

MAXIM

MAX2371/MAX2373 Evaluation Kits

General Description

The MAX2371/MAX2373 evaluation kits (EV kits) simplify evaluation of the MAX2371/MAX2373 low-noise amplifiers (LNAs). They enable testing of the devices' radio frequency (RF) performance and require no additional support circuitry. The EV kits' signal inputs and outputs use SMA connectors to facilitate the connection of RF test equipment.

Features

- ◆ Easy Evaluation of the MAX2371/MAX2373
- ◆ 2.65V to 3.3V Single-Supply Operation
- ◆ Jumpers for Analog/Digital Control
- ◆ All Critical Peripheral Components Included
- ◆ Fully Assembled and Tested

Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX2371EVKIT	-40°C to +85°C	12 QFN
MAX2373EVKIT	-40°C to +85°C	12 QFN

MAX2371 Component List

DESIGNATION	QTY	DESCRIPTION
C1, C3, C7	3	Open
C2	1	15pF $\pm 5\%$ capacitor Taiyo Yuden 0402_UMK105CH150JW-B
C4, C5	2	1500pF $\pm 10\%$ capacitors Murata 0402_GRP155R71H152K
C6	1	6.8pF $\pm 0.5\text{pF}$ capacitor Murata 0402_GRP1555C1H6R8DZ01E
C8	1	1.0 μ F $\pm 20\%$ capacitor Taiyo Yuden 0805_LMK212BJ105MG-B
C9	1	10nF $\pm 10\%$ capacitor Murata 0402_GRP155R71C103K
C10	1	0.015 μ F $\pm 10\%$ capacitor Taiyo Yuden 0402_EMK105B153KW-B
C19	1	100nF $\pm 10\%$ capacitor Murata 0402_GRP155R61A104K

DESIGNATION	QTY	DESCRIPTION
R1	1	1.10k Ω $\pm 1\%$ resistor CC0402
R2	1	750 Ω $\pm 1\%$ resistor CC0402
R3	1	0 Ω resistor CC0402
L1	1	Open
L2	1	56nH inductor Coilcraft 1008CS-560XJBC
L4	1	33nH $\pm 5\%$ inductor Murata 0603_LQG18HN33NJ00
L5	1	120nH $\pm 5\%$ inductor Coilcraft 1008CS-121XJBB
U1	1	MAX2371EGC Maxim MAX2371EGC
J1, J2, J3	3	1 $\times$ 3-pin headers Digi-Key S1012-36-ND
J4	1	1 $\times$ 6-pin header Digi-Key S1012-36-ND
J5, J6	2	1 $\times$ 2-pin headers Digi-Key S1012-36-ND
P1, P2	2	SMA connectors (edge mount) Johnson 142-0701-801

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MAX2373 Component List

DESIGNATION	QTY	DESCRIPTION
C11	1	100nF $\pm 10\%$ capacitor Murata 0402_GRP155R61A104K
C12	1	0.015 μ F $\pm 10\%$ capacitor Taiyo Yuden 0402_EMK105B153KW-B
C13, C14	2	100pF $\pm 5\%$ capacitors Murata 0402_GRP1555C1H101J
C15	1	1.3pF ± 0.1 pF capacitor Murata 0402_GRP1555C1H1R3B
C16	1	1.0 μ F $\pm 20\%$ capacitor Taiyo Yuden 0805_LMK212BJ105MG-B
C17	1	Open
C18	1	10nF $\pm 10\%$ capacitor Murata 0402_GRP155R71C103K
R4	1	1.10k Ω $\pm 1\%$ resistor CC0402
R5	1	1.5k Ω $\pm 1\%$ resistor CC0402
R6	1	0 Ω resistor CC0402
L6	1	15nH $\pm 5\%$ inductor Coilcraft 0402CS-15NXJBW
L8	1	4.7nH ± 0.2 nH inductor Murata 0402_LQP15MN4N7C00
L9	1	1.8nH ± 0.3 nH inductor Murata 0402_LQG15HN1N8S00
L10	1	12nH $\pm 5\%$ inductor Murata 0402_LQG15HN12NJ00
U2	1	MAX2373EGC Maxim MAX2373EGC
J7, J8, J9	3	1 $\times$ 3-pin headers Digi-Key S1012-36-ND
J10	1	1 $\times$ 6-pin header Digi-Key S1012-36-ND
J11, J12	2	1 $\times$ 2-pin headers Digi-Key S1012-36-ND
P3, P4	2	SMA connectors (edge mount) Johnson 142-0701-801

Component Suppliers

SUPPLIER	PHONE	FAX
CoilCraft	847-639-6400	847-639-1469
Digi-Key	800-344-4539	218-681-3380
Murata	770-436-1300	770-436-3030
Taiyo Yuden	800-348-2496	847-925-0899

Note: Please indicate that you are using the MAX2371/MAX2373 when contacting these component suppliers.

Quick Start

The MAX2371/MAX2373 EV kits are fully assembled and factory tested. Follow the instructions in the *Connections and Setup* section for proper device evaluation.

Test Equipment Required

This section lists the recommended test equipment to verify operation of the MAX2371/MAX2373. It is intended as a guide only, and some substitutions are possible.

- Two RF signal generators capable of delivering at least 5dBm of output power at the operating frequency (HPE4433B or equivalent)
- One RF power sensor capable of handling at least 20dBm of output power at the operating frequency (HP8482A or equivalent)
- One RF power meter capable of measuring up to 20dBm of output power at the operating frequency (HP437B or equivalent)
- An RF spectrum analyzer that covers the MAX2371/MAX2373 operating frequency range, as well as a few harmonics (FSEB20, for example)
- A network analyzer (HP8753D, for example) to measure small-signal return loss and gain (optional)
- Two power supplies capable of up to 1A at 2.65V to 3.3V
- An optional ammeter for measuring the supply current
- SMA cables

Connections and Setup

This section provides a step-by-step guide to operating the EV kits and testing the devices' function. **Do not turn on the DC power or RF signal generators until all connections are made:**

- 1) Connect a DC supply set to 2.775V (through an ammeter if desired) to the VCC and GND on the EV kit. Do not turn on the supply.
- 2) Connect one RF signal generator to the LNA_IN

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SMA connector. Do not turn on the generator's output. Set the generator for proper output frequency and power level.

- 3) Connect the spectrum analyzer to LNA_OUT. Set the spectrum analyzer to a center frequency of 150MHz (MAX2371) or 900MHz (MAX2373).
- 4) Connect the jumpers to set the desired mode of operation (RX Enable/Disable, High/Low Attenuation, High/Low Current).
- 5) Connect a DC supply set to 1.3875V ($V_{CC}/2$ for maximum gain) to AGC. Do not turn on the supply.
- 6) Turn on the DC supplies.
- 7) Activate the RF generator's output. Refer to the *Electrical Characteristics Table* in the data sheet for specifications in different operation modes.
- 8) Another method for determining gain is by using a network analyzer (optional). This has the advantage of displaying gain versus a swept-frequency band, in addition to displaying input return loss. Refer to the network analyzer manufacturer's user manual for setup details.

Layout Issues

A good PC board is an essential part of an RF circuit design. The EV kit PC board can serve as a guide for laying out a board using the MAX2371/MAX2373. Keep traces carrying RF signals as short as possible to minimize radiation and insertion loss. Use impedance control on all RF signal traces. VCC nodes on the PC board should have decoupling capacitors to the closest ground. Refer to the *Layout* section of the MAX2371/MAX2373 data sheet for more information.

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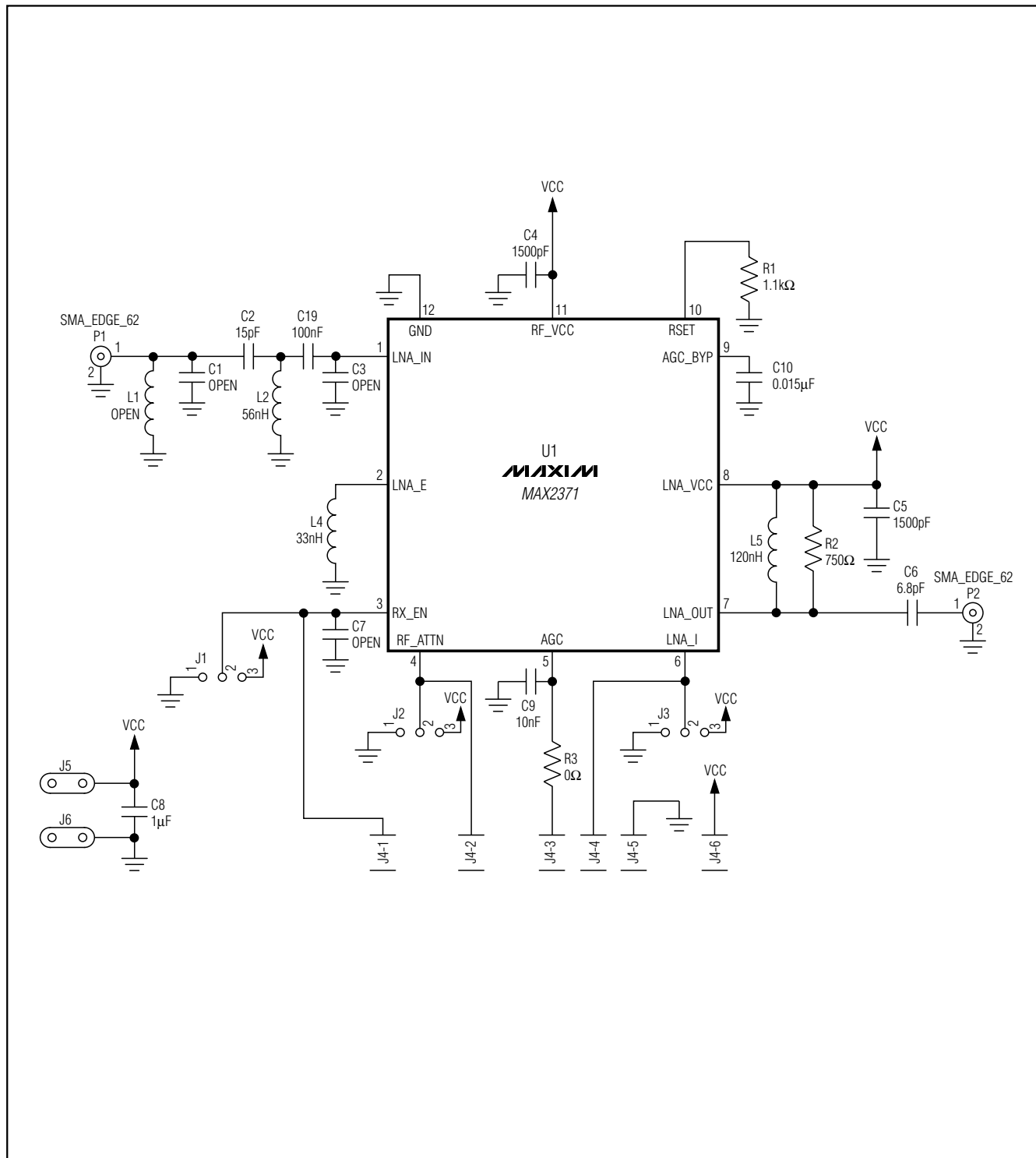
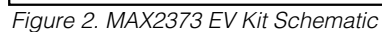


Figure 1. MAX2371 EV Kit Schematic

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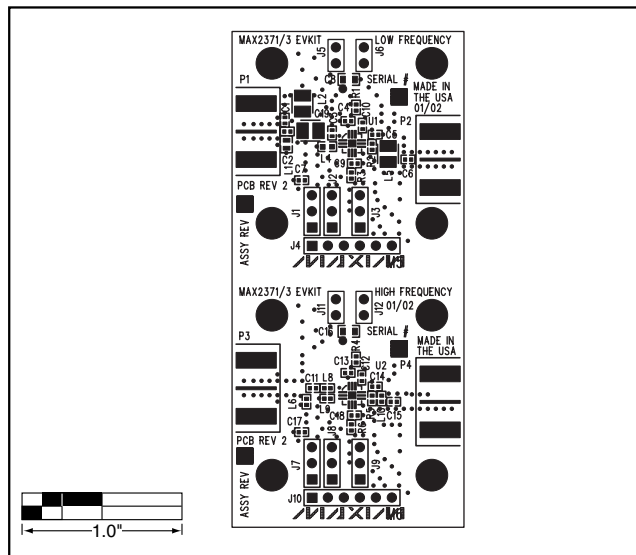


Figure 3. MAX2371/MAX2373 EV Kit Component Placement Guide—Component Side

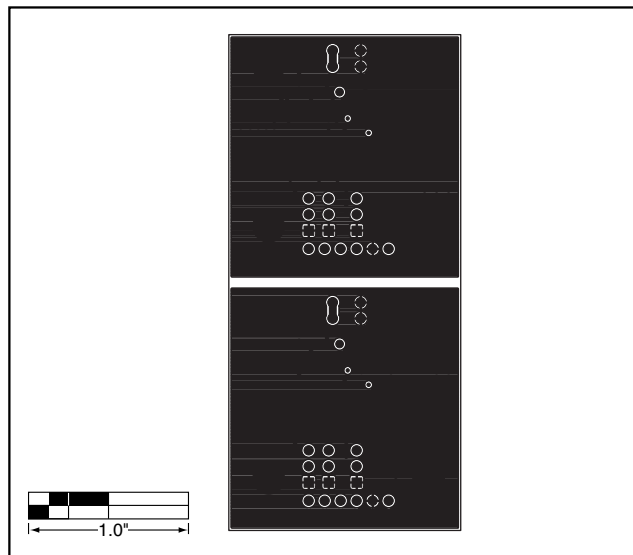


Figure 4. MAX2371/MAX2373 EV Kit PC Board Layout—Layer 2

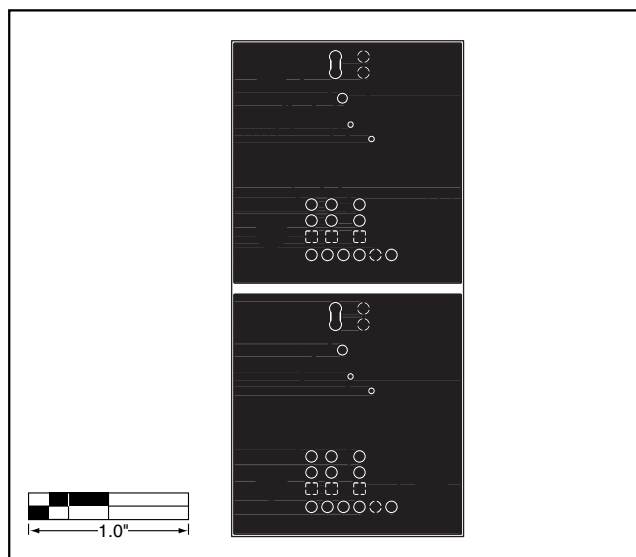


Figure 5. MAX2371/MAX2373 EV Kit PC Board Layout—Layer 3

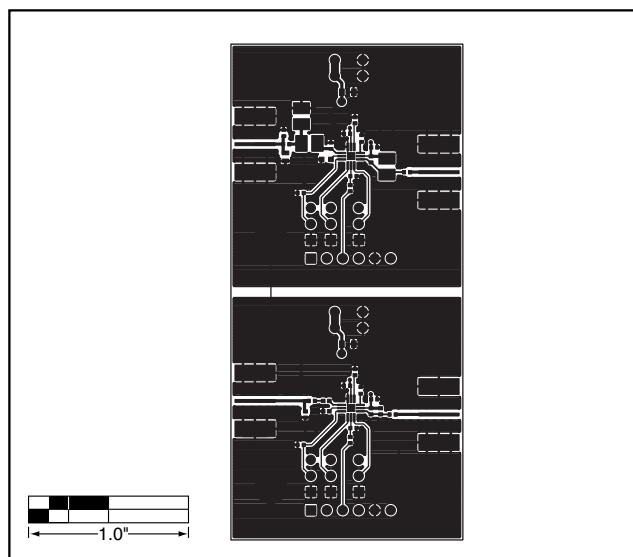


Figure 6. MAX2371/MAX2373 EV Kit PC Board Layout—Primary Component Side

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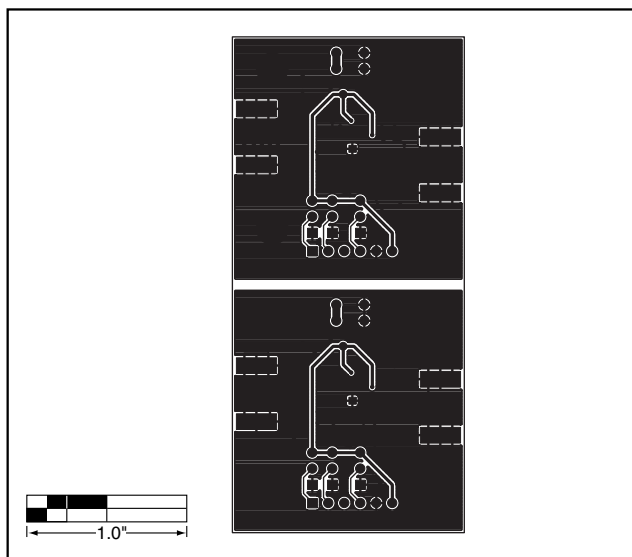


Figure 7. MAX2371/MAX2373 EV Kit PC Board Layout—
Secondary Side

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.

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