

# ISL97516IUZEVALZ Evaluation Board Application Manual

## Description

The ISL97516IUZEVALZ evaluation board is an evaluation kit for evaluating the ISL97516, a step-up voltage regulator that operates with high frequency and high efficiency. This evaluation kit is designed to deliver over 90% efficiency.

The ISL97516IUZEVALZ kit provides a dip switch that allows users to select either 620kHz or 1.2MHz switching frequency.

## Key Features

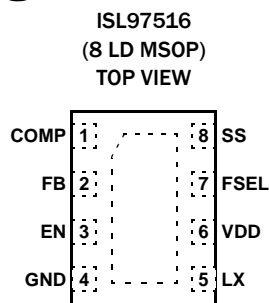
- A Complete evaluation platform for ISL97516 evaluation
- Input voltage: 2.3V to 5.5V
- Proven evaluation board layout
- Pb-free (RoHS compliant)

## What is Needed

The following instruments will be needed to perform testing:

- Power supplies
- DC electronic load
- Multimeters
- Oscilloscope
- Cables and wires

## Pin Configuration



## Ordering Information

| PART NUMBER      | DESCRIPTION                   |
|------------------|-------------------------------|
| ISL97516IUZEVALZ | Evaluation Board for ISL97516 |

## Quick Setup Guide

1. Connect power supply between headers of  $V_{IN}$  and GND. The positive output of the power supply should be connected to  $V_{IN}$  header. Set power supply voltage between 2.3V and 5V, and current limit at 3A.
2. Connect E-load between headers of  $V_{OUT}$  and GND. The positive input of the E-load should be connected to  $V_{OUT}$  header. Set E-load current. The load current should not exceed the maximum output current the part can supply.
3. Close pins 1 and 4 of S1 to tie FSEL pin to VIN. This will set the switching frequency to 1.2MHz. Open pins 1 and 4 to pull FSEL to ground with  $R_4$  to set 620kHz.
4. Close pins 2 and 3 of S1 to tie EN pin to VIN to enable the part. To disable the part, open pins 2 and 3 to pull EN to ground with  $R_3$  to disable the part.

Make sure all the connections on the evaluation board are correct, then turn on power supply and E-load. The part starts to operate.

## Maximum Output Current

The MOSFET current limit is normally 2.0A and guaranteed 1.7A. This restricts the maximum output current that the ISL97516 can drive. Table 1 shows the ISL97516EVAL1Z maximum output current,  $I_{OMAX}$  in different input and output voltages.

TABLE 1. TYPICAL MAXIMUM  $I_{OUT}$  VALUES

| $V_{IN}$ (V) | $V_{OUT}$ (V) | $I_{OMAX}$ (mA) |
|--------------|---------------|-----------------|
| 2.5          | 5             | 870             |
| 2.5          | 9             | 500             |
| 2.5          | 12            | 380             |
| 3.3          | 5             | 1150            |
| 3.3          | 9             | 655             |
| 3.3          | 12            | 500             |
| 5            | 9             | 990             |
| 5            | 12            | 750             |

## Board Design Schematic

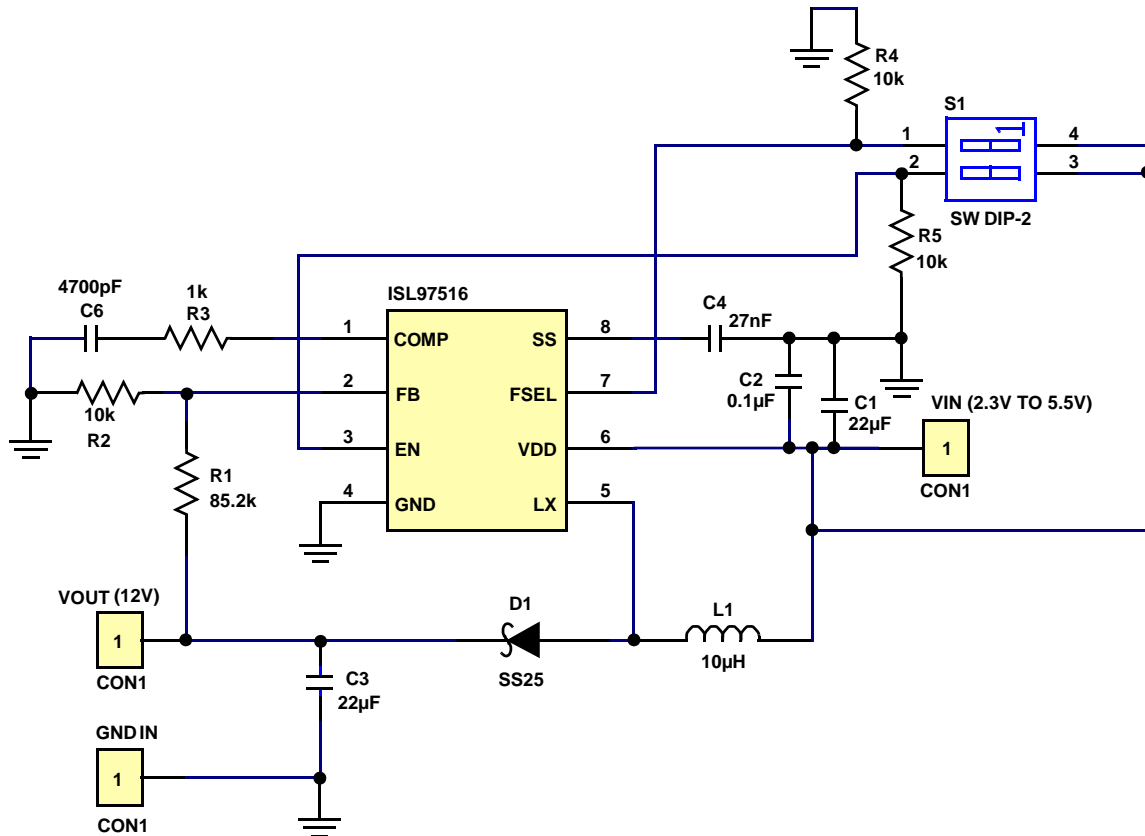


FIGURE 1. SCHEMATIC

TABLE 2. ISL97516IUZEVALZ BILL OF MATERIALS (BOM)

| ITEM | QTY | REFERENCE  | PART DESCRIPTION | PCB FOOTPRINT  | PART NUMBER        | VENDOR     |
|------|-----|------------|------------------|----------------|--------------------|------------|
| 1    | 1   | C4         | 27nF             | 603            |                    | TDK        |
| 2    | 1   | C6         | 4700pF           | 603            |                    | TDK        |
| 3    | 1   | C2         | 0.1µF/16V        | 603            | C1068X7R1H104K     | TDK        |
| 4    | 1   | R1         | 85.2k            | 603            |                    | WALSIN     |
| 5    | 3   | R2, R4, R5 | 10k              | 603            | WR06W1002JTL       | WALSIN     |
| 6    | 1   | R3         | 1k               | 603            |                    |            |
| 8    | 1   | C3         | 22µF             | 1206           |                    | MURATA     |
| 9    | 1   | C1         | 22µF             | 1206           | GRM31CR61C226KE15L | MURATA     |
| 10   | 1   | L1         | 10µH             | CDRH8D43-100NC | CDRH8D43-100NC     | SUMIDA     |
| 11   | 1   | U1         | ISL97516         | MSOP-8         | ISL97516           | INTERSIL   |
| 12   | 1   | VOUT (12V) | CON1             | Powerpost      |                    |            |
| 13   | 1   | VIN (3.3V) | CON1             | Powerpost      |                    |            |
| 14   | 1   | GND IN     | CON1             | Powerpost      |                    |            |
| 15   | 1   | D1         | SS25             | DO-214A        | SS25               | Fairchild  |
| 16   | 1   | S1         | SWDIP-2          | DIP4           |                    | CKN3001-ND |

PCB Layout

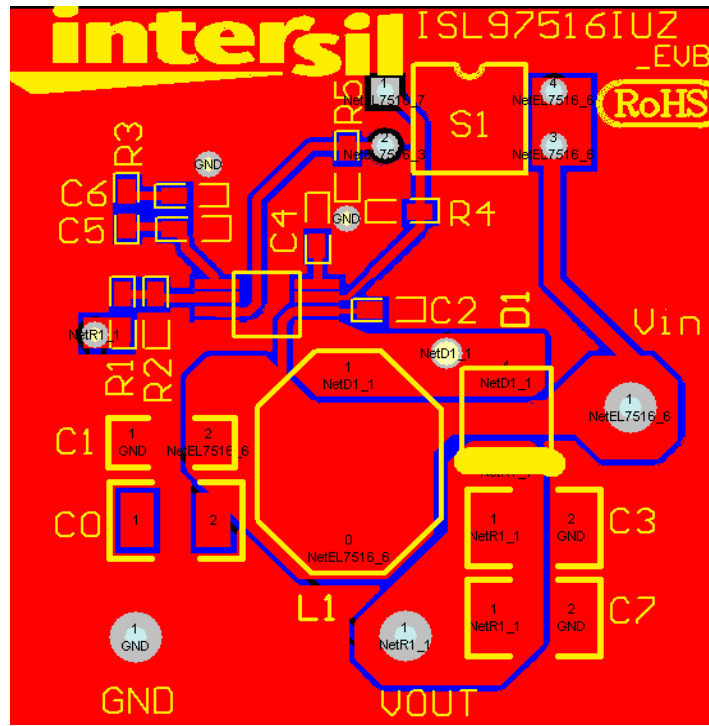


FIGURE 1. EVALUATION BOARD ASSEMBLY LAYER

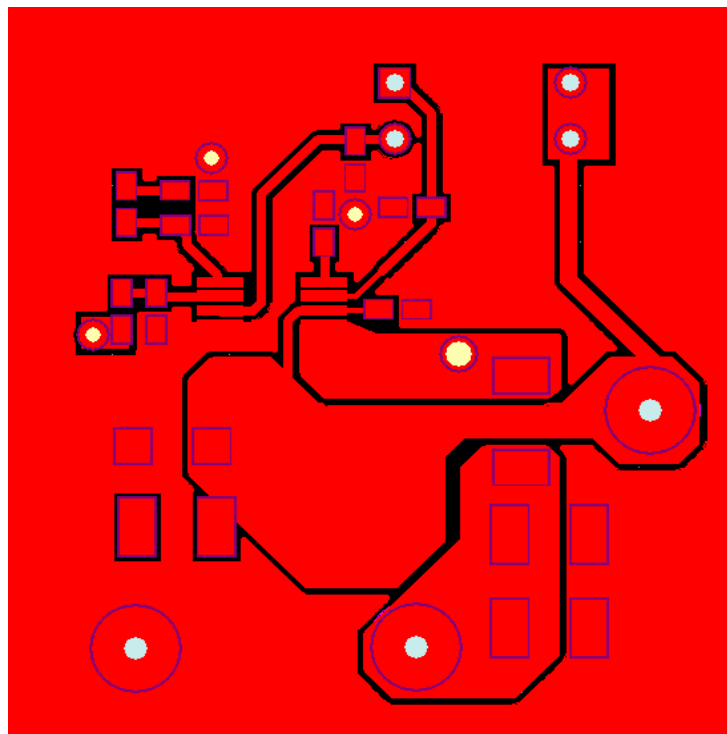


FIGURE 2. TOP LAYER

PCB Layout (Continued)

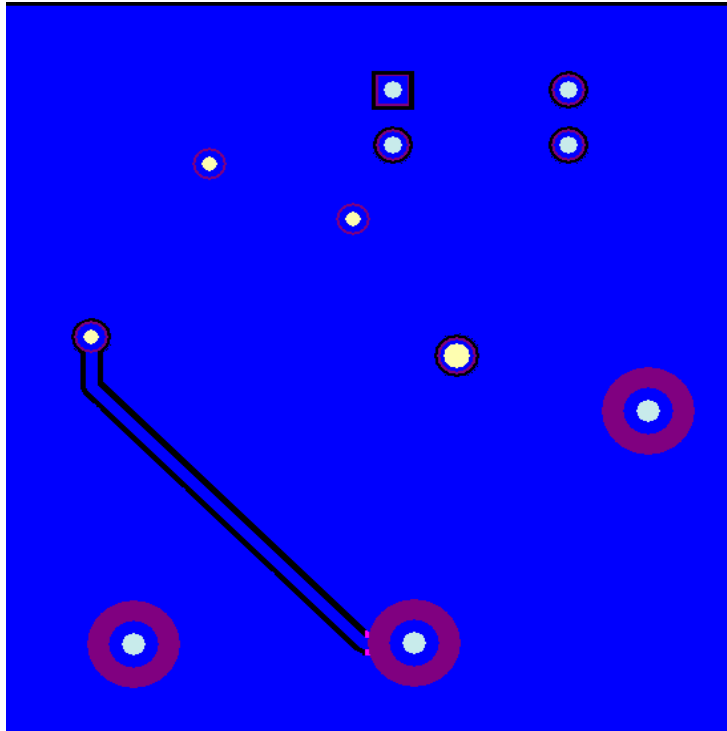


FIGURE 3. BOTTOM LAYER

Intersil Corporation reserves the right to make changes in circuit design, software and/or specifications at any time without notice. Accordingly, the reader is cautioned to verify that the Application Note or Technical Brief is current before proceeding.

For information regarding Intersil Corporation and its products, see [www.intersil.com](http://www.intersil.com)