EV4462DN-00A

3.5A, 36V, 4MHz
Step-Down Converter Evaluation Board

The Future of Analog IC Technology

DESCRIPTION

The EV4462DN-00A is an evaluation board for the MP4462, a high frequency step-down regulator with an integrated power MOSFET.

The MP4462 integrates a 100mΩ MOSFET that provides 3.5A load current over a wide operating input voltage of 6V to 36V. A 5μA shutdown mode quiescent current allows use in battery-powered applications.

Current mode control provides fast transient response and eases loop stabilization. An internal soft-start prevents inrush current at turn-on.

The MP4462 is available in compact SOIC8 with exposed pad package.

FEATURES

- 3.5A Output Current
- Wide 8V to 36V Operating Input Range
- Adjustable Output from 0.8V to 33V
- Fully Assembled and Tested

APPLICATIONS

- Game Machines
- Automotive Systems
- Industrial Power Systems
- Distributed Power Systems
- Printer Systems
- Battery Powered Systems

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

ELECTRICAL SPECIFICATIONS

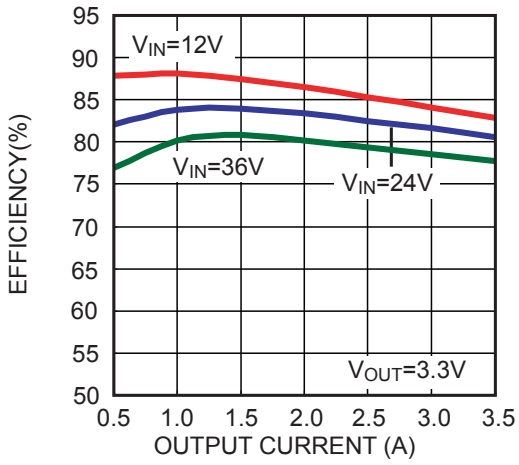
Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	8 – 36	V
Output Voltage	V_{OUT}	3.3	V
Output Current	I_{OUT}	3.5	A

EV4462DN-00A EVALUATION BOARD

(L x W x H) 1.8” x 1.8” x 0.4”
(4.6cm x 4.6cm x 1.0cm)

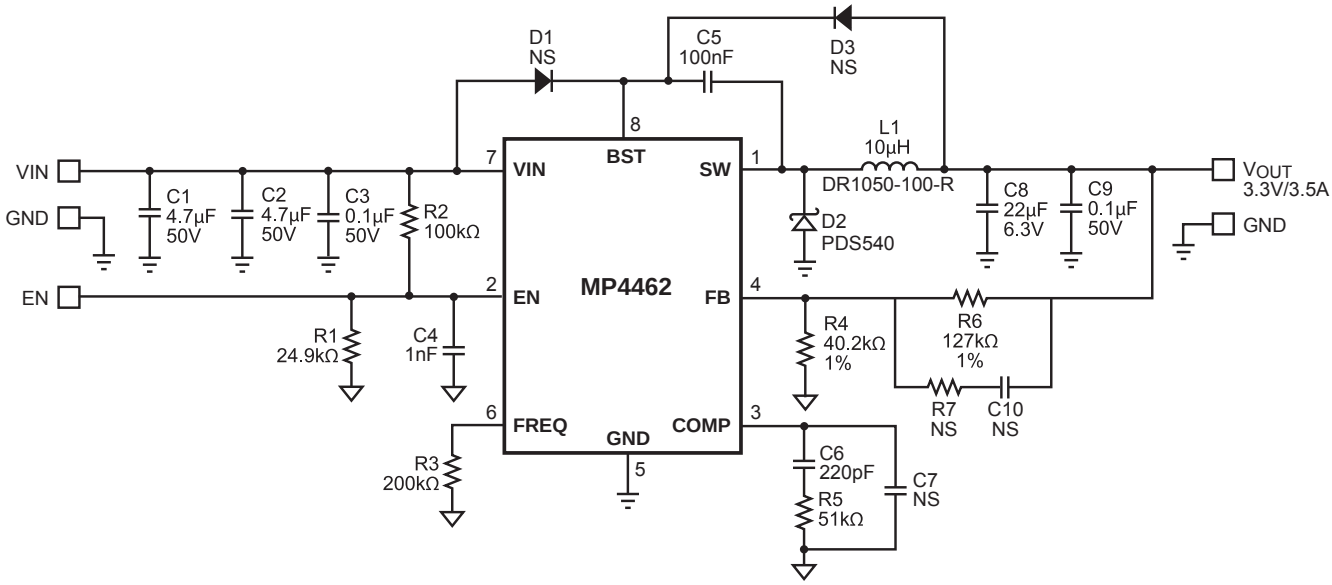
Board Number	MPS IC Number
EV4462DN-00A	MP4462DN

Efficiency vs Output Current



MPS Proprietary Information. Unauthorized Photocopy and Duplication Prohibited.
© 2009 MPS. All Rights Reserved.

EVALUATION BOARD SCHEMATIC



EV4462DN-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
2	C1, C2	4.7µF	Ceramic Cap., 50V, X7R	1210	Murata	GRM32ER71H475KA88L
2	C3, C9	0.1µF	Ceramic Cap., 50V, X7R	0805	TDK	C2012X7R1H104K
1	C4	1nF	Ceramic Cap, 50V, X7R	0603	TDK	C1608X7R1H102K
1	C5	100nF	Ceramic Cap., 50V, X7R	0603	TDK	C1608X7R1H104K
1	C6	220pF	Ceramic Cap, 50V, NPO	0603	TDK	C1608C0G1H221J
21	C7,C10	NS	Not Stuffed			
1	C8	22µF	Ceramic Cap., 6.3V, X5R	1210	TDK	C3225X5R0J226M
1	R1	24.9kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0724K9L
1	R2	100kΩ	Film Res., 5%	0603	Any	
1	R3	200kΩ	Film Res., 5%	0603	Any	
1	R4	40.2kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0740K2L
1	R5	51kΩ	Film Res., 5%	0603	Any	
1	R6	127kΩ	Film Res., 1%	0603	Yageo	RC0603FR-07127KL
1	R7	NS	Not Stuffed			
2	D1, D3	NS	Not Stuffed			
1	D2		Diode Schottky, 40V, 5A	PowerDI	Diodes Inc	PDS540
1	L1	10µH	Inductor, 5.0A	SMD	Cooper	DR1050-100-R
1	U1		Step-Down Regulator	SO8	MPS	MP4462DN

MPS Proprietary Information. Unauthorized Photocopy and Duplication Prohibited.
© 2009 MPS. All Rights Reserved.

PRINTED CIRCUIT BOARD LAYOUT

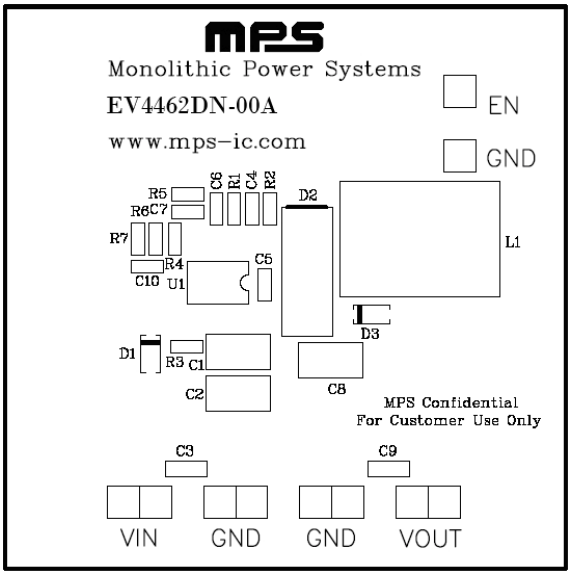


Figure 1—Top Silk Layer

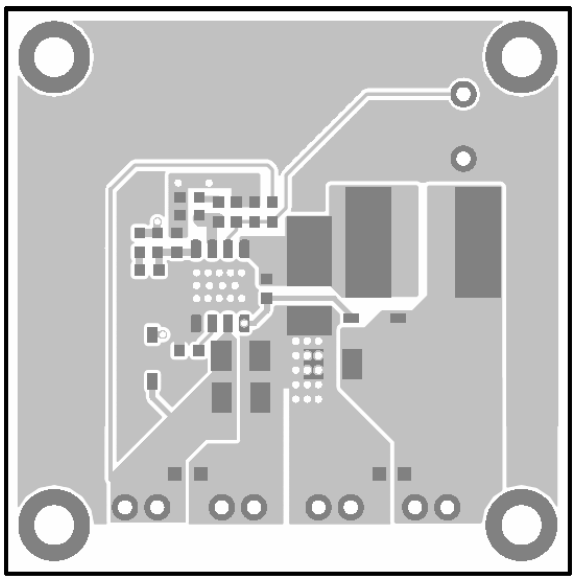


Figure 2—Top Layer

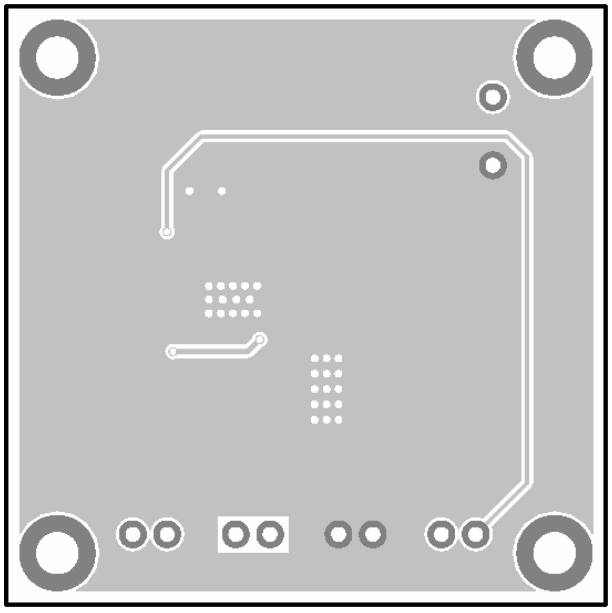


Figure 3—Bottom Layer

MPS Proprietary Information. Unauthorized Photocopy and Duplication Prohibited.
© 2009 MPS. All Rights Reserved.

QUICK START GUIDE

1. Connect the positive and negative terminals of the load to the VOUT and GND pins, respectively.
2. Preset the power supply output to between 8V and 36V, then turn it off.
3. Connect the positive and negative terminals of the power supply output to the VIN and GND pins, respectively.
4. Turn the power supply on. The EV4462DN will automatically startup.
5. To use the Enable function, apply a digital input to the EN pin. Drive EN higher than 1.6V to turn on the regulator, drive EN less than 1.2V to turn it off.
6. An input under voltage lockout (UVLO) function is implemented by the addition of a resistor divider R1 and R2. The EN threshold is 1.2V (falling edge), so V_{IN} UVLO threshold is $1.2V \times \left(1+\frac{R2}{R1}\right)$. It is preset to 6V on this board.
7. Use R3 to re-program switching frequency if needed,

$$fs(KHz) = \frac{70000}{R3(K\Omega)^{0.93}}.$$

   The switching frequency is preset to 500KHz on this board. Please note that an external bootstrap diode from 5Vsupply to BST pin is necessary to boost gate drive voltage if switching frequency is above 2MHz because the charge time is reduced at high switching frequency.
8. Use R4 and R6 to set the output voltage with V_{FB} = 0.8V. For R4 = 40.2kΩ, R6 can be determined by: $R6 = \frac{40.2}{0.8} \times \left(V_{OUT} - 0.8\right)(k\Omega)$.

Follow the Application Information section in the device datasheet to recalculate the compensation, inductor and output capacitor values when output voltage is changed.

NOTICE: The information in this document is subject to change without notice. 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.

MPS Proprietary Information. Unauthorized Photocopy and Duplication Prohibited.
© 2009 MPS. All Rights Reserved.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Monolithic Power Systems (MPS):

EV4462DN-00A