



The Future of Analog IC Technology™

# EV1517DR-00B

3.3V, 1A Sepic  
Evaluation Board

## 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.

## 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

## FEATURES

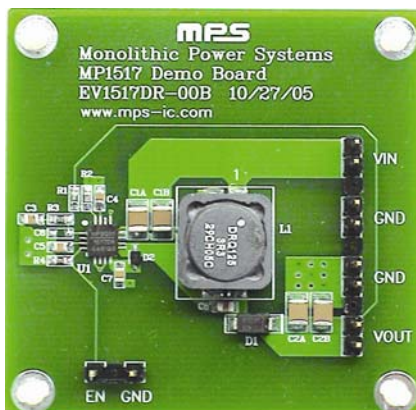
- Provides 3.3V, 1A Output from as Low as 3V Input
- Over 80% Efficiency
- Inherent Output Disconnect at Shutdown Mode
- 1.1MHz Switching Frequency
- 0.5 $\mu$ A Shutdown Current
- Fully Assembled and Tested

## APPLICATIONS

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

"MPS" and "The Future of Analog IC Technology", are Trademarks of Monolithic Power Systems, Inc.

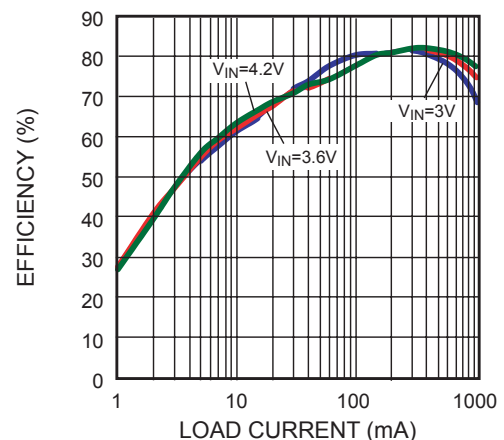
## EV1517DR-00B EVALUATION BOARD



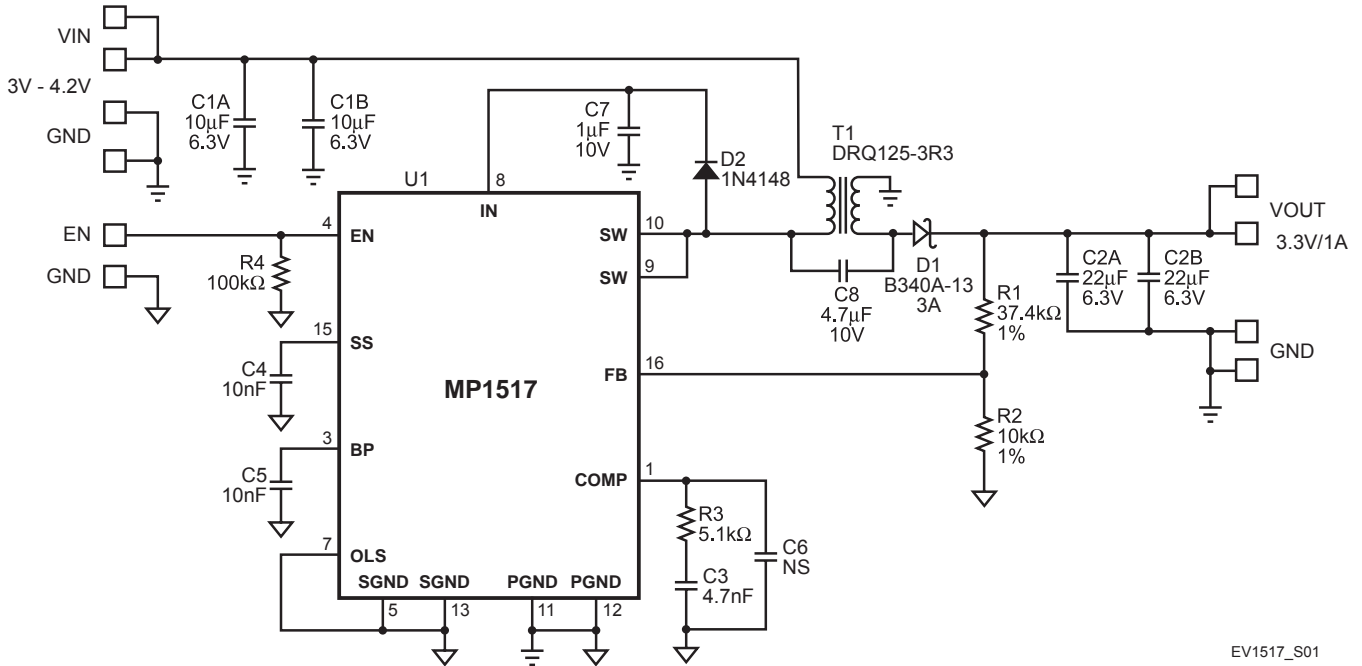
(L x W x H) 2.0" x 2.0" x 0.4"  
(5cm x 5cm x 1cm)

Board Number	MPS IC Number
EV1517DR-00B	MP1517DR

## Efficiency vs Load Current



MP1517-EC01

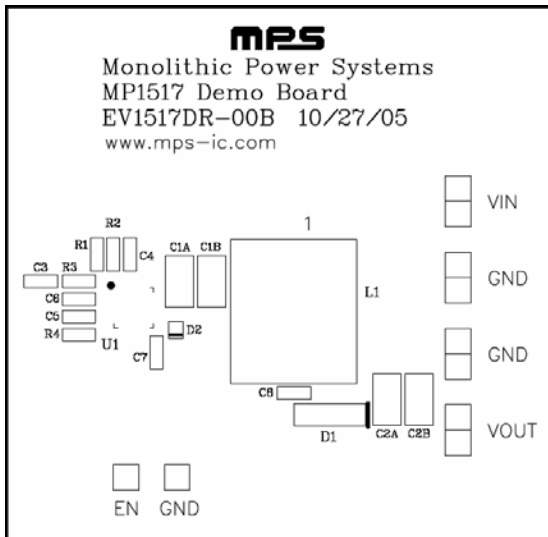
**EVALUATION BOARD SCHEMATIC**


EV1517\_S01

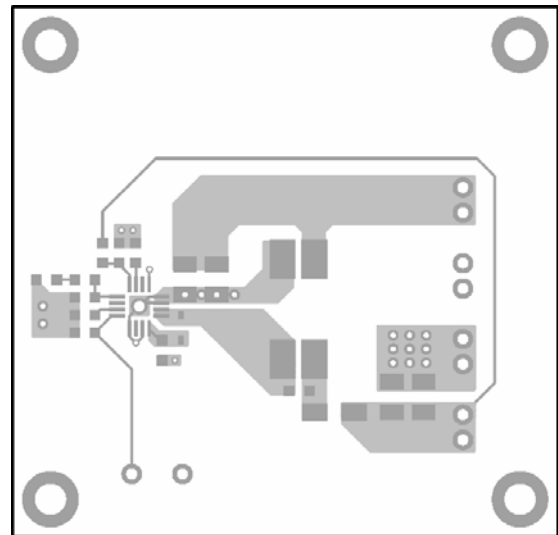
**EV1517DR-00B BILL OF MATERIALS**

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

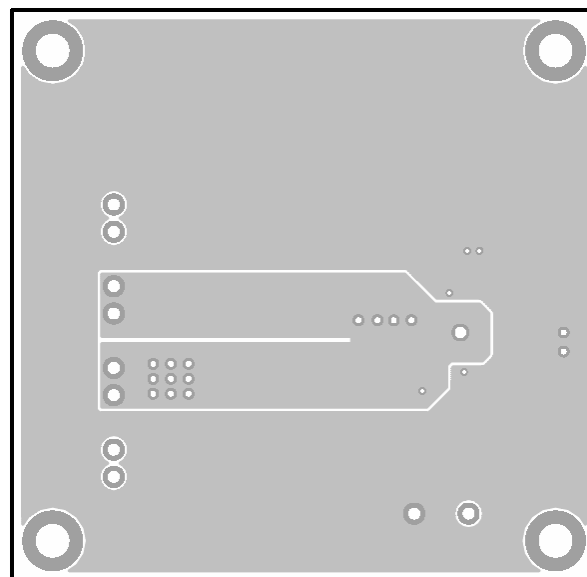
**PRINTED CIRCUIT BOARD LAYOUT**



**Figure 1—Top Silk Layer**



**Figure 2—Top Layer**



**Figure 3—Bottom Layer**

## 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  $3V \leq V_{IN} \leq 4.2V$ .
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  $R2 = 10k\Omega$

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 41.2k $\Omega$  standard 1% value resistor.

**NOTICE:** The information in this document is subject to change without notice. Please contact MPS for current specifications. Users should warrant and guarantee that third party Intellectual Property rights are not infringed upon when integrating MPS products into any application. MPS will not assume any legal responsibility for any said applications.