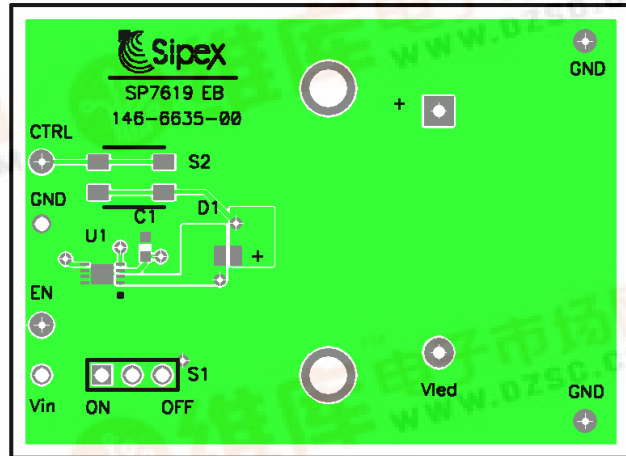




SP7619/19A

Evaluation Board Manual

- Very low dropout voltage: 100mV
- Accurate current regulation down to dropout voltage
- No external components
- Output current 2 levels selectable
- Power-saving shutdown mode of 12nA typical
- PWM brightness control
- Fast turn-on (<math><50\mu\text{s}</math>)
- Time Out function to protect the LED
- Thermal Shutdown Protection
- Space saving 2mm x 3mm 8 pin DFN package



The **SP7619 Evaluation Board** is designed to help the user evaluate the performance of the SP7619 for use as a single LED Driver. The evaluation board is a completely assembled and tested surface mount board which provides easy probe access points to all SP7619 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.

DESCRIPTION AND BOARD SCHEMATIC

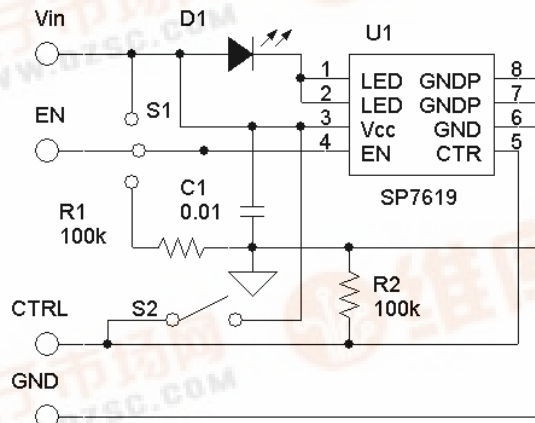


Figure 1. The SP7619 Evaluation Board Schematic Diagram

*Note: While high current time duration is limited by the SP7619 in the range from 2 to 7s, we don't recommend pushing the button for a long time to prevent LED damage and battery discharge. LEDs provide very bright light at 0.5/0.7A output current. Protect your eyes.



INTRODUCTION

The SP7619 is a linear low side constant current driver designed to source two preset currents of 200mA/500mA (SP7619), 200mA/700mA (SP7619A)*. The preset currents can be set by selecting THE CTRL pin to high or low. Dimming or shutdown can be done by feeding a PWM signal to the EN pin. Fast EN turn-on/off time allows for very fast PWM dimming frequencies, completely eliminating flicker. The driver acts as a current source ensuring constant LED current for a range of input voltage. The SP7619 allows for customer implementation of the lowest cost LED driver for a variety of applications. Internal circuitry maintains the preset constant current output for a wide voltage range at the LED input. The built-in thermal protection automatically stops LED current to prevent overheating. A timeout function serves as a fail safe, shutting down the output for currents greater than 266mA after 4 seconds of continuous operation if the enable input is not cycled.

Capacitor C1 is a decoupling capacitor. Resistor R1 is used to hold the device in a Sleep Mode at power on if the ENABLE pin isn't connected to Vin voltage. The SP7619 devices don't have internal pull-up/down resistors at the EN input and should be connected either to Vin or Ground. If the EN pin isn't used for modulation, it may be connected to Vin voltage directly using switch S1. Push button S2 is used to set LED current. Low output current is set by default using resistor R2. To set high output current value, connect the CTRL pin to Vcc (push button).

USING THE EVALUATION BOARD

1) Powering Up the SP7619 Circuit

The SP7619 Evaluation Board can be powered from a 4.5V power supply or from 3 alkaline cells. Connect the 4.5V source pin with a short lead directly to the "Vin" and -4.5V /GND pin to the "GND" posts. Connect the ENABLE pin to Vin voltage using shunt S1 (ON position).

2) Selecting the output current

The LED current may be set at 500 (700) mA by connecting the CTRL pin to the Vin voltage (push button S2) or at 200 mA by connecting it to the ground (by default) respectively.*

The device provides high output current for 4 seconds only after setting the CTRL pin HIGH to protect the LED. After that the device will go into shutdown mode.

Set the ENABLE pin LOW (switch S1 in position OFF) and then after that set it HIGH (S1 position ON) to start the device again.

3) Dimming

The SP7619 can be pulse width modulated using the EN pin. Set switch S1 in the OFF position. Connect the EN pin to the pulse generator with desired modulation frequency (positive pulse with amplitude from 2.4 to Vin voltage range). Changing the pulse duty cycle changes the average LED current. Recommended modulation frequencies are from 100Hz to 2kHz with 10 – 90% duty cycle.

* Contact Factory for additional current options.

EVALUATION BOARD LAYOUT

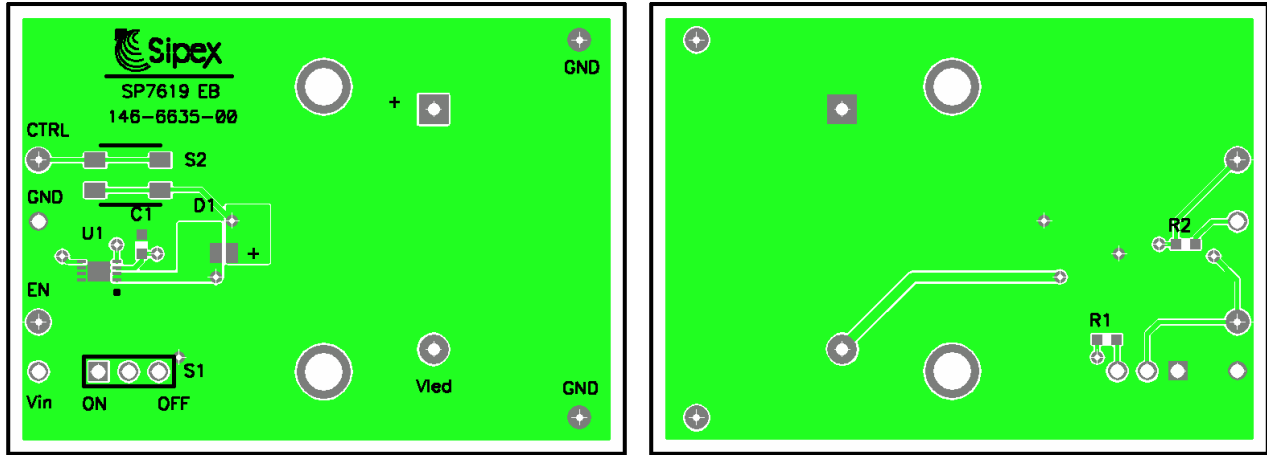


Figure 2. SP7619 Evaluation Board Layout top and bottom side

Reference	Quantity	Value	Type	Manufacturer
C1	1	10nF 10%	06033D103KAT2	AVX
D1	1		LXCL-PWF1	Lumileds
R1, R2	2	100k 1%	M11251041%P5	Vishay
S1	1		42375-22-28-4033 or EG2209	Molex E-Switch
S2	1		7914G-1-000E	Switch Key
U1	1		SP7619ER	Sipex

Table2. SP7619EB List of Materials

ORDERING INFORMATION

Model	Temperature Range	Package Type
SP7619EB.....	-40°C to +85°C.....	SP7619 Evaluation Board
SP7619ER-L	-40°C to +85°C	Lead Free 8 Pin DFN (2mm x 3mm)
SP7619ER-L/TR	-40°C to +85° C	Lead Free 8 Pin DFN (2mm x 3mm)
SP7619AER-L.....	-40°C to +85° C	Lead Free 8 Pin DFN (2mm x 3mm)
SP7619AER-L/TR	-40°C to +85° C	Lead Free 8 Pin DFN (2mm 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>
Live Technical Chat: <http://www.geolink-group.com/sipex/>
Sipex Application Notes: <http://www.sipex.com/applicationNotes.aspx>



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