

MAXIM

MAX2307 Evaluation Kit

General Description

The MAX2307 evaluation kit simplifies evaluation of the MAX2307 integrated RF upconverter-driver. It enables testing of all functions with no additional support circuitry. Signal inputs and outputs use SMA connectors and are compatible with the 50Ω impedance of the test equipment.

Each EV kit is shipped with a Maxim device configured for operation with an IF input frequency of 165MHz and LO input frequency of 722MHz to 760MHz. The output-matching network of each kit is optimized for an RF output frequency of 887MHz to 925MHz.

Features

- ◆ +2.8V to +4.2V Single Supply
- ◆ Output Matched to 50Ω from 887MHz to 925MHz
- ◆ Differential 400Ω IF Input Matched and Converted to 50Ω Single-Ended for Ease of Lab Testing
- ◆ Optimal Component Placement
- ◆ Easy Evaluation of All Product Functions
- ◆ All Critical Peripheral Components Included

Ordering Information

PART NUMBER	TEMP. RANGE	PIN-PACKAGE
MAX2307EVKIT-T	-40°C to +85°C	3×4 UCSP

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C4, C6, C11, C13	5	100pF 5% ceramic capacitors (0402) Murata GRM36C0G101J050
C15	2	Not installed
C16	1	3.0pF ceramic capacitor (0402) Murata GRM36C0G030B050
C3	1	4.7μF A Case 10V AVXTAJA475M010
C2, C7, C12, C14	4	0.01μF 10% ceramic capacitors (0402) Murata GRM36X7R103K016
C8	1	1.5pF ±0.1pF ceramic capacitor (0402) Murata GRM36C0G1R5B050
C9, C10	2	10pF ±0.25% ceramic capacitors (0402) Murata GRM36C0G100C050

DESIGNATION	QTY	DESCRIPTION
L1, L2	2	5.6nH inductors (0402) Murata LQP10A5N6B00
L3	1	180nH inductor (0603) Coilcraft 0603CS-18XJBC
L4	1	6.2nH inductor (0402) Coilcraft 0402CS-6N2XJBG
R1, R2	2	10kΩ 5% resistors (0402)
T1	1	Balun transformer (B5F type) Tokko 458DB-1011
RF_OUT, LOIN, IFIN	3	SMA connectors (PC edge-mount) EF Johnson 142-0701-801 or Digi-Key J502-ND
JU1, JU2	2	3-pin headers
VCC, GND, VGC	3	Test points Mouser 151-203
U1	1	MAX2307EBC (UCSP-4×3L)
None	1	MAX2307 PC board
None	1	MAX2307 data sheet
None	1	MAX2307 EV Kit data sheet

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Quick Start

Each EV kit is fully assembled and factory tested. Follow the instructions in the *Connections and Setup* section.

Test Equipment Required

EQUIPMENT	DESCRIPTION
DC Power Supply	Capable of supplying +2.8V to 4.2V at a minimum of 50mA
HP 8561E Spectrum Analyzer	Or equivalent high-sensitivity spectrum analyzer
Digital Multimeters	To monitor supply voltage and supply current (if desired)
HP 8648C RF Generators, 2	For the IFIN and LO inputs or equivalent sine-wave sources

Connections and Setup

- 1) Verify the DC power supply is set to less than +4.2V before attaching the supply to the EV kit. A good starting voltage is +2.8V.
- 2) Set V_{GC} to +2.2V.
- 3) Verify the jumpers JU1 and JU2 are in the "VCC" position.
- 4) The supply current should be approximately 30mA.
- 5) Connect a signal generator to the IFIN connector using an SMA cable. Set the generator's output to 165MHz at -20dBm power level.
- 6) Connect a second signal generator to the LO input connector using an SMA cable. Set the generator's output to 741MHz at -15dBm power level.
- 7) Connect the RF output of the EV kit to the spectrum analyzer using an SMA cable. Take care to use quality connector adapters for the spectrum analyzer's input. Avoid using BNC-type connectors due to their high VSWR while operating in the gigahertz range.

Table 1. Nominal DC Voltage

PIN NUMBER	PIN NAME	NOMINAL DC VOLTAGE (V)
A1	VCC	+2.8
A2	VCCMIXP	+2.8
A3	VCCMIXM	+2.8
A4, C1	GND	0
B1	LOIN/ $\overline{\text{SHDNLO}}$	+2.8
B3	GC	+2.2
B4	RFOUT	+2.8
C2	IFINP	0.948
C3	IFINM	0.948
C4	$\overline{\text{SHDN}}$	+2.8

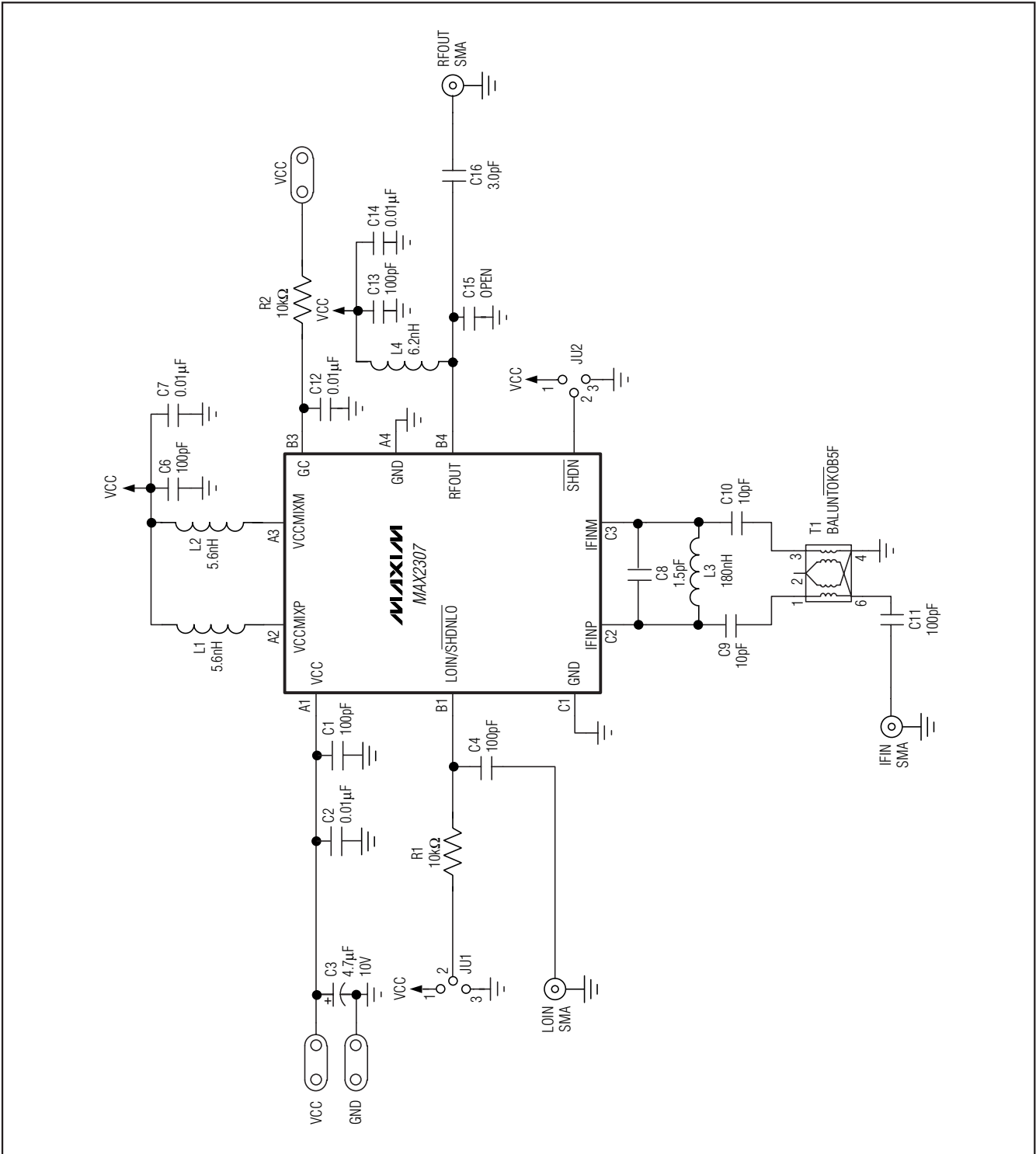
- 8) To assist in troubleshooting, verify the correct voltages on the PC board with a multimeter. Use Table 1 to verify correct node voltage during proper operation.
- 9) Set the spectrum analyzer's center frequency to 906MHz.
- 10) Set the marker position to the peak level.
- 11) Read the output power of the center frequency. This should be about +4dBm, depending on cable and connector losses.

Component Suppliers

SUPPLIER	PHONE	FAX	WEB
AVX	843-448-9411	843-448-1943	www.avxcorp.com
Coilcraft	847-639-6400	843-639-1469	www.coilcraft.com
Digi-Key	800-344-4539	218-681-3380	www.digikey.com
EF Johnson	800-328-3911	507-835-6969	www.efjohnson.com
Murata	800-831-9172	814-238-0490	www.murata.com
Toko	800-745-8656	708-699-1194	www.tokoam.com

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Evaluates: **MAX2307**



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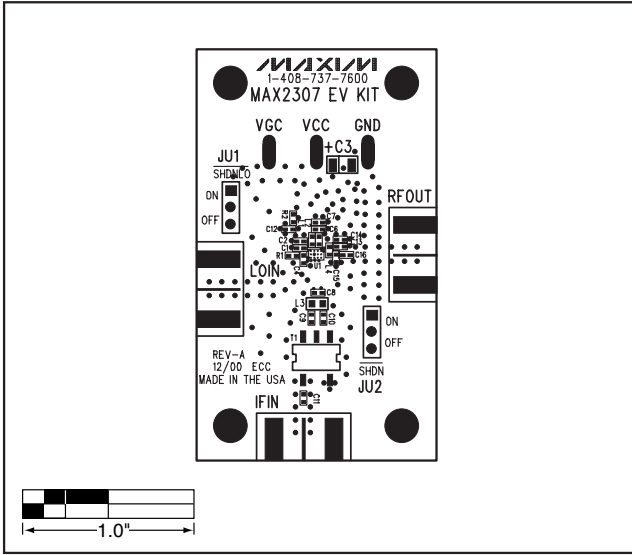


Figure 2. MAX2307 EV Kit PC Board Layout—Top Silkscreen

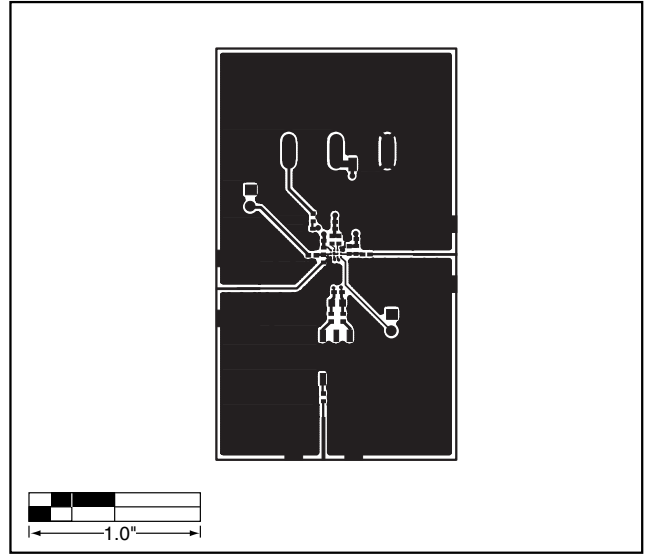


Figure 3. MAX2307 EV Kit PC Board Layout—Component Side

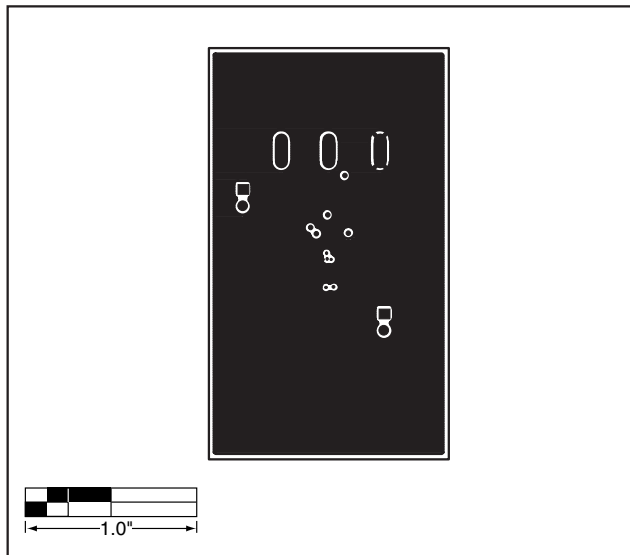


Figure 4. MAX2307 EV Kit PC Board Layout—GND

MAX2307 Evaluation Kit

Evaluates: MAX2307

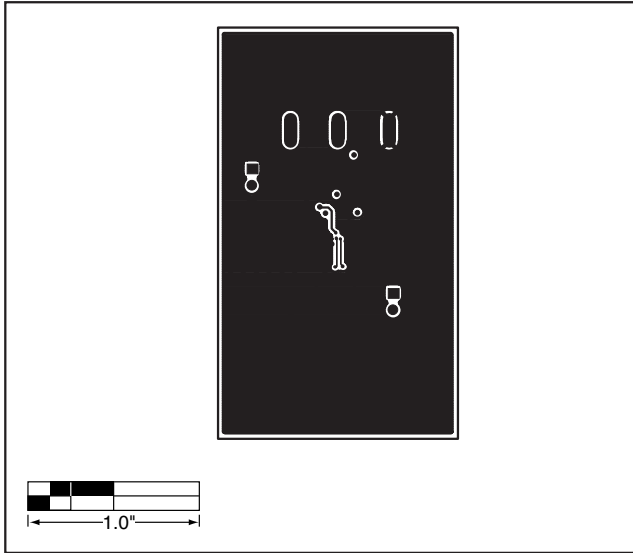


Figure 5. MAX2307 EV Kit PC Board Layout—GND2

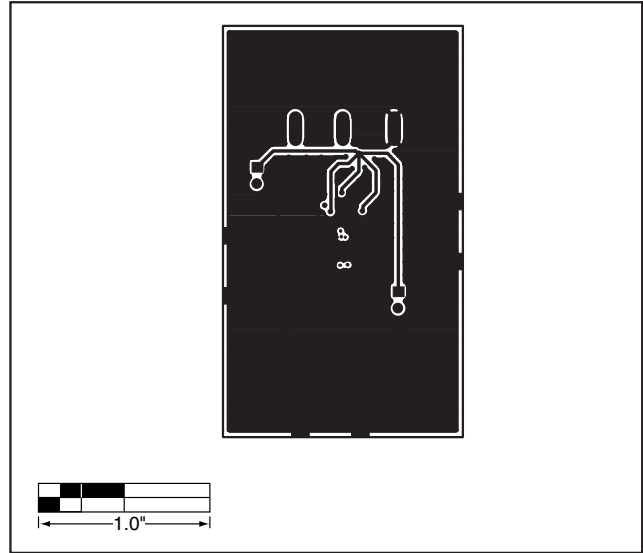


Figure 6. MAX2307 EV Kit PC Board Layout—Solder Side

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