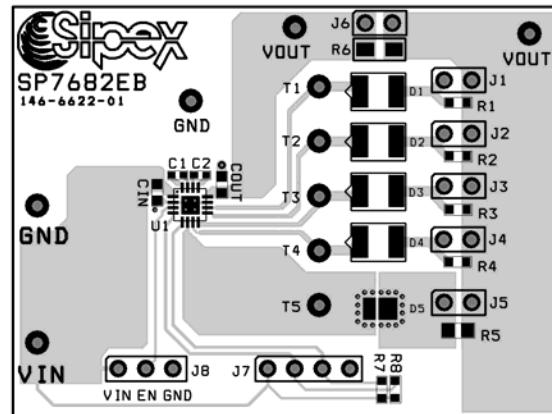


Evaluation Board Manual

- Output current up to 500mA for Flash LED
- Triple mode 1x, 1.5x and 2x charge pump
- 2.4MHz switching frequency
- I²C serial interface
- Flash LED output current adjustable in 10mA steps to 500mA
- Backlight LED output current adjustable in 0.5mA steps to 30mA
- Time Out function to protect the LED in Flash mode (2s)
- Built-in over-voltage and over-current protection
- Automatic soft start limits in-rush current
- Thermal shutdown protection
- Automatic soft start limits in-rush current
- Space saving 16-pin 3x3 QFN package



DESCRIPTION

The **SP7682 Evaluation Board** is designed to help the user evaluate the performance of the SP7682 for use as a Backlight and Flash LED Driver. The evaluation board is a completely assembled and tested surface mount board which provides easy probe access points to all SP7682 inputs and outputs so that the user can quickly connect and measure electrical characteristics and waveforms. The Evaluation Board schematic diagram is shown at Figure 1.

BOARD SCHEMATIC

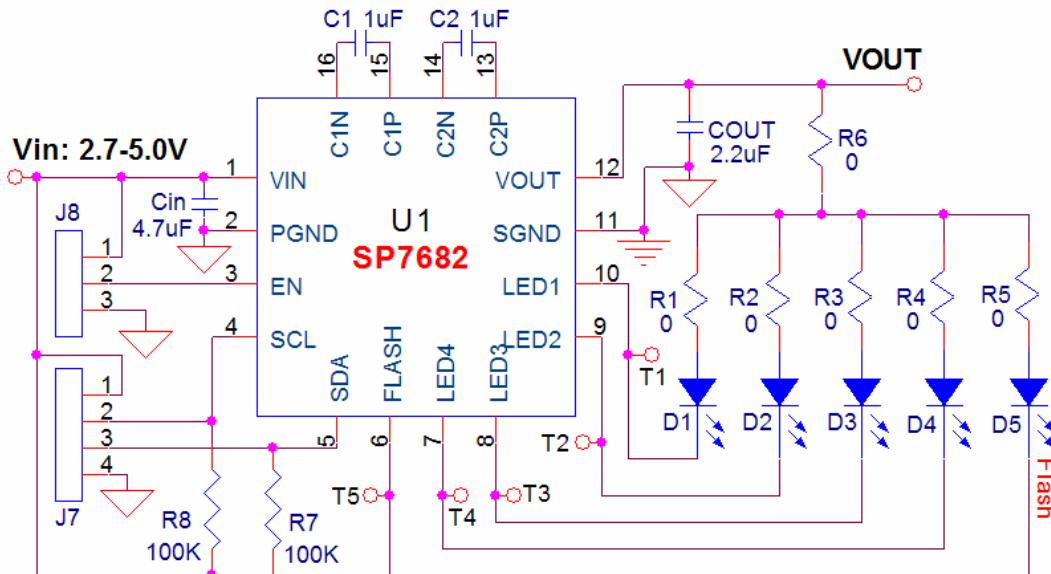


Figure 1. The SP7682 Evaluation Board Schematic Diagram

1) Powering Up the SP7682 Circuit

The SP7682 Evaluation Board can be powered from a 2.7V to 5V power supply or from 3 alkaline cells. Connect the power supply with a short leads directly to the "Vin" and "GND" posts. Connect the J8 ENABLE connector EN pin to Vin pin using a shunt (J8 pin 1 to 2). Connect J7 4 pin I²C connector to the SPI2CEB board 4 pin connector. For using another I²C board connect the SCL, SDA and GND connections to the I²C board respective connections.

2) Selecting the output current

Backlight LEDs need to be connected to the D1, D2, D3 and D4 positions on the SP7682EB. A Flash LED should be connected to the D5 position on the board. The LED current may be set using the I²C software for Backlight current in 0.5mA steps to 31.5mA. Each LED can be selected on or off. The Flash LED current can be set in 10mA steps to 500mA.

It is recommended to enable the Flash timeout. It can be set for 0.5, 1.0, 2.0 or 4.0 sec in the I²C software. The device provides high output current for the desired seconds and will shut off to protect the LED and user.

For shutdown set the ENABLE pin LOW (J8 shunt in the position pin 2 to 3) and then to enable set it HIGH (J8 shunt in the position pin 1 to 2).

3) Dimming

The SP7682 can be pulse width modulated using the EN pin. First you need to set the output current level in step 2. Then remove the shunt on J8 and connect the EN J8 pin 2 to the pulse generator with desired modulation frequency (positive pulse with amplitude from 2.4V to Vin voltage range). Changing the pulse duty cycle changes the average LED current. Recommended modulation frequencies are from 60Hz to 200Hz with 10 – 90% duty cycle.

EVALUATION BOARD LAYOUT

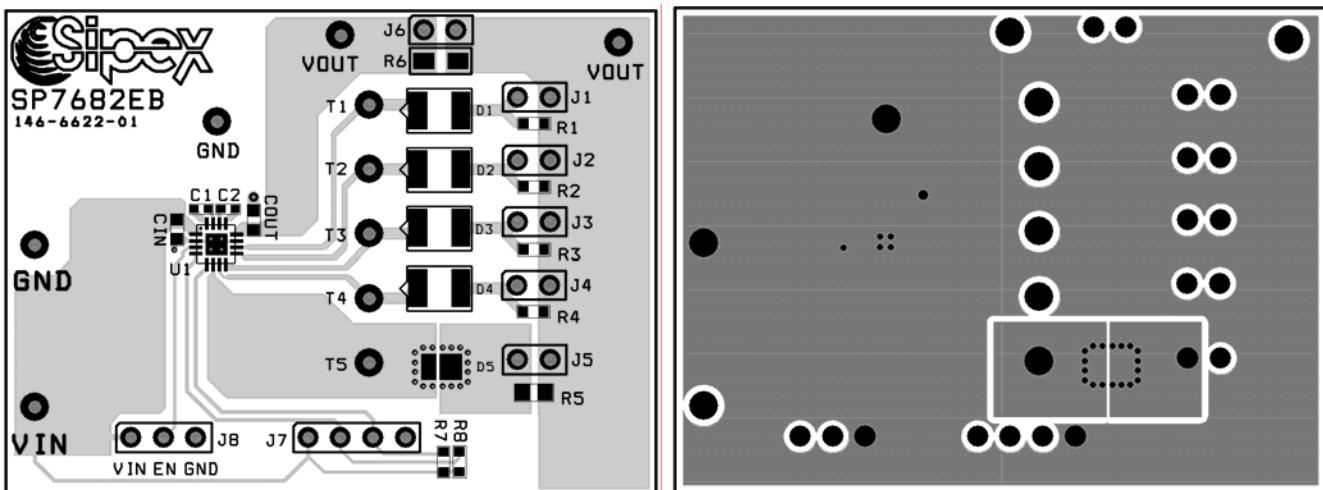


Figure 2. SP7682 Evaluation Board Layout top and bottom side

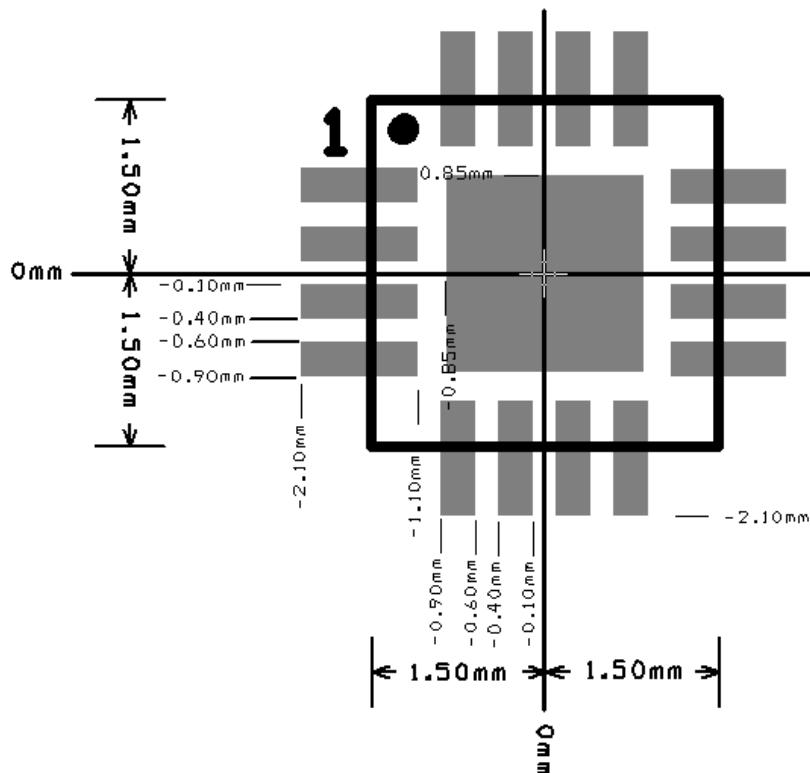


Figure 3. SP7682EB 16 Pin 3X3 QFN recommend foot print dimension

| Part Reference | Qty | Part Number | Value | Size | Manufacturers |
|----------------------------------|-----|-------------------------|--------------------------|----------------------|----------------------------|
| U1 | 1 | SP7682ER-L | | 3x3mm QFN-16 pin | www.sipex.com |
| PCB | 1 | 146-6622-01 | Eval bd PCB | | www.sipex.com |
| Cin | 1 | GRM188R60J475k | 4.7uF/6.3V | 0603, X5R, 0.9mm ht. | www.murata.com |
| Cout | 1 | GRM188R61A225k | 2.2uF/10V | 0603, X5R, 0.9mm ht. | www.murata.com |
| C1,C2 | 2 | GRM155R60J105k | 1uF/6.3V | 0402, X5R, 0.7mm ht. | www.murata.com |
| R1,R2,R3 R4,R5,R6 | 6 | CRCW06030000Z0EA | 0 Ohm | 0603, 1/10 watt | www.vishay.com |
| R7,R8 | 2 | CRCW0603100K | 100K | 0603, 1/10 watt | www.vishay.com |
| J1,J2,J3 J4,J5,J6 | Opt | 61303611121 | 2 pin Header | 6x2.54mm | www.we-online.com |
| | Opt | 60900213421 | Shunt | 5x2.54mm | |
| J7 | 1 | 61304011021 | Angled pin Header | 4 Pos, 2.54mm R/A | www.we-online.com |
| J8 | 1 | 61303611121 | 3 pin Header | 6x2.54mm | www.we-online.com |
| Vin,Vouts,GNDs T1,T2,T3,T4,T5 | 10 | 0300-1-15-01-47-01-10-0 | Test Point Female pin | 0.042" dia | Mil-Max www.digikey.com |

Table1. SP7682EB List of Materials

ORDERING INFORMATION

| Model | Temperature Range | Package Type |
|----------------------|-----------------------|----------------------------------|
| SP7682EB..... | -40°C to +85°C..... | SP7682 Evaluation Board |
| SP7682ER1-L | -40°C to +85°C | Lead Free 16 Pin QFN (3mm x 3mm) |
| SP7682ER1-L/TR | -40°C to +85° C | Lead Free 16 Pin QFN (3mm x 3mm) |

/TR = Tape and Reel

Pack quantity is 3,000 for DFN.

For further assistance:

Email: Sipexsupport@sipex.com

WWW Support page: <http://www.sipex.com/content.aspx?p=support>

Sipex Application Notes: <http://www.sipex.com/applicationNotes.aspx>



**Sipex Corporation
Headquarters and
Sales Office**
233 South Hillview Drive
Milpitas, CA95035
tel: (408) 934-7500
fax: (408) 935-7600

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