ISL97516 Evaluation Board Application Manual

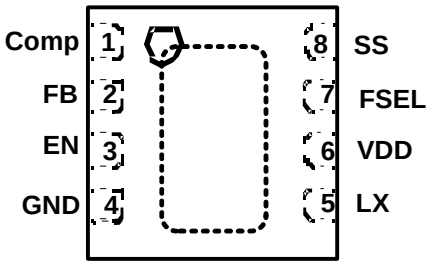
Description

The ISL97516 EVB 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 deliever over 90% efficiency.

The ISL97516 EVB kit provides a dip switch that allows users to select either 620kHz or 1.2MHz switching frequency.

Pinout

ISL97516
(10L µTDFN)
TOP VIEW



Features

- A Complete Evaluation Platform for the ISL97516 evaluation
- Input Voltage: 2.3V to 5.5V
- Proven EVB Layout
- RoSH compliant

What is Needed

The following instruments will be needed to perform testing:

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

Ordering Information

PART #	DESCRIPTION
ISL97516IRTZEVAL	Evaluation Board for ISL97516

Quick Setup Guide

Step 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.*

Step 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.*

Step 3: *Close pin 1 and pin 4 of S1 to tie FSEL pin to VIN to set 1.2MHz switching frequency. Open pin 1 and pin 4 to pull FSEL to ground with R4 to set 620kHz.*

Step 4: *Close pin 2 and pin 3 of S1 to tie EN pin to VIN to enable the part. Open pin 2 and pin 3 to pull EN to ground with R3 to disable the part.*

Step 5: *Make sure all the connections on the EVB are correct, then turn on power supply and E-load. The part starts to operate.*

Maximum Output Current

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

TABLE 1. Typical Maximumu 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

Table 1 shows typical maximum I_{OUT} values for 1.2MHz switching frequency and 10µH inductor

Board Design

Schematic

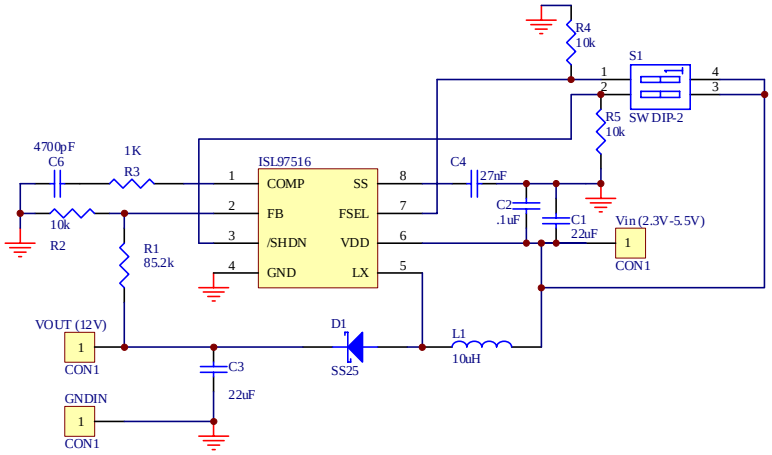
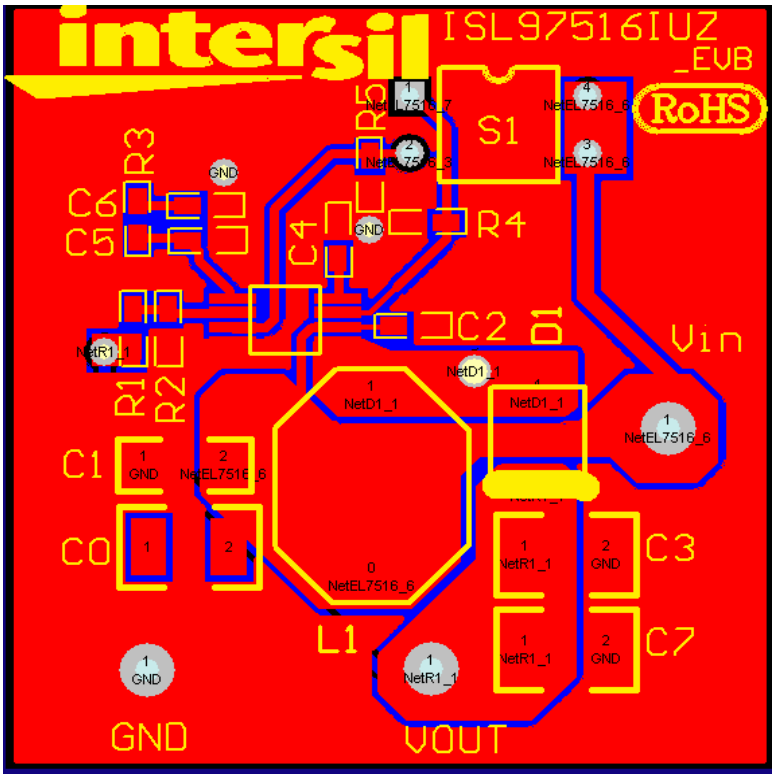


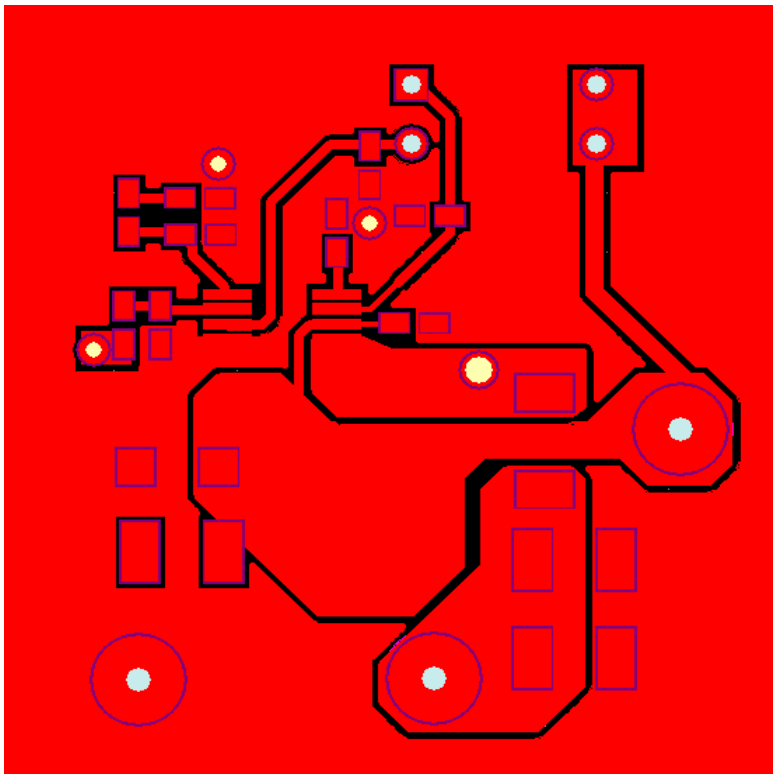
FIGURE 1. SCHEMATIC

BOM for ISL97516 Rev. A Standard Demo Board					
Description	Quantity	Designator	Size	Manufacture	Mfg. Part Number
27nF	1	C4	603	TDK	
4700pF	1	C6	603	TDK	
0.1uF/16V	1	C2	603	TDK	C1068X7R1H104K
85.2K	1	R1	603	WALSIN	
10K	3	R2,R4,R5	603	WALSIN	WR06W1002JTL
1K	1	R3	603		
22uF	1	C3	1206	MURATA	GRM31CR61C226KE15L
22uF	1	C1	1206	MURATA	GRM31CR61C226KE15L
10uH	1	L1	CDRH8D43-100NC	SUMIDA	CDRH8D43-100NC
ISL97516	1	U1	MSOP-8	INTERSIL	ISL97516
CON1	1	VOUT (12V)	POWERPOST		
CON1	1	Vin (3.3V)	POWERPOST		
CON1	1	GNDIN	POWERPOST		
SS25	1	D1	DO-214A	Fairchild	SS25
SW DIP-2	1	S1	DIP4	CKN3001-ND	

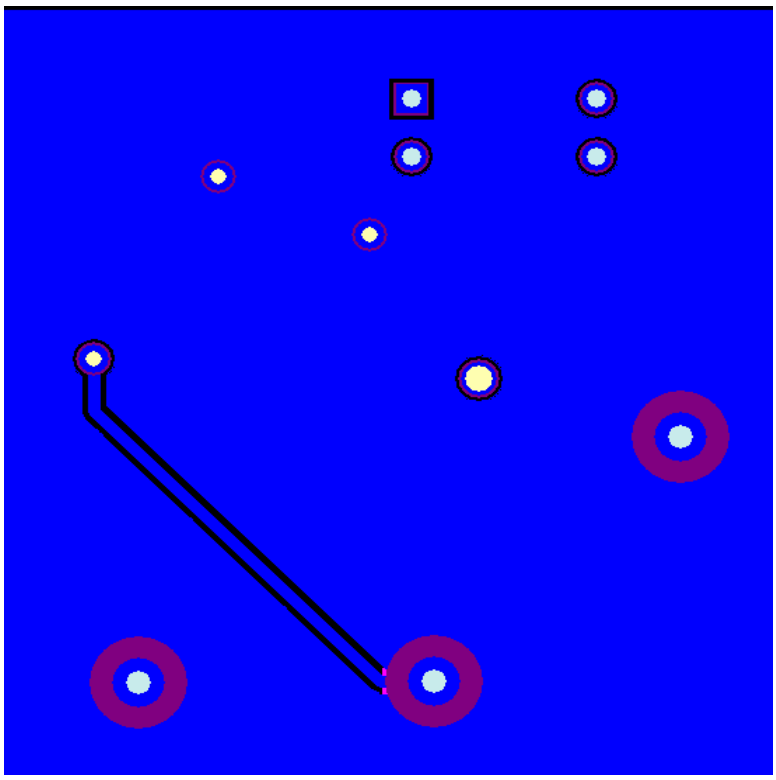
PCB Layout



EVB Assembly Layer



TOP LAYER



BOTTOM LAYER