# EV1517DR-00B

**3.3V, 1A Sepic Evaluation Board**

The Future of Analog IC Technology™

## GENERAL DESCRIPTION

The EV1517DR-00B is a MP1517 evaluation board that is configured to provide a regulated 3.3V output at up to 1A from a 3V to 4.2V input. The output voltage is adjustable by changing resistors on the evaluation board. The high 1.1MHz switching frequency allows for smaller external components producing a compact solution for a wide range of load currents. Soft-start, cycle-by-cycle current limiting, and input under voltage lockout prevent overstressing or damage to sensitive external circuitry at startup and output short-circuit conditions. Current-mode regulation and external compensation components allow the MP1517 control loop to be optimized over a wide variety of input voltage, output voltage, and load current conditions.

## FEATURES

- Provides 3.3V, 1A Output from as Low as 3V Input
- Over 80% Efficiency
- Inherent Output Disconnect at Shutdown Mode
- 1.1MHz Switching Frequency
- 0.5μA Shutdown Current
- Fully Assembled and Tested

## APPLICATIONS

- Boost and SEPIC Regulators
- Handheld Computers
- Cell Phone Camera Flash, PDAs
- Digital Still and Video Cameras

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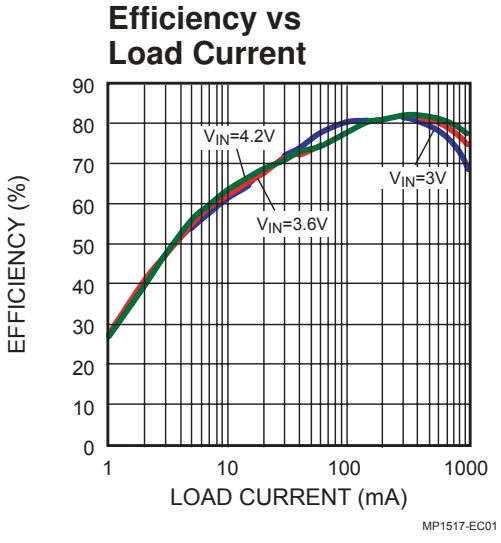
## ELECTRICAL SPECIFICATIONS

| Parameter | Symbol | Value | Units |
|---|---|---|---|
| Input Voltage | $V_{IN}$ | 3-4.2 | V |
| Output Voltage | $V_{OUT}$ | 3.3 | V |
| Output Current | $I_{OUT}$ | 1 | A |

## EV1517DR-00B EVALUATION BOARD


**(L x W x H) 2.0" x 2.0" x 0.4"**
**(5cm x 5cm x 1cm)**

| Board Number | MPS IC Number |
|---|---|
| EV1517DR-00B | MP1517DR |





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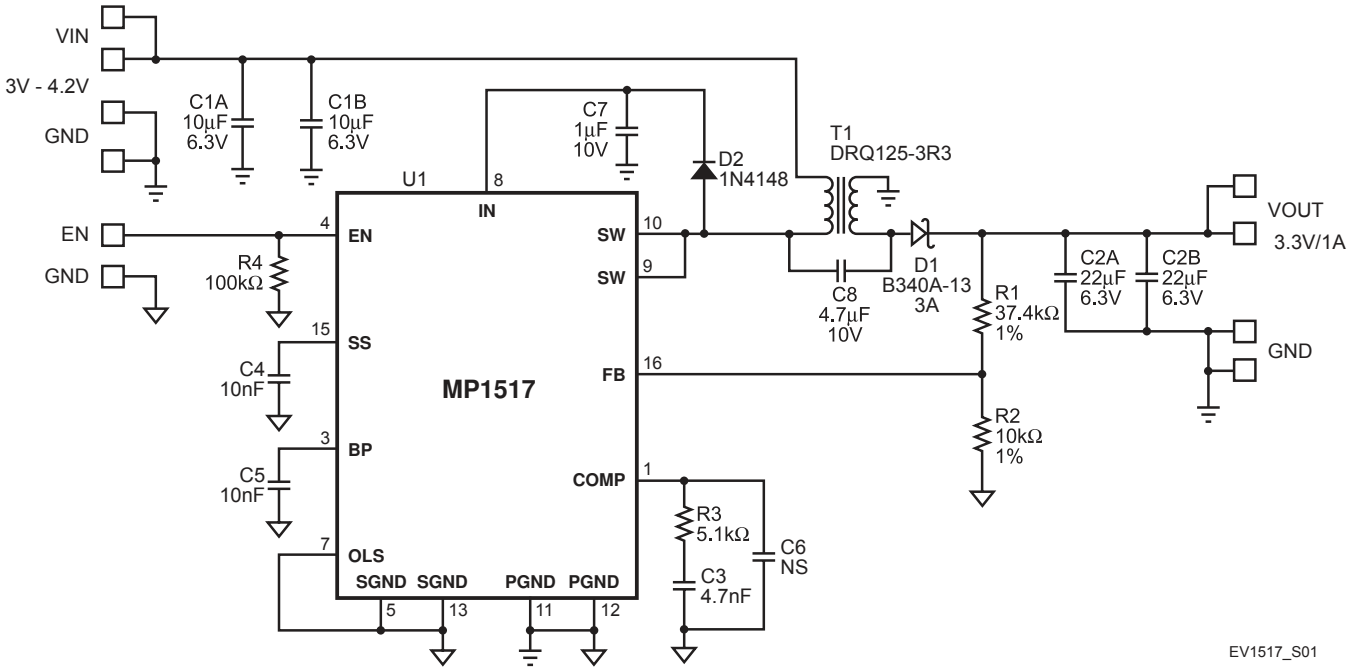
## EVALUATION BOARD SCHEMATIC




## EV1517DR-00B BILL OF MATERIALS

| Qty | Ref | Value | Description | Package | Manufacturer | Manufacturer P/N |
|---|---|---|---|---|---|---|
| 2 | C1A, C1B | 10µF | Ceramic Cap, 6.3V, X5R | 1210 | TDK | C3225X5R1A106K |
| 2 | C2A, C2B | 22µF | Ceramic Cap, 6.3V, X7R | 1210 | TDK | C3225X5R0J226M |
| 1 | C3 | 4.7nF | Ceramic Cap, 50V, X7R | 0805 | Panasonic | ECJ-2VB1H472K |
| 2 | C4, C5 | 10nF | Ceramic Cap, 50V, X7R | 0805 | TDK | C2012X7R1H103K |
| 1 | C6 | | Do Not Stuff | | | |
| 1 | C7 | 1uF | Ceramic Cap, 10V, X5R | 0805 | TDK | C2012X5R1A105K |
| 1 | C8 | 4.7uF | Ceramic Cap, 10V, X5R | 0805 | Panasonic | ECJ-2FB1A475K |
| 1 | D1 | | Schottky Diode, 40V, 3A, SMA | | Diodes Inc | B340LA-13-F |
| 1 | D2 | | Rectifier Diode, 75V, 200mW, SOD-323 | | Diodes Inc | 1N4148WS-7 |
| 1 | R1 | 37.4KΩ | Film Resistor, 1% | 0805 | Panasonic | ERJ-6ENF3742V |
| 1 | R2 | 10KΩ | Film Resistor, 1% | 0805 | Panasonic | ERJ-6ENF1002V |
| 1 | R3 | 5.1KΩ | Film Resistor, 5% | 0805 | Panasonic | ERJ-6GEYJ512V |
| 1 | R4 | 100KΩ | Film Resistor, 5% | 0805 | Panasonic | ERJ-6GEYJ104V |
| 1 | T1 | 3.3uH | Coupled Inductors, 4.63A, SMD | | Cooper | DRQ125-3R3 |
| 1 | U1 | | DC-DC Converter | | MPS | MP1517DR |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## PRINTED CIRCUIT BOARD LAYOUT

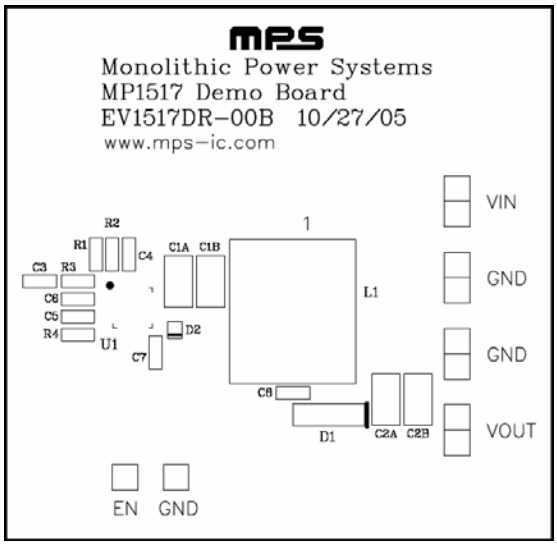


**Figure 1—Top Silk Layer**

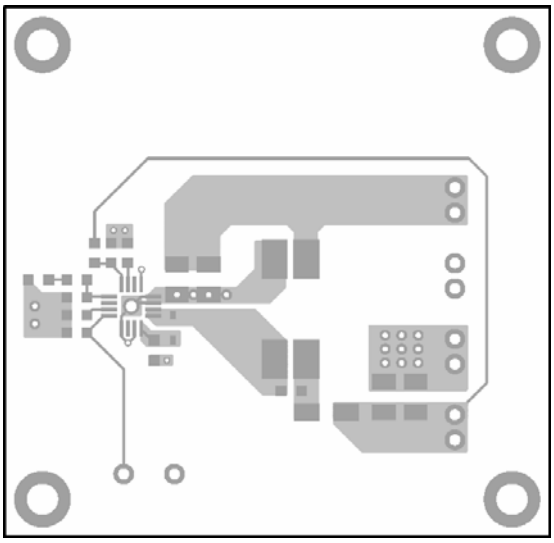

**Figure 2—Top Layer**

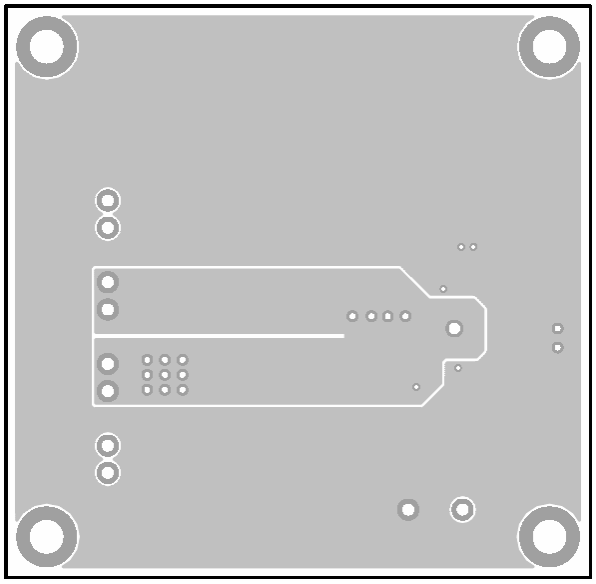

**Figure 3—Bottom Layer**


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## QUICK START GUIDE

The output voltage of this board is set to 12V. The board layout accommodates most commonly used inductors and output capacitors.

1. Preset Power Supply to $3V \le V_{IN} \le 4.2V$.
2. Turn Power Supply off.
3. Connect Power Supply terminals to:

   Positive (+): VIN, EN

   Negative (–): GND
4. Connect Load to:

   Positive (+): VOUT

   Negative (–): GND
5. Turn Power Supply on after making connections.
6. The MP1517 is enabled on the evaluation board once $V_{IN}$ is applied. To disable the MP1517, disconnect EN from VIN.
7. The output voltage $V_{OUT}$ can be changed by varying R1. Calculate the new value using the formula:

   $$R1 = \left( \frac{V_{OUT}}{V_{FB}} - 1 \right) R2$$

   Where $V_{FB}$ = 0.7V and R2 = 10kΩ

   For example, for $V_{OUT}$ = 3.6V

   $$R1 = \left( \frac{3.6V}{0.7V} - 1 \right) \times 10k\Omega = 41.4k\Omega$$

   Therefore use a 41.2kΩ standard 1% value resistor.

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