19-6283; Rev 0; 4/12

MAX14778 Evaluation Kit
Evaluates: MAX14778

General Description

The MAX14778 evaluation kit (EV kit) provides a proven design to evaluate the MAX14778 dual ±25V above- and below-the-rails 4:1 analog multiplexer. The EV kit operates from a single +3V to +5.5V supply and supports analog signals between -25V and +25V.

The EV kit PCB comes with a MAX14778ETP+ installed. Contact the factory for free samples.

Features

- **+3V to +5.5V Input Supply Range**
- **Dual 4:1 Mux**
- **Independent Mux Control**
- **±25V Voltage Signal Input Range**
- **Proven PCB Layout**
- **Fully Assembled and Tested**

Ordering Information appears at end of data sheet.

Component List

DESIGNATION	QTY	DESCRIPTION
A0–A3, ACOM, B0–B3, BCOM, VDD	11	Small red test points
C1	1	1µF ±10%, 16V X5R ceramic capacitor (0603) TDK C1608X5R1C105K
C2, C3	2	0.1µF ±10%, 50V X5R ceramic capacitors (0603) TDK C1608X5R1H104K
C4, C5	0	Not installed, ceramic capacitors (0603)

DESIGNATION	QTY	DESCRIPTION
GND	4	Black test points
JU1–JU6	6	3-pin headers
R1, R2	0	Not installed, resistors (2512)
U1	1	Dual ±25V 4:1 analog multiplexer (20 TQFN-EP*) Maxim MAX14778ETP+
—	6	Shunts
—	1	PCB: MAX14778 EVALUATION KIT

**EP = Exposed pad.*

Component Supplier

SUPPLIER	PHONE	WEBSITE
TDK Corp.	847-803-6100	www.component.tdk.com

Note: *Indicate that you are using the MAX14778 when contacting this component supplier.*

Quick Start

Required Equipment

- MAX14778 EV kit
- +5V, 100mA power supply
- +25V, 800mA power supply
- Two voltmeters

Procedure

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

1) Verify that all jumpers (JU1–JU6) are in their default position, as shown in Table 1.
2) Connect the +5V supply positive and ground terminals to the VCC and GND test points, respectively.
3) Connect the +25V supply positive and ground terminals to the A0 and GND test points, respectively.
4) Connect the +25V supply positive and ground terminals to the B0 and GND test points, respectively.
5) Connect a voltmeter at the ACOM and GND test points.
6) Connect a voltmeter at the BCOM and GND test points.
7) Enable the +5V supply.
8) Enable the +25V supply.
9) Place shunts on pins 1-2 on jumpers JU1 and JU4.
10) Verify that both voltmeters display +25V.

Table 1. Jumper Descriptions (JU1–JU6)

JUMPER	SHUNT POSITION	DESCRIPTION
JU1	1-2	MUX B enabled
	2-3*	MUX B disabled
JU2	1-2	B_ connects to BCOM (Table 3)
	2-3*	
JU3	1-2	B_ connects to BCOM (Table 3)
	2-3*	
JU4	1-2	MUX A enabled
	2-3*	MUX A disabled
JU5	1-2	A_ connects to ACOM (Table 2)
	2-3*	
JU6	1-2	A_ connects to ACOM (Table 2)
	2-3*	

**Default position.*

Detailed Description of Hardware

The MAX14778 EV kit is a fully assembled and tested circuit board that simplifies evaluation of the MAX14778 dual ±25V above- and below-the-rails 4:1 analog multiplexer. The EV kit operates from a single +3V to +5.5V input voltage range.

The IC integrates bias circuitry to provide a ±25V analog voltage range with a single +3V to +5.5V supply. This extended input range allows multiplexing different communications signals such as RS-232, RS-485, audio, and USB 1.1 onto the same connector. The IC features 1.5Ω (max) on-resistance for analog signals between -25V and +25V.

Jumpers JU4 and JU1 are available for controlling the turn-on/off of MUX A and MUX B, respectively. Jumpers JU2, JU3, JU5, and JU6 are available for routing the B_ and A_ input signals to the corresponding BCOM and ACOM outputs, respectively. Inputs A_ and B_ can pass up to ±300mA of continuous current. The current flow through the multiplexers can be bidirectional, allowing operation as either a multiplexer or a demultiplexer.

The EV kit provides PCB pads in addition to red test points for monitoring the multiplexer input and output signals. The EV kit is also populated with 2515 resistor PCB pads and 0603 capacitor PCB pads for load-specific applications at the ACOM and BCOM connectors.

User-Supplied Power Supply

The EV kit is powered from a +3V to +5.5V power supply connected at the VCC and GND test points. The EV kit circuit inputs (A_, B_, ACO, and BCOM) can transmit signals of up to ±25V.

Multiplexer Configuration

Jumpers JU4, JU5, and JU6 control the operation for MUX A. JU4 enables/disables the ACOM output and JU5 and JU6 control the signal routing to ACOM. See Table 2 for proper jumper settings for operating MUX A.

Jumpers JU1, JU2, and JU3 control the operation for MUX B. JU1 enables/disables the BCOM output and JU2 and JU3 control the signal routing to BCOM. See Table 3 for proper jumper settings for operating MUX B.

Table 2. MUX A Routing Configuration (JU4, JU5, JU6)

SHUNT POSITION			ACOM CONNECTED TO
JU4 (ENA)	JU5 (SA1)	JU6 (SA0)	
1-2	2-3	2-3	A0
1-2	2-3	1-2	A1
1-2	1-2	2-3	A2
1-2	1-2	1-2	A3
2-3	X	X	Switch is open

X = Don't care.

Table 3. MUX B Routing Configuration (JU1, JU2, JU3)

SHUNT POSITION			BCOM CONNECTED TO
JU1 (ENB)	JU2 (SB1)	JU3 (SB0)	
1-2	2-3	2-3	B0
1-2	2-3	1-2	B1
1-2	1-2	2-3	B2
1-2	1-2	1-2	B3
2-3	X	X	Switch is open

X = Don't care.

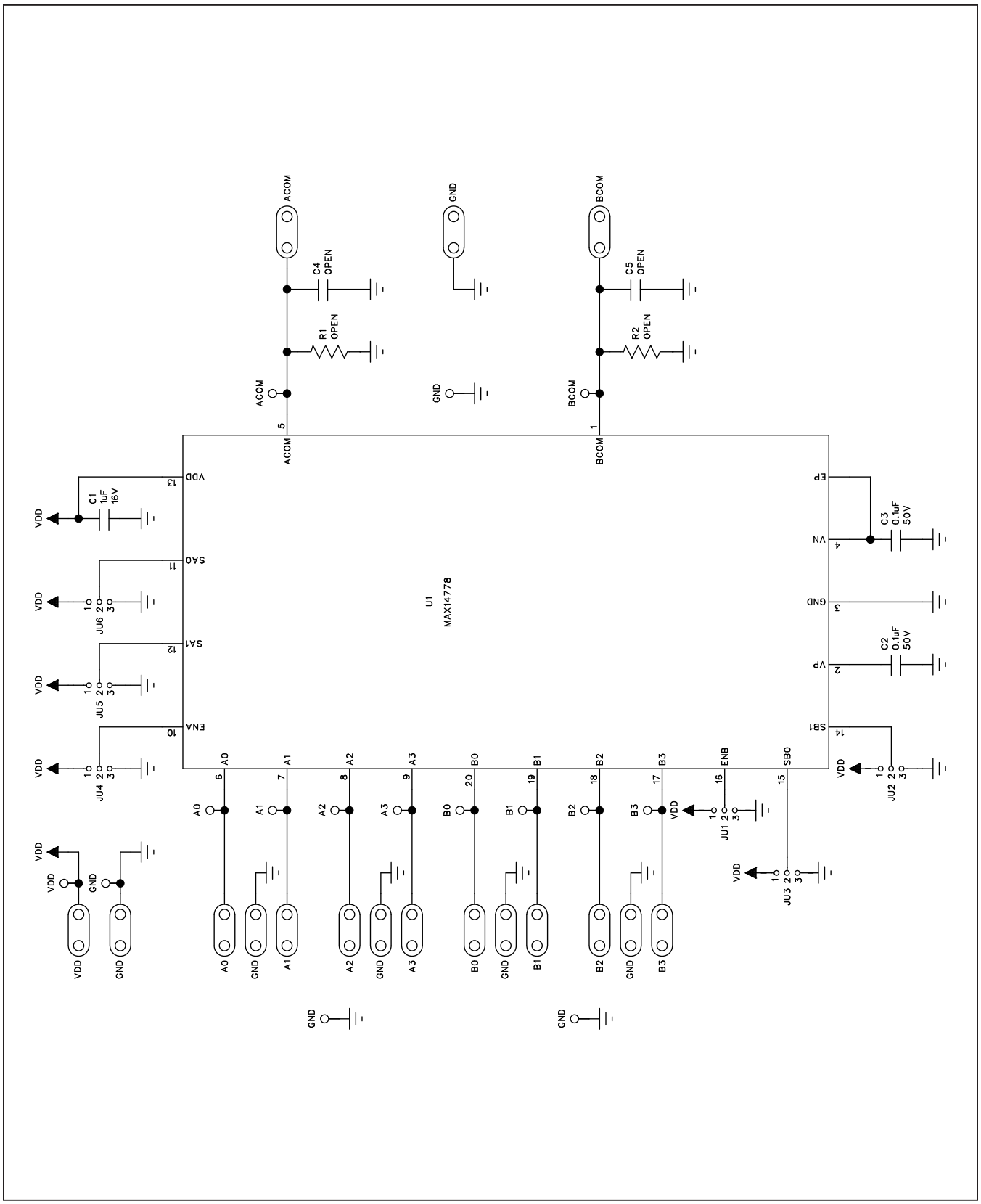

Figure 1. MAX14778 EV Kit Schematic

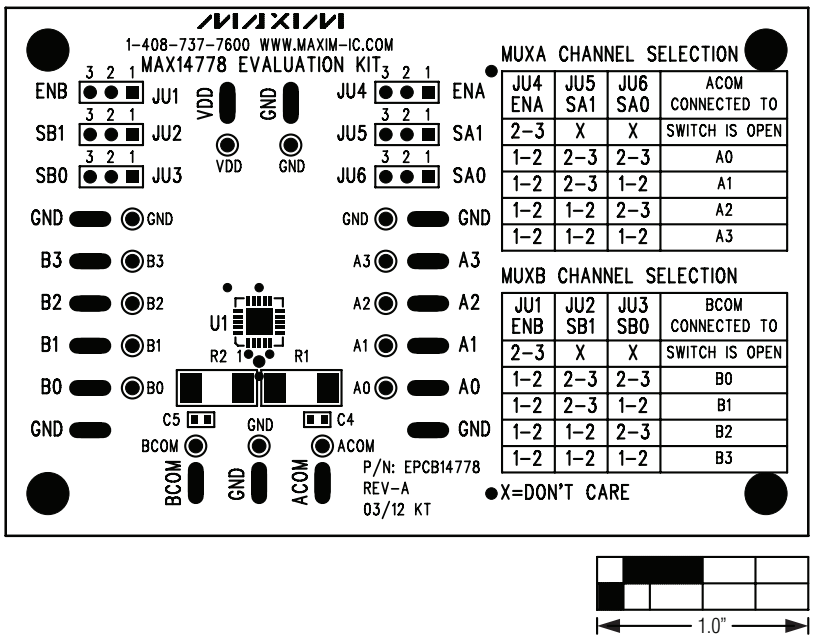

Figure 2. MAX14778 EV Kit Component Placement Guide—Component Side

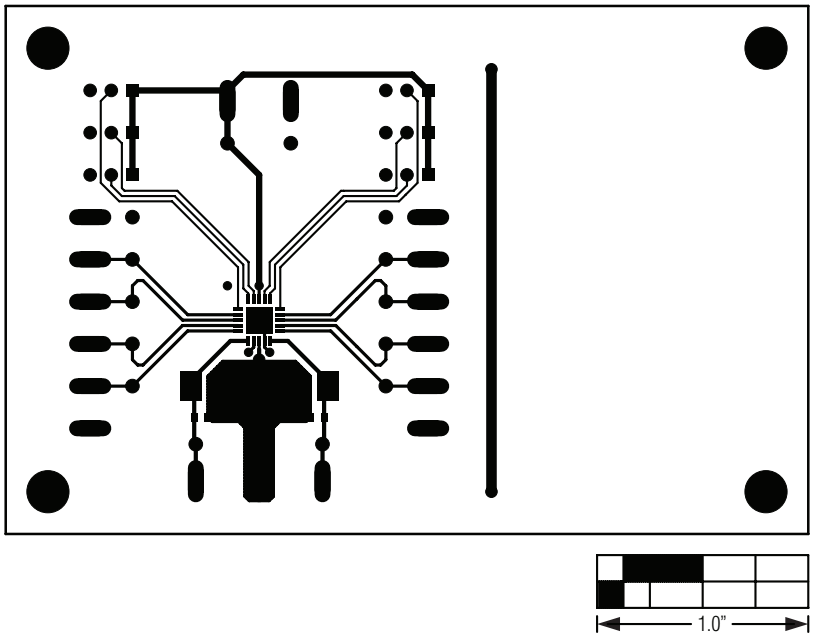

Figure 3. MAX14778 EV Kit Component PCB Layout—Component Side

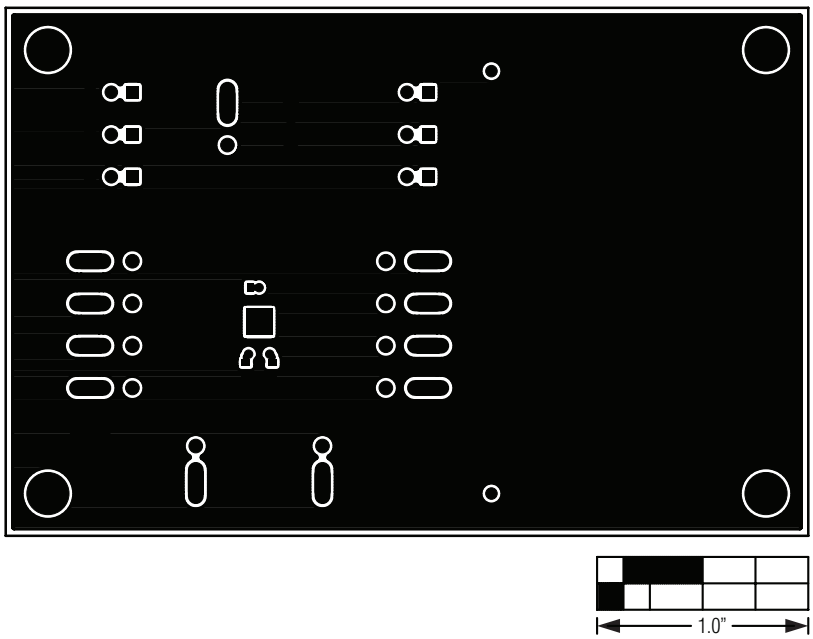

Figure 4. MAX14778 EV Kit PCB Layout—Solder Side

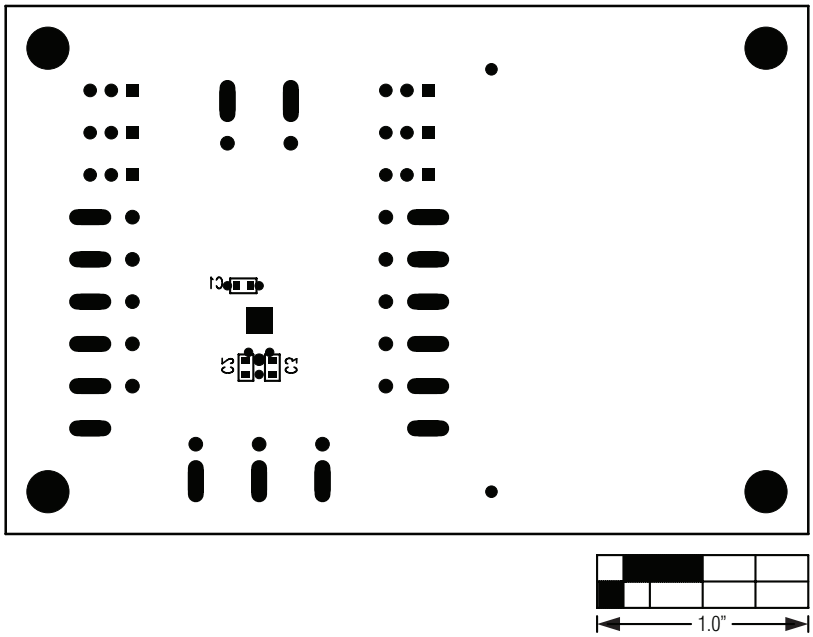

Figure 5. MAX14778 EV Kit Component Placement—Solder Side

Ordering Information

PART	TYPE
MAX14778EVKIT#	EV Kit

#Denotes RoHS compliant.

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	4/12	Initial release	—