R49, R51, R55, R57, R59, R75, R77, R81, R83, R85 | 13 | 10kΩ ±5% resistors (0603) |
| R3 | 1 | 2.2kΩ ±5% resistor (0603) |
| R4 | 1 | 1.5kΩ ±5% resistor (0603) |
| R5, R6 | 2 | 27Ω ±5% resistors (0603) |
| R7, R9, R11, R32, R42, R43, R67, R68 | 8 | 1kΩ ±1% resistors (0603) |
| R8 | 1 | 1.4kΩ ±1% resistor (0603) |
| R10, R12 | 2 | 3.01kΩ ±1% resistors (0603) |
| R13, R14, R15 | 3 | 0Ω ±5% resistors (0805) |
| R16, R19, R20, R22, R24, R26, R28, R30 | 8 | 6.98kΩ ±1% resistors (0603) |
| R17, R18, R21, R23, R25, R27, R29, R31 | 8 | 4.99kΩ ±1% resistors (0603) |
| R33 | 1 | 0Ω ±5% resistor (0603) |
| R36, R38, R61, R63 | 4 | 10Ω ±1% range A resistors (2512) |
| R37, R39, R62, R64 | 4 | 3.3Ω ±1% range A resistors (2512) |
| R40, R41, R65, R66 | 4 | 100Ω ±1% resistors (1206) |
| R44, R60, R69, R70 | 4 | 10kΩ ±1% resistors (0603) |
| R45, R46, R47, R71, R72, R73, R90–R99 | 0 | Not installed, resistors (2512) |
| R48, R50, R54, R56, R58, R74, R76, R80, R82, R84 | 10 | 1kΩ ±5% resistors (0603) |
| R52, R53, R78, R79, R86–R89, R100, R101 | 0 | Not installed, resistors (0603) |
| R102 | 1 | 200Ω ±1% resistor (0603) |
| TP1, TP3, TP5, TP7, TP8, TP19, TP35 | 7 | Red test points |
| TP4, TP6, TP9 | 3 | Black test points |
| TP2, TP10–TP16, TP20–TP24, TP28, TP31–TP34, TP39, TP40 | 0 | Not installed, red miniature test points |

## Component List (continued)

| DESIGNATION | QTY | DESCRIPTION |
|---|---|---|
| TP17, TP18, TP25, TP26, TP27, TP29, TP30, TP36, TP37, TP38 | 10 | Red miniature test points |
| U1, U2 | 2 | Digital power supplies (100 TQFP-EPR-IDP) Maxim MAX9959DCCQ+ |
| U3 | 1 | Low-cost microcontroller (68 QFN-EP*) Maxim MAXQ2000-RAX+ |
| U4 | 1 | 93C46 type (64k x 16) 3-wire EEPROM (8 SO) |
| U5 | 1 | UART-to-USB converter (32 TQFP) |
| U6 | 1 | 3.3V regulator (5 SC70) Maxim MAX8511EXK33+T (Top Mark: AEI) |
| U7 | 1 | 2.5V regulator (5 SC70) Maxim MAX8511EXK25+T (Top Mark: ADV) |
| U9, U10 | 2 | Adjustable positive-voltage regulators (3 TO220) |
| U11 | 1 | Adjustable negative-voltage regulator (3 TO220) |
| U12, U13 | 2 | Quad op-amp ICs (14 TSSOP) |
| U14 | 1 | Low-noise precision reference (8 SO) Maxim MAX6126AASA30+ |
| U15 | 1 | 32-channel, 16-bit DAC (56 TQFN-EP*) Maxim MAX5735BUTN+ |
| U16 | 1 | 12-bit serial DAC (14 SO) Maxim MAX531ACSD+ |
| U17, U18 | 2 | Quad SPDT analog switches (20 SSOP) Maxim MAX4533EAP+ |
| U19 | 0 | Not installed, external buffer (7 TO220) |
| Y1 | 1 | 16MHz crystal (HCM49) Hong Kong X'tals SSM1600000E18FAF |
| Y2 | 1 | 6MHz crystal (HCM49) Hong Kong X'tals SSL6000000E18FAF |
| — | 2 | Fans, heatsink, 5V, 30mm x 30mm x 20mm Cofan 30-1779 Rev A |
| — | 38 | Shunts |
| — | 1 | PCB: MAX9959 EVALUATION KIT+ |

**EP = Exposed pad.*

## Component Suppliers

| SUPPLIER | PHONE | WEBSITE |
|---|---|---|
| Hong Kong X'tals Ltd | 852-35112388 | www.hongkongcrystal.com |
| Murata Electronics North America, Inc. | 770-436-1300 | www.murata-northamerica.com |
| Taiyo Yuden | 800-348-2496 | www.t-yuden.com |
| TDK Corp. | 847-803-6100 | www.component.tdk.com |

***Note:*** *Indicate that you are using the MAX9959 when contacting these component suppliers.*

## MAX9959 EV Kit Files

| FILE | DESCRIPTION |
|---|---|
| INSTALL.EXE | Installs the EV kit files on your computer |
| MAX9959.EXE | Application program |
| FTD2XX.INF | USB device driver file |
| UNINST.INI | Uninstalls the EV kit software |
| USB_Driver_Help.PDF | USB driver installation help file |

## Quick Start

### Required Equipment

- MAX9959 EV kit (USB cable included)
- User-supplied Windows 2000/XP or Windows Vista PC with a spare USB port
- ±12V, 2A power supply
- Two digital voltmeters

**Note:** In the following sections, software-related items are identified by bolding. Text in **bold** refers to items directly from the EV kit software. Text in **bold and underlined** refers to items from the Windows operating system.

### Procedure

The MAX9959 EV kit is fully assembled and tested. Follow the steps below to verify board operation:

1) Visit **www.maxim-ic.com/evkitsoftware** to download the latest version of the EV kit software, 9959Rxx.ZIP. Save the EV kit software to a temporary folder and uncompress the ZIP file.
2) Install the EV kit software on your computer by running the INSTALL.EXE program inside the temporary folder. The program files are copied and icons are created in the Windows **Start | Programs** menu.
3) Verify that all jumpers are in their default positions, as shown in Table 1.
4) Connect the USB cable from the PC to the EV kit board. A **New Hardware Found** window pops up when installing the USB driver for the first time. If you do not see a window that is similar to the one described above after 30 seconds, remove the USB cable from the board and reconnect it. Administrator privileges are required to install the USB device driver on Windows.
5) Follow the directions of the **Add New Hardware Wizard** to install the USB device driver. Choose the **Search for the best driver for your device** option. Specify the location of the device driver to be **C:\Program Files\MAX9959** (default installation directory) using the **Browse** button. During device driver installation, Windows may show a warning message indicating that the device driver Maxim uses does not contain a digital signature. This is not an error condition and it is safe to proceed with installation. Refer to the USB_Driver_Help.PDF document included with the software for additional information.
6) Apply +12V to VCC (P2) and -12V to VEE (P4).
7) Start the MAX9959 EV kit software by opening its icon in the **Start | Programs** menu. The EV kit software main window appears, as shown in Figure 1.
8) In the **MAX9959 Settings** group box, click on the **FV** radio button in the **Set Measurement Mode** group box.
9) In the **MAX5735 Settings** group box, change the voltage for **VIN** to +1V.
10) Check that the output voltage at DUT_NODE_M (P8) is close to +1V. Figure 2 shows the MAX9959 EV kit quick start settings.

## Detailed Description of Software

The main window of the evaluation kit software is shown in Figure 1.

### MAX9959 Settings

The MAX9959 supports an 18-bit word SPI interface. The GUI provides a simple way to correlate setting changes with bit settings. There are two on-board MAX9959 devices connected in a daisy-chain configuration. U1 can be considered the *Master* and is denoted with an _M in the schematic, U2 can be considered the *Slave* and is denoted with an _S in the schematic, but both devices can be programmed to operate independently. Because of the daisy-chain configuration, the bit stream for U2 goes through U1 first. To avoid accidental programming of a device when communicating with another device in the daisy chain, bit 0 masks writing to the MAX9959 and bit 1 masks the loading of the settings. Both bits are automatically updated when using **Master** and **Master1/Master2** modes. The default setting by the GUI is **Manual Control** and allows the user to set all settings independently. Selecting **Master**, **Master/Slave**, or **Master1/Master2** forces certain bit settings that are required for that mode.

The **Set Measurement Mode** group box is a quick way to set the MAX9959 to force voltage (**FV**), force current (**FI**), force current as a slave device (**FI Slave**), or place into high impedance (**Hi-Z**). Bit settings are automatically changed to match mode settings.

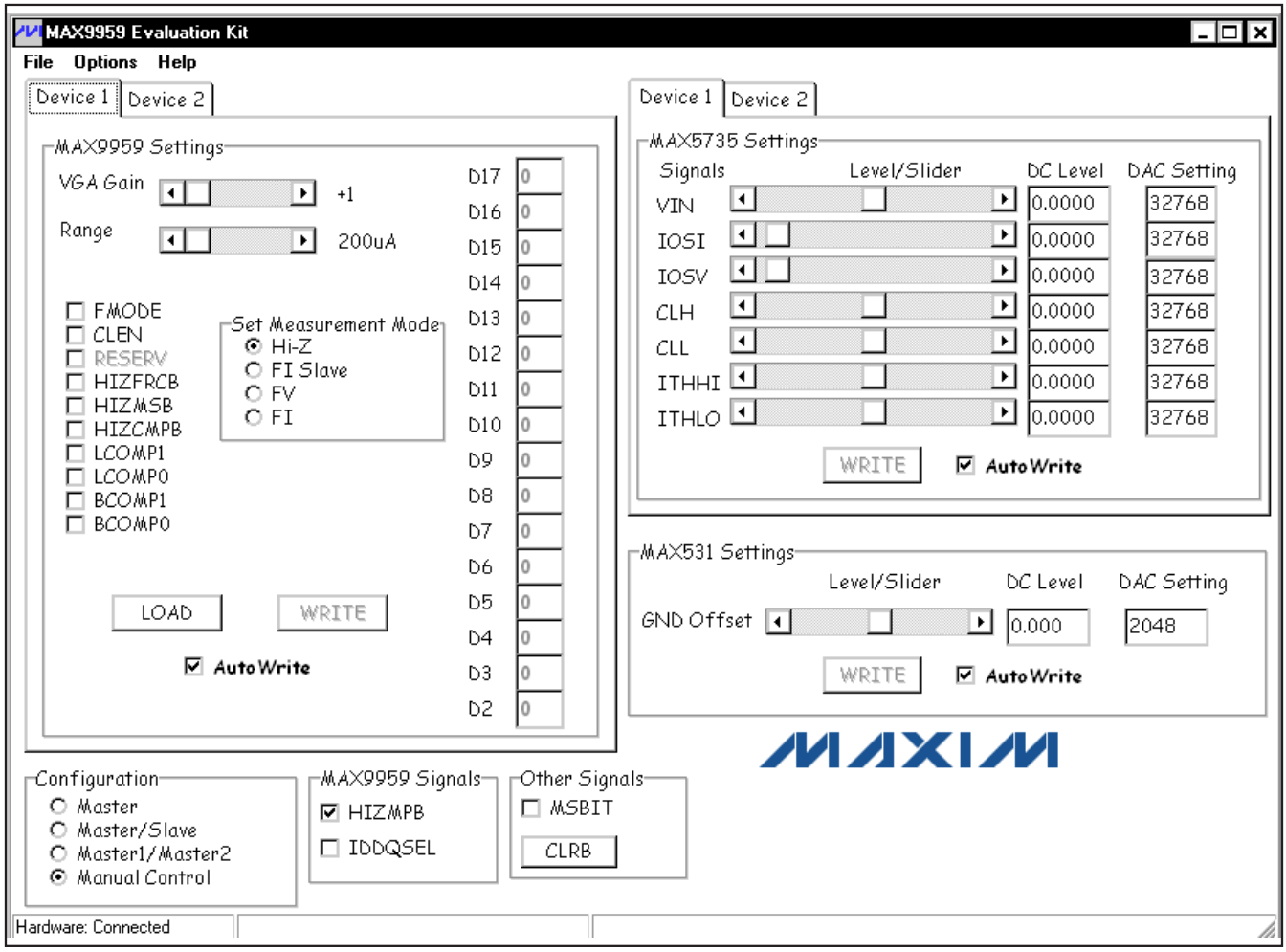


*Figure 1. MAX9959 EV Kit Software Main Window at Startup*

### MAX5735 Settings

The MAX5735 outputs voltages for both MAX9959 devices. The output voltages are set by moving the scrollbars located in the **MAX5735 Settings** group box or by entering data in the corresponding edit boxes and pressing *Enter* on the keyboard. The edit boxes accept the value of the voltage or binary code. Changes in the **DC Level** edit boxes automatically change the values in the **DAC Setting** edit boxes and vice versa. The min and max values allowed for each analog voltage setting set their scrollbar ranges. Analog voltages (**VIN**, **IOSI**, **IOSV**, **CLH**, **CLL**, **ITHHI**, and **ITHLO**) are set by the MAX5735 and appear as the input levels for the MAX9959. The MAX5735 has two tabs (**Device 1** and **Device 2**) to change the analog input voltages for both MAX9959 devices.

### MAX531 Settings

The MAX531 can be used for calibration by shifting the GND sense on the MAX5735. The GND shift on the MAX5735 should not exceed ±0.5V and the **GND Offset** scrollbar inside the **MAX531 Settings** group box is limited to that range.

### AutoWrite

The **AutoWrite** checkboxes can be checked to have the software automatically perform write operations. This feature allows the user to change settings and have them updated without pressing the **WRITE** buttons. There is an **AutoWrite** checkbox for writing to the MAX9959, MAX5735, and MAX531. Each device can independently perform auto writing. **AutoWrite** is enabled by default.

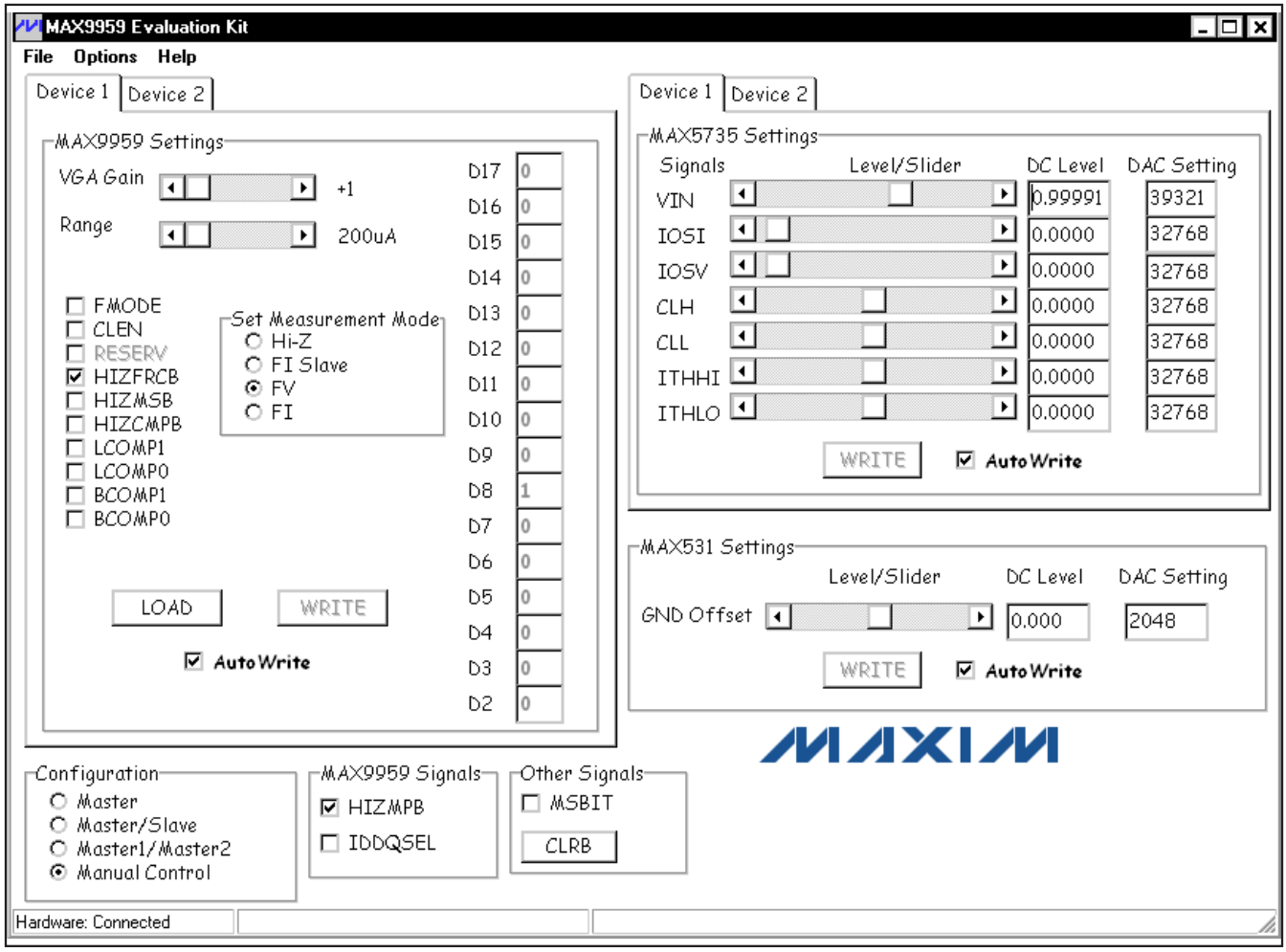


*Figure 2. MAX9959 EV Kit Quick Start Settings*

### *Signals*

**MSBIT**, **HIZMPB**, **IDDQSEL**, and **CLRB** are signals that can be used in different settings. **HIZMPB** and **IDDQSEL** are signals for the MAX9959. Each MAX9959 device can have its own set of **HIZMPB** and **IDDQSEL** signals, but the EV kit shares the same set of signals for both MAX9959 devices on-board. The **HIZMPB** signal is shared in functionality with the **HIZMSB** bit and internally both bits are ANDed. **CLRB** resets the MAX5735 and MAX531 outputs to 0V, and sets **CLH** to the max value and **CLL** to its min value. **MSBIT** is used for **Master/Slave** configuration. **MSBIT** is only selectable in **Manual Control**.

## _Detailed Description of Hardware

The MAX9959 EV kit provides a proven reference design for connecting two MAX9959 devices in a daisy-chain configuration. Headers for power, SPI, and analog voltages are provided for customized testing. The MAX5735 provides the analog voltages to the MAX9959. The MAX531 provides the GND-shifting voltage for calibrating the GND level on the MAX5735. The MAX5735 is a 32-channel DAC, but only 14 channels are used in the MAX9959 EV kit design. Headers J2 and J3 provide test points for the MAX5735 outputs. Various test points are available for different signals and LEDs indicate status information. The EV kit uses banana plugs for the outputs and inputs because of their high-current capability. Fan headers are provided to power two fans to cool the MAX9959 devices. Operating without the fans does not damage the MAX9959 devices even at high current because they have a thermal-shutdown feature that shuts off the IC when the die temperature exceeds the thermal limit.

### User-Supplied Power Supply

The MAX9959 EV kit is powered by ±12V. On-board regulators generate +5V, -5V, and +3V. The regulators are used by default, but changing the jumper position on JU1, JU2, and JU3 allows user-supplied power (see Table 1 for jumper configurations). User-supplied power is useful when isolating the supply current to individual devices. The USB-to-SPI circuitry is fully powered by USB power and can be detected without ±12V present. Power should always be present before running the software.

**Table 1. MAX9959 EV Kit Jumper Descriptions (JU1–JU6, JU9, JU10, JU11, JU14–JU19)**

| JUMPER | SHUNT POSITION | DESCRIPTION |
|---|---|---|
| JU1 | 1-2* | +3V is generated on-board through a regulator |
| | 2-3 | +3V is supplied externally |
| JU2 | 1-2* | +5V is generated on-board through a regulator |
| | 2-3 | +5V is supplied externally |
| JU3 | 1-2* | -5V is generated on-board through a regulator |
| | 2-3 | -5V is supplied externally |
| JU4 | 1-2 | Connects the MAX5735 GS input to GND |
| | 2-3* | Connects the MAX5735 GS input to MAX531 output |
| JU5A | Open* | Reserved |
| JU5B | Open* | Reserved |
| JU5C | Open* | Reserved |
| JU5D | 1-2* | Normal operation |
| | 2-3 | Reserved |
| JU6 | Open | DUT SENSE pin not connected to DUT_NODE (U2) |
| | Closed* | DUT SENSE pin connected to DUT_NODE (U2) |
| JU9 | Open* | Sets internal threshold voltage to half of logic voltage for U1 |
| | Closed | Sets internal threshold voltage to minimum for U1 |
| JU10A | Open* | Reserved |
| JU10B | Open* | Reserved |
| JU10C | Open* | Reserved |
| JU10D | 1-2* | Normal operation |
| | 2-3 | Reserved |
| JU11 | (See Table 2) | |
| JU14 | Open* | Sets internal threshold voltage to half of logic voltage for U2 |
| | Closed | Sets internal threshold voltage to minimum for U2 |
| JU15 | Open* | Normal operation |
| | Closed | Reserved |
| JU16 | Open* | VRXP sense input not connected |
| | Closed | VRXP sense input connected |
| JU17 | Open | DUT sense not connected to DUT_NODE (U1) |
| | Closed* | DUT sense connected to DUT_NODE (U1) |
| JU18 | Open | GND sense not connected to GND (U1) |
| | Closed* | GND sense connected to GND (U1) |
| JU19 | Open | GND sense not connected to GND (U2) |
| | Closed* | GND sense connected to GND (U2) |

**Default position.*

### User-Supplied Interface (On-Board Headers)

The MAX9959 EV kit uses ten signal lines from the microcontroller for operation. The signal lines go to JU11 and shunting the 1-2 position (default) uses the on-board signals to operate the evaluation kit. Switching the shunts to the 2-3 position allows user-supplied signals to operate the evaluation kit. The external signals are applied to headers J11, J13, J15, and J17. Headers J11 and J13 contain the digital bits, and headers J15 and J17 contain the analog voltages. Headers J10, J12, J14, and J16 can be used as test points, but are available to connect to another MAX9959 EV kit board. The outputs on headers J10, J12, J14, and J16 can connect to the inputs on headers J11, J13, J15, and J17 with the shunt positions changed to the 2-3 position on JU11. This allows multiple boards to be paralleled.

## Table 2. JU11 Jumper Description

| JU11 ROWS | SHUNT POSITION | DESCRIPTION |
|---|---|---|
| Row A | 1-2* | MAXQ microcontroller-generated DIN |
| | 2-3 | External DIN |
| Row B | 1-2* | MAXQ microcontroller-generated SCLK |
| | 2-3 | External SCLK |
| Row C | 1-2* | MAXQ microcontroller-generated $\overline{CS}$ for MAX9959 |
| | 2-3 | External $\overline{CS}$ for the MAX9959 |
| Row D | 1-2* | MAXQ microcontroller-generated $\overline{CS}$ for MAX5735 |
| | 2-3 | External $\overline{CS}$ for the MAX5735 |
| Row E | 1-2* | MAXQ microcontroller-generated $\overline{CS}$ for MAX531 |
| | 2-3 | External $\overline{CS}$ for the MAX531 |
| Row F | 1-2* | MAXQ microcontroller-generated MSBIT |
| | 2-3 | External MSBIT |
| Row G | 1-2* | MAXQ microcontroller-generated $\overline{LOAD}$ |
| | 2-3 | External $\overline{LOAD}$ |
| Row H | 1-2* | MAXQ microcontroller-generated $\overline{HIZMP}$ |
| | 2-3 | External $\overline{HIZMP}$ |
| Row I | 1-2* | MAXQ microcontroller-generated IDDQSEL |
| | 2-3 | External IDDQSEL |
| Row J | 1-2* | MAXQ microcontroller-generated $\overline{CLR}$ (internal use only) |
| | 2-3 | External $\overline{CLR}$ |

## Table 3. Analog Voltage Settings J2 Header Description

| J2 | MAX5735 SIGNAL NAME | J2 | MAX9959 SIGNAL NAME |
|---|---|---|---|
| 1 | OUT0_B | 2 | ITHLO_M |
| 3 | OUT1_B | 4 | ITHHI_M |
| 5 | OUT2 | 6 | IOSI_M |
| 7 | OUT3 | 8 | IOSV_M |
| 9 | OUT4 | 10 | VIN_M |
| 11 | OUT5_B | 12 | CLL_M |
| 13 | OUT6_B | 14 | CLH_M |

***Note:*** *OUT_ _B is a buffered version of OUT_.*

### Table 4. Analog Voltage Settings J3 Header Description

| J3 | MAX5735 SIGNAL NAME | J3 | MAX9959 SIGNAL NAME |
|---|---|---|---|
| 1 | OUT10_B | 2 | ITHLO_SAS |
| 3 | OUT11_B | 4 | ITHHI_SAS |
| 5 | OUT12 | 6 | IOSI_SAS |
| 7 | OUT13 | 8 | IOSV_SAS |
| 9 | OUT14 | 10 | VIN_SAS |
| 11 | OUT15_B | 12 | CLL_SAS |
| 13 | OUT16_B | 14 | CLH_SAS |

***Note:*** *OUT1__B is a buffered version of OUT1_.*

### Table 5. MAX9959 EV Kit J10 Header Description

| J10 | MAX9959 SIGNAL NAME | J10 | MAX9959 SIGNAL NAME |
|---|---|---|---|
| 1 | DOUT_S | 2 | GND |
| 3 | SCLK | 4 | GND |
| 5 | $\overline{CS}$ | 6 | GND |
| 7 | $\overline{LOAD}$ | 8 | GND |
| 9 | $\overline{CLR}$ | 10 | GND |

### Table 6. MAX9959 EV Kit J11 Header Description

| J11 | MAX9959 SIGNAL NAME | J11 | MAX9959 SIGNAL NAME |
|---|---|---|---|
| 1 | EXT_DIN | 2 | GND |
| 3 | EXT_SCLK | 4 | GND |
| 5 | $\overline{EXT\_CS}$ | 6 | GND |
| 7 | $\overline{EXT\_LOAD}$ | 8 | GND |
| 9 | $\overline{EXT\_CLR}$ | 10 | GND |

### Table 7. MAX9959 EV Kit J12 Header Description

| J12 | MAX9959 SIGNAL NAME | J12 | MAX9959 SIGNAL NAME |
|---|---|---|---|
| 1 | IDDQSEL | 2 | GND |
| 3 | $\overline{HIZMP}$ | 4 | GND |
| 5 | MSBIT | 6 | GND |
| 7 | $\overline{CSD}$ | 8 | GND |
| 9 | $\overline{CS\_GS}$ | 10 | GND |

### Table 8. MAX9959 EV Kit J13 Header Description

| J13 | MAX9959 SIGNAL NAME | J13 | MAX9959 SIGNAL NAME |
|---|---|---|---|
| 1 | EXT_IDDQSEL | 2 | GND |
| 3 | $\overline{\text{EXT\_HIZMP}}$ | 4 | GND |
| 5 | EXT_MSBIT | 6 | GND |
| 7 | $\overline{\text{EXT\_CSDAC}}$ | 8 | GND |
| 9 | $\overline{\text{EXT\_CS\_GS}}$ | 10 | GND |

### Table 9. MAX9959 EV Kit J14 Header Description

| J14 | MAX9959 SIGNAL NAME | J14 | MAX9959 SIGNAL NAME |
|---|---|---|---|
| 1 | IPAR_S | 2 | GND |
| 3 | CLH_S | 4 | GND |
| 5 | CLL_S | 6 | GND |
| 7 | VIN_S | 8 | GND |
| 9 | IOSV_S | 10 | GND |

### Table 10. MAX9959 EV Kit J15 Header Description

| J15 | MAX9959 SIGNAL NAME | J15 | MAX9959 SIGNAL NAME |
|---|---|---|---|
| 1 | GND | 2 | IOSV_M |
| 3 | GND | 4 | VIN_M |
| 5 | GND | 6 | CLL_M |
| 7 | GND | 8 | CLH_M |
| 9 | GND | 10 | VINS_M |

### Table 11. MAX9959 EV Kit J16 Header Description

| J16 | MAX9959 SIGNAL NAME | J16 | MAX9959 SIGNAL NAME |
|---|---|---|---|
| 1 | IOSI_S | 2 | GND |
| 3 | ITHHI_S | 4 | GND |
| 5 | ITHLO_S | 6 | GND |
| 7 | RFU2 | 8 | GND |
| 9 | RFU1 | 10 | GND |

### Table 12. MAX9959 EV Kit J17 Header Description

| J17 | MAX9959 SIGNAL NAME | J17 | MAX9959 SIGNAL NAME |
|---|---|---|---|
| 1 | IOSI_M | 2 | GND |
| 3 | ITHHI_M | 4 | GND |
| 5 | ITHLO_M | 6 | GND |
| 7 | — | 8 | — |
| 9 | — | 10 | — |

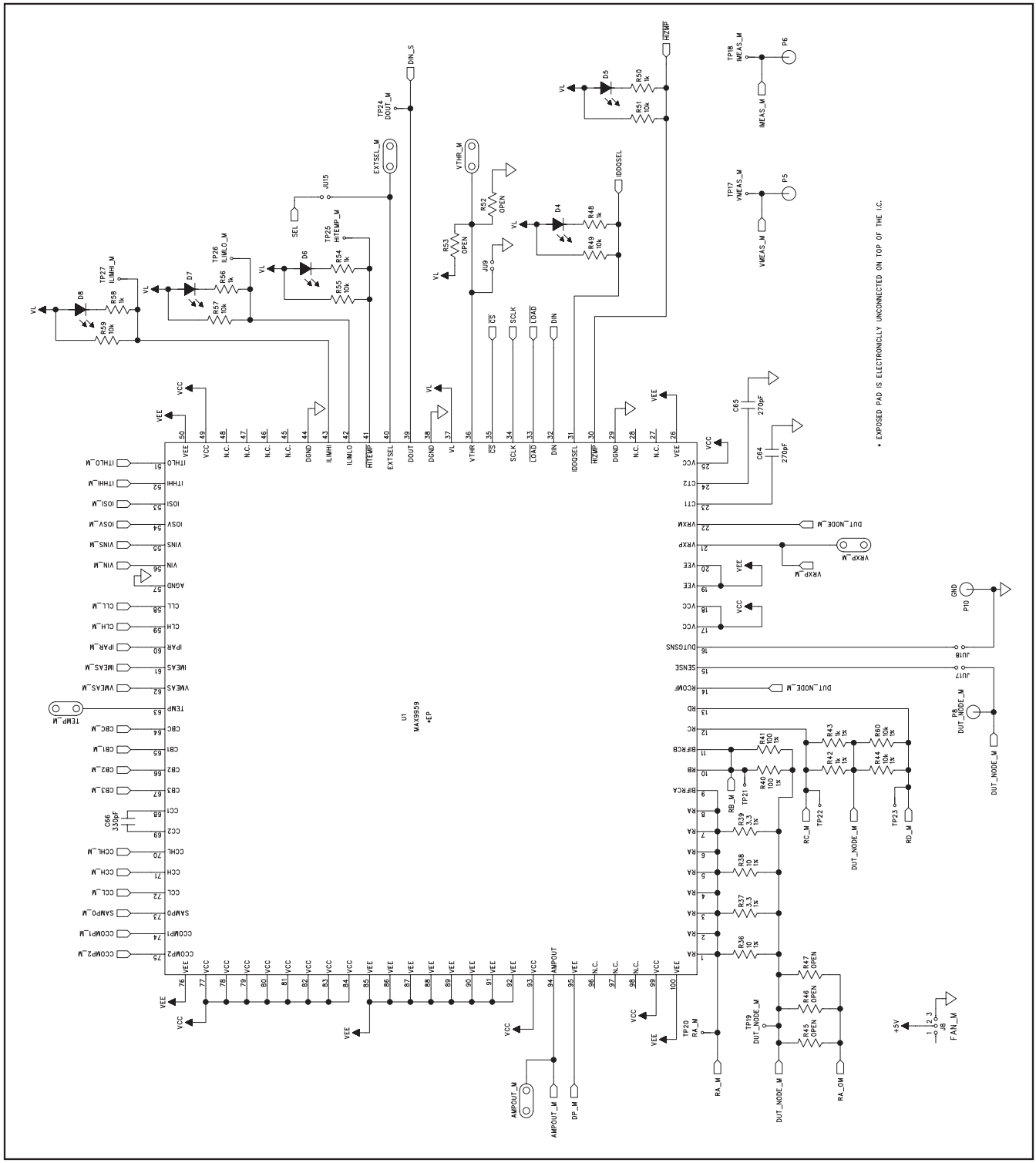


*Figure 3a. MAX9959 EV Kit Schematic (Sheet 1 of 8)*

# MAX9959 Evaluation Kit

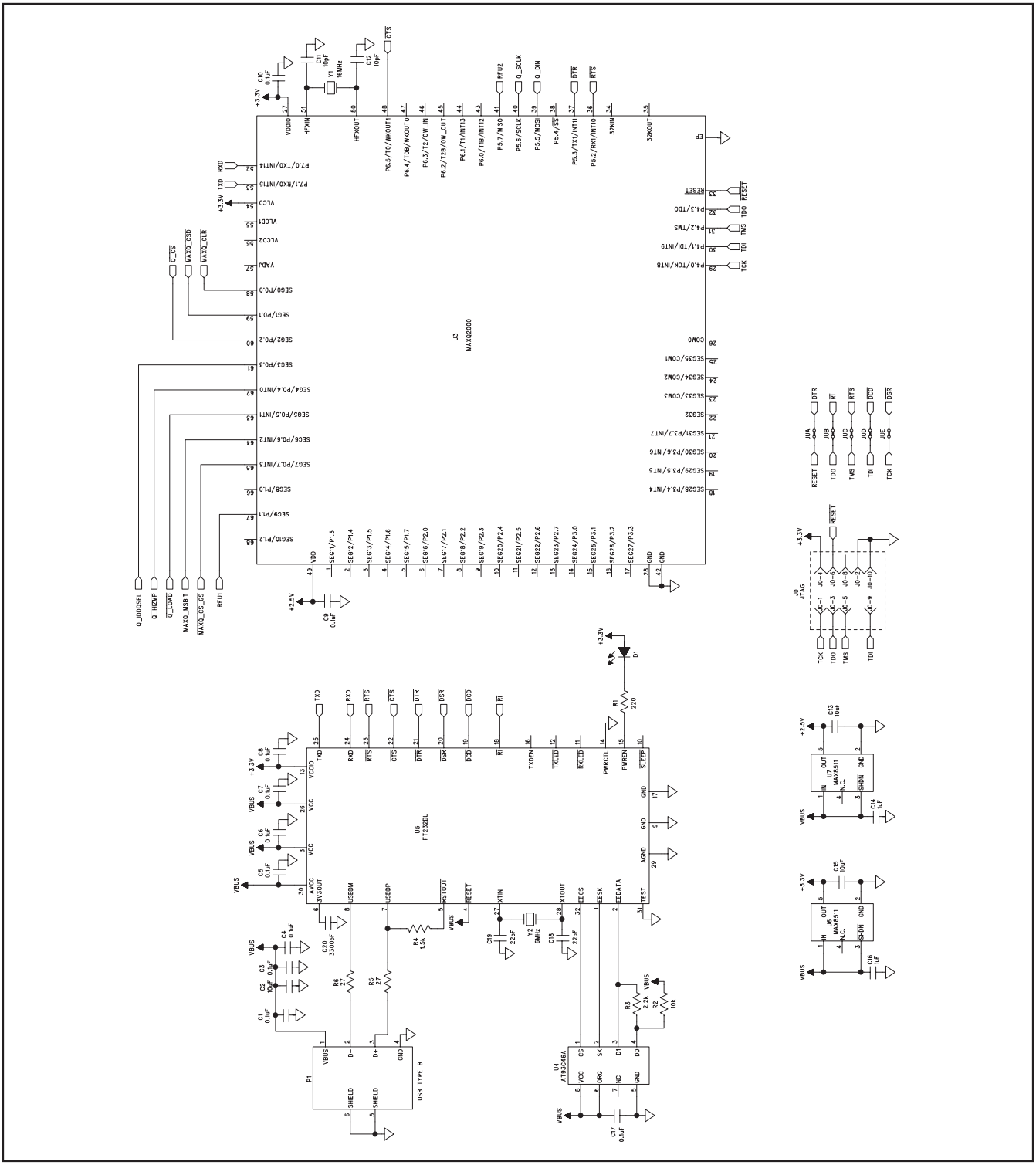

*Figure 3b. MAX9959 EV Kit Schematic (Sheet 2 of 8)*

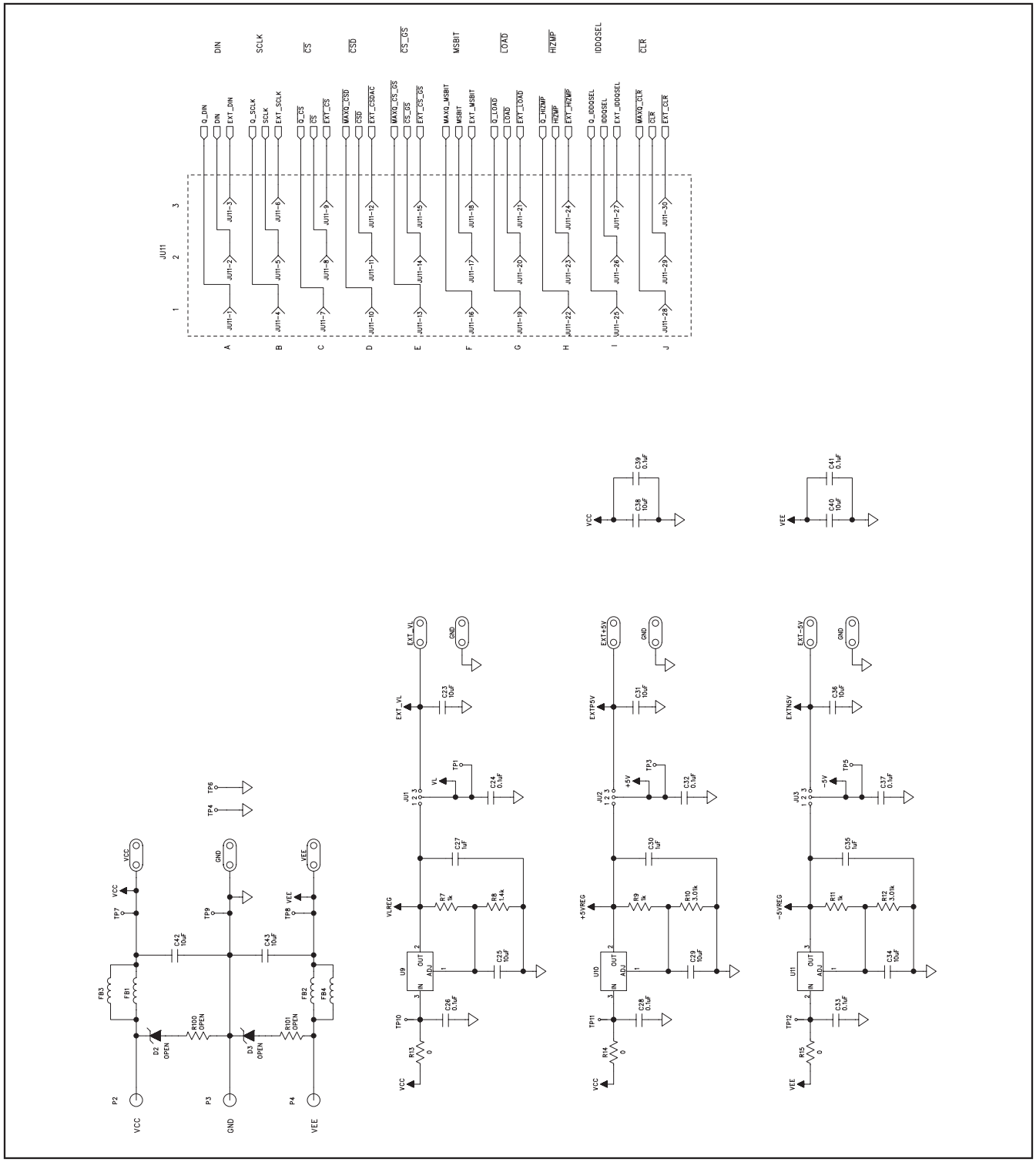


*Figure 3c. MAX9959 EV Kit Schematic (Sheet 3 of 8)*

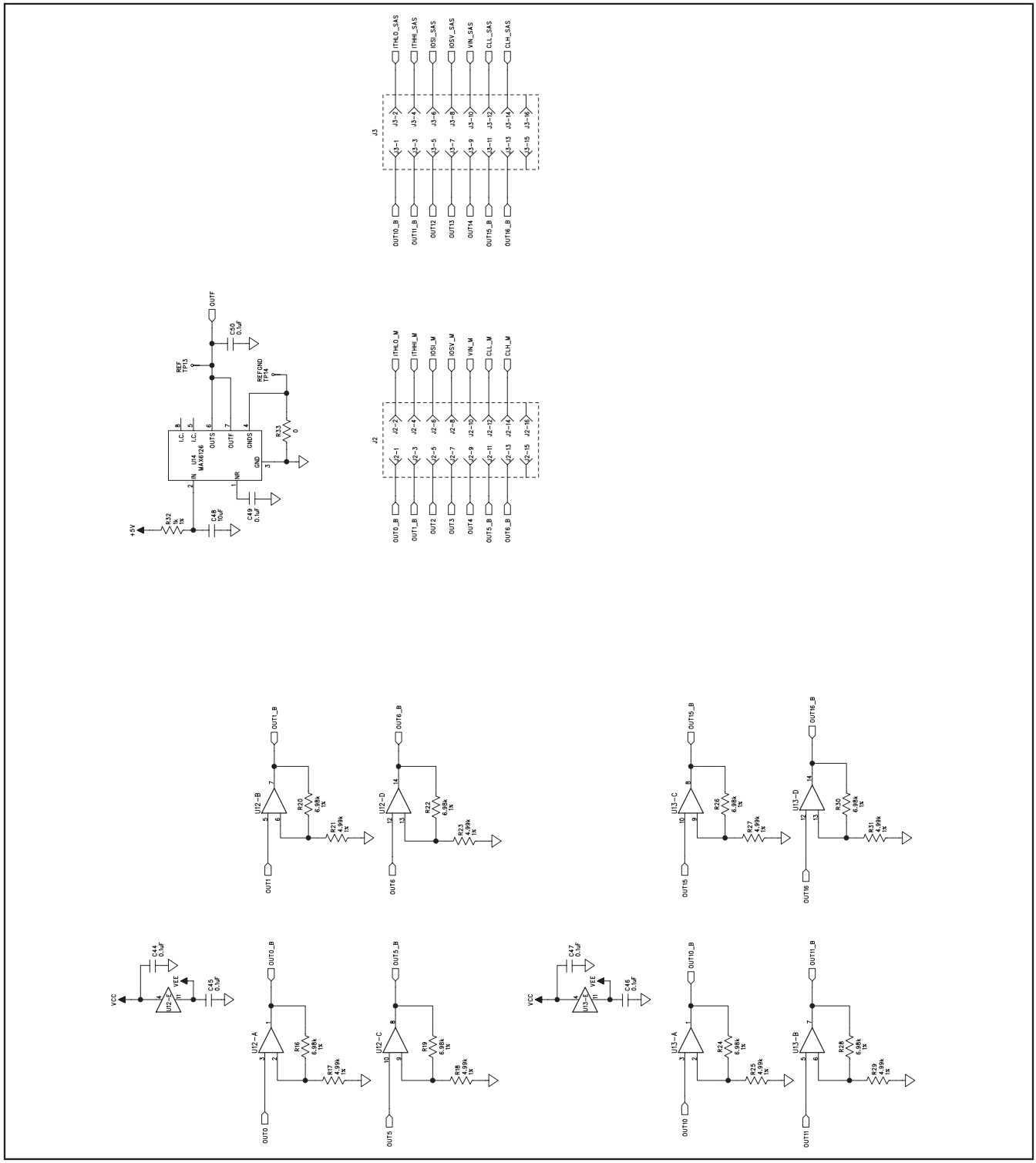


*Figure 3d. MAX9959 EV Kit Schematic (Sheet 4 of 8)*

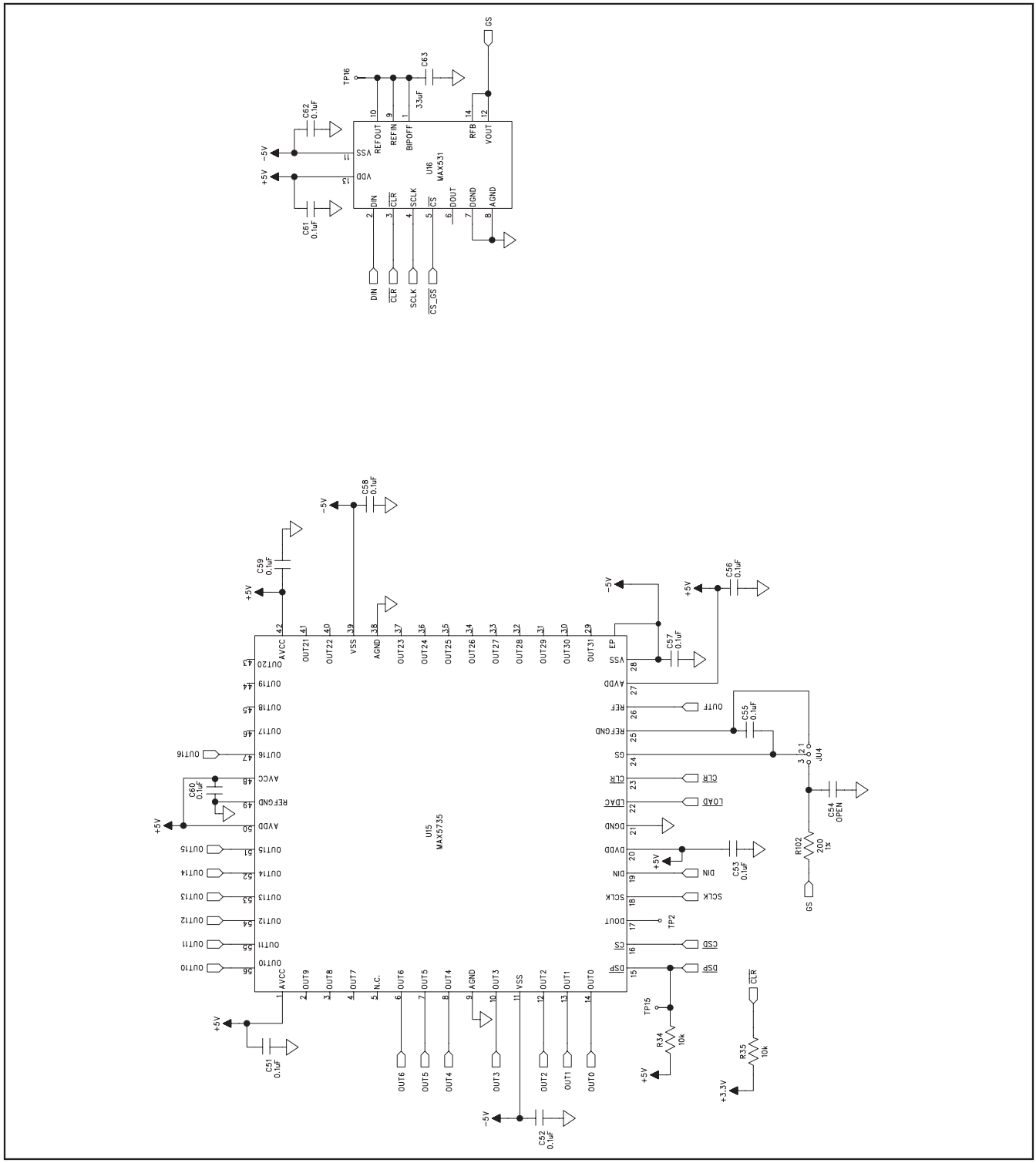

Figure 3e. MAX9959 EV Kit Schematic (Sheet 5 of 8)

# MAX9959 Evaluation Kit

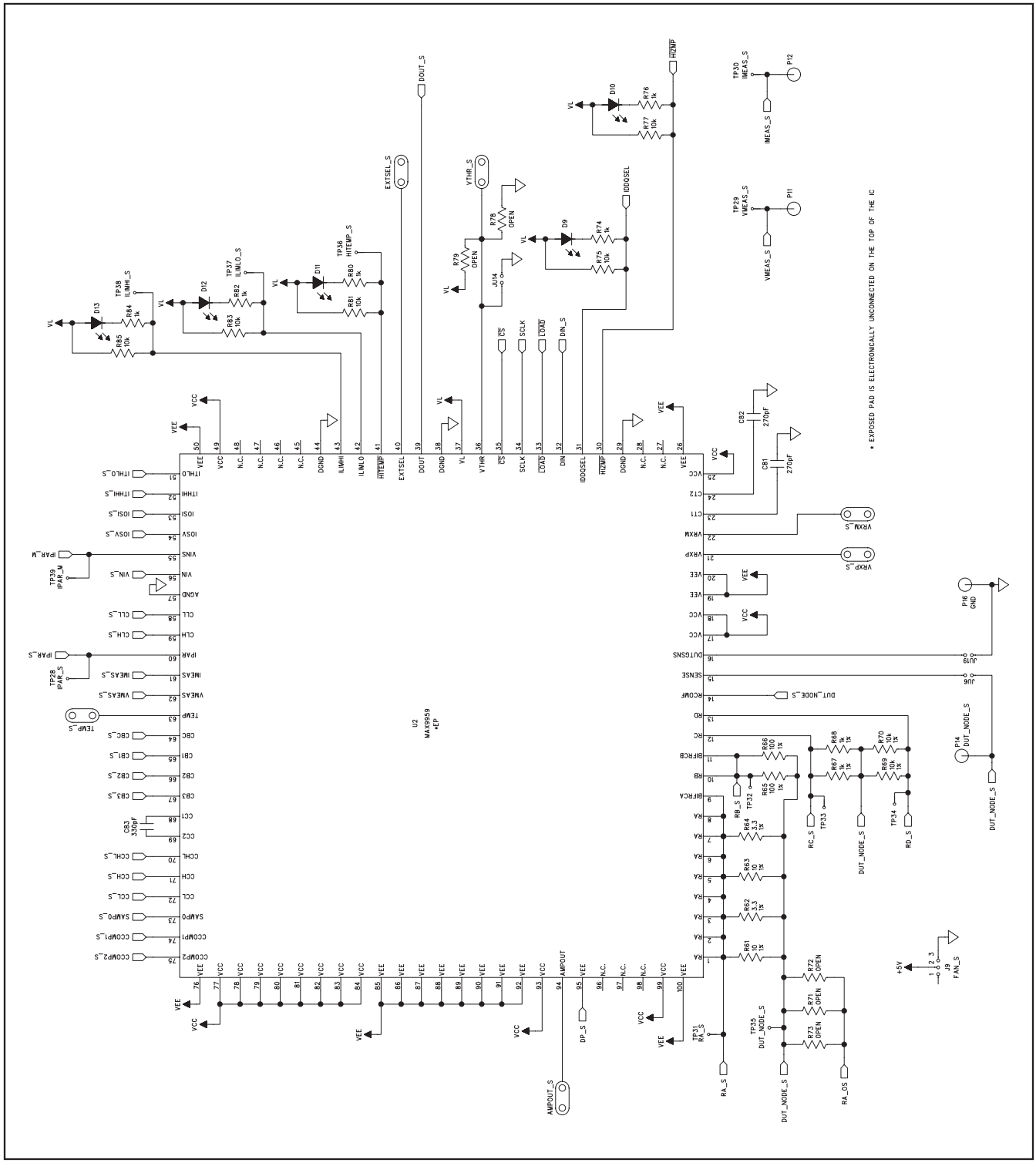


*Figure 3f. MAX9959 EV Kit Schematic (Sheet 6 of 8)*

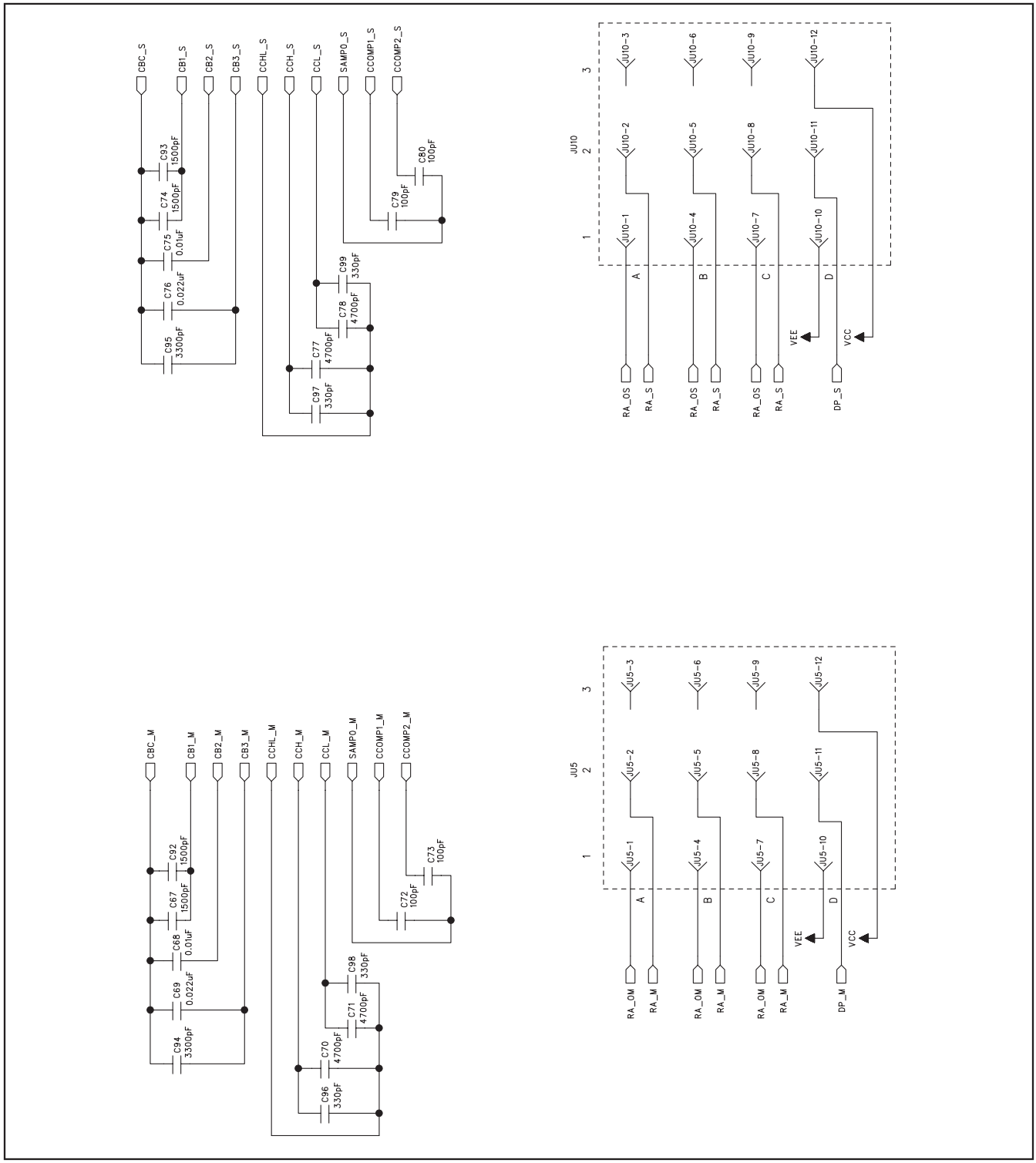


*Figure 3g. MAX9959 EV Kit Schematic (Sheet 7 of 8)*

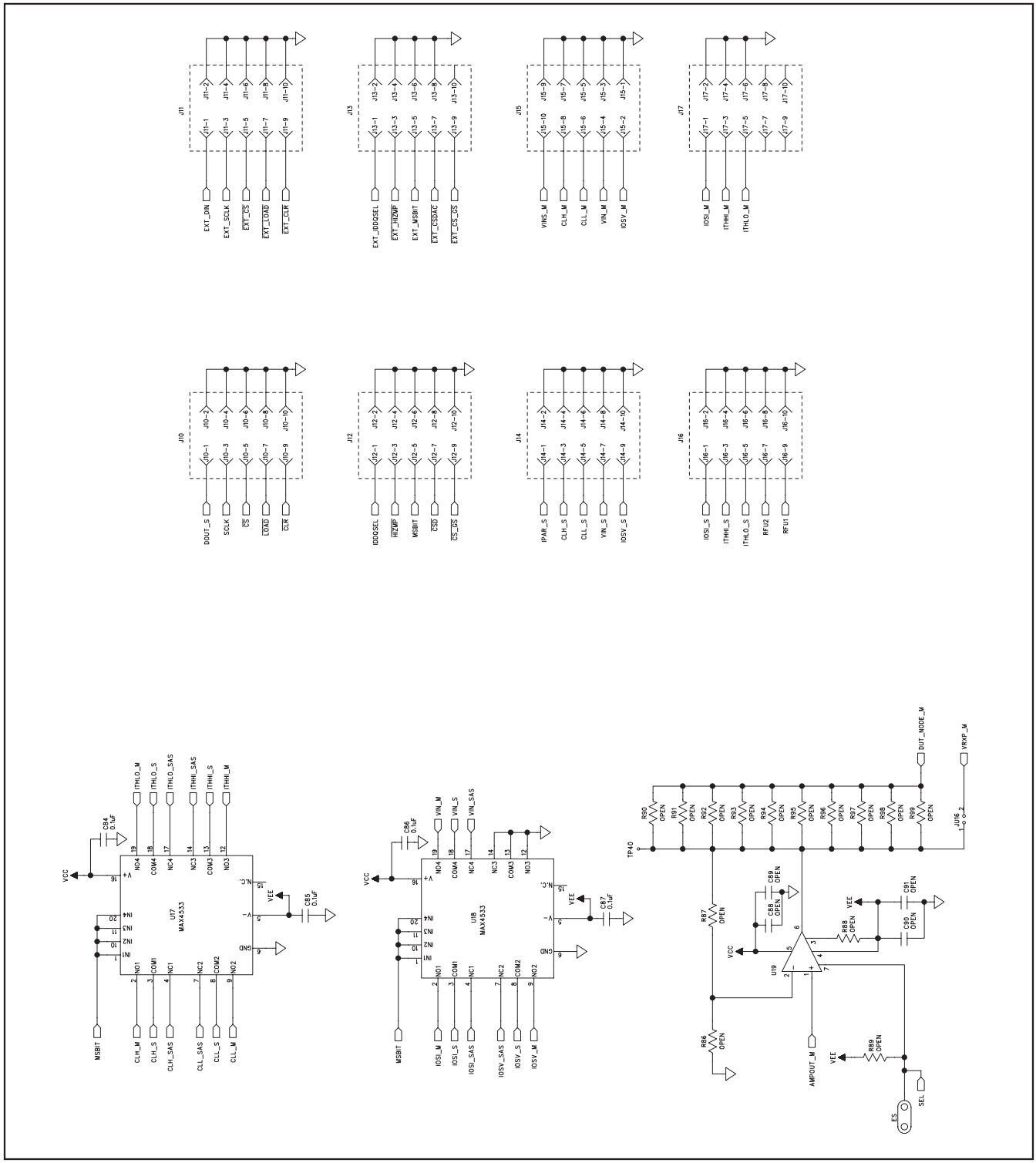


*Figure 3h. MAX9959 EV Kit Schematic (Sheet 8 of 8)*

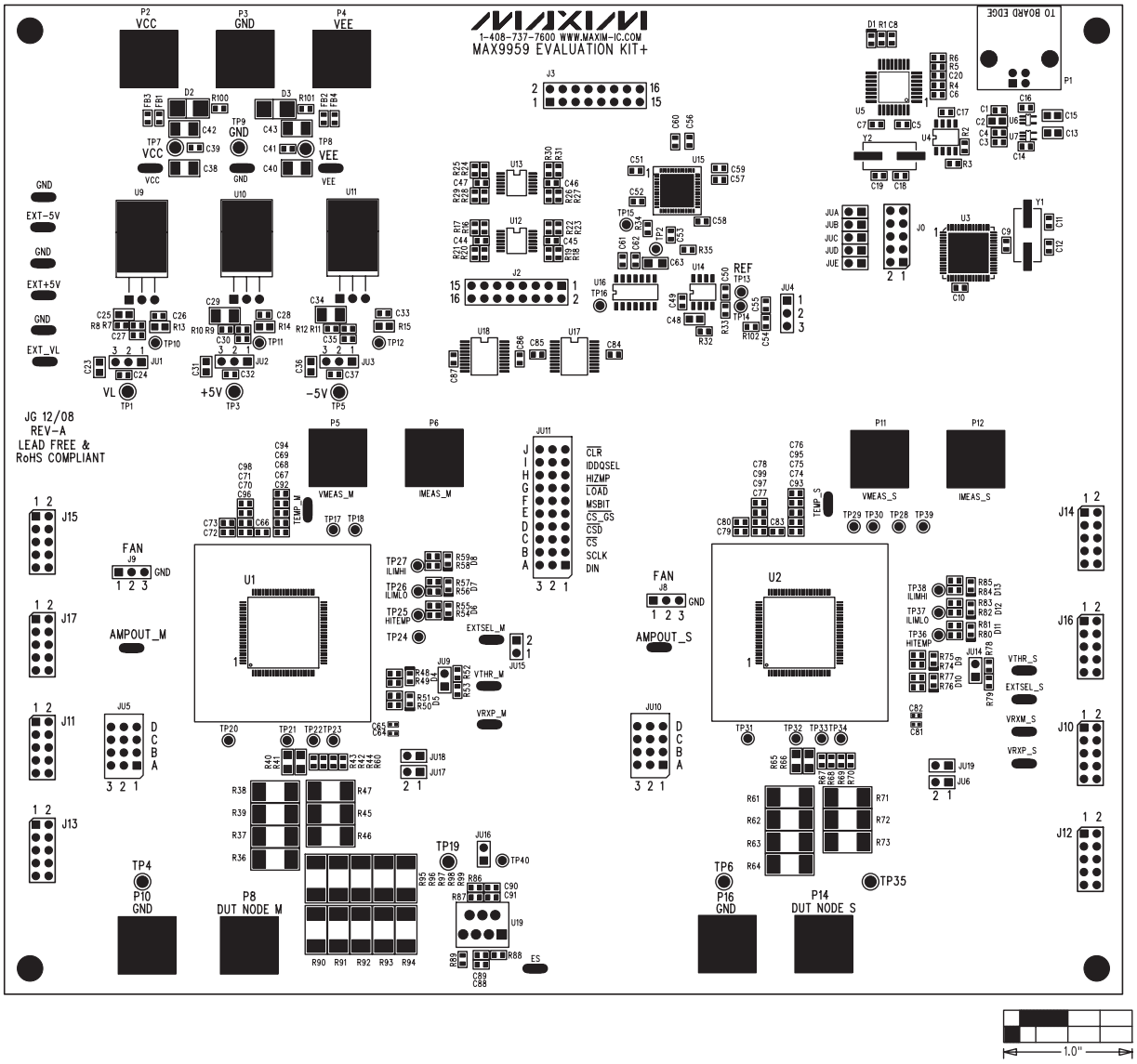


*Figure 4. MAX9959 EV Kit Component Placement Guide—Component Side*

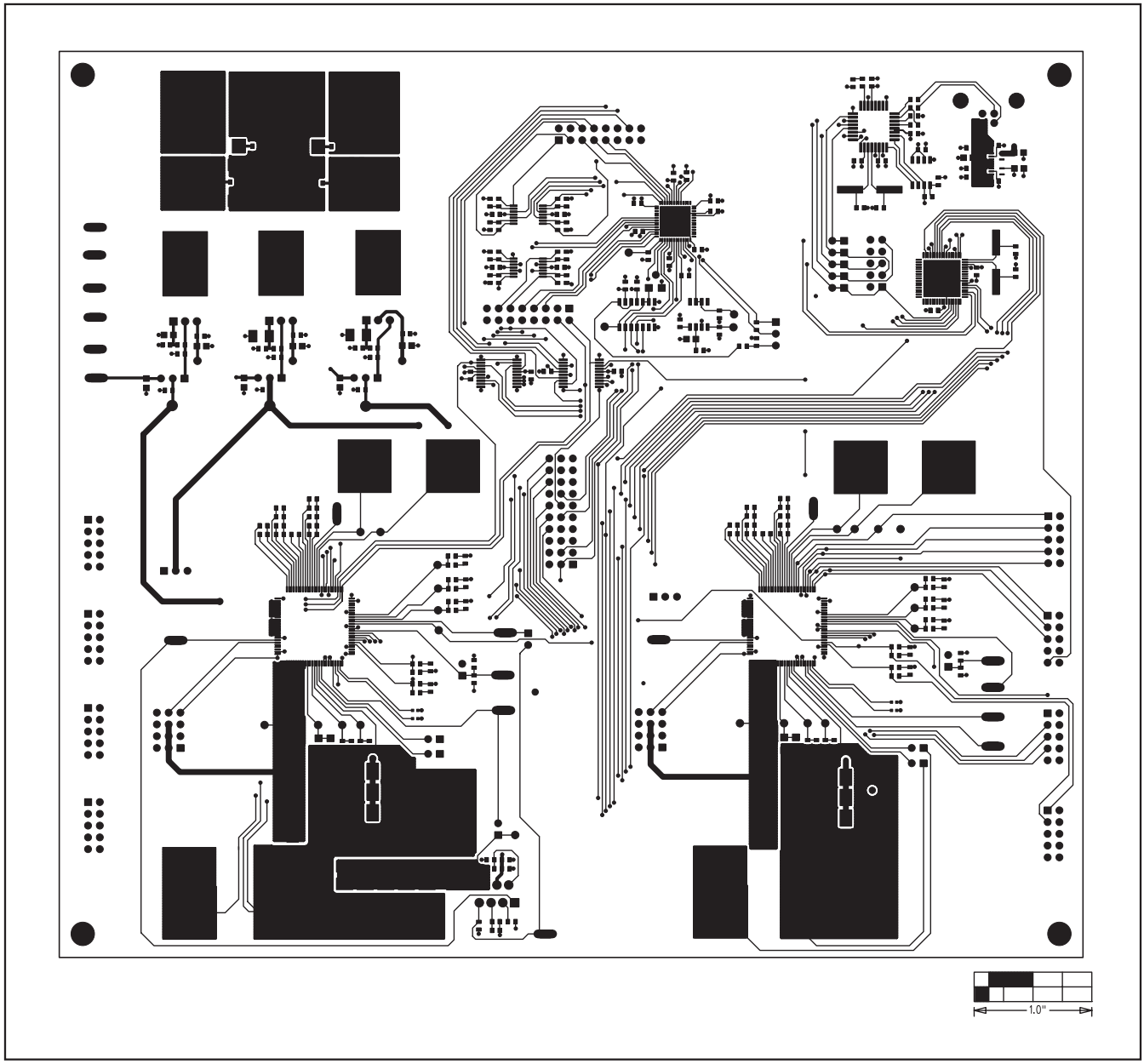


*Figure 5. MAX9959 EV Kit PCB Layout—Component Side*

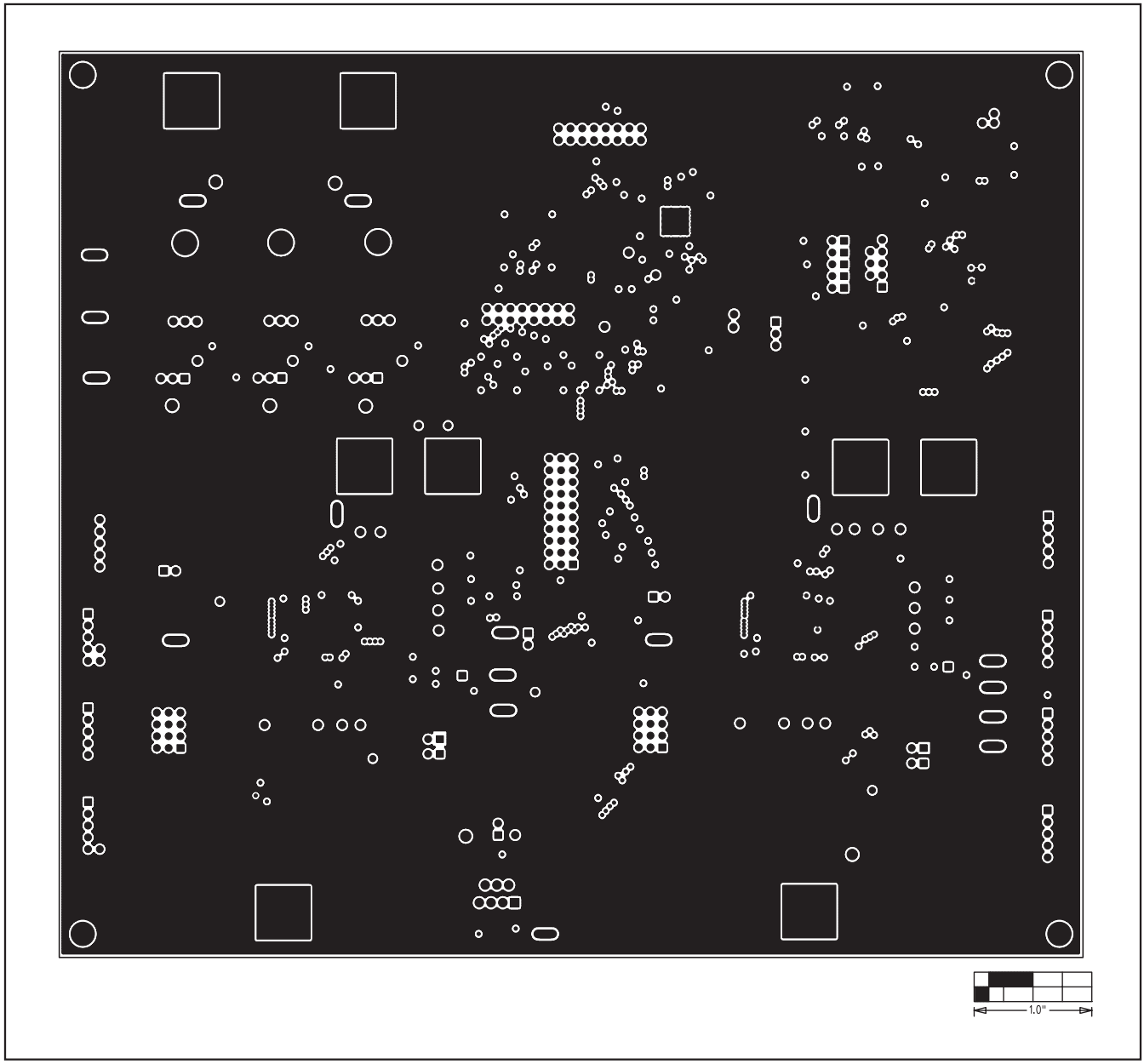


*Figure 6. MAX9959 EV Kit PCB Layout—2nd Layer*

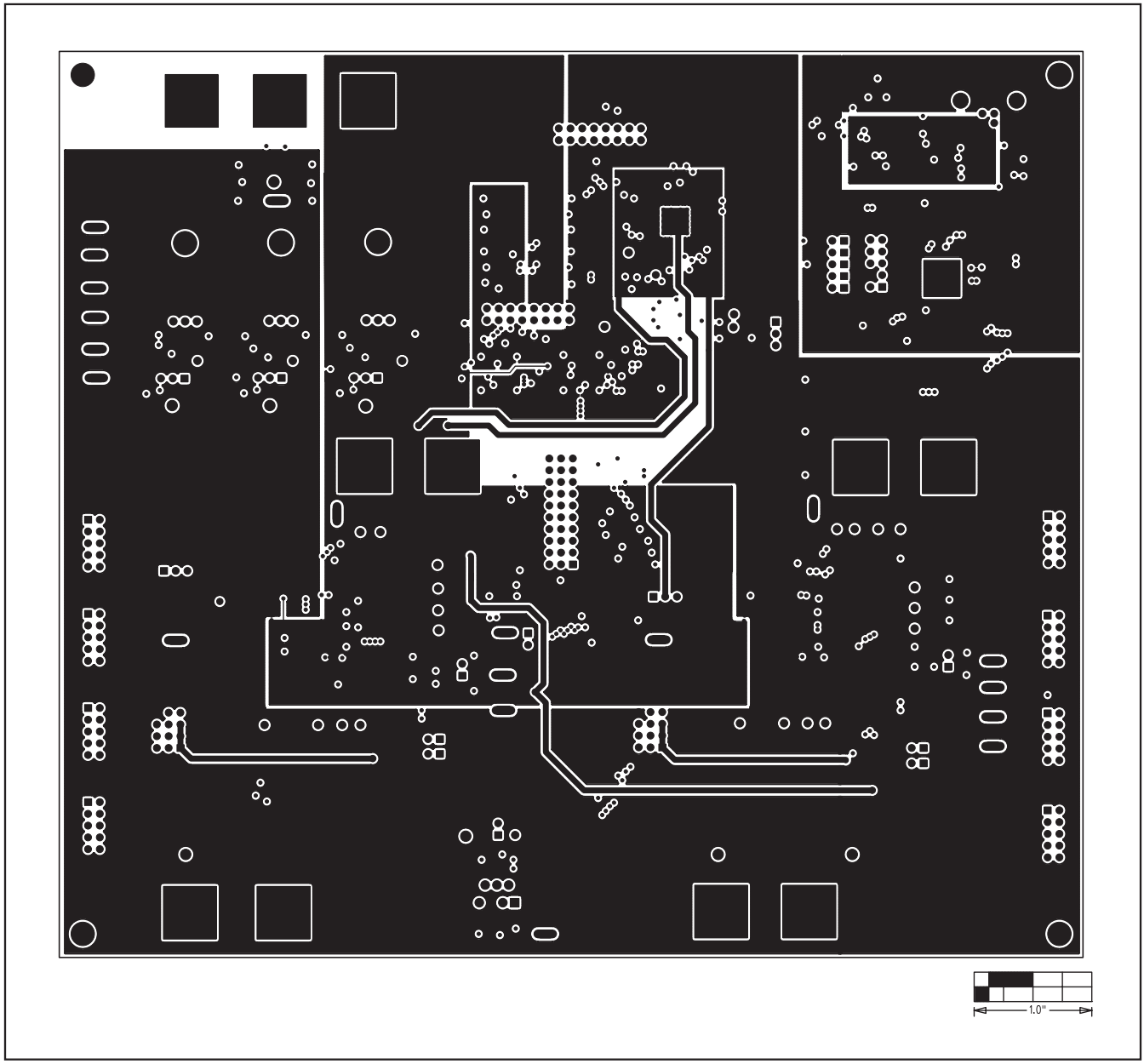


*Figure 7. MAX9959 EV Kit PCB Layout—3rd Layer*

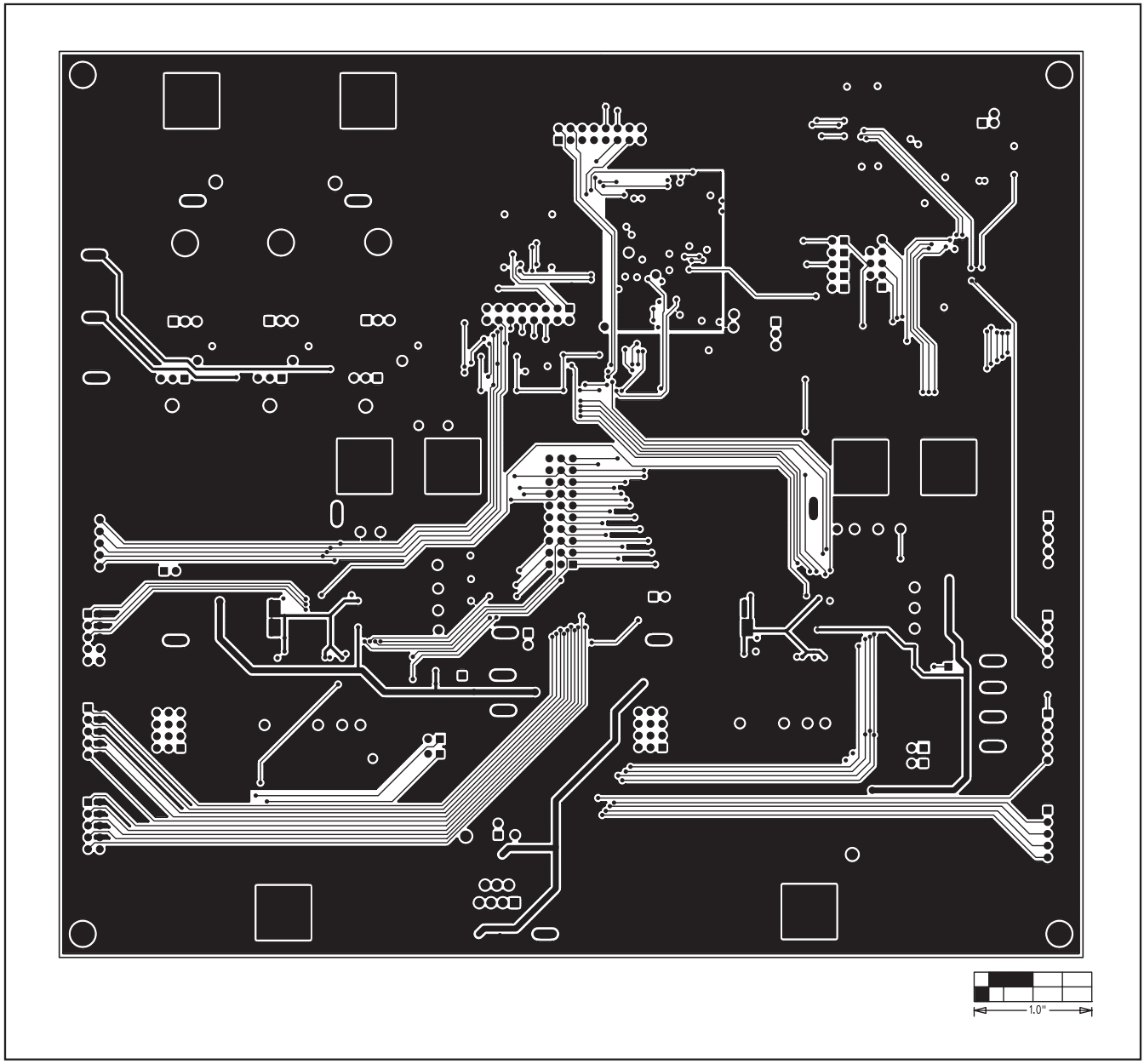


*Figure 8. MAX9959 EV Kit PCB Layout—Solder Side*