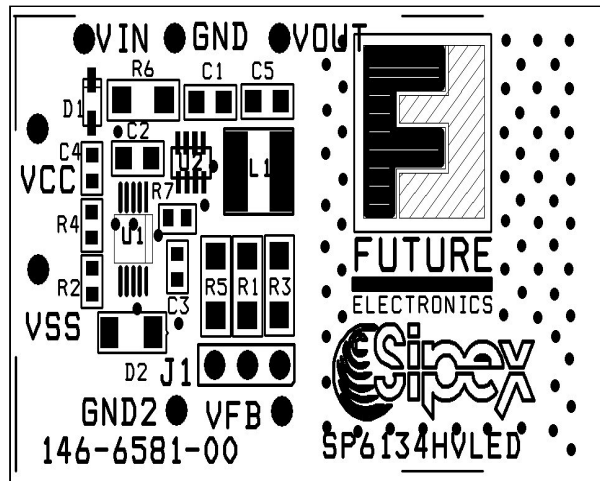




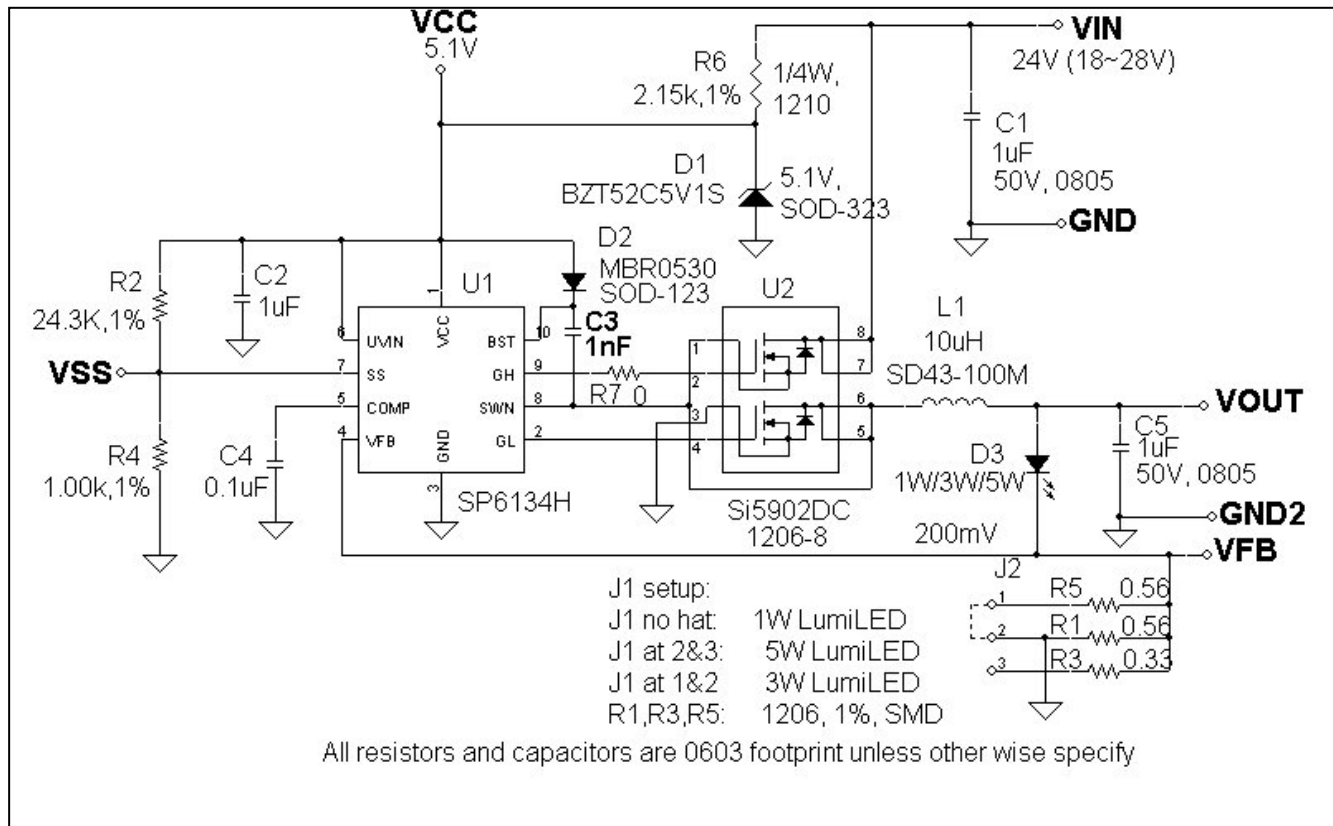
# SP6134HVLED Evaluation Board Manual

- Ideal for 24V Bus Application
- Single Board for 1W, 3W and 5W Applications
- High Efficiency
- Small 10-Pin MSOP Package
- 600kHz Switching Frequency Enables Small Components
- Integrated Design with Minimal Components.
- Dual MOSFET for Spacing Saving



## DESCRIPTION AND BOARD SCHEMATIC

The **SP6134HVLED Evaluation Board** is designed to help the user evaluate the performance of the SP6134H for use as a Luxeon 1W/3W/5W Driver. The evaluation board is a completely assembled and tested surface mount board which provides easy probe access points to all SP6134H inputs and outputs so that the user can quickly connect and measure electrical characteristics and waveforms.



## USING THE EVALUATION BOARD

### 1) Powering Up the SP6134HVLED Circuit

The SP6134HVLED Evaluation Board can be powered from a 24V power supply. Connect with short leads directly to the “VIN” and “GND” posts. Plug the 1W/3W/5W Luxeon LumiLED between the “VOUT” and “VFB” posts. Refer to section 2 for Jumper (J1) setup for different LumiLED applications.

### 2) Using the J1 Jumper for different LumiLED Applications

The SP6134HVLED Evaluation Board can be used to drive 1W, 3W or 5W LumiLED respectively, this can be done by using the J1 Jumper. When no hat was used for the J1, it is setup for 1W application. When the hat is put on 1 & 2 position, it is used for 5W application. When the hat is put on 2 & 3 position, it is used for 3W application.

### 3) Selecting the Bias Resistor

The feedback voltage was programmed to be 200mV by using two divider resistors ( $R_2$  and  $R_4$ ) at the soft start pin. (The internal 0.8V reference was overwritten by the programmed 0.2V to reduce the sense voltage and increase the efficiency). The bias resistor is used to set the operating current of the LumiLED as equation

$$R_b = \frac{V_{FB}}{I_F}$$

where  $V_{FB}$  is set as 200mV,  $I_F$  is the operating current of the LumiLED.

For 1W application,  $I_F=350\text{mA}$ ,  $R_b=R_1=0.56\text{Ohm}$

For 5W application,  $I_F=700\text{mA}$ ,  $R_b=R_1//R_5=0.28\text{Ohm}$

For 3W application,  $I_F=1000\text{mA}$ ,  $R_b=R_1//R_3=0.2\text{Ohm}$

## POWER SUPPLY DATA

For the standard evaluation board, the following chart shows the efficiency data for different applications.

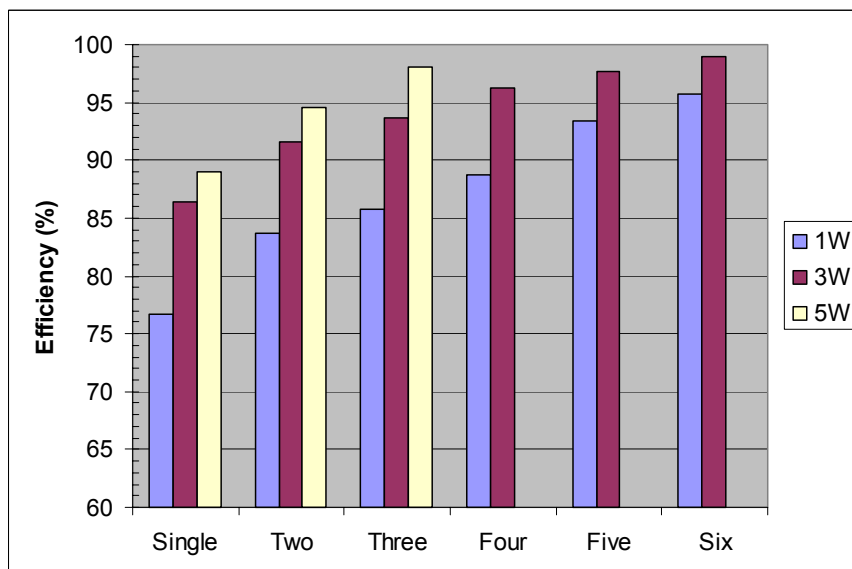


Fig. 1 Efficiency data of the SP6134HVLED evaluation board

# EVALUATION BOARD LAYOUT

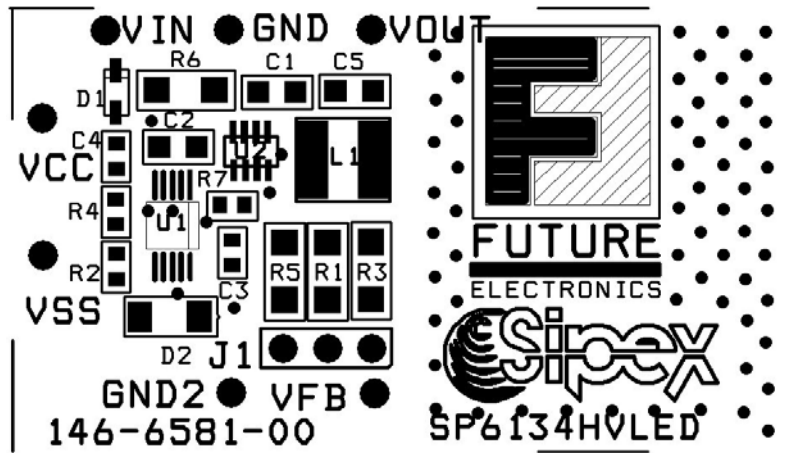


FIGURE 1: SP6134HVLEDEB COMPONENT PLACEMENT

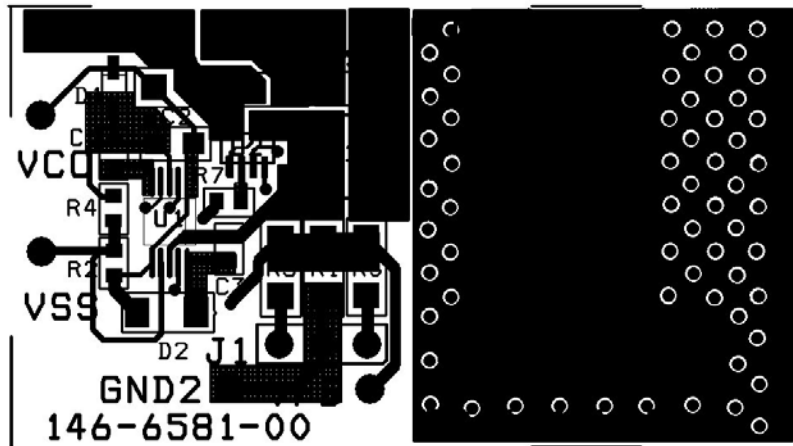


FIGURE 2: SP6134HVLEDEB PC LAYOUT TOP SIDE

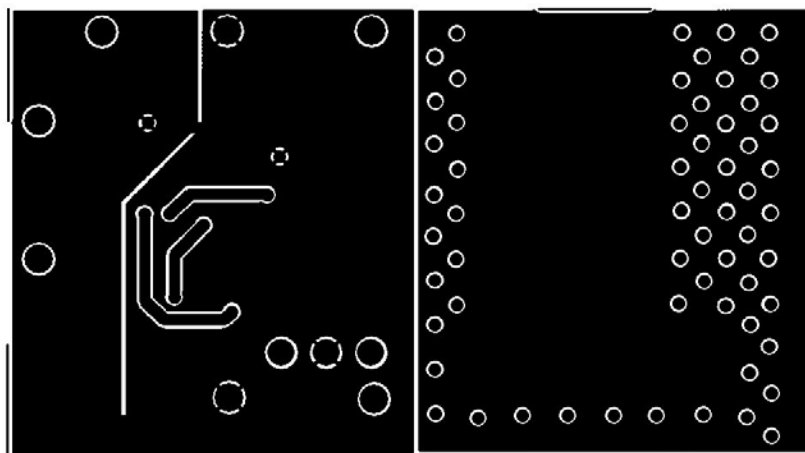


FIGURE 3: SP6134HVLEDEB PC LAYOUT BOTTOM SIDE

**TABLE1: SP6134HVLEDEB LIST OF MATERIALS**

<b>SP6134H Buck for LumiLED List of Materials</b>						8/8/2004
Ref. Des.	Qty.	Manufacturer	Part Number	Layout Size	Component	Vendor
PCB	1	Sipex	146-6581-00	45.8X25.4mm	SP6134HVLED	978-667-8700
U1	1	Sipex	SP6134HEU	MSOP-10	600kHz Dual Supply Synchronous Buck	978-667-8700
U2	1	Vishay	Si5902DC	1206-8 ChipFET	Dual N-Channel 30V MOSFET	402-563-6866
C1, C5	2	TDK	C2012Y5V1H105Z	0805	1uF/50V/Y5V/10% Ceramic	847-803-6100
C2	1	TDK	C1608X5R0J105K	0603	1uF/6.3V/X5R/ Ceramic	847-803-6100
C3	1	TDK	C1608COG1H102J	0603	1,000pF/50V/COG/ Ceramic	847-803-6100
C4	1	TDK	C1608X5R1A104K	0603	0.1uF/10V/X5R/ Ceramic	847-803-6100
L1	1	Inter-Technical	SD43-100M	4X4.5X3.2	10uH 1.53A 0.182 Ohm SM Inductor	914-347-2474
D2	1	ON Semi	MBR0530	SOD-123	0.5A Schottky	800-388-8731
D1	1	Diodes Inc	BZT52C5V1S	SOD-323	5.1V SMD zener diode	800-344-4539
D3	1	LumiLEDs			Open	877-2989455
R1, R5	2	Panasonic	ERJ-8RQFR56V	1206	0.56 Ohm 1/4W 1% 1206 SM	800-344-4539
R3	1	Panasonic	ERJ-8RQFR33V	1206	0.33 Ohm 1/4W 1% 1206 SM	800-344-4539
R6	1	Panasonic	ERJ-14NF2151V	1206	2.15K Ohm 1/4W 1% 1206 SM	800-344-4539
R2	1	Panasonic	ERJ-3EKF2432V	0603	24.3K Ohm 1/16W 1% 0603 SM	800-344-4539
R4	1	Panasonic	ERJ-3EKF1002V	0603	1.00K Ohm 1/16W 1% 0603 SM	800-344-4539
R7	1	YAGEO	9C06031A0R00JLHFT	0603	0 Ohm (Short)	800-344-4539
J1	1	Sullins	PTC36SAAN	.32x.12	3-Pin Header	800-344-4539
(J1)	1	Sullins	PTC02SYAN	.2x.1	Shunt	800-344-4539

**ORDERING INFORMATION**

<b>Model</b>	<b>Temperature Range</b>	<b>Package Type</b>
SP6134HVLEDEB.....	-40°C to +85°C.....	SP6134HVLED Evaluation Board
SP6134HEU.....	-40°C to +85°C.....	10-pin MSOP