



# MAX9486 Evaluation Kit

## General Description

The MAX9486 EV kit evaluates the MAX9486, a high-performance clock synthesizer with an 8kHz input reference clock. The EV kit provides six buffered 35.328MHz outputs, CLK1–CLK6, and a jitter-suppressed 8kHz output REO. The EV kit operates from a single 3.3V power supply.

## Features

- ◆ **Single 3.3V Supply**
- ◆ **Controlled 50Ω Microstrip Traces**
- ◆ **On-Board Adjustable Charge Pump Current**
- ◆ **Fully Assembled and Tested**

## Ordering Information

| PART         | TEMP RANGE   | IC PACKAGE |
|--------------|--------------|------------|
| MAX9486EVKIT | 0°C to +70°C | 24 TSSOP   |

## Component List

| DESIGNATION  | QTY | DESCRIPTION   |
|--------------|-----|---|
| C1, C2, C3   | 3   | 10μF ±20%, 6.3V X5R ceramic capacitors (0805)<br>Taiyo Yuden JMK212BJ106M<br>TDK C2012X5R0J106M       |
| C4, C5, C6   | 3   | 0.01μF ±10%, 16V X7R ceramic capacitors (0402)<br>Taiyo Yuden EMK105BJ103K<br>Murata GRM36X7R103K016K |
| C7, C8, C9   | 3   | 0.001μF ±10%, 50V X7R ceramic capacitors (0402)<br>TDK C1005X7R1H102K                                 |
| C10, C13–C18 | 0   | Not installed, ceramic capacitors (0603)  |
| C11, C12     | 2   | 4.7pF ±0.1pF, 50V C0G ceramic capacitors (0603)<br>TDK C1608COG1H4R7B                                 |
| C19          | 1   | 560pF ± 5%, 50V COG ceramic capacitor (0603)<br>TDK C1608COG1H561J                                    |

| DESIGNATION        | QTY | DESCRIPTION  |
|--------------------|-----|--|
| C20                | 1   | 0.022μF ±10%, 50V X7R ceramic capacitor (0603)<br>TDK C1608X7R1H223K                       |
| R1                 | 1   | 49.9Ω ±1% resistor (0603)  |
| R2                 | 1   | 13kΩ ±1% resistor (0603)   |
| R3                 | 1   | 1MΩ ±5% resistor (0603)  |
| R4                 | 1   | 200kΩ 12-turn potentiometer  |
| R5–R11             | 7   | 464Ω ±1% resistors (0603)  |
| REIN,<br>SMA1–SMA7 | 8   | SMA edge-mount connectors<br>Johnson Components 142-0701-801                               |
| Y1                 | 1   | 17.664MHz through-hole crystal resonator (with 14pF load cap)<br>Ecliptek ECX-5866-17.664M |
| JU1                | 1   | 3-pin header   |
| JU2–JU9            | 8   | 2-pin headers  |
| None               | 1   | Shunt  |
| None               | 1   | MAX9486 PC board   |
| U1                 | 1   | MAX9486EUG (24-pin TSSOP)  |

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## Quick Start

The MAX9486 EV kit is fully assembled and tested. **Do not turn on the power supplies until all connections are completed.**

### Recommended Equipment

- 3.3V, 500mA power supply
- 8.000kHz  $\pm 200$ ppm frequency source (or function generator)
- Frequency counter(s)/500MHz oscilloscope

### Procedure

- 1) Verify that a shunt is across JU1 (pins 1 and 2) ( $\overline{\text{SHDN}} = \text{DVDD}$ ).
- 2) Verify that there is no shunt across JU2–JU9.
- 3) Connect frequency counter(s) to the SMA connector(s) SMA1/2/3/4/5/6.
- 4) Connect the 8.000kHz frequency source to the REIN SMA connector.
- 5) Connect the positive of the power supply to the VDD, VDDP, and DVDD pads.
- 6) Connect the power ground to the GND pads.
- 7) Turn on the power supply, and enable the frequency source (or function generator).
- 8) Verify output frequencies SMA1/2/3/4/5/6 are at 35.328MHz  $\pm 200$ ppm.
- 9) Vary the 8.000kHz input by  $\pm 200$ ppm, then verify the output SMA1/2/3/4/5/6 tracks with the input and is at 35.328MHz  $\pm 200$ ppm.

## Detailed Description

The MAX9486 EV kit is a fully assembled and tested PC board. The EV kit evaluates the MAX9486, a high-performance clock synthesizer with an 8kHz input reference clock. The MAX9486 EV kit operates with a single 3.3V power supply, and provides six 35.328MHz outputs (CLK1–CLK6) and a jitter-suppressed 8kHz output REO. The output signals SMA1–SMA7 from the EV kit are scaled down by approximately 10 times to accommodate low 50 $\Omega$  impedance of equipment.

### Adjustable Charge Pump Current

The MAX9486 EV kit provides on-board adjustable charge-pump current options. To set the desired charge-pump current in  $\mu\text{A}$ , adjust the 200k $\Omega$  potentiometer R4 (k $\Omega$ ) so:

$$I_{\text{Charge\_Pump\_Current}} = 2400 / [(R4 + 13) + 1]$$

where R4 is set to 0 $\Omega$  at default.

### Jumper Selection

Jumper JU1 is incorporated to control the  $\overline{\text{SHDN}}$  pin of the MAX9486 device. See Table 1 for the JU1 function.

**Table 1. JU1 Function**

| SHUNT LOCATION | $\overline{\text{SHDN}}$ PIN | EV KIT FUNCTION |
|----------------|------------------------------|-----------------|
| Pins 1 and 2   | Connected to DVDD            | Enabled         |
| Pins 2 and 3   | Connected to GND             | Disabled        |

## Component Suppliers

| SUPPLIER    | PHONE        | FAX          | WEBSITE               |
|-------------|--------------|--------------|-----------------------|
| Ecliptek    | 800-433-1280 | 714-433-1234 | www.ecliptek.com      |
| Murata      | 770-436-1300 | 770-436-3030 | www.murata.com        |
| Taiyo Yuden | 800-348-2496 | 847-925-0899 | www.t-yuden.com       |
| TDK         | 847-803-6100 | 847-390-4405 | www.component.tdk.com |

**Note:** Indicate that you are using the MAX9486 when contacting these component suppliers.

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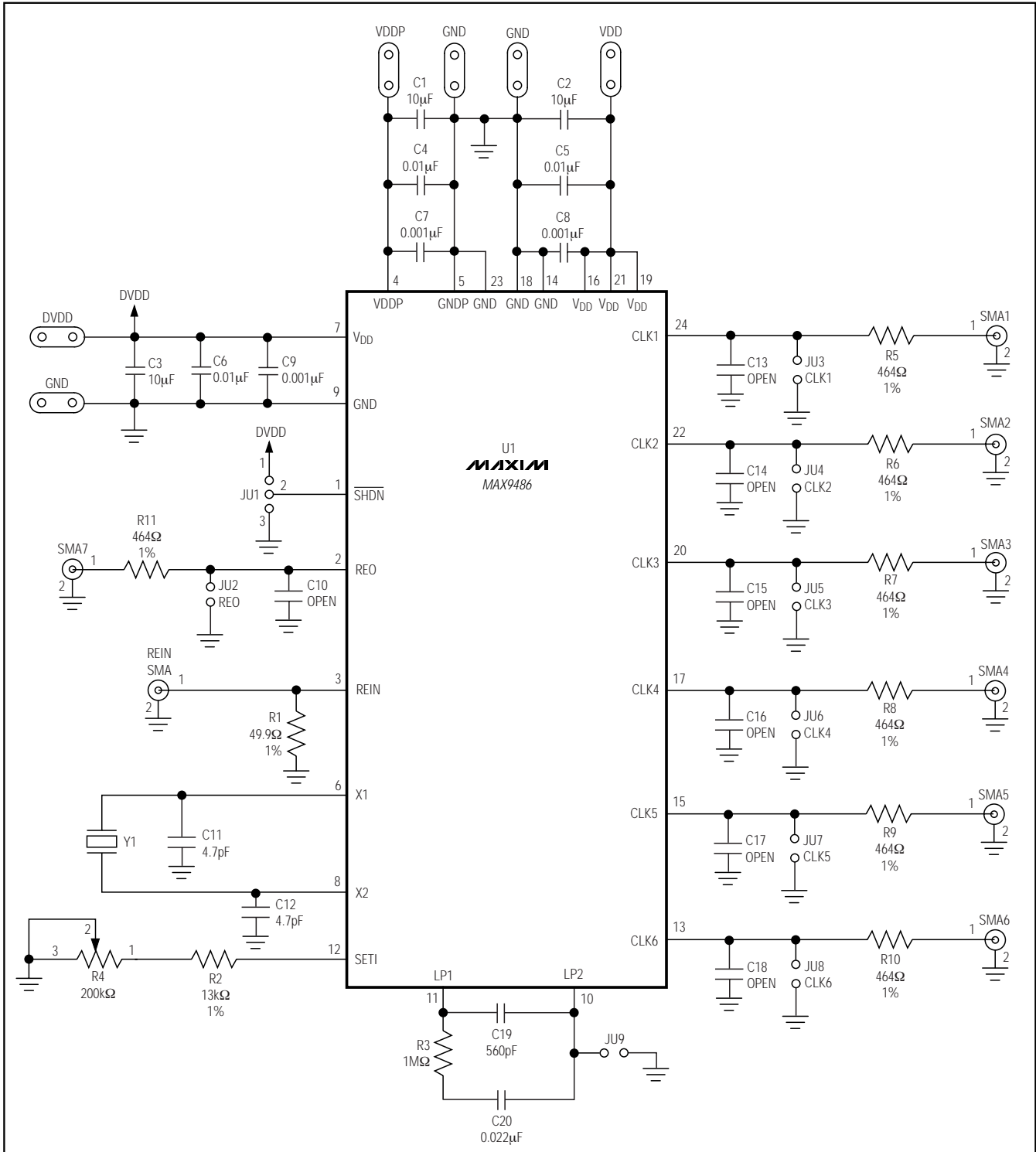


Figure 1. MAX9486 EV Kit Schematic

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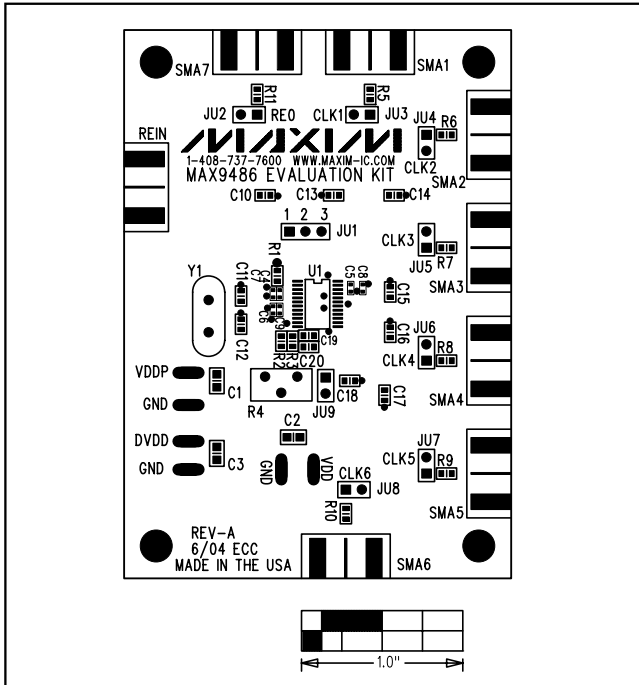


Figure 2. MAX9486 EV Kit Component Placement Guide—Component Side

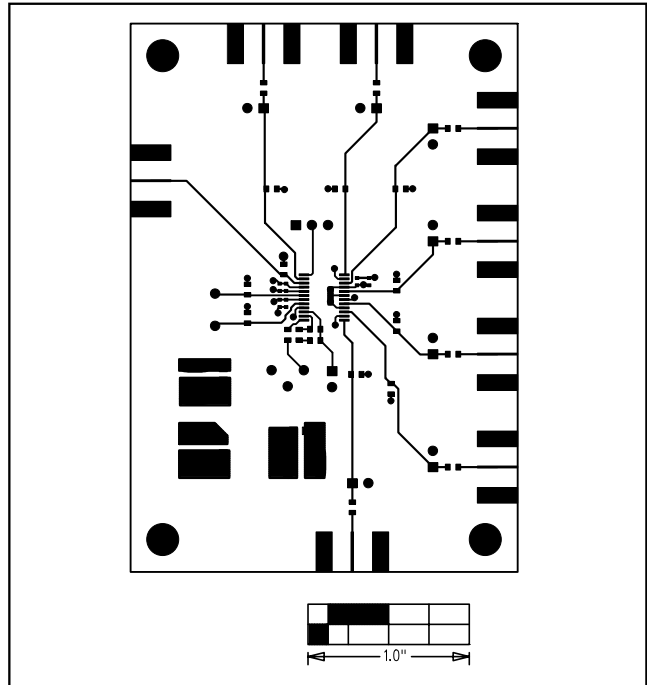


Figure 3. MAX9486 EV Kit PC Board Layout—Component Side

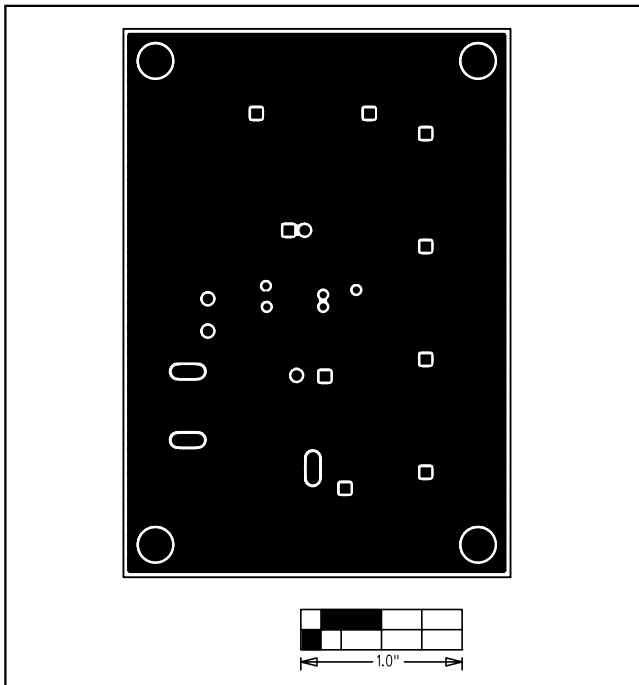


Figure 4. MAX9486 EV Kit PC Board Layout—Inner Layer 2 (GND Layer)

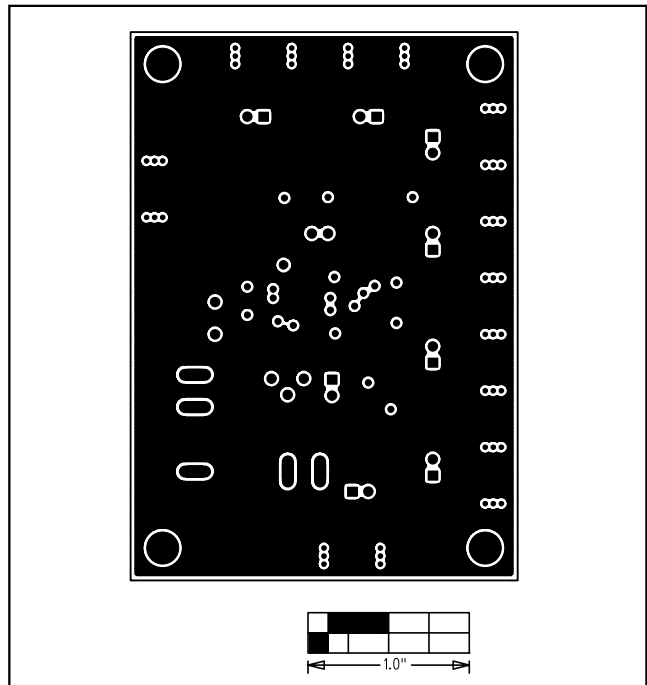


Figure 5. MAX9486 EV Kit PC Board Layout—Inner Layer 3 (DVDD Layer)

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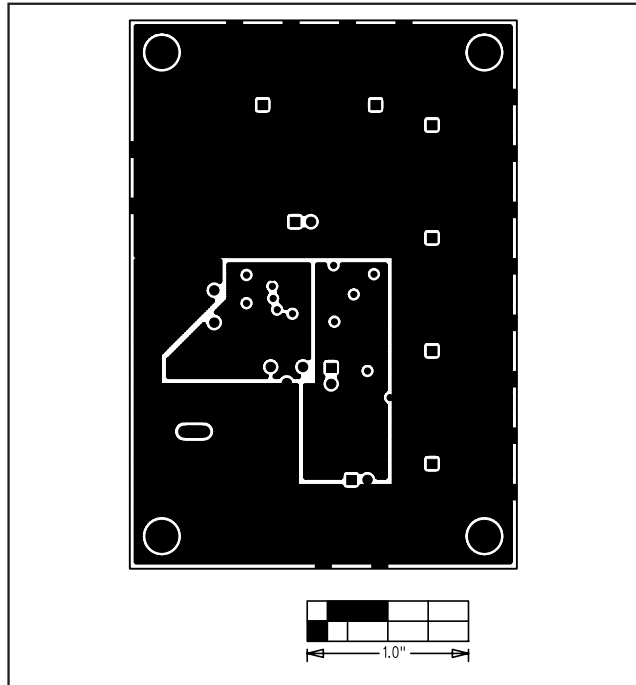


Figure 6. MAX9486 EV Kit PC Board Layout—Solder Side

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