ATI2202 Evaluation Board ATI2202EV1

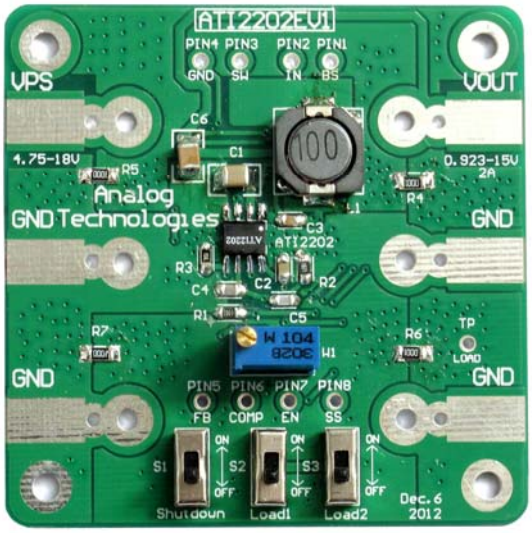

Figure 1. Physical Photo of ATI2202EV1

FEATURES

- Up to 2A output current with 95% efficiency
- Wide Input Voltage Range: 4.75V ~ 18V
- Wide Adjustable output: 0.923V~0.9×Vin
- Monolithic synchronous buck
- Fixed 340KHz frequency
- Programmable soft-start on enable control
- Overheat, overcurrent and under-voltage protections
- RoHS Compliant and 100% Lead (Pb) Free
- User friendly layout design for easy measurements

APPLICATIONS

LED Driver

Low Noise Voltage and Current Source

FPGA, DSP, ASIC Power Supplies

Notebook Computers

Green Electronic Appliances

DESCRIPTION

The ATI2202EV1 is the evaluation board for the ATI2202 Step-Down DC/DC Converter. It has a wide supply range from 4.75V to 18V and can output up to 2A current continuously. It features a synchronous rectification with integrated high and low side power MOSFETs to achieve high efficiency. The output voltage of this board can be set to from 0.923V to 0.9×Vin by adjusting a potentiometer. The current mode control and integrated power MOSFETs minimize component counts, board area, and solution cost. Fault condition protections include cycle-by-cycle current limiting, thermal shutdown, and under-voltage lockout. Programmable soft-start reduces turn-on stress imposed to the system power supply. The small SOP-8 package comes with a heat sink pad which allows transferring the converter IC's heat to the heat sink formed by the PCB.

This evaluation board demonstrates the PCB heat dissipation effect and allows users to approach a few test points of the circuit conveniently. It also comes with a configurable dummy load so that the users can evaluate the converter IC without an external load. Its photo is shown in Figure 1. The voltages of all its pins can be measured directly by probing the test point holes. The names of all these nodes are marked on the board.

Figure 2 below shows the efficiency under different input voltage and output current conditions.

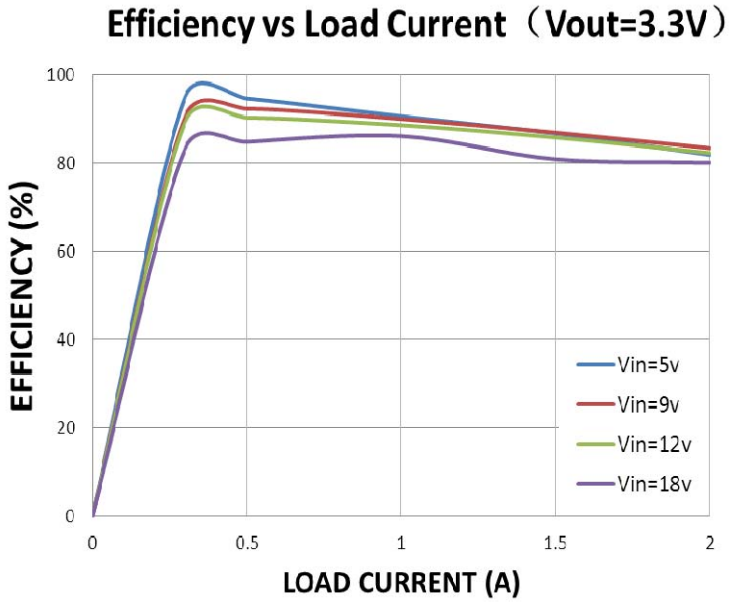

Figure 2. Efficiency vs. Input Voltage and Load Current

PRINTED CIRCUIT BOARD LAYOUT

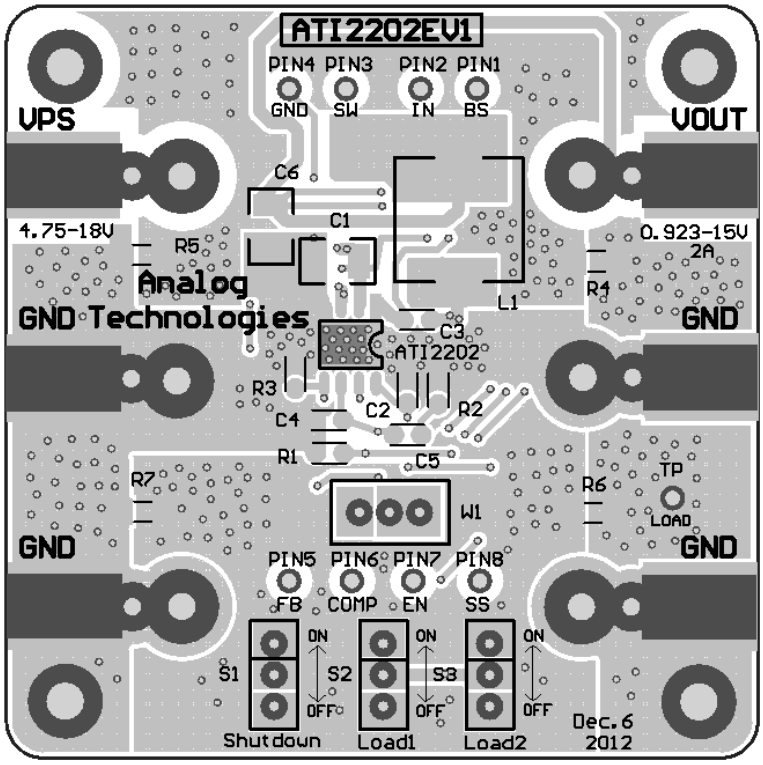

Figure 3. Top Silkscreen Layer with Top Copper Layer

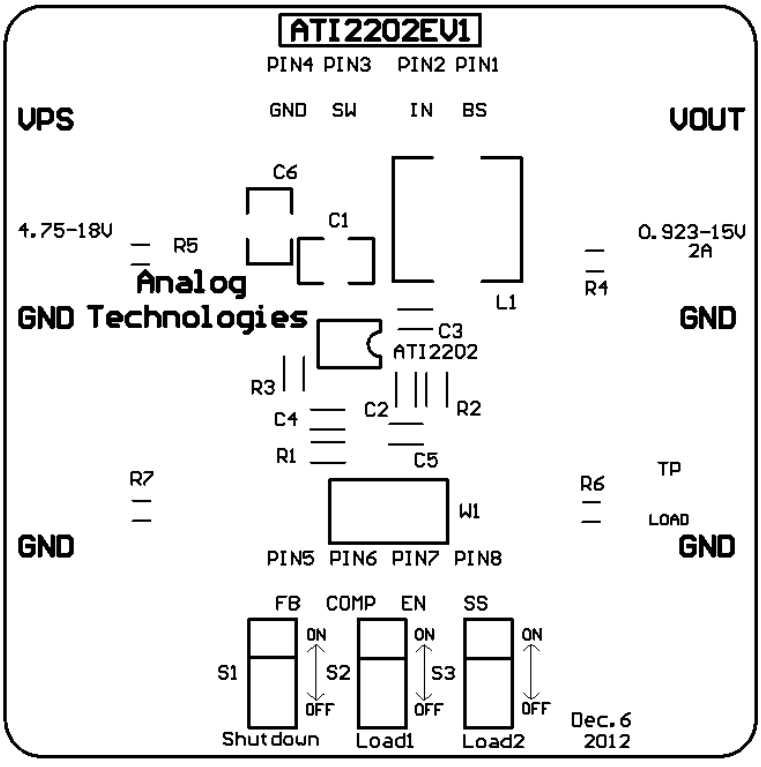

Figure 4. Top Silkscreen

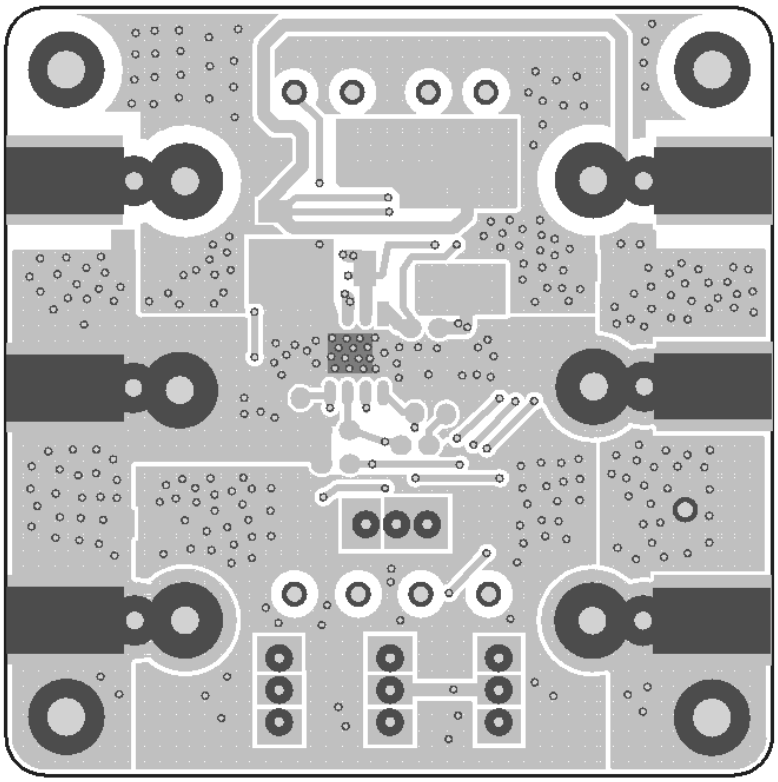

Figure 5. Top Layer

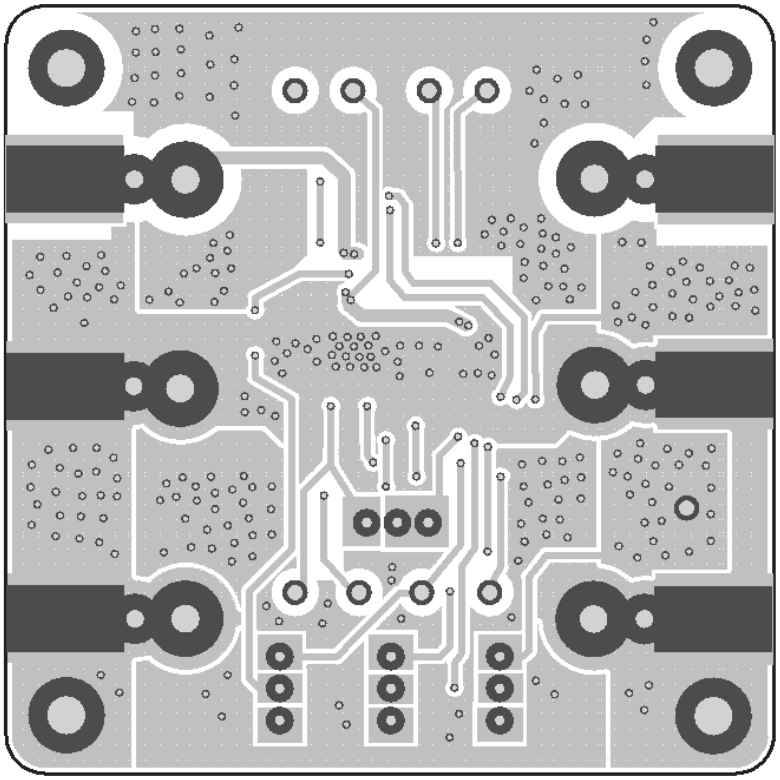

Figure 6. Bottom Layer

ATI2202EV1 BILL OF MATERIALS

Designator	Value	Package
R1	100K	0805
R2	1.82K	0805
R3	7.15K	0805
R4	100	1206
R5	100	1206
R6	100	1206
R7	100	1206
S1	0.3A50V	SIP3
S2	0.3A50V	SIP3
S3	0.3A50V	SIP3

Designator	Value	Package
U1	ATI2202	SOP8
C1	47uF16V	1210
C2	100nF	0805
C3	10nF	0805
C4	10pF	0805
C5	3.3nF	0805
C6	47uF16V	1210
L1	10uH	SMD
W1	100K	SIP3

EVALUATION BOARD SCHEMATIC

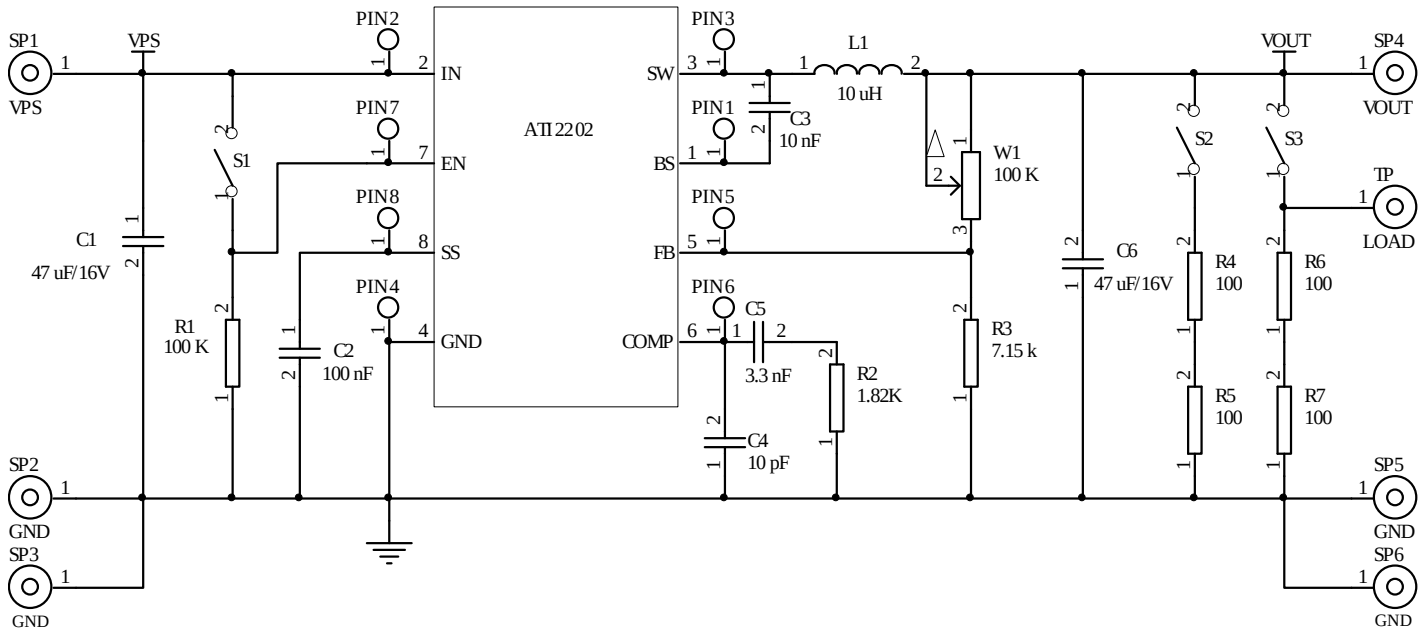

Figure 7. Schematic of ATI2202EV1

GETTING STARTED

1. Find an external power supply and set the output voltage to a desired value. Turn it off, connect to the evaluation board, then turn power supply on. Do not connect or disconnect the power supply with the board when the power is on. The connection can be made by solder appropriate wires onto the solder pads for the VPS and GND nodes on the left side of the PCB and run the wires to the external power supply.
2. To turn on the converter electronically, turn on the switch S1, the upper position; to turn the converter off, turn on this switch, the lower position.
3. To adjust the output voltage, turn W1, clock-wise to increase the output voltage; and vice versa. The output voltage can be adjusted from 0.923V to 0.9×VPS.
4. To emulate adding a load to the output, close switch S2 and/or S3 by pushing them to the upper position; to emulate disconnecting the load, open the same switches, to the lower position.
5. To add an external load, solder wires to the GND and VOUT solder pads on the right side of the PCB and run the wires to

the external load.

6. To see the dynamic response of the output when the load changes, use one channel of an oscilloscope to monitor LOAD test point, while using another channel monitor VOUT. The overshoot and the ringing will be seen. To optimize the response, the values of the compensation network components, C4, C5 and R2, can be adjusted.
7. To measure the voltages and/or the waveforms on each of the 8 pins of the converter IC, probe the test points, PIN1, PIN2, PIN3, PIN4, PIN5, PIN6, PIN7 and PIN8 respectively.

ORDERING INFORMATION

Part Number	Description	Unit Price
ATI2202EV1	ATI2202 Step-Down DC/DC Converter Evaluation Board	$39

NOTICE

1. ATI warrants performance of its products for one year to the specifications applicable at the time of sale, except for those being damaged by excessive abuse. Products found not meeting the specifications within one year from the date of sale can be exchanged free of charge.
2. ATI reserves the right to make changes to its products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete.
3. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgment, including those pertaining to warranty, patent infringement, and limitation of liability. Testing and other quality control techniques are utilized to the extent ATI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.
4. Customers are responsible for their applications using ATI components. In order to minimize risks associated with the customers' applications, adequate design and operating safeguards must be provided by the customers to minimize inherent or procedural hazards. ATI assumes no liability for applications assistance or customer product design.
5. ATI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of ATI covering or relating to any combination, machine, or process in which such products or services might be or are used. ATI's publication of information regarding any third party's products or services does not constitute ATI's approval, warranty or endorsement thereof.
6. IP (Intellectual Property) Ownership: ATI retains the ownership of full rights for special technologies and/or techniques embedded in its products, the designs for mechanics, optics, plus all modifications, improvements, and inventions made by ATI for its products and/or projects.