

ISL97632IRTZ-EVALZ

Using the ISL97632IRTZ-EVALZ White LED Driver Demo Board

AN1496  
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Introduction

The ISL97632 is a white LED driver with digital dimming. The demo kit schematic is shown in Figure 1. It is made up of an ISL97632IRTZ-EVALZ evaluation board connected with a USB adapter board that can be programmed by a PC running Windows XP (Note 1).

Jumpers JP1 to JP5 can be optionally used to disable five of the seven LEDs. The ISL97632 is guaranteed to drive six LEDs (3.5V/30mA type). It is possible to drive seven LEDs at 20mA if the total VF is lower than the OVP threshold and the input voltage is at nominal rather than low level.

Jumper S1 is used to enable ISL97632 that must be connected with the center and right most pins.

Jumper S2 is used to connect the single wire digital input that must be connected with the center and the left most pins.

Jumper S3 is not used but must be connected with the center and bottom pins.

Jumper S4 is used to select either a 4.75Ω resistor R1 or a 100Ω potentiometer, R2. If R1 is used, connect S4 with the center and the left most pins. This resistance sets the LED supply current.

$$I_{LED} = (9.8 + 5.68 \cdot S) / R \tag{EQ. 1}$$

where S is the programming step from 0 to 31.

Steps for Setting up the Demo Board:

1. Unzip the ISL97632-v091.zip file (download from <http://www.intersil.com/ISL97632> or contact Intersil's Technical Support Center at (800) 550-7364.
2. Run setup.exe.
3. Select the numbers of LEDs used with proper jumpers.
4. Connect the USB to the PC.
5. Apply a DC voltage of 2.7V to 5.5V to V<sub>IN</sub>. The input voltage must be lower than the expected output voltage for the boost function. If only one or two LEDs are used and the input is higher than the output, the LED may light but it is not a valid operation for ISL97632.
6. Use R<sub>1</sub> or R<sub>2</sub> with proper jumpers to set the desirable LED peak current.
7. Open the ISL97632 program and adjust the LED current.

Sometimes Steps 4 through 7 may need to be repeated if the PC does not recognize the USB device when it is inserted.

NOTE:

1. Intersil cannot guarantee the software compatibility on all PCs running Windows XP.

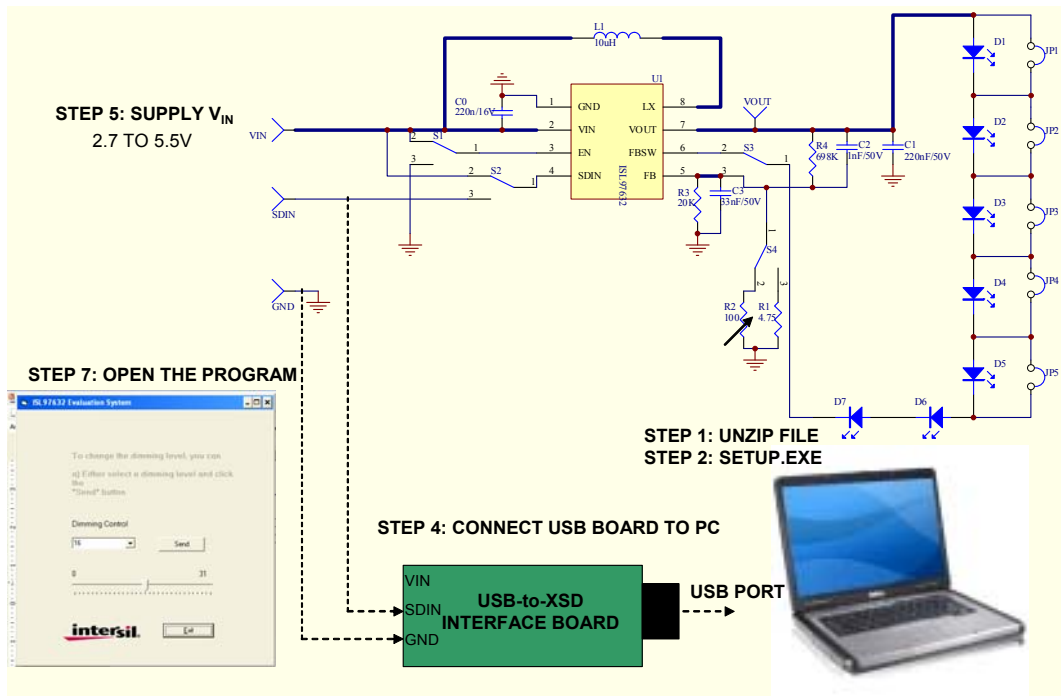


FIGURE 1. SCHEMATIC OF ISL97632IRTZ-EVALZ DEMO BOARD

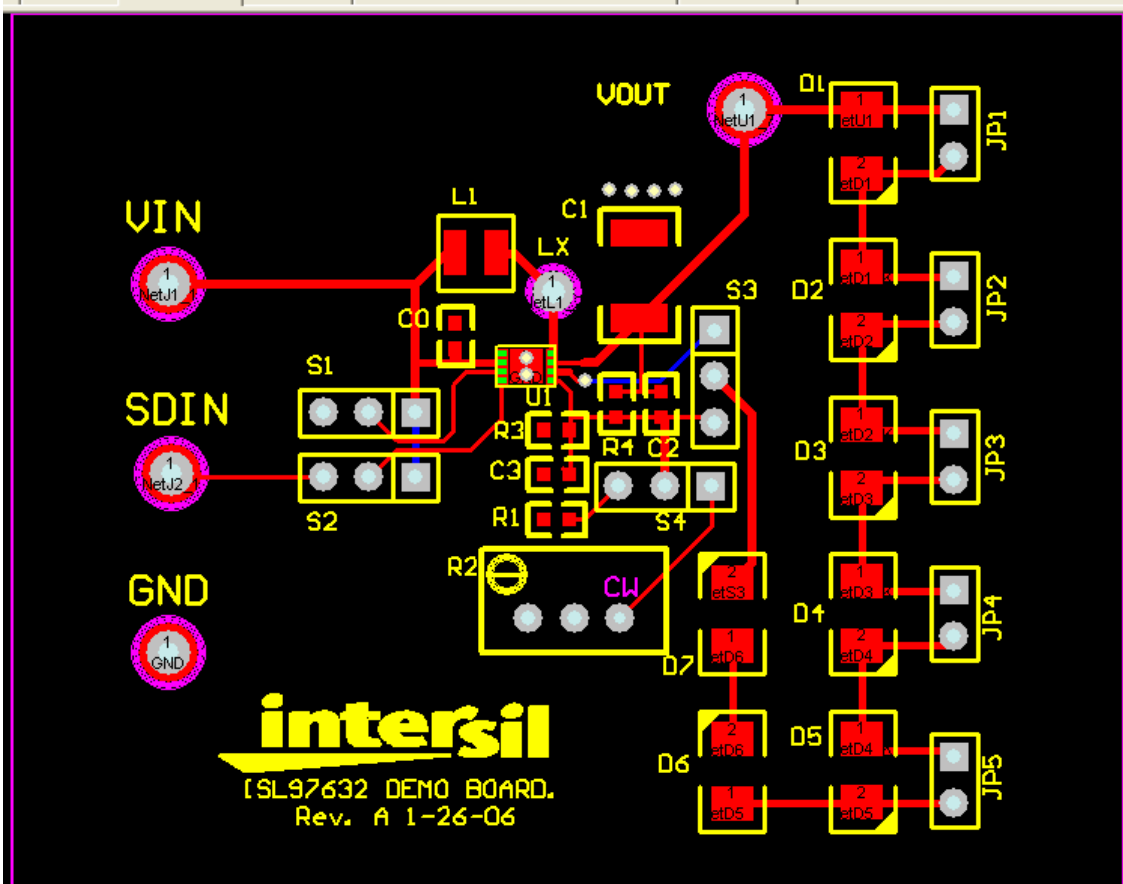


FIGURE 2. ISL97632IRTZ-EVALZ DEMO BOARD. RED TRACES ARE ON TOP LAYER AND BLUE TRACES ARE ON BOTTOM LAYER, RESPECTIVELY

TABLE 1. ISL97632IRTZ-EVALZ DEMO BOARD BOM

| ITEM | QTY | REF      | DESCRIPTION     | VENDOR    | PART NO.          | PACKAGE           |
|------|-----|----------|-----------------|-----------|-------------------|-------------------|
| 1    | 1   | C2       | 1nF/50V         |           |                   | 0603              |
| 2    | 1   | R1       | 4.75            |           |                   | 0603              |
| 3    | 1   | L1       | 22 $\mu$ H      | Coilcraft | 1008PS-223KL      | 3.81mmx3.81mm     |
|      |     |          | 10 $\mu$ H      | Coilcraft | 1008PS-103KL      | 3.81mmx3.81mm     |
| 4    | 1   | R3       | 20k             |           |                   | 0603              |
| 5    | 1   | C3       | 33nF/50V        |           |                   | 0603              |
| 6    | 1   | R2       | 100             |           |                   | 0603              |
| 7    | 1   | C0       | 220n/16V        |           |                   | 0603              |
| 8    | 1   | C1       | 4.7 $\mu$ F/50V | Murata    | GRM32ER71H475KA88 | 1210              |
| 9    | 1   | R4       | 698k            |           |                   | 0603              |
| 10   | 1   | J3       | GND             |           |                   | POWERPOST         |
| 11   | 1   | U1       | LED Driver      | Intersil  | ISL97632          | TDFN2X3           |
| 12   | 1   | JP3      | JUMPER          |           |                   | JUMPER-2PIN       |
| 13   | 1   | JP4      | JUMPER          |           |                   | JUMPER-2PIN       |
| 14   | 1   | JP5      | JUMPER          |           |                   | JUMPER-2PIN       |
| 15   | 1   | JP2      | JUMPER          |           |                   | JUMPER-2PIN       |
| 16   | 1   | JP1      | JUMPER          |           |                   | JUMPER-2PIN       |
| 17   | 1   | J2       | SDIN            |           |                   | POWERPOST         |
| 18   | 1   | J1       | VIN             |           |                   | POWERPOST         |
| 19   | 1   | J4       | VOUT            |           |                   | POWERPOST         |
| 20   | 7   | D1 to D7 | LED             | OSRAM     | LW Y3SG           | 0.6mm MircoSIDLED |
| 1    | 1   | C2       | 1nF/50V         |           |                   | 0603              |
| 2    | 1   | R1       | 4.75            |           |                   | 0603              |
| 3    | 1   | L1       | 22 $\mu$ H      | Coilcraft | 1008PS-223KL      | 3.81mmx3.81mm     |

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