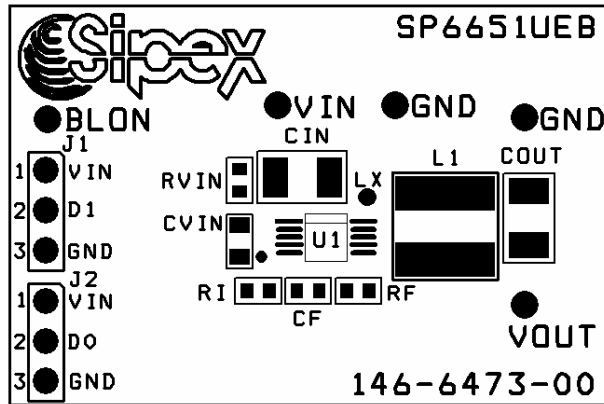




# SP6651EB Evaluation Board Manual

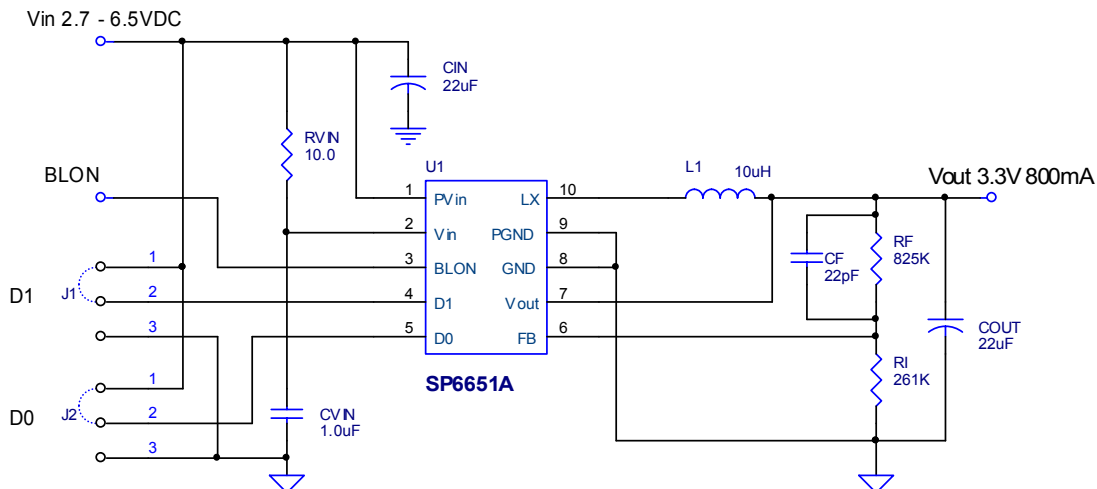
- High Efficiency Synchronous Step-Down Converter with up to 98% efficiency
- 800mA Output Current, only 20uA Quiescent Current
- 2.7V-6.5V Input Voltage range, Output Adjustable down to 0.8V
- MSOP Package & Ceramic Capacitors for small, low profile Power Supply
- Ideal for PDAs, Digital Cameras, Wireless Modems, Cellular Telephones



## DESCRIPTION

The **SP6651A Evaluation Board** is designed to help the user evaluate the performance of the SP6651A for use as a single Li-Ion battery Step-Down DC-DC Converter. The SP6651A operates from 2.7V to 6.5V input, with the highest efficiency in the range 3.0V to 4.2V where the Li-Ion battery has the most energy. The SP6651A evaluation board is a complete power supply circuit to provide ease of evaluation for the DC/DC Converter performance.

**FIGURE 1. SP6651A 3.3V OUTPUT EVALUATION BOARD SCHEMATIC**





**Table 2. SP6651EB BILL OF MATERIALS**

<b>Component</b>	<b>Vo = 3.3V</b>	<b>Vo = 1.5V</b>
L1	10uH, CDRH5D28-100, Sumida	10uH, CDRH5D28-100, Sumida
CIN	22uF, TDK C3225X5R0J226M	22uF, TDK C3225X5R0J226M
COUT	22uF, TDK C3225X5R0J226M	22uF, TDK C3225X5R0J226M
RVIN	10 Ohm 5%	10 Ohm 5%
CVIN	1uF ceramic X7R SM 0805	1uF ceramic X7R SM 0805
RI	261k 1%	261k 1%
RF	825k 1%	226k 1%
CF	22pF ceramic	22pF ceramic
U1	SP6651AEU	SP6651AEU

**Table 3. SP6651A PIN ASSIGNMENT**

<b>Pin Name</b>	<b>Pin Description</b>	<b>Pin NO.</b>
<b>PVin</b>	Input voltage power pin. Inductor charging current passes through this pin.	<b>1</b>
<b>Vin</b>	Internal supply voltage. Control circuitry powered from this pin.	<b>2</b>
<b>BLON</b>	Open drain battery low output – need to pullup to supply externally. Vin - Vout below threshold pulls this node to ground. Vin - Vout above threshold, this node is open.	<b>3</b>
<b>D1</b>	Digital mode control input. See Table 1 for definition.	<b>4</b>
<b>D0</b>	Digital mode control input. See Table 1 for definition.	<b>5</b>
<b>FB</b>	External feedback network input connection. Connect a resistor from FB to ground and FB to Vout to control the output voltage. This pin regulates to the internal reference voltage of 0.8V.	<b>6</b>
<b>Vout</b>	Output voltage sense pin. Used for internal timing and BLON circuitry.	<b>7</b>
<b>GND</b>	Internal ground pin. Control circuitry returns current to this pin.	<b>8</b>
<b>PGND</b>	Power ground pin. Synchronous rectifier current returns through this pin.	<b>9</b>
<b>LX</b>	Inductor switching node. Inductor tied between this pin and the output capacitor to create Vout.	<b>10</b>

EVALUATION BOARD LAYOUT

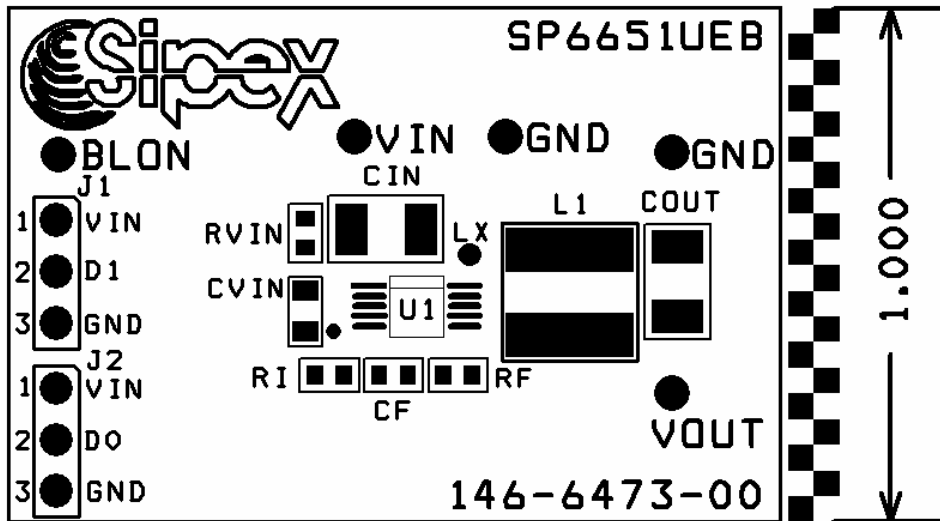


FIGURE 3: SP6651AEU COMPONENT PLACEMENT

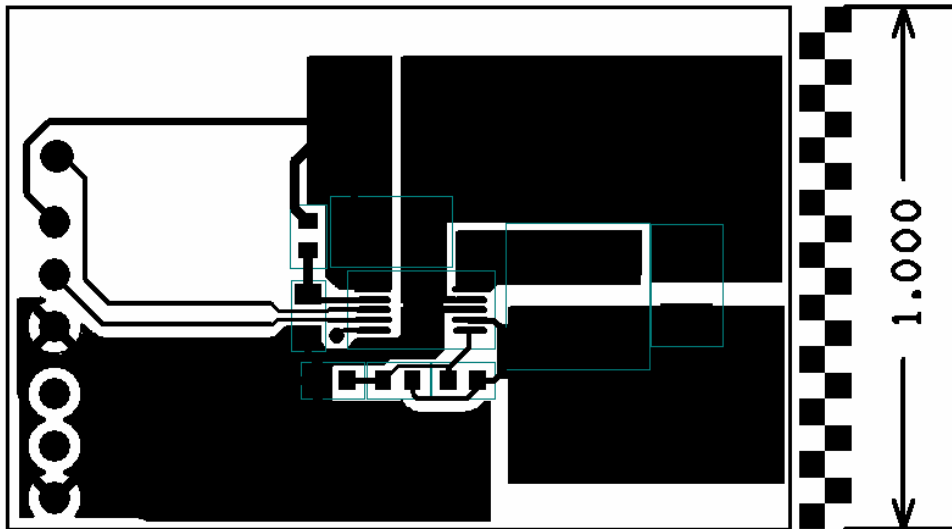


FIGURE 4: SP6651AEU PC LAYOUT TOP SIDE

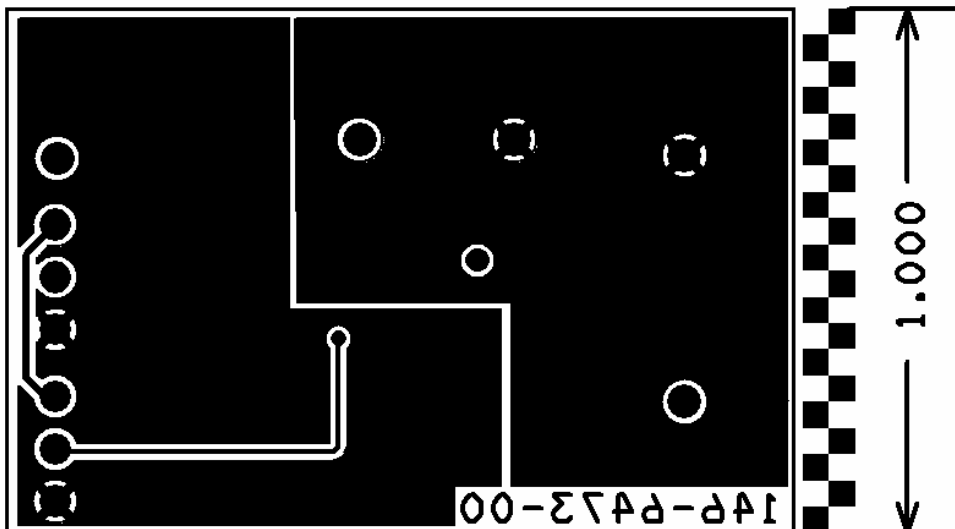


FIGURE 5: SP6651AEU PC LAYOUT BOTTOM SIDE

## ORDERING INFORMATION

Model	Temperature Range	Package Type
SP6651EB	.....-40°C to +85°C.....	SP6651 Evaluation Board

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