

MAXIM

MAX3873 Evaluation Kit

Evaluates: MAX3873

General Description

The MAX3873 evaluation kit (EV kit) simplifies evaluation of the MAX3873, a low-power 2.488Gbps/2.67Gbps clock recovery and data retiming IC. The EV kit enables testing of all the MAX3873 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 MAX3873 EV kit is configured for 3.3V operation and consumes up to 150mA.

Component List

DESIGNATION	QTY	DESCRIPTION
C1–C6, C10–C22	19	0.1 μ F $\pm$ 10% ceramic capacitors (0402)
C7	1	0.01 μ F $\pm$ 10% ceramic capacitor (0402)
C8	1	33 μ F $\pm$ 20% tantalum capacitor
C9	1	2.2 μ F $\pm$ 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
R1	1	392 Ω $\pm$ 1% resistor (0402)
L1–L4	4	56nH inductors
JU1–JU5, JU9, JU11	0	Not installed
JU6–JU8, JU10	4	3-pin headers (0.1in centers)
JU6–JU8, JU10	4	Shunts
VCC, GND	2	Test points
U1	1	MAX3873EGP (20-pin QFN) 4mm x 4mm
None	1	MAX3873 evaluation kit
None	1	MAX3873 data sheet

Features

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

Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX3873EVKIT	-40°C to +85°C	20 QFN-EP (4mm x 4mm)

Detailed Description

The MAX3873 EV kit is fully assembled and factory tested. It enables testing of all MAX3873 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 MAX3873 data and clock outputs (SDO+, SDO-, SCLKO+, SCLKO-) are internally terminated to 50 Ω and have on-board AC-coupling capacitors. Configured in this way, these outputs can be directly connected to the 50 Ω 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 50 Ω cables.
- 6) Connect the (SDO+, SDO-, SCLKO+, SCLKO-) outputs to a 50 Ω high-speed oscilloscope. Terminate unused outputs with 50 Ω .

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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 MAX3873'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.

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Jumpers and Test Points

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

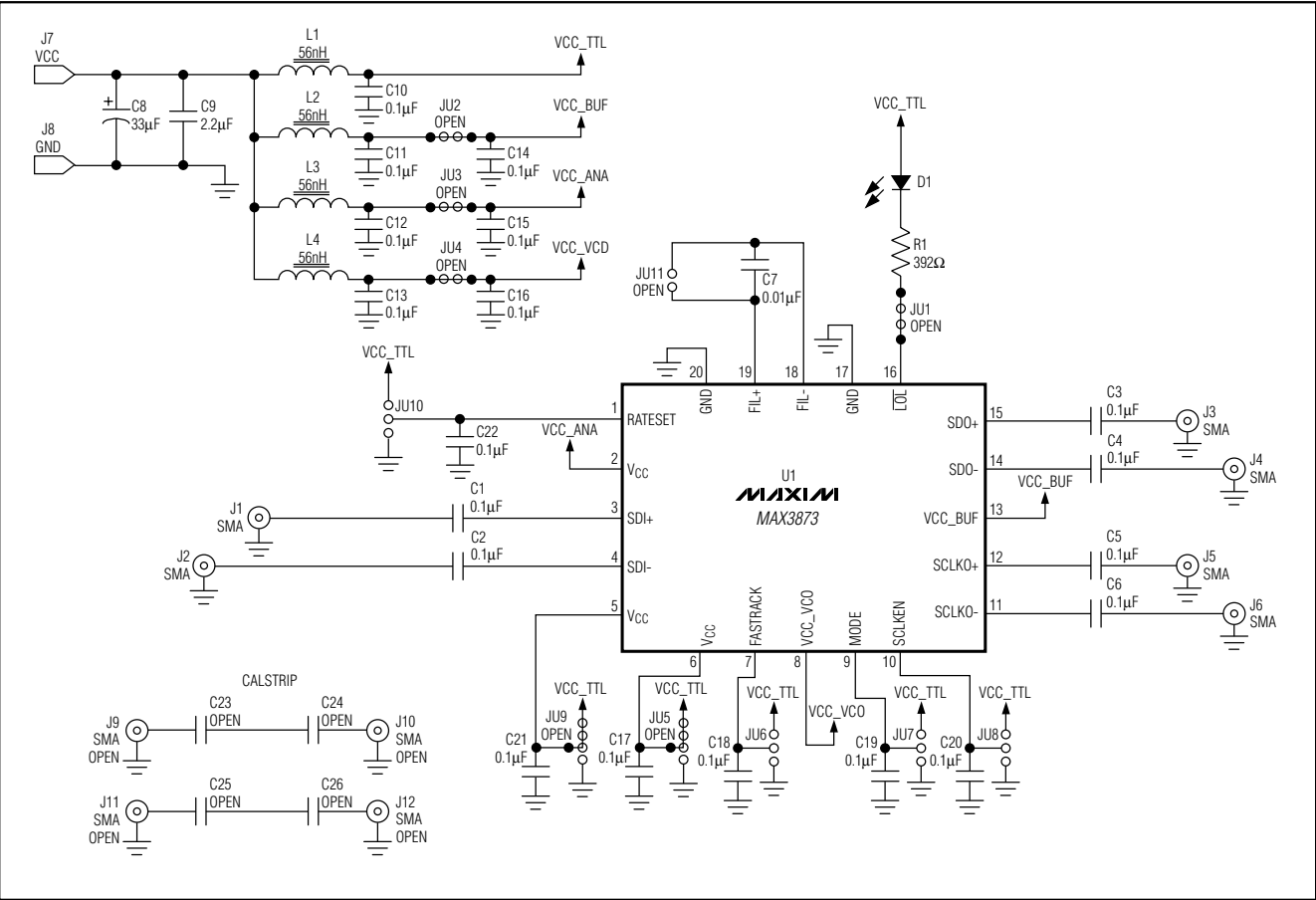


Figure 1. MAX3873 EV Kit Schematic

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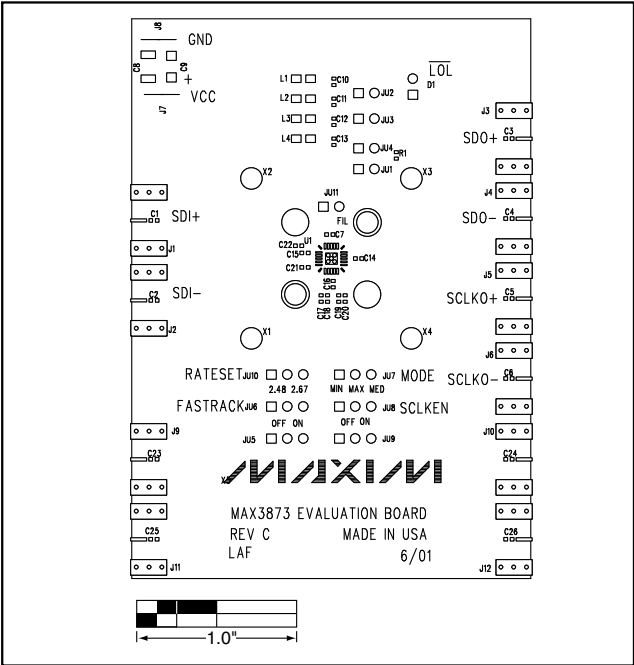


Figure 2. MAX3873 EV Kit Component Placement Guide—Component Side

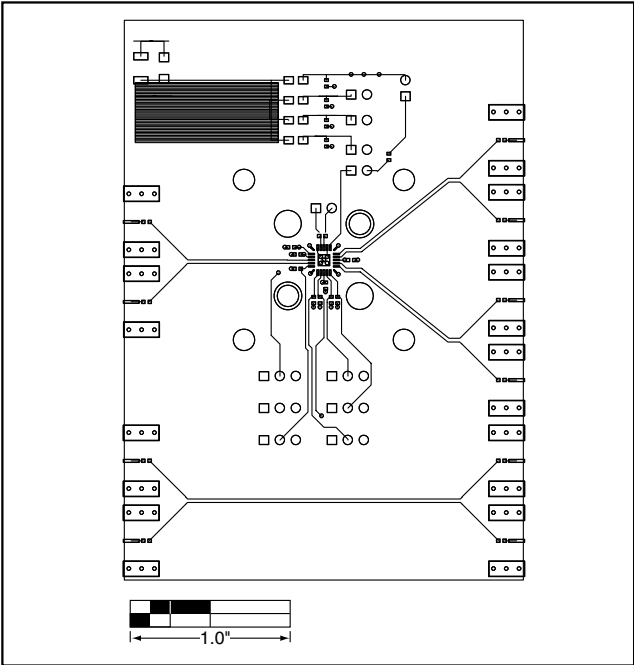


Figure 3. MAX3873 EV Kit PC Board Layout—Component Side

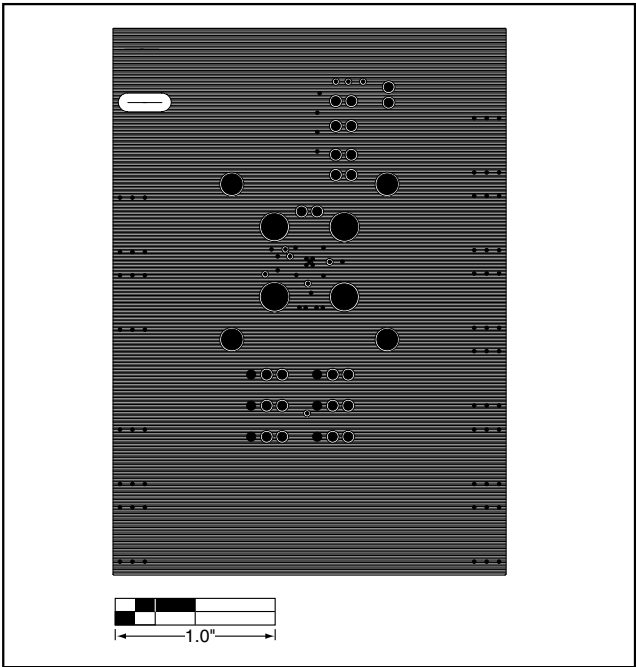


Figure 4. MAX3873 EV Kit PC Board Layout—Ground Plane

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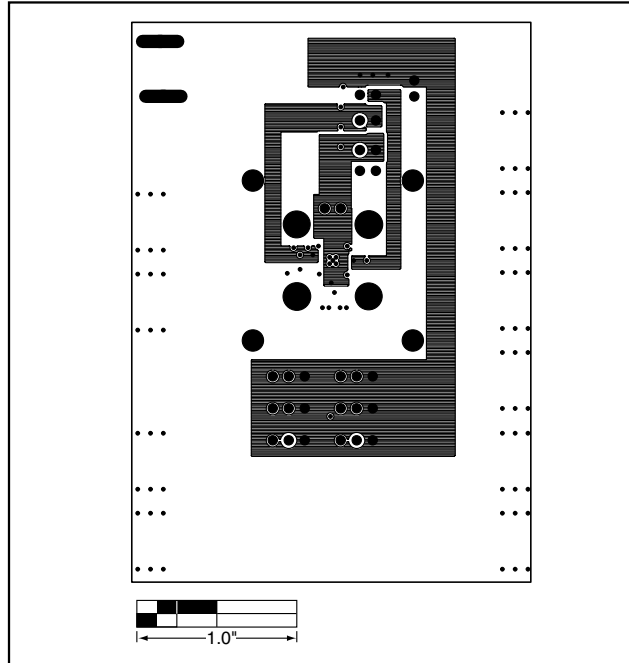


Figure 5. MAX3873 EV Kit PC Board Layout—Power Plane

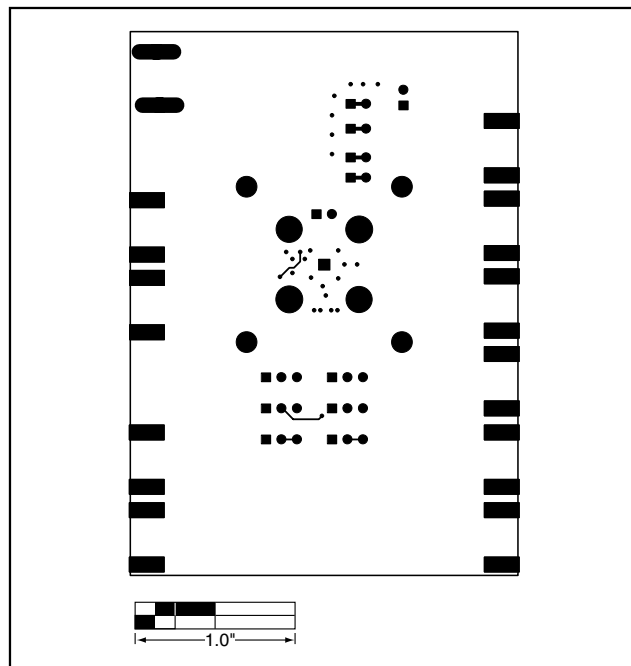


Figure 6. MAX3873 EV Kit PC Board Layout—Solder Side

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