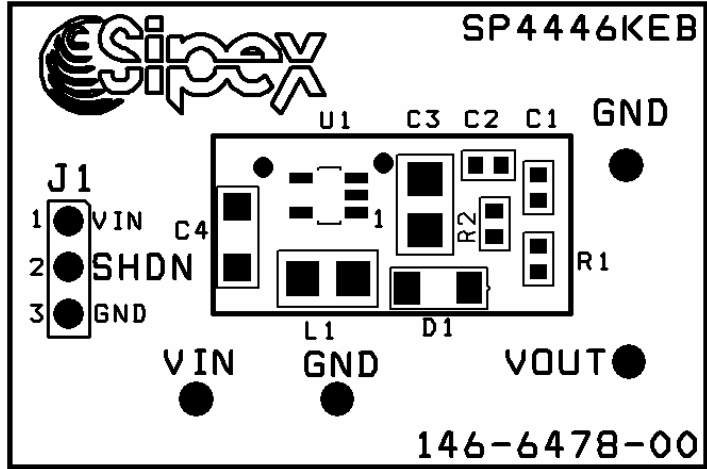




# SP4446 Evaluation Board Manual

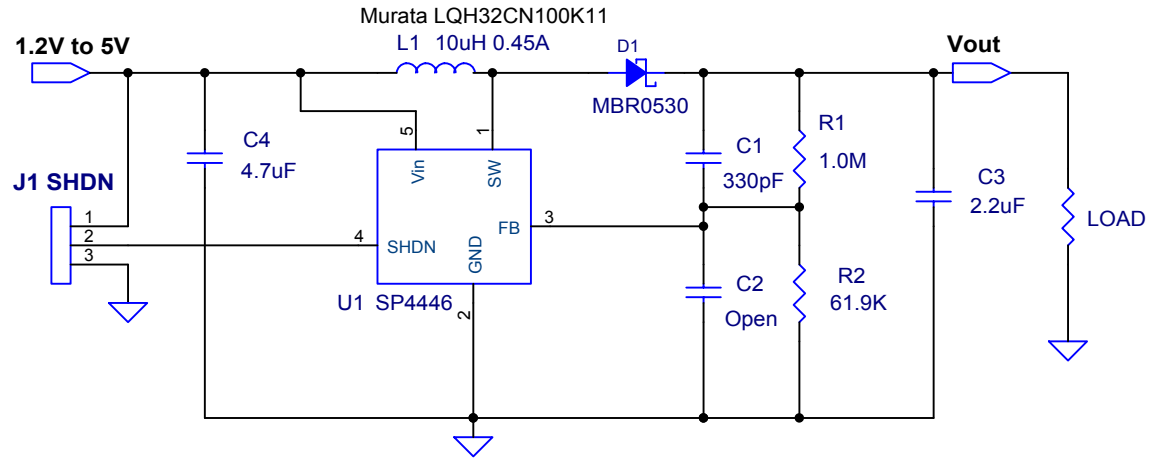
- Easy Evaluation for the SP4446 2V to 7V input to 25 to 30V Output
- SP4446 provides up to 30mA output current
- High Efficiency: up to 80%
- SOT23-5 Package & SMT components for small, low profile Power Supply



## DESCRIPTION

The **SP4446 Evaluation Boards** are designed to help the user evaluate the performance of the SP4446 for use as a single or dual cell input to +5V output DC-DC Converter. The SP4446 have a fixed output voltage programmed to +5V (consult the factory for other voltage options). The evaluation board is a completely assembled and tested surface mount board which provides easy probe access points to all SP4446 Inputs and Outputs so that the user can quickly connect and measure electrical characteristics and waveforms.

## SP4446 EVALUATION BOARD SCHEMATIC



## **USING THE EVALUATION BOARD**

### **1) Powering Up the SP4446 Circuit**

The SP4446 Evaluation Board can be powered from inputs from a +1.2V to +7.0V. Connect with short leads directly to the “Vin” and “Gnd” posts. Monitor the Output Voltage and connect the Load between the “Vout” post and the 2<sup>nd</sup> “GND” post.

### **2) Using the J1 Jumper: Enabling the SP4446 Output and using the Shutdown Mode**

The SP4446 output will be Enabled if the J1 Jumper is in the top or pin 1 to 2 position. If J1 is in the pin 2 to 3 position, the Shutdown pin is brought to GND, which puts the SP4446 in the low quiescent Shutdown Mode.

### **3) Selecting the Inductor**

In selecting an inductor, the saturation current specified for the inductor needs to be greater than the SP4446 peak current to avoid saturating the inductor, which would result in a loss in efficiency and could damage the inductor. The SP4446 evaluation board uses a Murata 10uH inductor with an Isat value of 450mA and a DCR of 0.39ohms, which easily handles the Ipeak of 350mA of the SP4446 and will deliver high efficiencies. Other inductors could be selected provided their Isat is greater than the Ipeak of the SP4446.

## **POWER SUPPLY DATA**

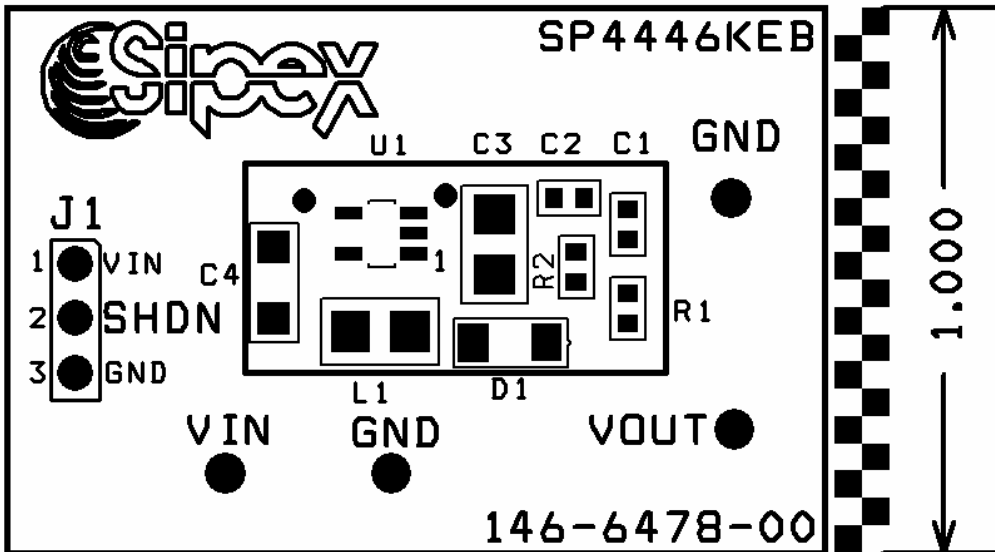


Figure 1. SP4446 Efficiency Vs Output Current (Vout = 5V)

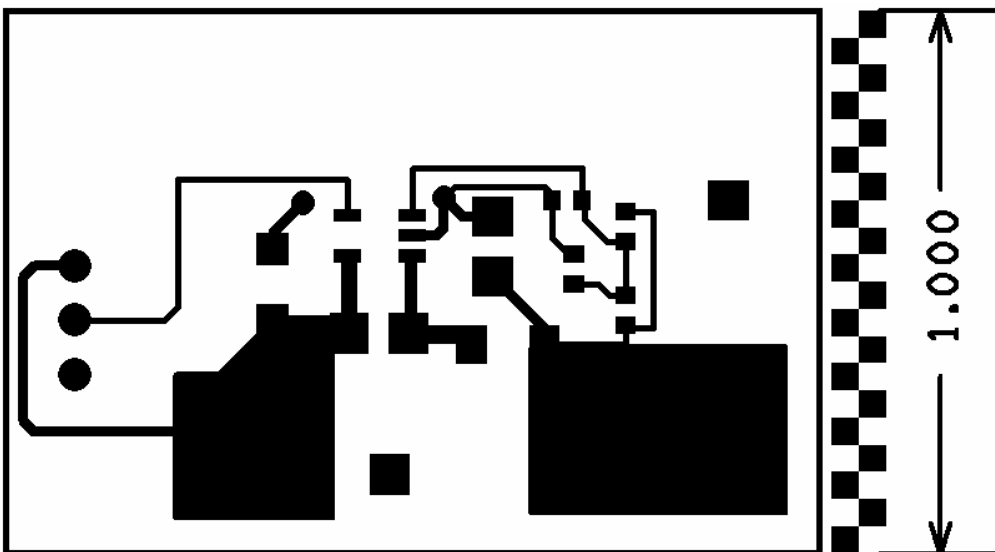


Figure 2. SP4446 Line/Load Rejection Vs Output Current (Vout = 5V)

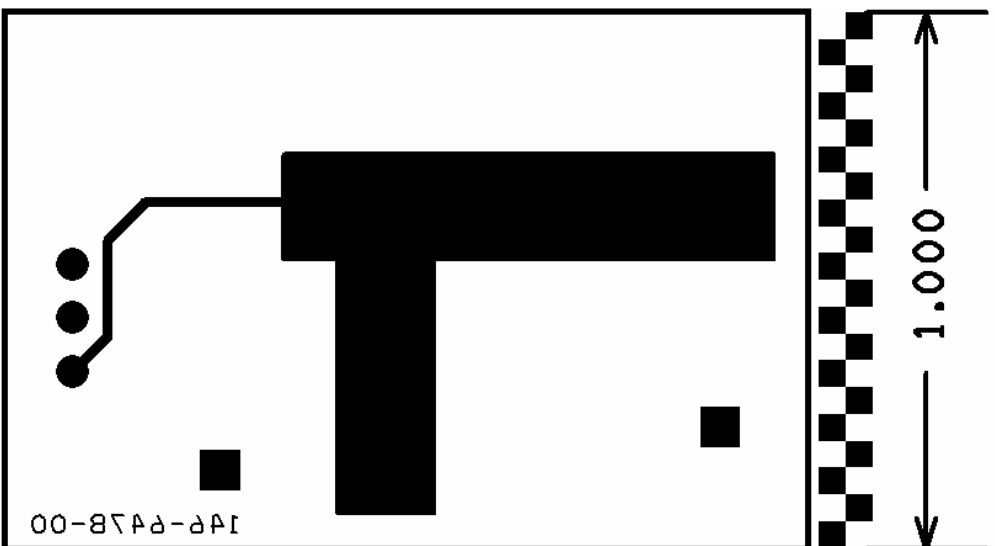


Figure 3. SP4446 No-Load Battery Current Vs Vbatt (Vout = 5V)

**TABLE1: SP4446 LIST OF MATERIALS**

Ref. Des.	Qty.	Manufacturer	Part Number	Layout Size	Component	Vendor
				LxWxH		
	1	Sipex Corp.	146-6478-00	1"x1.5"	SP4446 Eval PC Board	Sipex 978-667-8700
U1	1	Sipex Corp.	SP4446EK	SOT23-5	5-pin SOT23 Step-Up DC/DC Conv	Sipex
C1	1	Murata	GRM1885C1H331JA01B	0603	Ceramic 330pF SM	Murata 770-436-1300
C2	1				open	
C3	1	Murata	GRM32RR71E225KC01B	1210	Ceramic 25V 2.2uF SM	Murata 770-436-1300
C4	1	Murata	GRM31CR61A475KA01B	1206	Ceramic 10V 4.7uF SM	Murata 770-436-1300
L1	1	Murata	LQH32CN100K11	3.2x2.5x2mm	10uH, 0.45A, 0.39ohm, SM Inductor	Murata 770-436-1300
D1	1	On-Semi	MBR0530	SOD-123	Schottky Diode 30V, 0.5A	On-Semi
R1	1	Panasonic	ERJ-3EKF1004	0603	1M ohm 1/8W 1% 0603 SM	Digi-Key 800-344-4539
R2	1	Panasonic	ERJ-3EKF6192	0603	61.9K ohm 1/8W 1% 0603 SM	Digi-Key 800-344-4539
TP	4	Mill-Max	0300-115-01-4727100	.042 Dia	Test Point Female Pin	Digi-Key 800-344-4539
J1	1	Sullins	PTC36SAAN	.23x.12	3-Pin Header	Digi-Key 800-344-4539
	1	Sullins	STC02SYAN	.2x.1	Shunt	Digi-Key 800-344-4539

**ORDERING INFORMATION**

Model	Temperature Range	Package Type
SP4446KEB.....	-40°C to +85°C.....	SP4446 Evaluation Board
SP4446EK.....	-40°C to +85°C.....	5-pin SOT23