19-5951; Rev 0; 6/11

MAX14998 Evaluation Kit
Evaluates: MAX14998

General Description

The MAX14998 evaluation kit (EV kit) is a fully assembled and tested surface-mount PCB that utilizes the MAX14998 IC to route one DisplayPort™ source between two possible destinations, or vice versa.

DisplayPort connectors are provided to easily interface the EV kit with DisplayPort devices. The digital control inputs (SEL1, SEL2) are controlled through a single jumper (JU4) to switch the four-lane plus AUX/HPD DisplayPort. The EV kit requires power from an external 3.3V power supply.

Features

- **Complete DisplayPort Switch**
- **Single 3.3V Power Supply**
- **Power LED Indicator**
- **DisplayPort Connectors for Source and Sink**
- **Proven PCB Layout**
- **Fully Assembled and Tested**

***Ordering Information** appears at end of data sheet.*

Component List

DESIGNATION	QTY	DESCRIPTION
C1–C4, C7	5	0.1µF ±10%, 16V X7R ceramic capacitors (0603) Murata GRM188R71C104K
C5	1	10µF ±10%, 16V X5R ceramic capacitor (0805) Murata GRM21BR61C106K
C6	0	Not installed, capacitor (0603)
D1	1	Green LED (1206)
JU1, JU2, JU3	3	2-pin headers
JU4	1	3-pin header
P1, P2, P3	3	DisplayPort video connectors
Q1	1	60V, 200mA n-channel MOSFET (3 SOT23) STMicroelectronics 2N7002
Q2, Q3	2	General-purpose npn transistors (3SOT23) Fairchild MMBT5088
R1	1	270Ω ±5% resistor (0603)
R7, R8, R14, R15	4	10kΩ ±5% resistors (0603)
R9	1	120kΩ ±5% resistor (0603)
R12, R13	2	3.3kΩ ±5% resistors (0603)
U1	1	DisplayPort passive switch (42 TQFN-EP) Maxim MAX14998ETO+
U2	1	Quad 2:1 multiplexers (16 TQFN) Maxim MAX4784ETE
—	4	Shunts
—	1	PCB: MAX14998 EVALUATION KIT

Component Suppliers

SUPPLIER	PHONE	WEBSITE
Fairchild Semiconductor	888-522-5372	www.fairchildsemi.com
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
STMicroelectronics	408-452-8585	www.us.st.com

***Note:** Indicate that you are using the MAX14998 when contacting these component suppliers.*

DisplayPort is a trademark of the Video Electronics Standards Association (VESA).

Quick Start

Required Equipment

- MAX14998 EV kit
- DisplayPort source (e.g., a notebook computer docking station)
- DisplayPort device (e.g., a monitor)
- Two DisplayPort cables
- 3.3V, 100mA power supply

Procedure

The EV kit is a fully assembled and tested surface-mount PCB. Follow the steps below to verify the board operation:

1) Connect the positive terminal of the 3.3V power supply to the 3.3V pad on the EV kit. Connect the negative terminal of the power supply to the GND PCB pad on the EV kit.
2) Verify that the power LED indicator (D1) is lit.
3) Verify that shunts are not installed across jumpers JU1, JU2, and JU3.
4) Set SEL1 and SEL2 to the low positions by placing a shunt on pins 2-3 of jumper JU4.
5) Connect a DisplayPort source to P1.
6) Connect a DisplayPort sink, such as a monitor, to P3.
7) Enable the DisplayPort source, if needed.
8) Visually verify that the DisplayPort shows the information from the source.

Detailed Description of Hardware

The MAX14998 EV kit evaluates the MAX14998 four-lane DisplayPort passive switches with separate AUX/HPD control. Both digital control inputs (SEL1, SEL2) are controlled by jumper JU4. DisplayPort connectors are provided to easily interface the EV kit with DisplayPort devices. The EV kit operates from a single 3.3V power supply.

Evaluation Kit Controls

The EV kit provides jumpers JU1, JU2, and JU3 to optionally bypass the level-shifting circuitry on the HPD pins. Place a shunt across each jumper for bidirectional switching, allowing COM_, NO_, and NC_ to be used as either inputs or outputs.

The EV kit provides jumper JU4 to control the quad 2:1 multiplexers IC (U2), which in turn controls the two digital control inputs (SEL1, SEL2). SEL1 selects high-frequency switching, while SEL2 selects AUX/HPD.

Place a shunt on pins 1-2 of JU4 to set both SEL1 and SEL2 to logic-high. This configuration connects a DisplayPort source at P2 through to the DisplayPort sink at P3. Place a shunt on pins 2-3 of JU4 to set both SEL1 and SEL2 to logic-low. This configuration connects a DisplayPort source at P1 through to the DisplayPort sink at P3.

Table 1. Jumper Functions (JU1–JU4)

JUMPER	SHUNT POSITION	DESCRIPTION
JU1, JU2, JU3	Installed	Level-shifting circuitry on the HPD pins bypassed. IC can be used as a bidirectional switch.
	Not installed*	Level-shifting circuitry on the HPD pins enabled.
JU4	1-2	SEL1, SEL2 logic-high. P2 source routes to P3 sink.
	2-3*	SEL1, SEL2 logic- low. P1 source routes to P3 sink.

**Default position.*

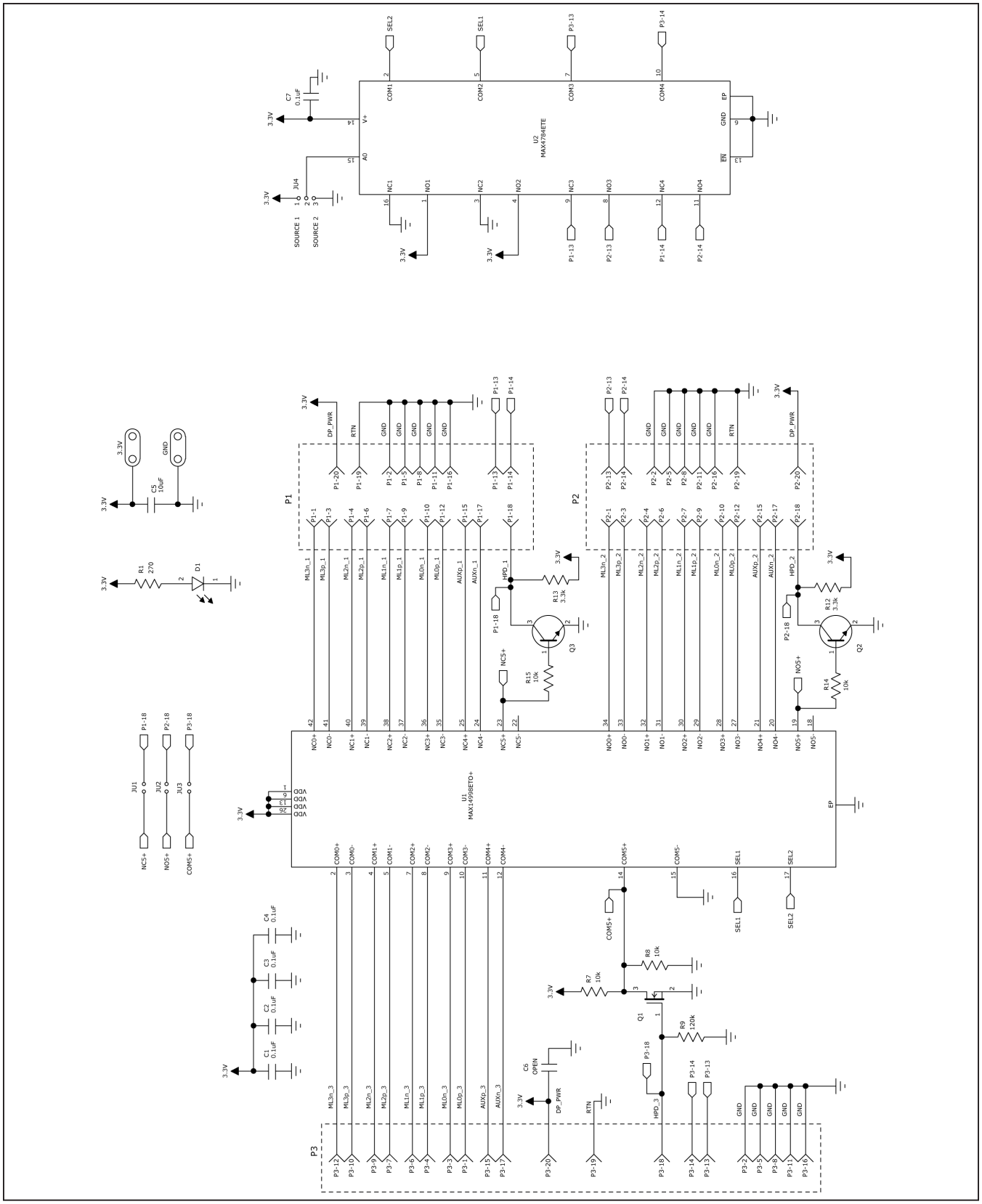

Figure 1. MAX14998 EV Kit Schematic

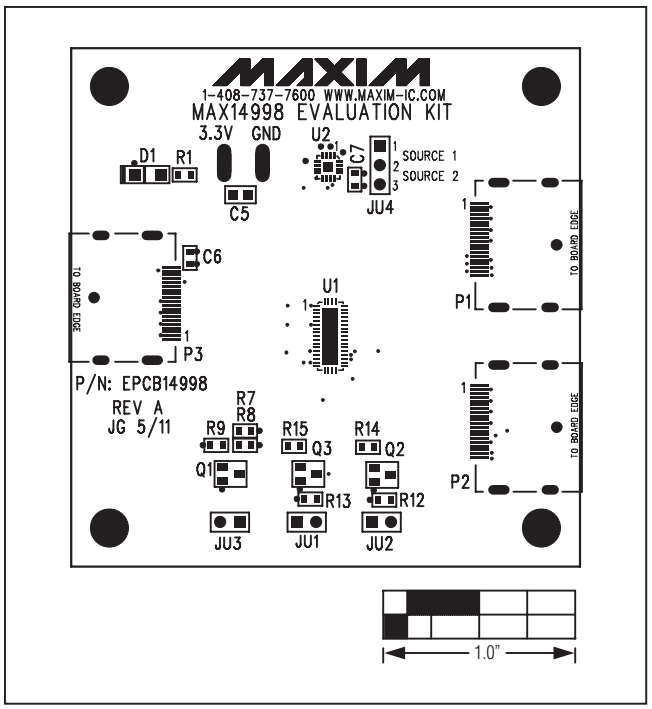

Figure 2. MAX14998 EV Kit Component Placement Guide—Component Side

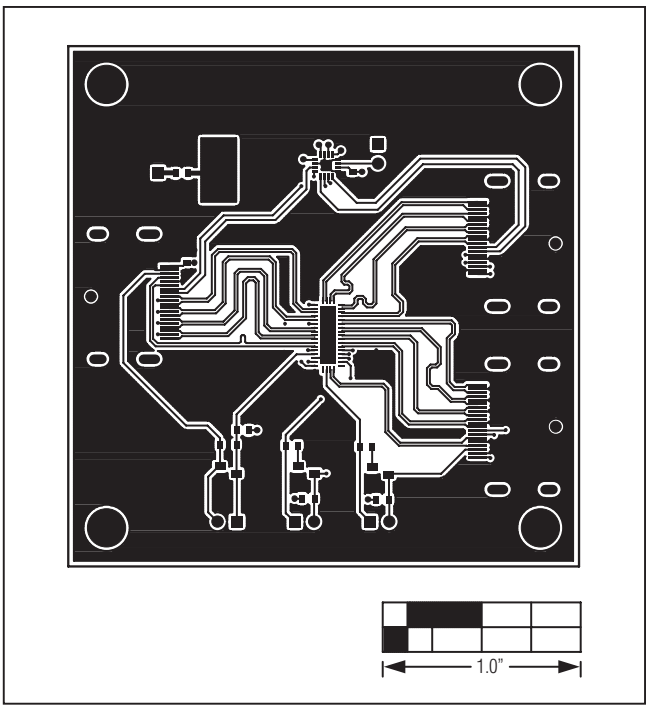

Figure 3. MAX14998 EV Kit PCB Layout—Component Side

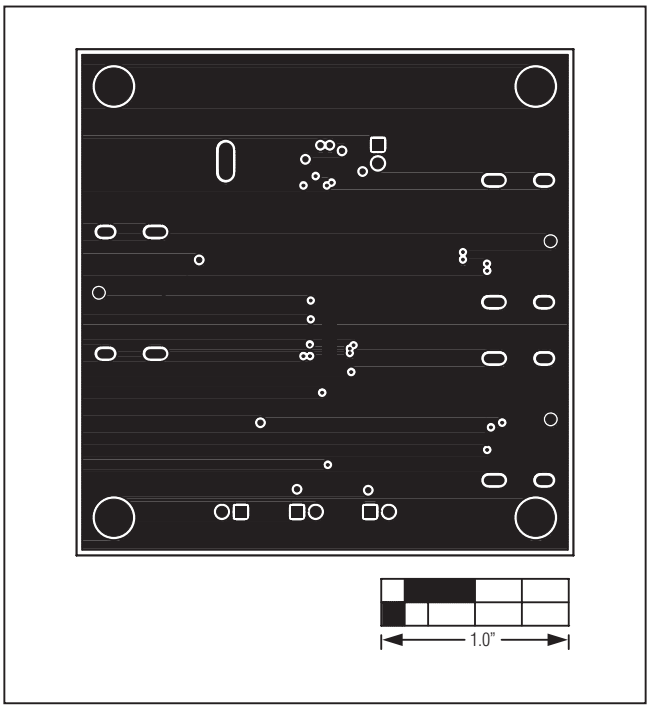

Figure 4. MAX14998 EV Kit PCB Layout—Inner Layer 2

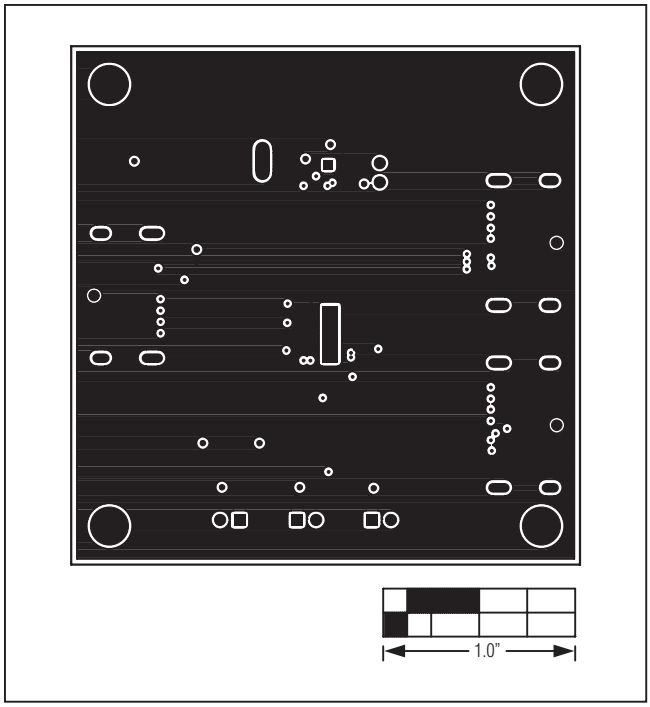

Figure 5. MAX14998 EV Kit PCB Layout—Inner Layer 3

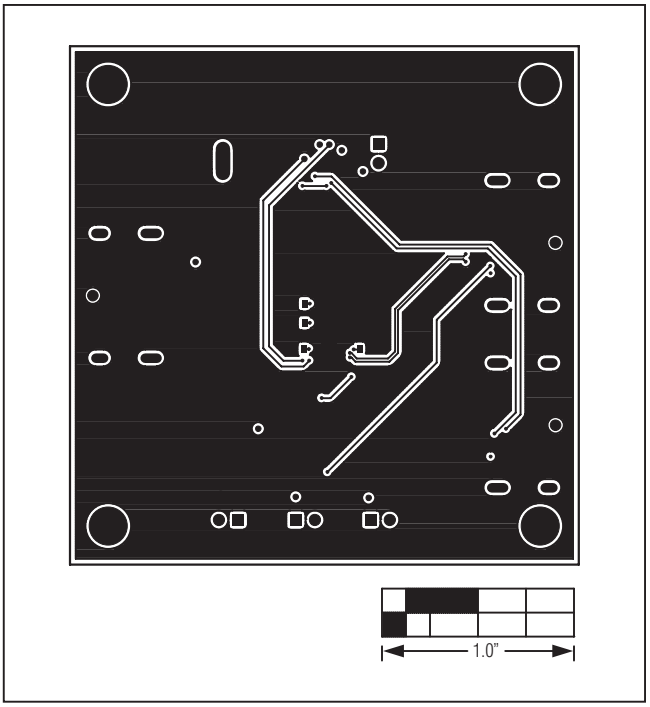

Figure 6. MAX14998 EV Kit PCB Layout—Solder Side

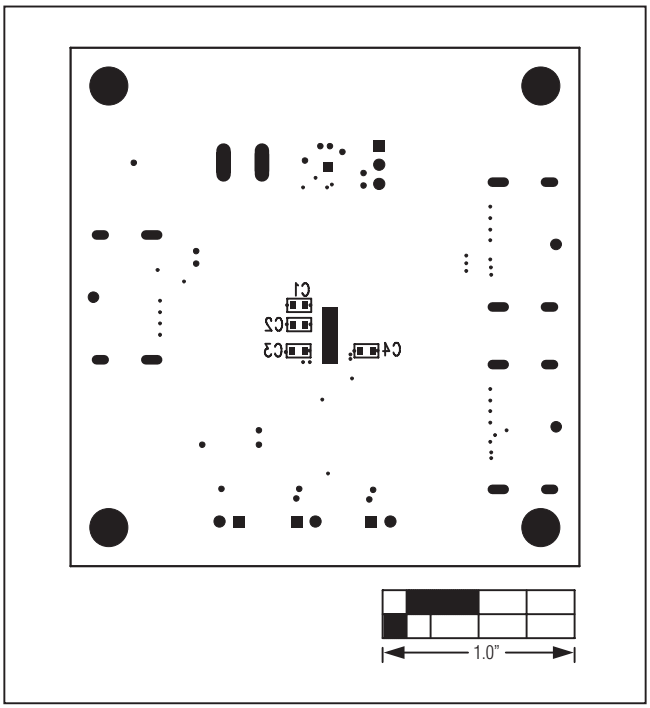

Figure 7. MAX14998 EV Kit Component Placement Guide—Solder Side

Ordering Information

PART	TYPE
MAX14998EVKIT#	EV Kit

#Denotes RoHS compliant.

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	6/11	Initial release	—

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Analog Devices Inc.:

MAX14998EVKIT#