19-2779; Rev 0; 6/03

MAX3873A Evaluation Kit

Evaluates: MAX3873A

General Description

The MAX3873A evaluation kit (EV kit) simplifies evaluation of the MAX3873A, a low-power 2.488Gbps/2.67Gbps clock recovery and data retiming IC. The EV kit enables testing of all the MAX3873A functions. SMA connectors are provided for the differential CML-compatible data and clock outputs. The differential data and clock outputs have on-board AC-coupling capacitors to allow direct connection to a high-speed oscilloscope. The MAX3873A EV kit is configured for 3.3V operation and consumes up to 150mA.

Features

- **SMA Connections for All System I/Os**
- **Test Point for Monitoring Loss-of-Lock ($\overline{LOL}$)**
- **Single 3.3V Power-Supply Operation**
- **Fully Assembled and Tested**

Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX3873AEVKIT	-40°C to +85°C	20 QFN-EP* (4mm x 4mm)

**EP = Exposed pad.*

Component List

DESIGNATION	QTY	DESCRIPTION
C1–C6, C10–C22	19	0.1µF ±10% ceramic capacitors (0402)
C7	1	0.022µF ±10% ceramic capacitor (0402)
C8	1	33µF ±20% tantalum capacitor
C9	1	2.2µF ±10% ceramic capacitor (1206)
C23–C26	0	Not installed
D1	1	Red LED
J1–J6	6	SMA connectors (edge-mount)
J9–J12	0	Not installed
JU1–JU5, JU9, JU11	0	Not installed
JU6–JU8, JU10	4	3-pin headers (0.1in centers)
JU6–JU8, JU10	4	Shunts
L1–L4	4	56nH inductors
R1	1	392Ω ±1% resistor (0402)
V_{CC}, GND	2	Test points
U1	1	MAX3873AEGP (20-pin QFN) 4mm x 4mm
None	1	MAX3873A evaluation kit
None	1	MAX3873A data sheet

Detailed Description

The MAX3873A EV kit is fully assembled and factory tested. It enables testing of all MAX3873A functions.

Test Equipment Required

- 3.3V power supply with 300mA current capability
- Signal-source, 2.7Gbps minimum capability
- Jitter analyzer capable of 2.7Gbps performance
- Oscilloscope with at least 3GHz performance

Connections

The serial data inputs (SDI+, SDI-) have on-board AC-coupling capacitors. All the MAX3873A data and clock outputs (SDO+, SDO-, SCLKO+, SCLKO-) are internally terminated to 50Ω and have on-board AC-coupling capacitors. Configured in this way, these outputs can be directly connected to the 50Ω inputs of a high-speed oscilloscope for analysis.

Setup

1) Select either 2.488Gbps or 2.67Gbps with JU10 (RATESET).
2) Enable/Disable FASTRACK capture mode with JU6 (FASTRACK).
3) Enable/Disable Clock output with JU8 (SCLKEN).
4) Select amplitude of CML outputs to high/medium/low with JU7 (MODE).
5) Connect a 2.488Gbps/2.67Gbps PRBS NRZ signal to (SDI+, SDI-) inputs with 50Ω cables.
6) Connect the (SDO+, SDO-, SCLKO+, SCLKO-) outputs to a 50Ω high-speed oscilloscope. Terminate unused outputs with 50Ω.

Jitter analysis and product performance can also be observed by appropriately interfacing the EV kit with a bit-error-rate tester (BERT) and a jitter analyzer.

Layout Considerations

The MAX3873A's performance can be greatly affected by circuit board layout and design. Use good high-frequency design techniques, including minimizing ground inductances and using controlled-impedance transmission lines on the data and clock signals.

Jumpers and Test Points

NAME	TYPE	DESCRIPTION	VCC	GND	OPEN
JU6	3-pin header	Enables quick phase lock	Enabled	Disabled	N/A
JU7	3-pin header	Sets amplitude of CML outputs	Medium	Low	High
JU8	3-pin header	Enables clock output	Enabled	Disabled	N/A
JU10	3-pin header	Sets VCO frequency	2.67Gbps	2.488Gbps	N/A

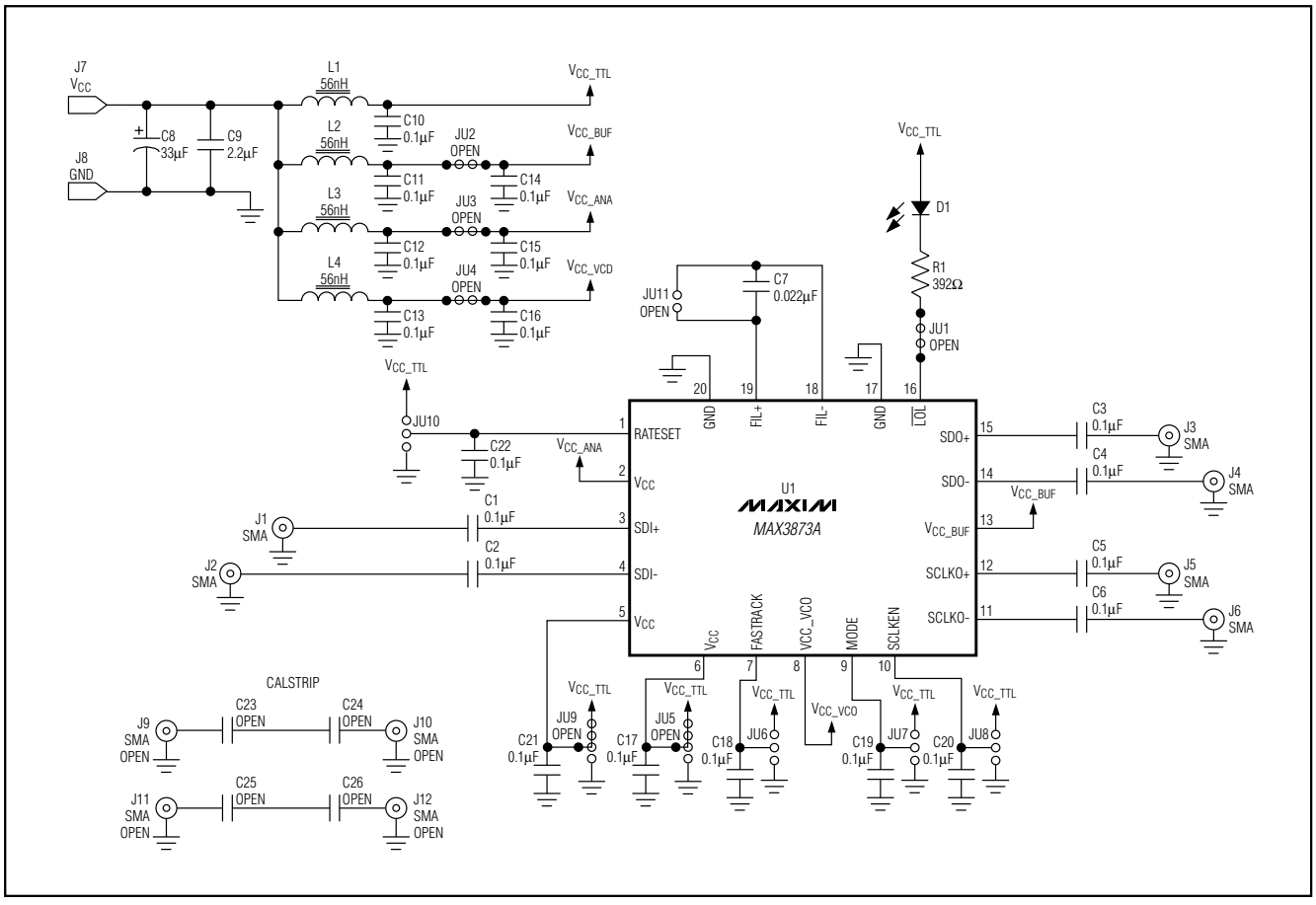

Figure 1. MAX3873 EV Kit Schematic

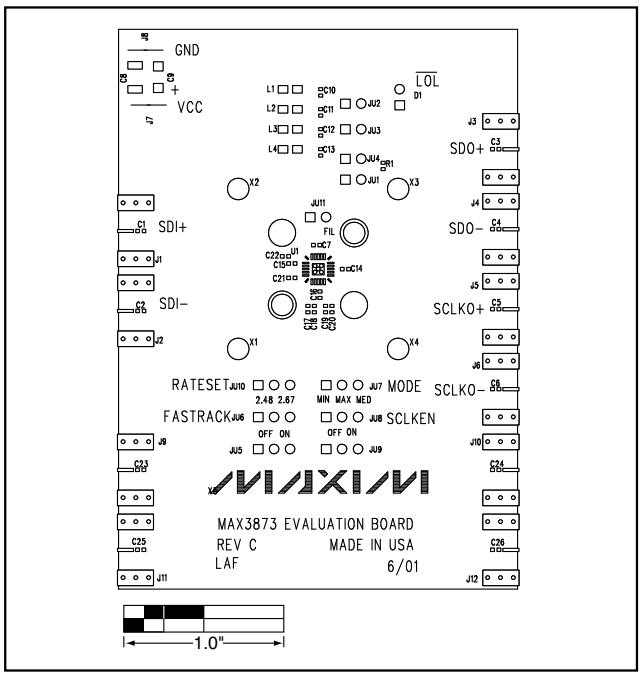

Figure 2. MAX3873A EV Kit Component Placement Guide—Component Side

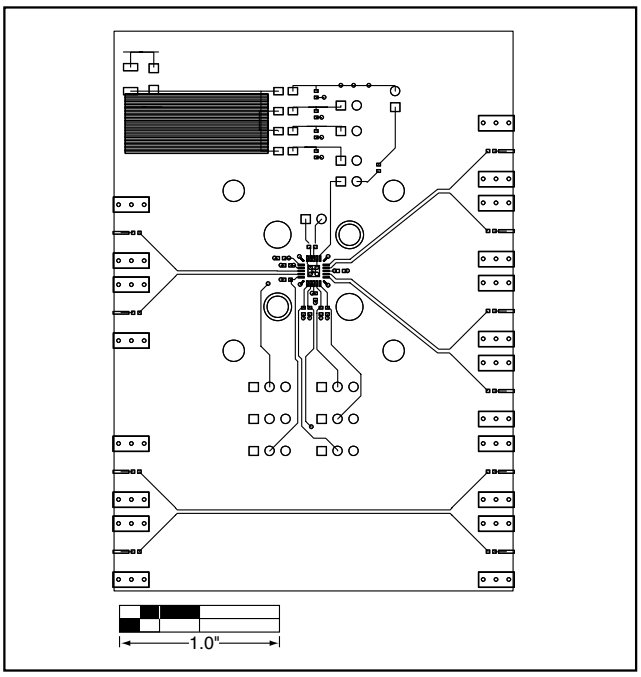

Figure 3. MAX3873A EV Kit PC Board Layout—Component Side

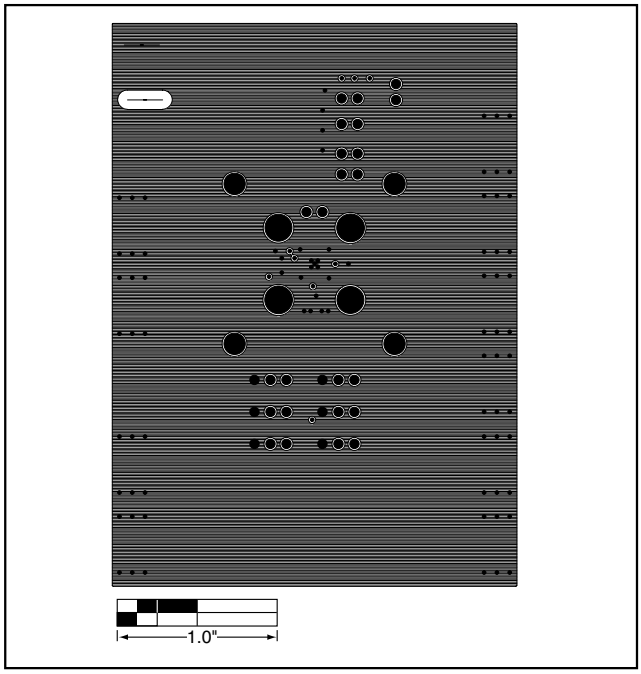

Figure 4. MAX3873A EV Kit PC Board Layout—Ground Plane

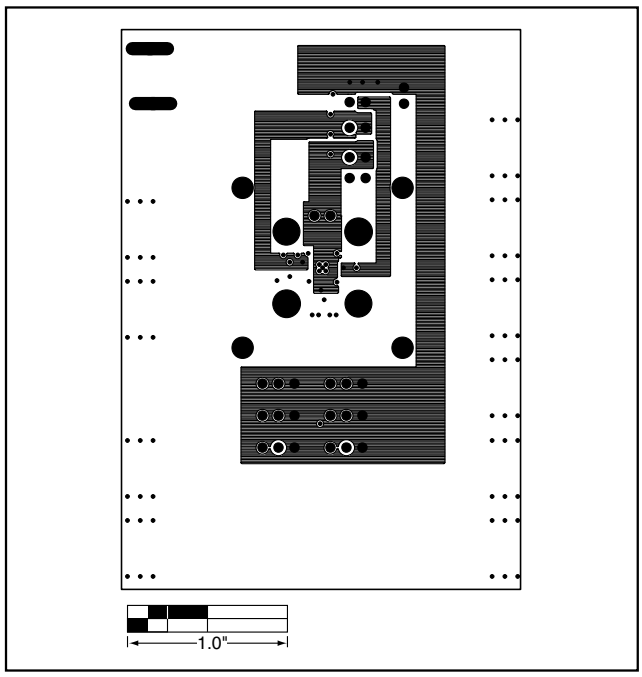

Figure 5. MAX3873A EV Kit PC Board Layout—Power Plane

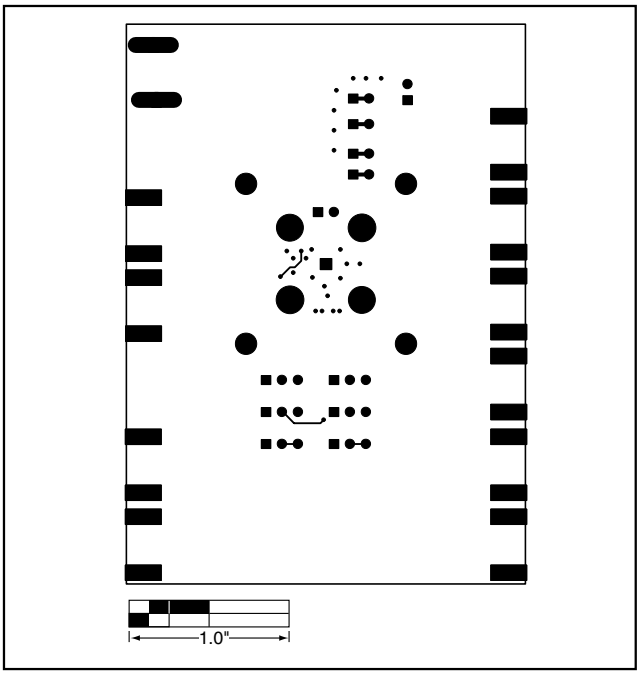

Figure 6. MAX3873A EV Kit PC Board Layout—Solder Side