# ISL97671/2/3/4IRZ-EVAL Quick Start Guide

This quick start guide pertains to the ISL97671/2/3/4IRZ-EVAL Evaluation Board. This board comes populated with 72 LED's in a 6P12S configuration to simplify evaluation and testing. Please install the Sunlight ISL97670 GUI, which will be used to control these parts via $I^2C$. Please note the slave address on the ISL97671, ISL97672, ISL97673, ISL97674 is hexadecimal 58, see Figure 1. Please refer to “ISL97671” on page 1, “ISL97672” on page 2, “ISL97673” on page 2 and “ISL97674” on page 3, for jumper settings and power-up instructions.

## ISL97671

1. Jumpers JP7B, JP8B, JP9, JP10, JP11, JP12 and JP13 should be inserted for LED's in 6P12S configuration.
2. Jumpers in line 1, plus JP14, JP15, JP16, JP17, JP18 and JP19 should be inserted for LED's in 6P10S configuration.
3. Jumper JP5A, JP3A and JP6A inserted.
4. Connect the $I^2C$ interface board to the ISL97671/2/3/4IRZ-EVAL Evaluation Board as shown in Figure 2.

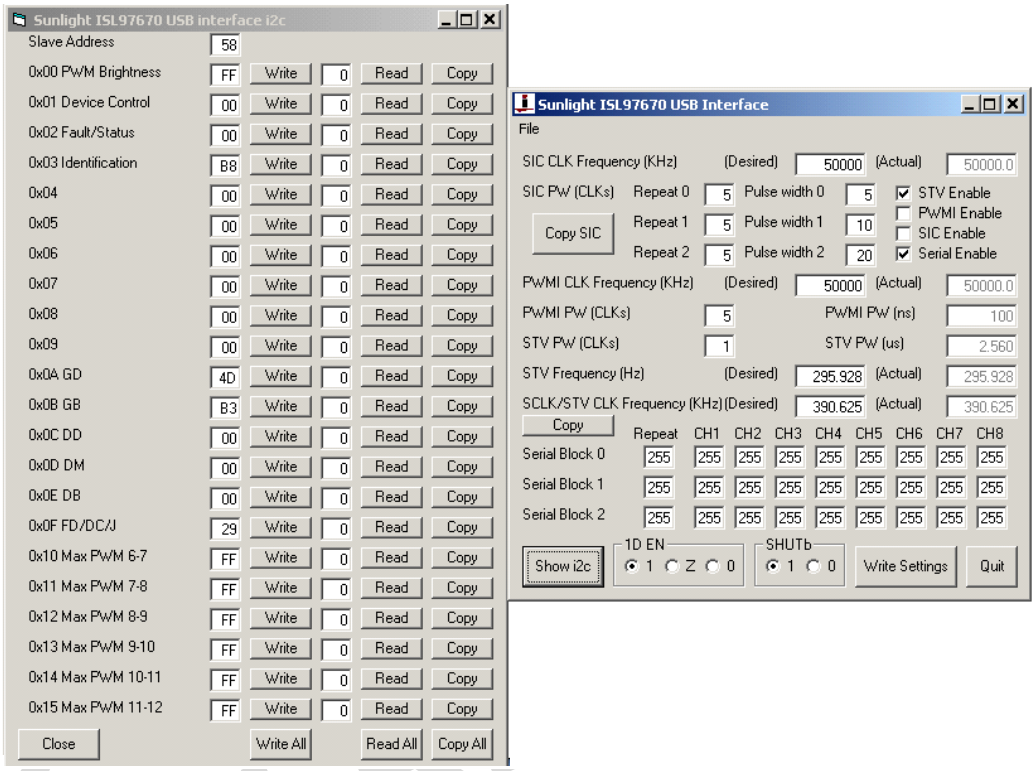



FIGURE 1. EXAMPLE OF GUI INTERFACE

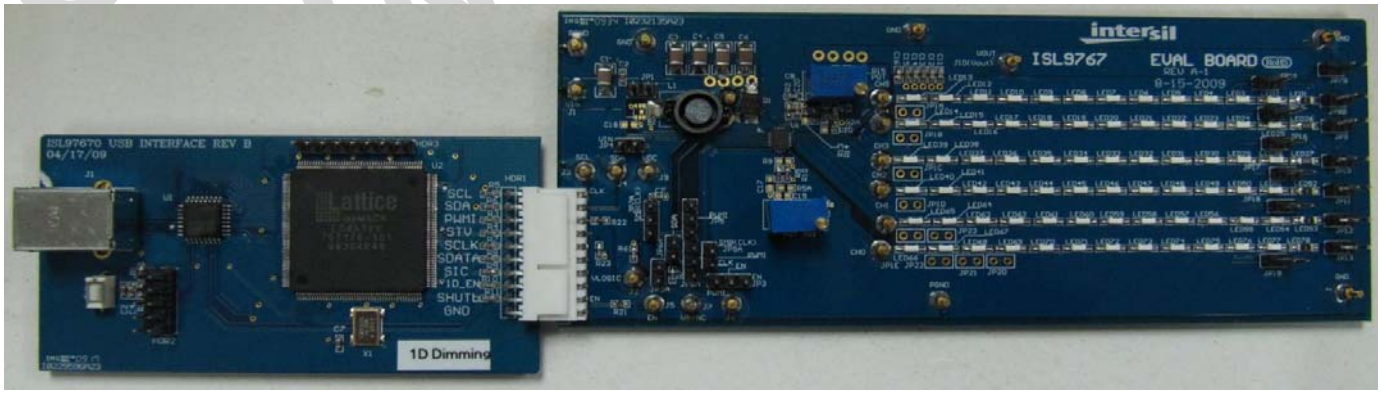



FIGURE 2. $I^2C$ INTERFACE BOARD CONNECTED TO ISL97671/2/3/4IRZ-EVAL EVALUATION BOARD

5. JP1 should be inserted only if the input fault MOSFET Q1 is not used.
6. Apply input voltage to the $V_{IN}$ and GND post on the top left corner of the ISL97671/2/3/4IRZ-EVAL Evaluation Board.
7. JP7A in the bottom position corresponds to SEL2 pin being high, which corresponds to fixed delay; floating JP7A corresponds to float on SEL2 pin, which corresponds to equal phase shift; inserting JP7A in the top position, corresponds to no delay.
8. Jumper JP3 should be in the right position and EN signal from a 2.5V/3.3V logic supply connected to the EN jumper, J5.
9. Jumper JP8A should be in the top position and PWM signal from a function generator connected to the PWMI jumper, J6.
10. Insert JP5A and insert J5 in the bottom position.
11. Jumper JP3 should be in the left position and EN signal (2.5V or 3.3V) from function generator connected to PWMI jumper, J6.
12. To enable the board, write a hex 05 in register 01; by writing a hex 01 in register 01 will enable DPST (see datasheet for more details); writing a hex 03 in register 01 will allow PWM dimming only.
13. The LED current is calibrated to 20mA/channel can be programmed by connecting a current meter across JP7B and varying POT $R_{15}$ by Equation 1:

$$I_{LED} = 401.8/R_{15} \quad \text{(EQ. 1)}$$

The measured current divided by six is the LED current per channel. For example, 120mA measured current will correspond to 20mA/channel.

14. The PWM dimming frequency is calibrated to 200Hz on this evaluation board but can be adjusted by varying POT $R_{11}$ by Equation 2:

$$F_{SW} = (6.66 \times 10^{7})/R_{11} \quad \text{(EQ. 2)}$$

15. ISL97671/2/3/4IRZ-EVAL Evaluation Board should be powering 6P10S or 6P12S LED's.

## ISL97672

1. Jumpers JP7B, JP8B, JP9, JP10, JP11, JP12 and JP13 should be inserted for LED's in 6P12S configuration.
2. Jumpers in line 1, plus JP14, JP15, JP16, JP17, JP18 and JP19 should be inserted for LED's in 6P10S configuration.
3. Jumper JP8A inserted in top position.
4. Jumper JP3 should be in the right position.
5. JP1 should be inserted only if the input fault MOSFET Q1 is not used.
6. Apply input voltage to the $V_{IN}$ and GND post on the top left corner of the ISL97671/2/3/4IRZ-EVAL Evaluation Board.
7. Apply a 3.3V signal to EN jumper, J5.
8. Apply a PWM signal from a function generator to PWMI jumper, J6.
9. The LED current is calibrated to 20mA/channel can be programmed by connecting a current meter across JP7B and varying POT $R_{15}$ by Equation 3:

$$I_{LED} = 401.8/R_{15} \quad \text{(EQ. 3)}$$

The measured current divided by six is the LED current per channel. For example, 120mA measured current will correspond to 20mA/channel.

10. The boost switching frequency is calibrated to 600kHz on this evaluation board but can be adjusted by varying POT $R_{11}$ by Equation 4:

$$F_{SW} = (5 \times 10^{10})/R_{11} \quad \text{(EQ. 4)}$$

11. At this point, the ISL97671/2/3/4IRZ-EVAL Evaluation Board should be powering 6P10S or 6P12S LED's.

## ISL97673

1. Jumpers JP7B, JP8B, JP9, JP10, JP11, JP12 and JP13 should be inserted for LED's in 6P12S configuration.
2. Jumpers in line 1, plus JP14, JP15, JP16, JP17, JP18 and JP19 should be inserted for LED's in 6P10S configuration.
3. Jumpers JP3A and JP6A inserted.
4. Connect the $I^2C$ interface board to the ISL97671/2/3/4IRZ-EVAL Evaluation Board as shown in Figure 3.


**FIGURE 3. I²C INTERFACE BOARD CONNECTED TO ISL97671/2/3/4IRZ-EVAL EVALUATION BOARD**

5. JP1 should be inserted only if the input fault MOSFET Q1 is not used.
6. Apply input voltage to the $V_{IN}$ and GND post on the top left corner of the ISL97671/2/3/4IRZ-EVAL Evaluation Board.

   For PWM dimming only go to 6-7; for SMBus dimming go to 8-10.
7. JP7A in the bottom position corresponds to SEL2 pin being high, which corresponds to fixed delay; floating JP7A corresponds to float on SEL2 pin, which corresponds to equal phase shift; inserting JP7A in the top position, corresponds to no delay.
8. Jumper JP3 should be in the left position and EN/PWM signal from function generator connected to PWMI jumper, J6.
9. To enable the board, write a hex 05 in register 01; writing a hex 01 in register 01 will enable DPST (see datasheet for more detail); writing a hex 03 in register 01 will only allow external PWM signal for dimming.
10. The LED current is calibrated to 20mA/channel can be programmed by connecting a current meter across JP7B and varying POT $R_{15}$ by Equation 5:

$$I_{LED} = 401.8/R_{15} \quad \text{(EQ. 5)}$$

The measured current divided by six is the LED current per channel. For example, 120mA measured current will correspond to 20mA/channel.

11. The PWM dimming frequency is calibrated to 200Hz on this evaluation board but can be adjusted by varying POT $R_{11}$ by Equation 6:

$$F_{SW} = (6.66 \times 10^7)/R_{11} \quad \text{(EQ. 6)}$$

12. At this point, the ISL97671/2/3/4IRZ-EVAL Evaluation Board should be powering 6P10S or 6P12S LED's.

## ISL97674

1. Jumpers JP7B, JP8B, JP9, JP10, JP11, JP12 and JP13 should be inserted for LED's in 6P12S configuration.
2. Jumpers in line 1, plus JP14, JP15, JP16, JP17, JP18 and JP19 should be inserted for LED's in 6P10S configuration.
3. Insert jumpers JP3A, JP5A and JP6A.
4. Connect the I²C interface board to the ISL97671/2/3/4IRZ-EVAL Evaluation Board as shown in Figure 4.

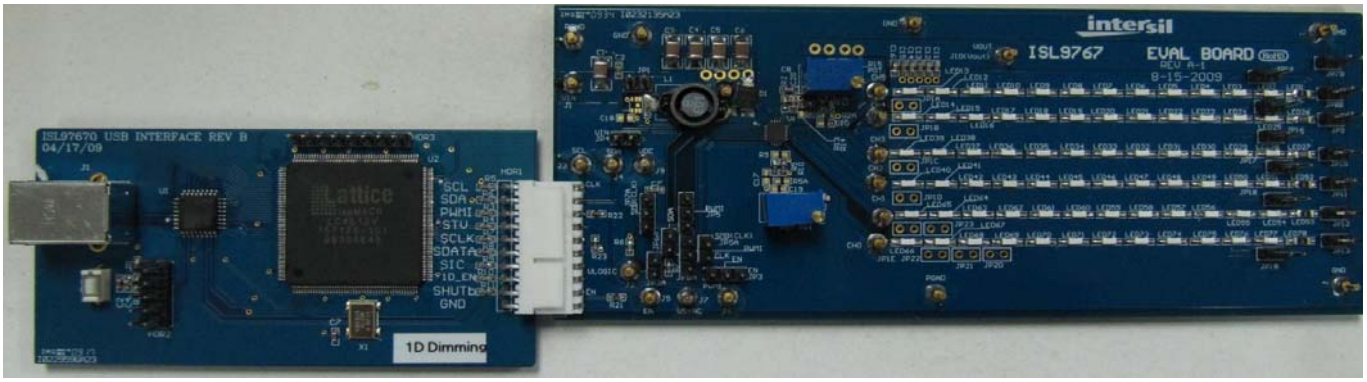



**FIGURE 4. I²C INTERFACE BOARD CONNECTED TO ISL97671/2/3/4IRZ-EVAL EVALUATION BOARD**

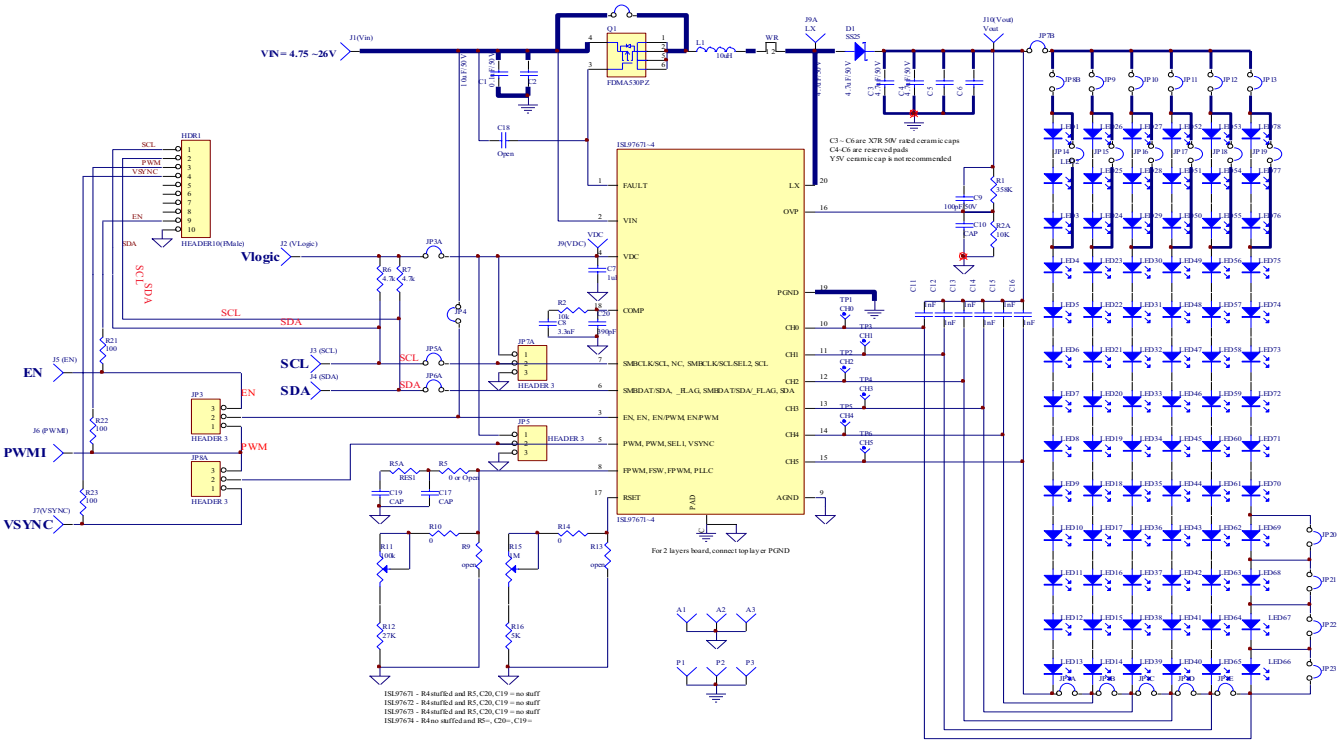
5. Jumper JP3 should be in the left position and En/PWM signal from function generator connected to PWMI jumper, J6.
6. JP1 should be inserted only if the input fault MOSFET Q1 is not used.
7. Apply input voltage to the $V_{IN}$ and GND post on the top left corner of the ISL97671/2/3/4IRZ-EVAL Evaluation Board.
8. Apply 60Hz $V_{SYNC}$ signal to $V_{SYNC}$ post, J7.
9. Apply a PWM signal from a function generator to PWMI jumper, J6.
10. To enable the LEDs, write a hex 05 in register 01.
11. The LED current is calibrated to 20mA/channel can be programmed by connecting a current meter across JP7B and varying POT $R_{15}$ by Equation 7:

$$I_{LED} = 401.8/R_{15} \quad \text{(EQ. 7)}$$

The measured current divided by six is the LED current per channel. For example, 120mA measured current will correspond to 20mA/channel.

12. The boost switching frequency can be programmed to either 600kHz or 1.2MHz by writing a '1' or a '0' in hex register 08, Bit 2. See ISL97674 datasheet, table 2B for more details.
13. At this point, the ISL97671/2/3/4IRZ-EVAL Evaluation Board should be powering 6P10S or 6P12S LED's.

# ISL97671/2/3/4IRZ-EVAL Evaluation Board Schematic




# ISL97671/2/3/4IRZ-EVAL Evaluation Board Layout

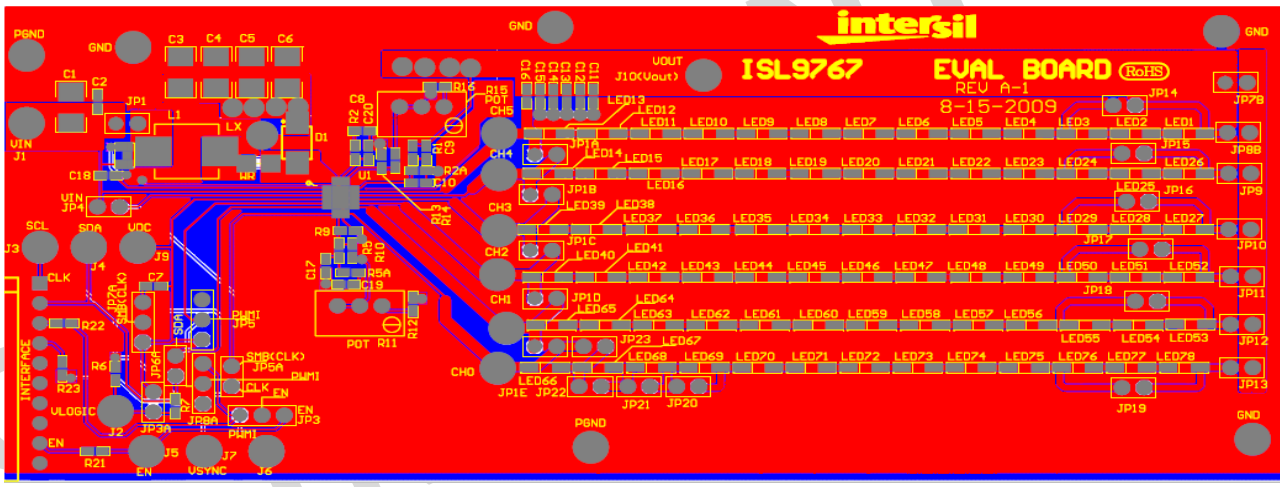



**FIGURE 5. TOP LAYER**

## ISL97671/2/3/4IRZ-EVAL Evaluation Board Layout (Continued)

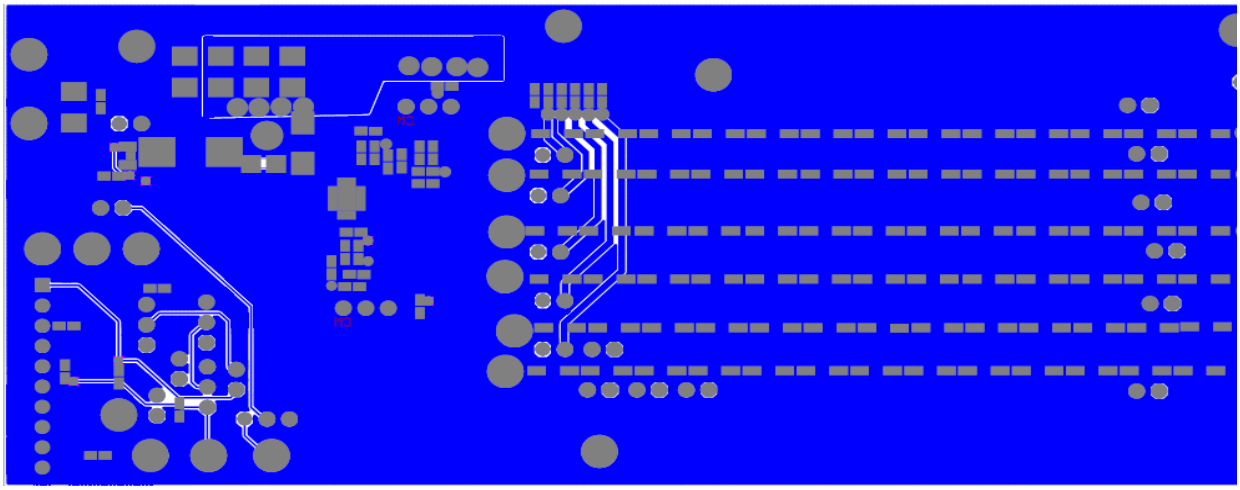


FIGURE 6. BOTTOM LAYER