



The Future of Analog IC Technology™

EV2307DN-00A

3A, 23V, 340KHz

Synchronous Step-Down Converter

EVALUATION BOARD – INITIAL RELEASE

GENERAL DESCRIPTION

The MP2307 is a monolithic synchronous buck regulator. The device integrates 100mΩ MOSFETS that provide 3A continuous load current over a wide operating input voltage range of 4.75V to 23V. Current mode control provides fast transient response and cycle-by-cycle current limit.

An adjustable soft-start prevents inrush current at turn-on. In shutdown mode, the supply current drops to only 1µA.

This device, available in an 8-pin SOIC package, provides a very compact system solution with minimal reliance on external components.

ELECTRICAL SPECIFICATIONS

| Parameter | Symbol | Value | Units |
|----------------|-----------|------------|-------|
| Supply Voltage | V_{IN} | 4.75 to 23 | V |
| Output Voltage | V_{OUT} | 3.3 | V |
| Output Current | I_{OUT} | 0 to 3 | A |

FEATURES

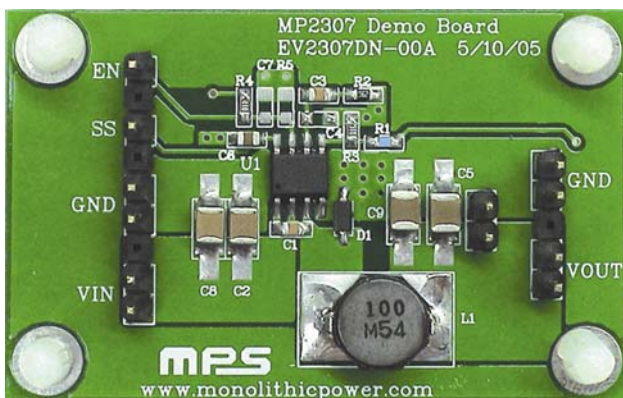
- Up to 3A Output Current
- Wide 4.75V to 23V Operating Input Range
- Monolithic Synchronous Buck with 100mΩ High-Side and Low-Side FETs
- Fixed 340KHz Frequency
- All Ceramic Input and Output Capacitors
- Programmable Soft-Start
- Programmable Input Under Voltage Lockout

APPLICATIONS

- Distributed Power Systems
- Networking Systems
- FPGA, DSP, ASIC Power Supplies
- Green Electronics/ Appliances
- Notebook Computers

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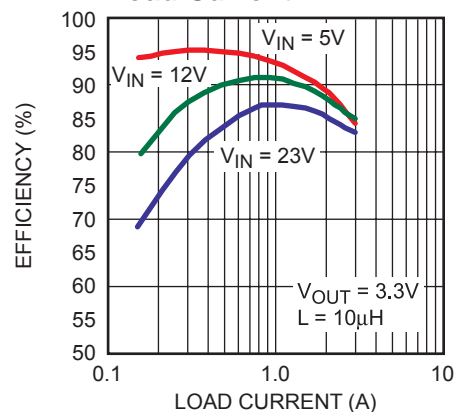
EV2307DN-00A EVALUATION BOARD



((L x W x H) 2.0" x 1.5" x 0.5"
(5.0cm x 3.8cm x 1.2cm))

| Board Number | MPS IC Number |
|--------------|---------------|
| EV2307DN-00A | MP2307DN |

Efficiency vs Load Current



MP2307_EC01

PRINTED CIRCUIT BOARD LAYOUT

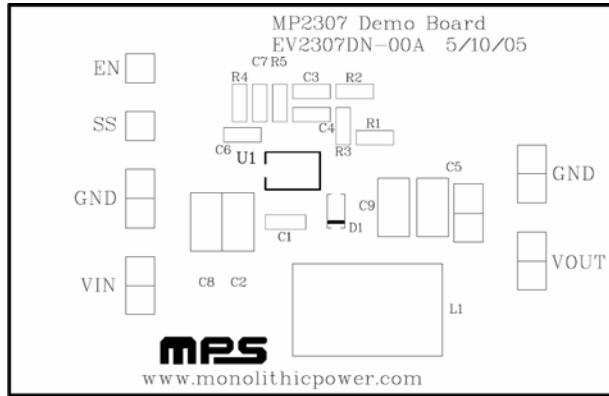


Figure 1—Top Silk Layer

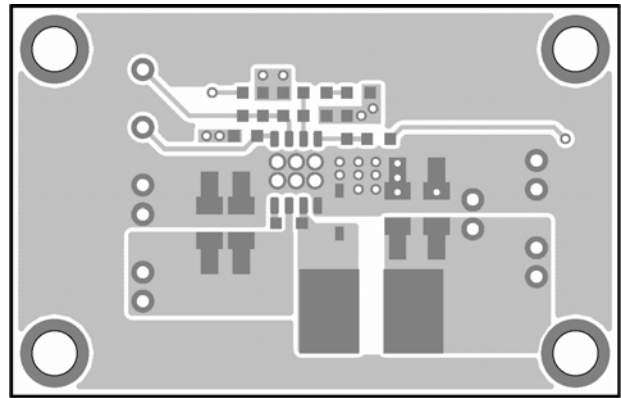


Figure 2—Top Layer

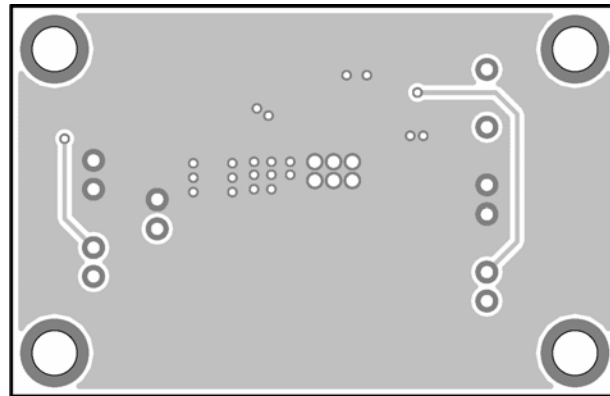


Figure 3—Bottom Layer

QUICK START GUIDE

1. Connect the positive terminal of the load to the VOUT pins and the negative terminal to the GND pins.
2. Preset the power supply output to 4.75V to 23V and turn it off.
3. Connect the positive terminal of the power supply output to the VIN pin and the negative terminal to the GND pin.
4. Turn on the power supply. The MP2307 will automatically startup.
5. To use the Enable function, apply a digital input to the EN pin. Drive EN higher than 2.5V to turn on the regulator or less than 0.7V to turn it off.
6. An under voltage lockout (UVLO) function can be implemented by the addition of a resistor divider (R4 and R5). The EN threshold is 2.5V, so the VIN UVLO threshold is: $\left(1 + \frac{R4}{R5}\right) \times 2.5V$.

RECOMMENDED COMPONENTS FOR STANDARD OUTPUT VOLTAGES

The output voltage of this board is set to 3.3V. This board is laid out to accommodate most commonly used inductors and output capacitors and to also be programmed for most standard output voltages. The following table lists recommended components for some standard output voltages. Listed compensation components (R2, C3) values are based on the output capacitor installed on this board. For other capacitors, refer to the Application Information section of the MP2307 datasheet.

| VOUT | R1 | R2 | C3 | L1 |
|------|--------|--------|-------|----------------|
| 1.8V | 9.53kΩ | 4.42kΩ | 6.8nF | 4.7μH |
| 2.5V | 16.9kΩ | 4.75kΩ | 4.7nF | 4.7μH to 6.8μH |
| 3.3V | 26.1kΩ | 5.6kΩ | 3.3nF | 6.8μH to 10μH |
| 5V | 44.2Ω | 7.5kΩ | 3.3nF | 10μH to 15μH |
| 12V | 121kΩ | 10kΩ | 1.2nF | 15μH to 22μH |

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