19-1763; Rev 1; 10/01

MAX3781 Evaluation Kit

Evaluates: MAX3781

General Description

The MAX3781 evaluation kit (EV kit) is an assembled demonstration board that provides easy evaluation of the MAX3781 multiplexer/buffer. The MAX3781 EV kit provides 100Ω differential output terminations on-board, simplifying termination of unused outputs.

Features

- **Fully Assembled and Tested**
- **+3.3V Operation**
- **On-Board Output Termination**
- **Easy Selection of Operating Modes**

Component List

DESIGNATION	QTY	DESCRIPTION
C1–C24, C27–C30	28	0.1µF ±10%, 25V min ceramic capacitors (0603)
C25	1	33µF tantalum capacitor (C)
C26	1	2.2µF ±10%, 25V min tantalum capacitor (B)
R1, R2, R3	3	1kΩ ±1% resistors (0603)
R4–R9	6	100Ω ±1% resistors (0603)
L1	1	4.7nH inductor TOKOLL1608-FH4N7K
U1	1	MAX3781UCM 48-pin TQFP-EP
J1–J24	24	SMA connectors (PC mount) EFJohnson 142-0701-301
JU1, JU2, JU3	3	2-pin headers (0.1in centers) Digi-Key S1012-36-ND
JU1, JU2, JU3	3	Shunts Digi-Key S9000-ND
VCC, GND	2	Test points Digi-Key 5000-ND
None	1	MAX3781 EV kit circuit board, rev A
None	1	MAX3781 data sheet

Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX3781EVKIT	0°C to +85°C	48 TQFP-EP*

**Exposed pad*

Component Suppliers

SUPPLIER	PHONE	FAX
AVX	803-946-0690	803-626-3123
TOKO	800-745-8656	847-699-7864

Note: *Please indicate that you are using the MAX3781 when contacting these component suppliers.*

Quick Start

1) Apply +3.3V to the VCC pin. Connect power-supply ground to the GND pin.
2) Shunt jumpers JU1 (SELA), JU2 (PD), and JU3 (SELB). Refer to Table 1 in the MAX3781 data sheet for other configurations.
3) Apply up to 2.75Gbps differential data to LI2A± (J17 and J18).
4) Remove R9 (differential termination resistor) from the evaluation board.
5) Connect SOA± (J23 and J24) to a high-speed 50Ω oscilloscope.

For pricing, delivery, and ordering information, please contact Maxim/Dallas Direct! at 1-888-629-4642, or visit Maxim's website at www.maxim-ic.com.

Detailed Description

Connecting CML Outputs to 50Ω Oscilloscopes

CML outputs have a common-mode voltage near VCC. To avoid changing this optimum common-mode voltage, all CML outputs are AC-coupled on-board with 0.1µF capacitors. The CML outputs should not be connected directly through 50Ω to ground.

Terminating Unused Outputs

The MAX3781 EV kit has 100Ω differential resistors placed across all outputs. These resistors must be removed before connecting the outputs to a 50Ω oscilloscope. For best performance, keep all outputs terminated, either to a 50Ω measurement device or to the 100Ω differential resistor.

Control Lines

Jumpers JU1, JU2, and JU3 are provided to set the operating mode of the MAX3781. Shorting these jumpers pulls the corresponding TTL control line to a logical zero. All TTL control lines are internally pulled high through 15kΩ resistors. See Table 1 for more information regarding setting operating modes.

Exposed-Pad Package

The exposed paddle (EP) 48-pin TQFP has features that provide a very low thermal resistance path for heat removal from the IC. The paddle is electrical ground on the MAX3781 and should be soldered to the circuit board for proper thermal and electrical performance.

Table 1. Operating Modes

SEL_	PD	LO1_	LO2_	SO_
0	0	SI_	SI_	LI2_
0	1	–	SI_	LI2_
1	0	SI_	SI_	LI1_
1	1	SI_	–	LI1_

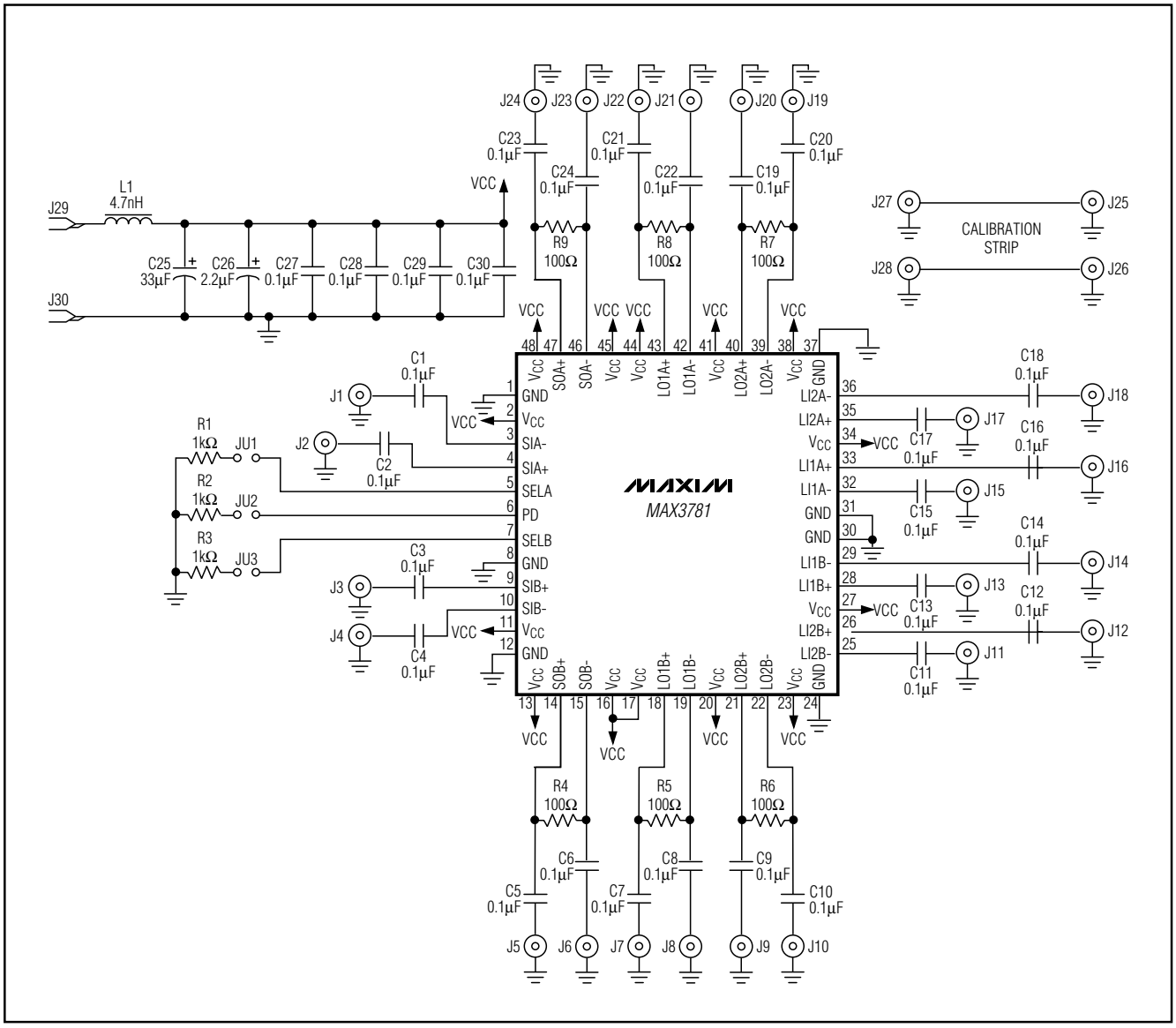

Figure 1. MAX3781 EV Kit Schematic

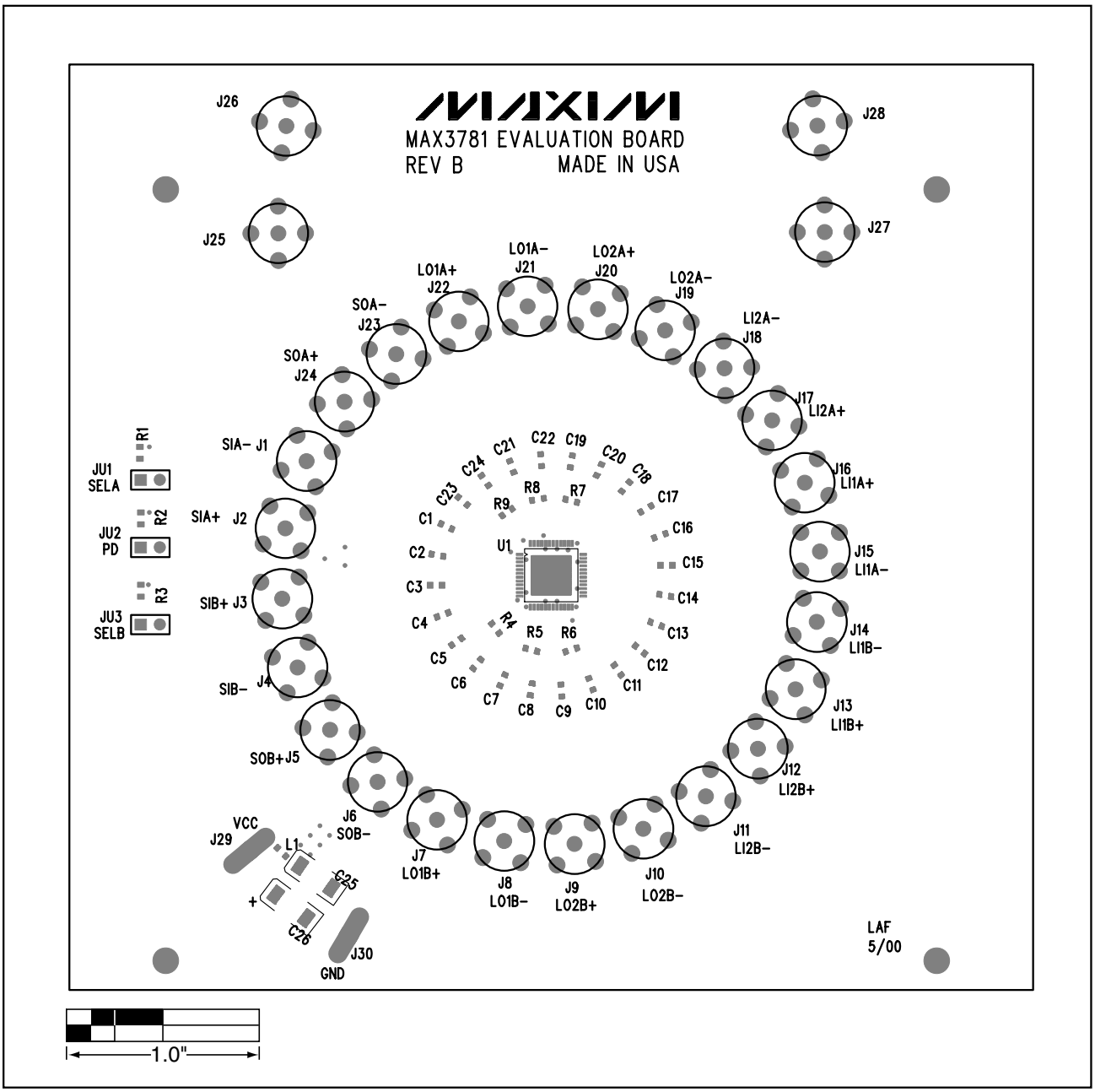

Figure 2. MAX3781 EV Kit Component Placement Guide—Component Side

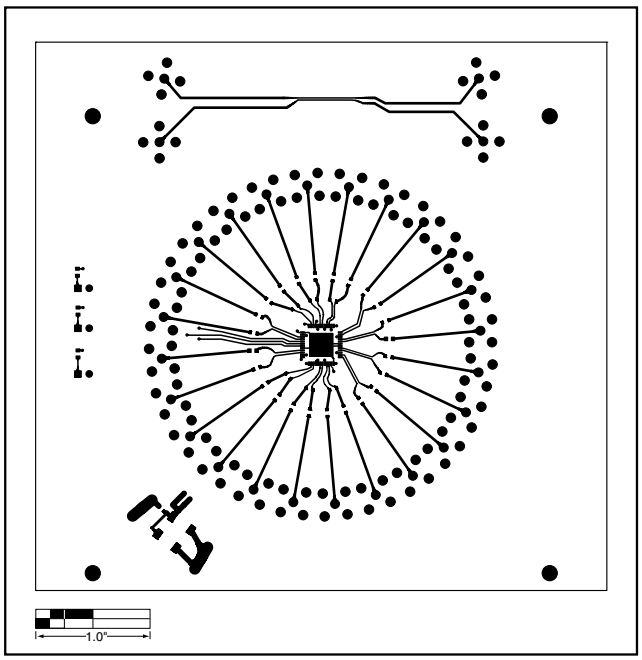

Figure 3. MAX3781 EV Kit PC Board Layout—Component Side

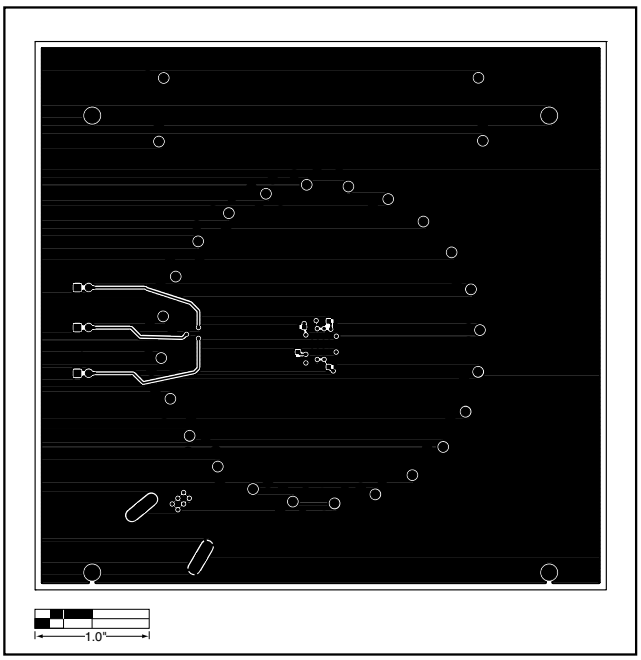

Figure 4. MAX3781 EV Kit PC Board Layout—Solder Side

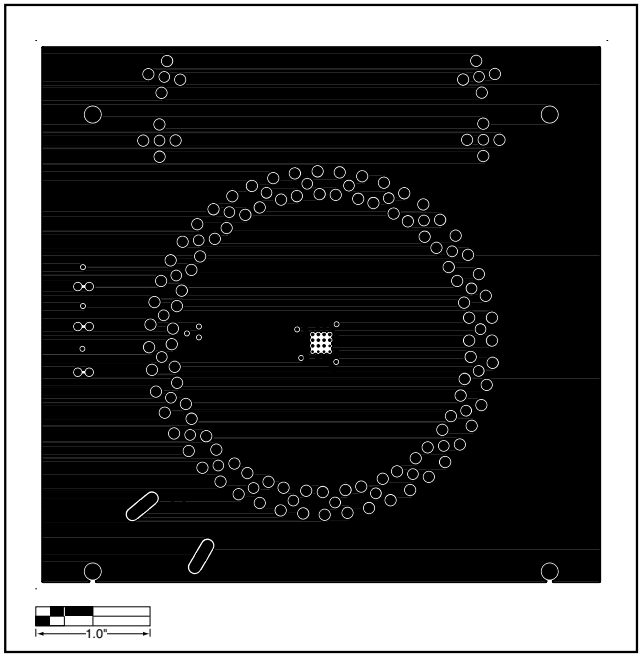

Figure 5. MAX3781 EV Kit PC Board Layout—Power Plane

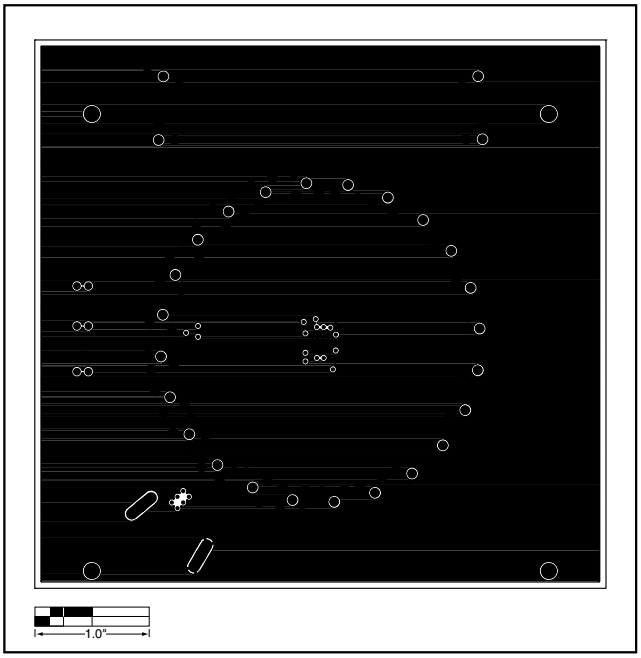

Figure 6. MAX3781 EV Kit PC Board Layout—Ground Plane

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