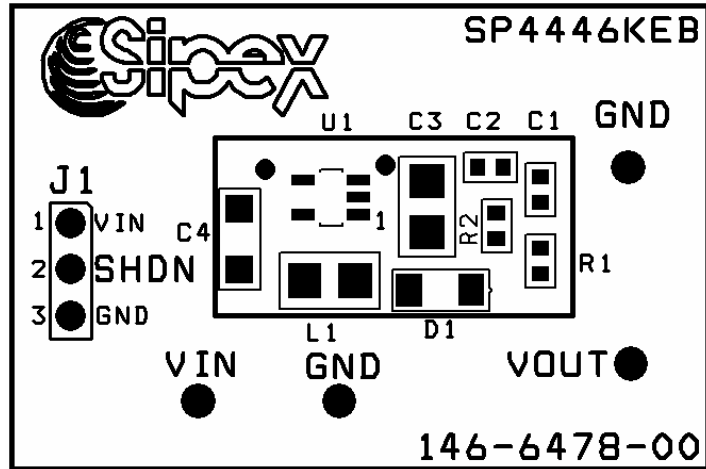




SP4446 Evaluation Board Manual

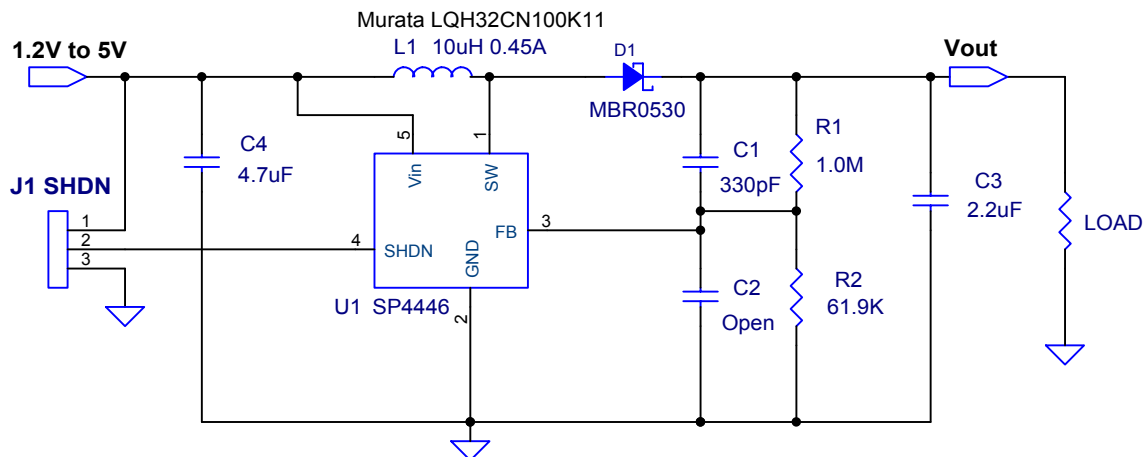
- Easy Evaluation for the SP4446 2V to 7V input to 25 to 30V Output
- SP4446 provides up to 30mA output current
- High Efficiency: up to 80%
- SOT23-5 Package & SMT components for small, low profile Power Supply



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 2nd “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

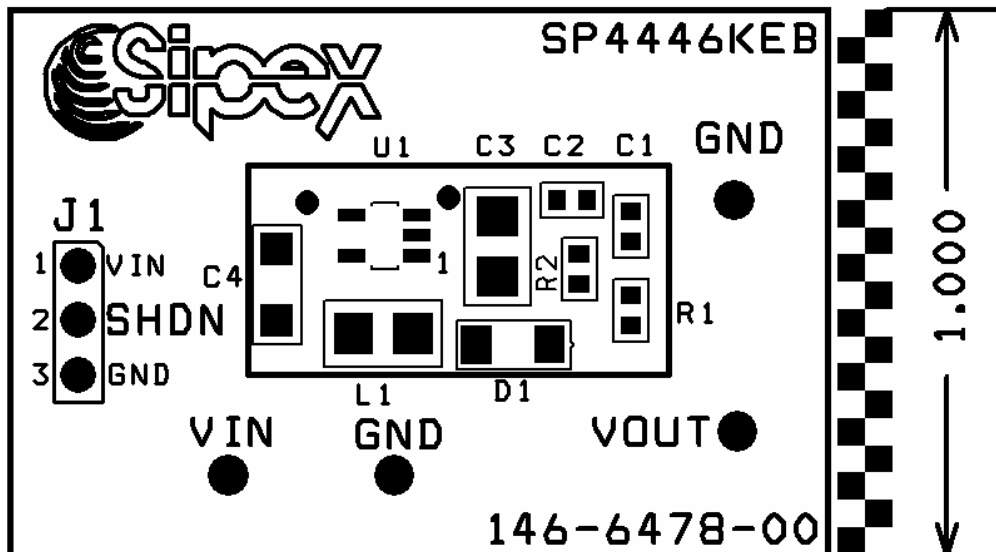


Figure 1. SP4446 Efficiency Vs Output Current ($V_{out} = 5V$)

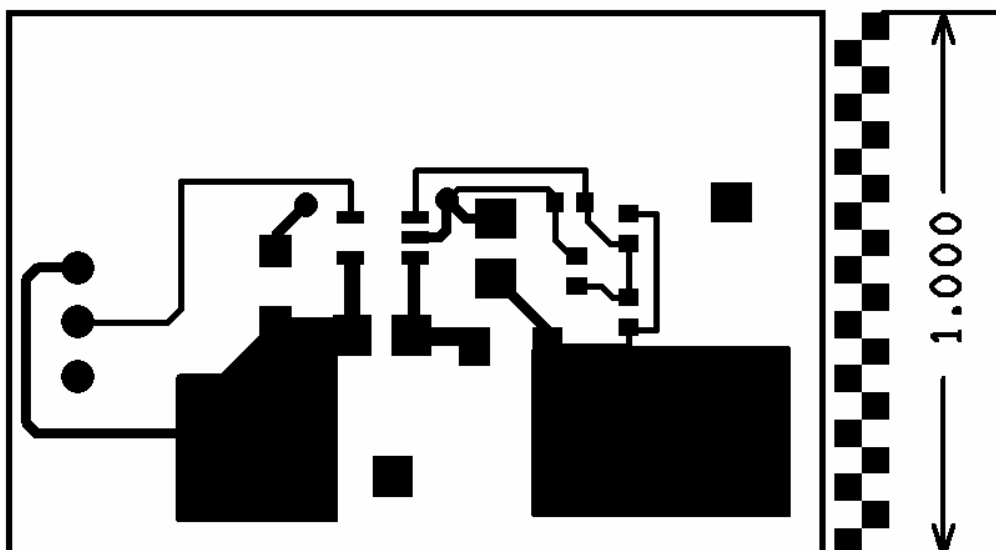


Figure 2. SP4446 Line/Load Rejection Vs Output Current ($V_{out} = 5V$)

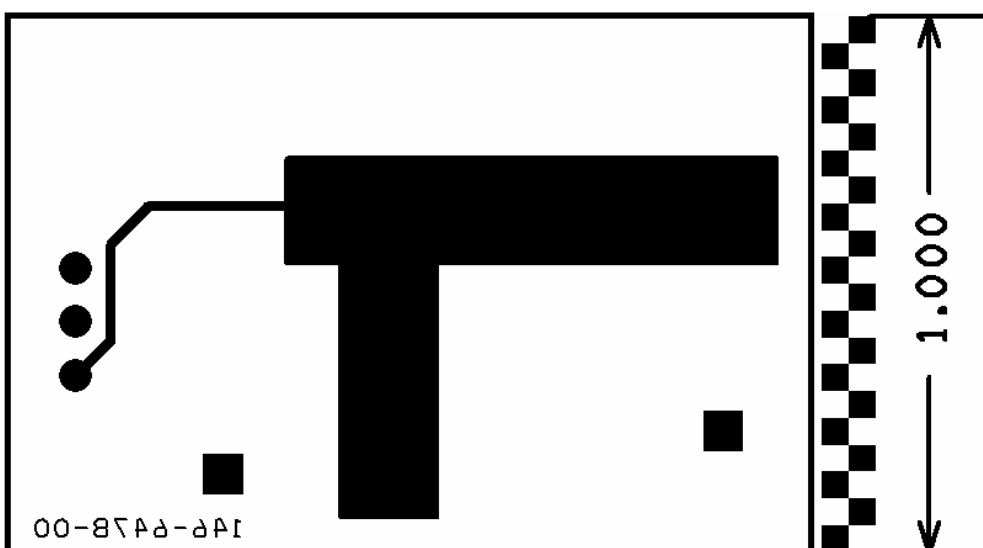


Figure 3. SP4446 No-Load Battery Current Vs V_{batt} ($V_{out} = 5V$)

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