

MAXIM

MAX3935 Evaluation Kit

General Description

The MAX3935 evaluation kit (EV kit) is an assembled demonstration board that enables electrical evaluation of the 10.7Gbps EAM driver. The output of the evaluation board is interfaced to an SMA connector, which can be connected to a 50Ω terminated oscilloscope.

Features

- ◆ Fully Assembled and Tested
- ◆ Fully Matched for Best Return Loss

Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX3935EVKIT	-40°C to +85°C	32 QFN-EP*

*Exposed pad

Component List

DESIGNATION	QTY	DESCRIPTION
C2, C5, C7, C19–C22	7	1000pF 10% ceramic capacitors (0201) Murata GRM33X5R102K016A
C3, C8, C12, C13, C14, C17, C18, C25, C26	9	0.01μF 10% ceramic capacitors (0402) Murata GRM36X5R103K016A
C4, C9	2	10μF ±10% tantalum capacitors AVX TAJC106K016
C15	1	100pF 5% ceramic capacitor (0402) Murata GRM36COG101J050A
C16	1	Not installed
R1, R15, R16, R21, R22	5	4.99kΩ ±1% resistors (0402)
R13	1	2kΩ potentiometer Digi-Key 3296W-202-ND
R14	1	Not installed
R17, R23	2	15kΩ ±1% resistors (0402)
R18, R24	2	200kΩ potentiometers Digi-Key 3296W-204-ND
R19, R25	2	Not installed
R20, R26	2	100Ω ±1% resistors (0402)
R27, R29	2	49.9Ω ±1% resistors (0402)
L1, L3	2	220nH inductors Coilcraft 0805CS-221XKBC

DESIGNATION	QTY	DESCRIPTION
L4	1	EMI ferrite bead Murata BLM11HA601SG
U1	1	MAX3935EGJ 32-pin QFN Note: U1 has an exposed paddle which requires it to be solder attached to the circuit board to insure proper functionality of part.
U2, U3	2	MAX480ESA 8-pin SO
U4	1	MAX6190AESA 8-pin SO
JU1, JU2	2	1 × 2 pin headers (0.1in centers) Digi-Key S1012-36-ND
J1–J4, J9	5	SMA edge-mount connectors (tab contact) EFJohnson 142-0701-851 Note: Insure that there is a continuous connection from the ground plane to the body of the connector when soldering.
J5, J6, J7, TP2–TP12	14	Test points, Digi-Key 5000K-ND
JU1, JU2	2	Shunts, Digi-Key S9000-ND
None		MAX3935 Rev B evaluation circuit board
None		MAX3935 EV kit data sheet
None		MAX3935 data sheet

Evaluates: MAX3935

MAX3935 Evaluation Kit

Component Suppliers

SUPPLIER	PHONE	FAX
AVX	843-444-2863	843-626-3123
Coilcraft	847-639-6400	847-639-1469
Digi-Key	218-681-6674	218-681-3380
EFJohnson	402-474-4800	402-474-4858
Murata	415-964-6321	415-964-8165

Note: Please indicate that you are using the MAX3935 when contacting these component suppliers.

Quick Start

- 1) If the data is to be latched, place shunt on JU2 to enable clock input. Otherwise, leave JU2 open.
- 2) Install shunt JU1 to enable the outputs.
- 3) Adjust R18 to the full counter-clockwise position.
- 4) Adjust R24 to the full counter-clockwise position.
- 5) Adjust R13 to the approximate center of the adjustment range.
- 6) Apply a differential input signal (max amplitude $\leq 800\text{mV}$ per side) to J1 and J2 (DATA+ and DATA-).
- 7) If the latch is enabled, apply a differential clock signal (max amplitude $\leq 800\text{mV}$ per side) to J3 and J4 (CLK+ and CLK-). For optimum performance, see the interconnect recommendations.
- 8) Attach a high-speed oscilloscope with 50Ω inputs to J9. (**Note:** Attenuation may be required as voltage levels may exceed 4V.) See the interconnect recommendations below.

- 9) Set V_{TT} to 0V. Power up the board with V_{EE} at -5.2V.
- 10) Adjust R18 clockwise until the desired EAM modulation voltage is achieved.
- 11) Adjust R24 clockwise for the desired DC bias. Be careful not to exceed the compliance range of the modulation source as given by:

$$V_{MOD} (\text{Pin } 20) \geq V_{EE} + 1.55\text{V}$$

Recommendations for Interconnect Between the MAX3935 EV Kit and an Oscilloscope

- 1) Use a high-bandwidth sampling oscilloscope such as the Tektronix CSA8000 mainframe with an 80E01 50GHz sampling head. The 80E03 and 80E04 20GHz sampling heads are not recommended.
- 2) A high-quality SMA attenuator (14dB or 20dB) is required to reduce the signal level for compatibility with the sampling head. The attenuator should be connected directly to the output SMA connector on the EV kit to minimize transmission line reflections.
- 3) The total path length from the EV kit to the oscilloscope must be minimized. If possible, connect the female connector of the attenuator to the female input of the oscilloscope with an SMA adapter. If cables must be used, a 0.141in semi-rigid 50 Ω coaxial cable with high-quality SMA connectors is recommended (example: Tektronix 015-1015-00).

Adjustment and Control Descriptions (see Quick Start first)

COMPONENT	NAME	FUNCTION
JU2	RETIMING ENABLE	Enables/disables data retiming. Shunt to enable data retiming. Remove shunt for direct data transmission.
JU1	MODULATION ENABLE	Enables/disables the modulation outputs. Shunt for normal operation. Remove shunt to disable switching of the modulation output.
R13	PWC ADJUST	Adjusts the EAM pulse width.
R18	MOD ADJUST	Adjusts the EAM modulation current.
R24	BIAS ADJUST	Adjusts the EAM bias current.

MAX3935 Evaluation Kit

Evaluates: MAX3935

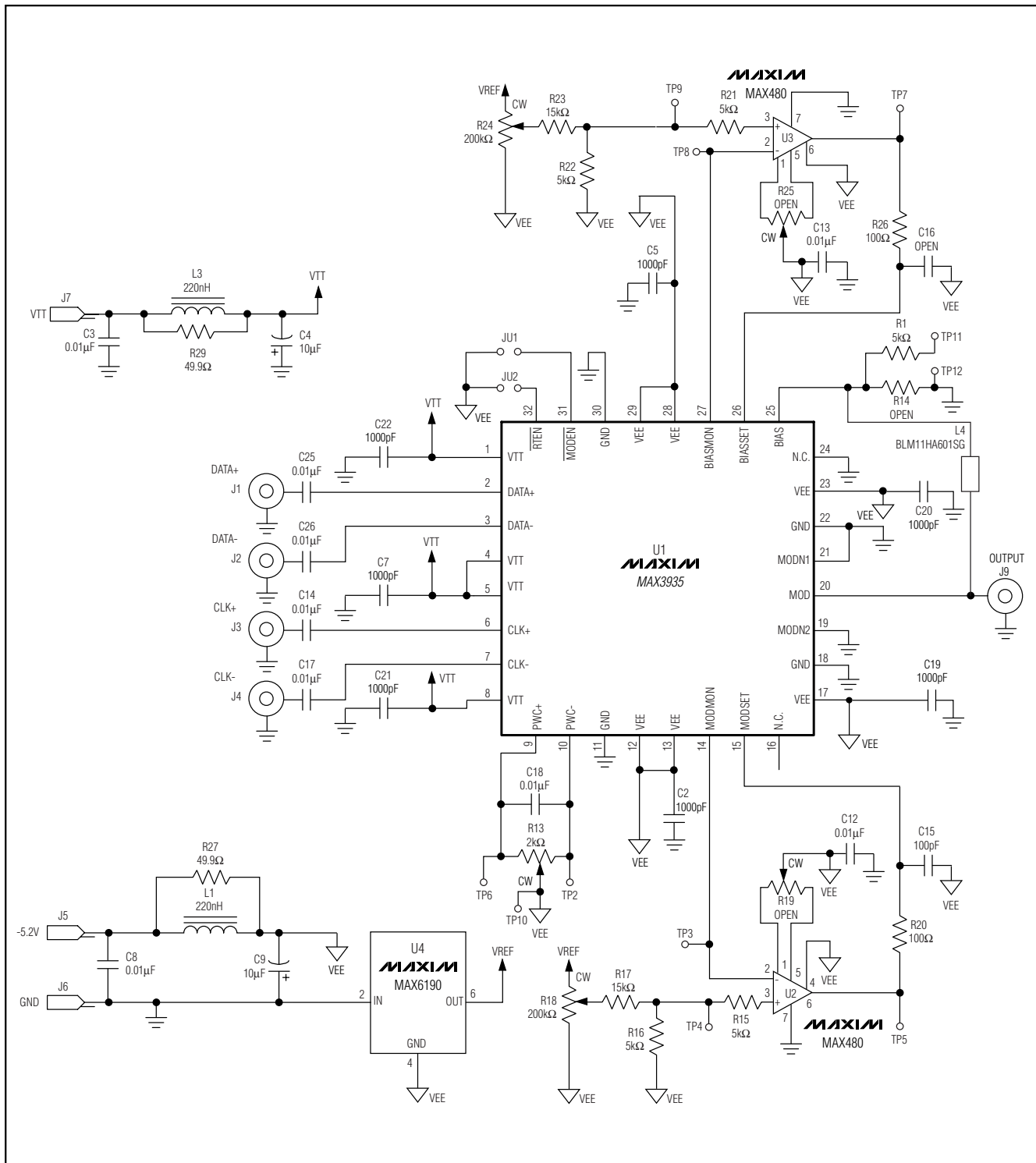


Figure 1. MAX3935 EV Kit Schematic

MAX3935 Evaluation Kit

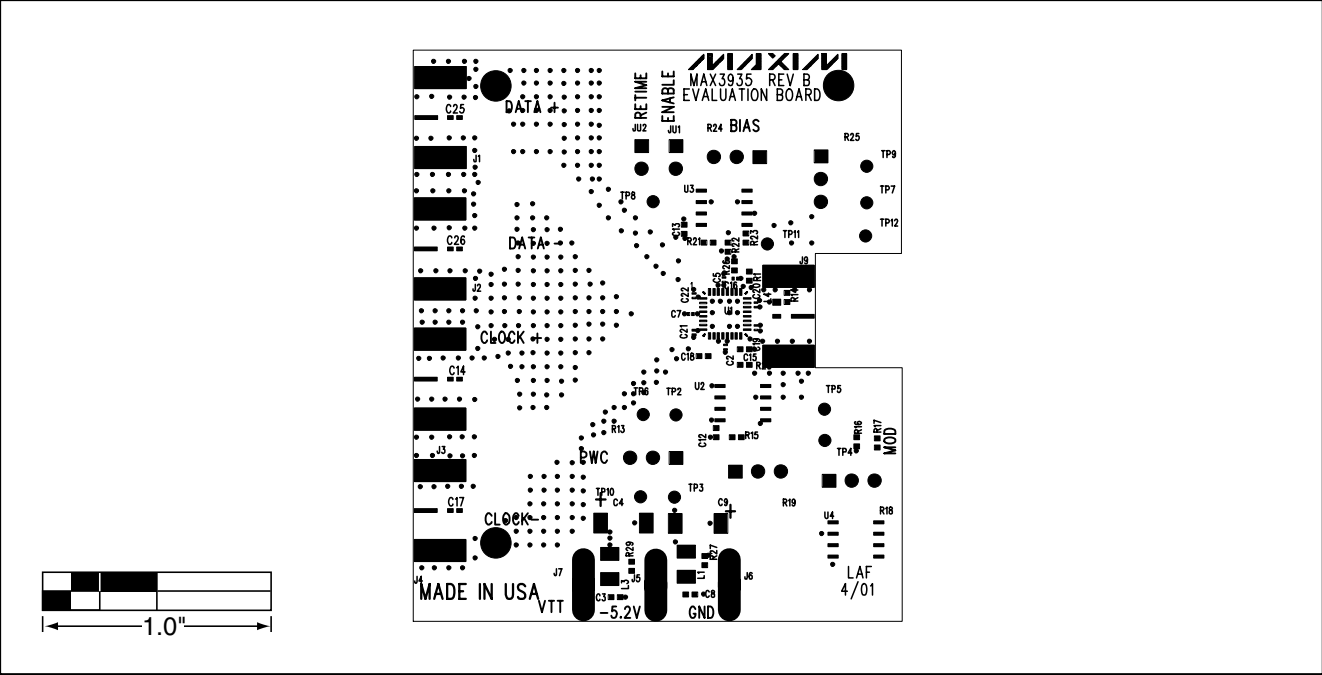


Figure 2. MAX3935 EV Kit Component Placement Guide—Component Side

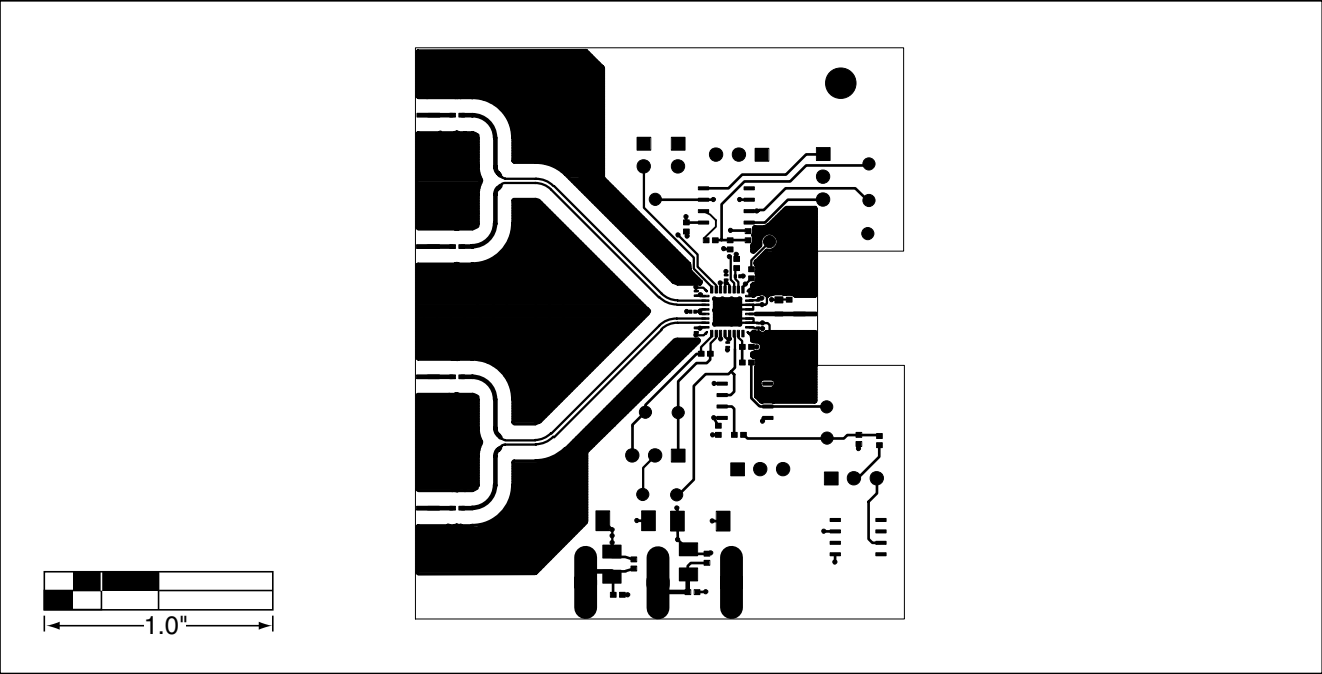


Figure 3. MAX3935 EV Kit PC Board Layout—Component Side

MAX3935 Evaluation Kit

Evaluates: MAX3935

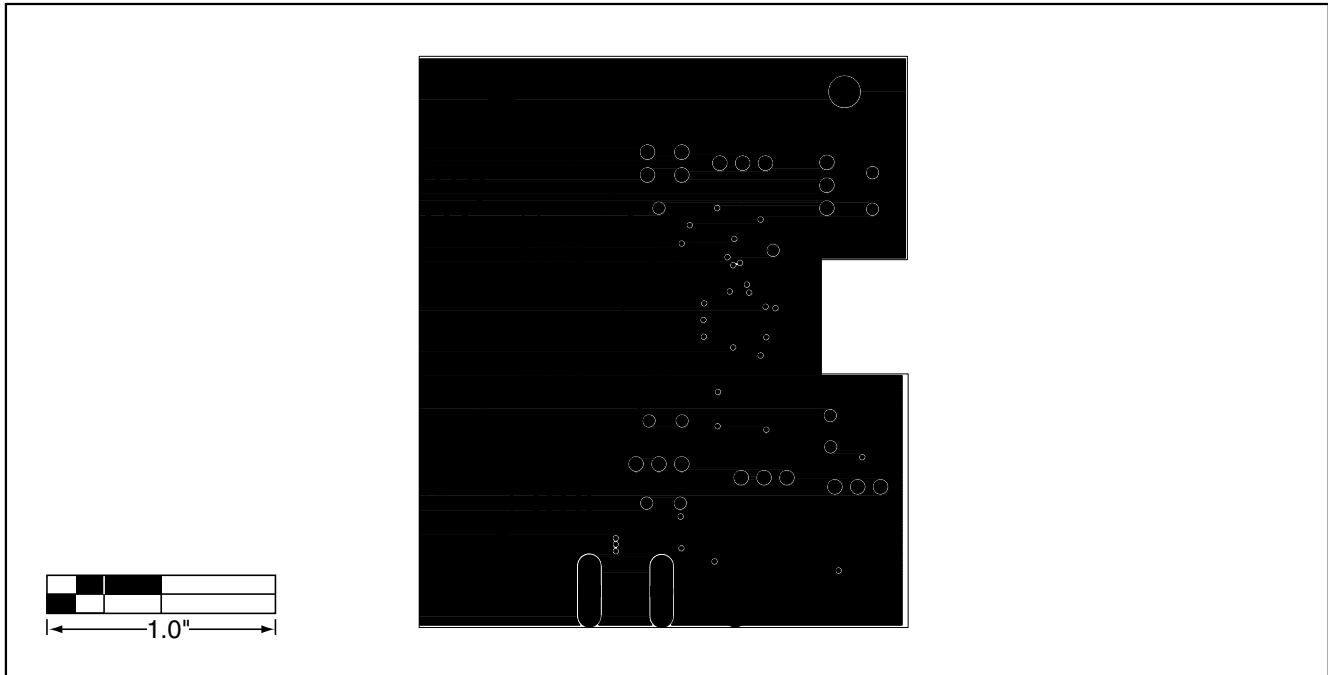


Figure 4. MAX3935 EV Kit PC Board Layout—Ground Plane

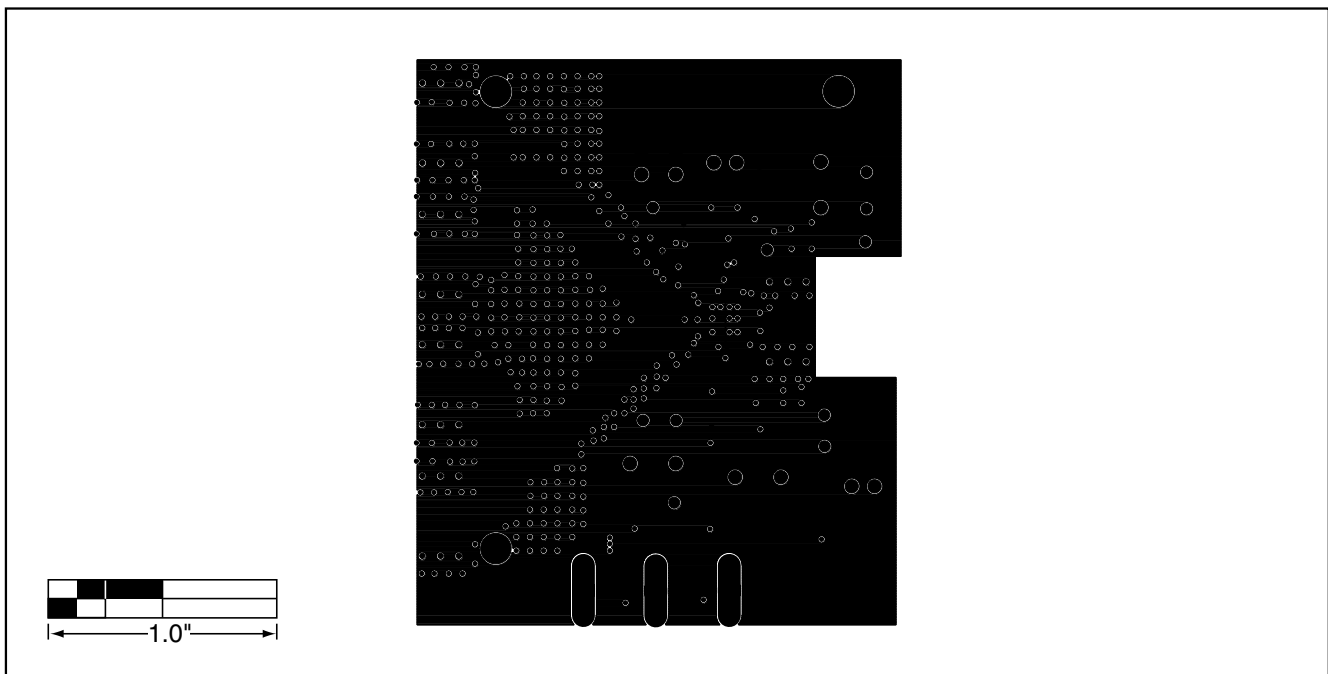


Figure 5. MAX3935 EV Kit PC Board Layout—Power Plane

MAX3935 Evaluation Kit

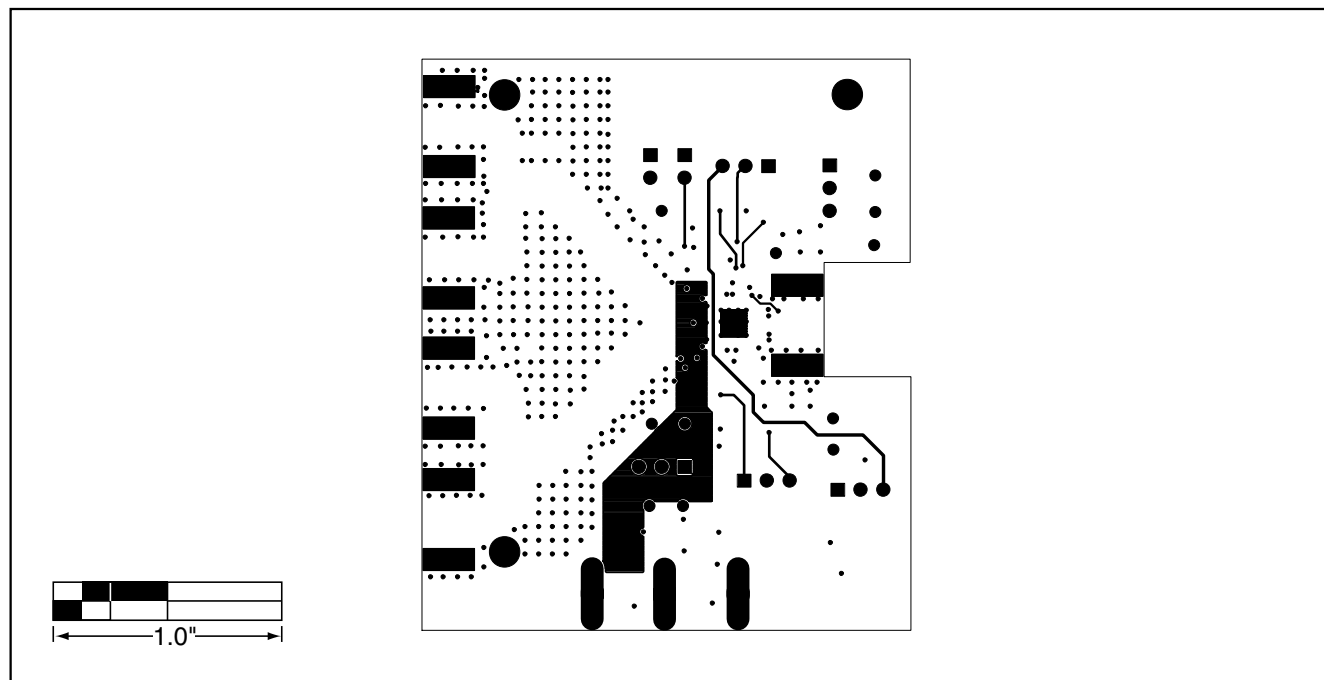


Figure 6. MAX3935 EV Kit PC Board Layout—Solder Side

Maxim cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim product. No circuit patent licenses are implied. Maxim reserves the right to change the circuitry and specifications without notice at any time.

6 **Maxim Integrated Products, 120 San Gabriel Drive, Sunnyvale, CA 94086 408-737-7600**