

GENERAL DESCRIPTION

The EV2403DN-00A is an evaluation board for the MP2403, a monolithic synchronous buck regulator. The MP2403 integrates a 150mΩ high-side MOSFET and a 80mΩ low-side MOSFET that provide 3A continuous load current over a wide operating input voltage of 4.6V to 32V. 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 1μA.

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

ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	4.6 to 32	V
Output Voltage	V_{OUT}	3.3	V
Output Current	I_{OUT}	3	A

FEATURES

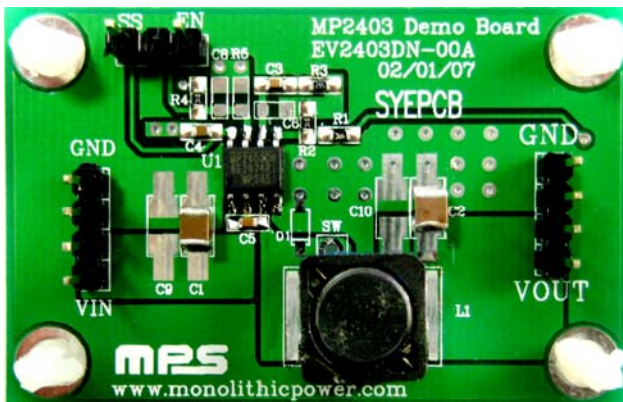
- 3A Output Current
- Wide 4.6V to 32V Operating Input Range
- 3.3V Output, Adjustable from 0.80V to 28V
- Up to 95% Efficiency at Full Load
- Fixed 250KHz Frequency
- All Ceramic Input and Output Capacitors
- Programmable Soft-Start
- Input Under Voltage Lockout

APPLICATIONS

- Distributed Power Systems Handheld
- Networking Systems
- FPGA, DSP, ASIC Power Supplies
- Pre-Regulator for Linear Regulators
- Notebook Computers

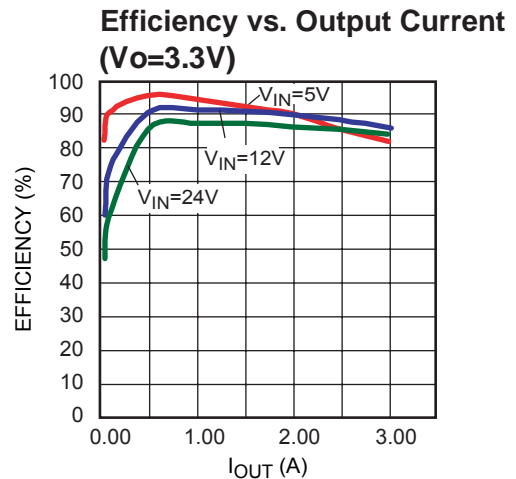
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EV2403DN-00A EVALUATION BOARD

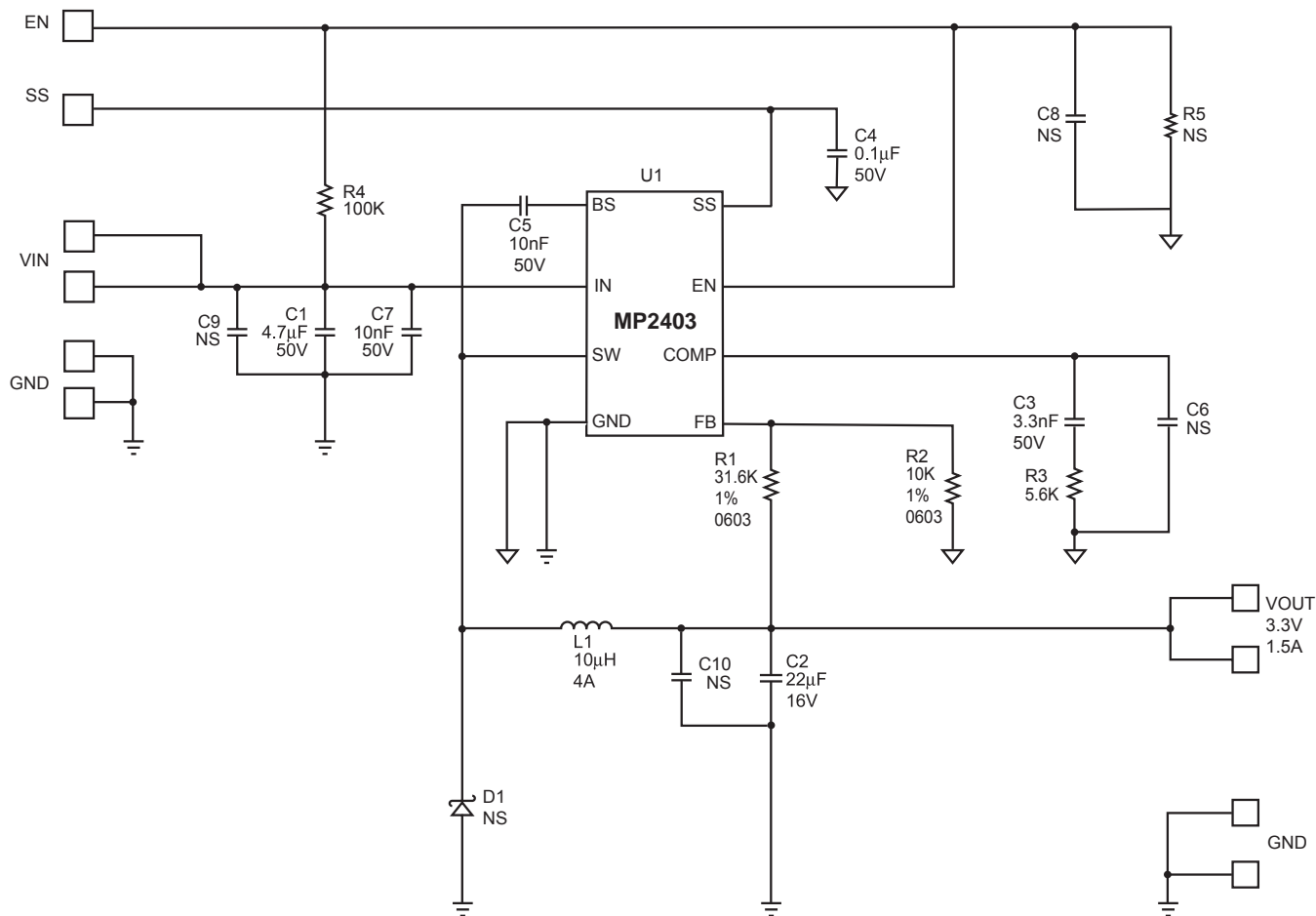


Dimensions (2.1"Lx1.3"Wx0.3"H)

Board Number	MPS IC Number
EV2403DN-00A	MP2403DN



EVALUATION BOARD SCHEMATIC



EV2403DN-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Mfg.	Mfg. P/N
1	C1	4.7uF	Ceramic Cap, 50V, X7R	SM1210	Murata	GRM32ER71H475KA88L
1	C2	22uF	Ceramic Cap, 16V, X7R	SM1210	TDK	C3225X5R1C226M
1	C3	3.3nF	Ceramic Cap, 50V, X7R	SM0603	Murata	GRM188R71H332KA01
1	C4	0.1uF	Ceramic Cap, 50V, X7R	SM0603	TDK	C1608X7R1H104K
2	C5, C7	10nF	Ceramic Cap, 50V, X7R	SM0603	TDK	C1608X7R1H103K
1	C6,C8,C9,C10		Do Not Stuff			
1	D1		Do Not Stuff			
1	L1	10uH	Inductor, 4.3A	SMD	TOKO	D104C-#919AS-100M
1	R1	31.6k Ω	Film Res, 1%	SM0603	Yageo	RC0603FR-0731K6L
1	R2	10k Ω	Film Res, 1%	SM0603	Yageo	RC0603FR-0710KL
1	R3	5.6k Ω	Film Res, 5%	SM0603	any	
1	R4	100k Ω	Film Res, 5%	SM0603	any	
1	R5		Do Not Stuff			
1	U1		DC-DC Converter	SO8	MPS	

PRINTED CIRCUIT BOARD LAYOUT

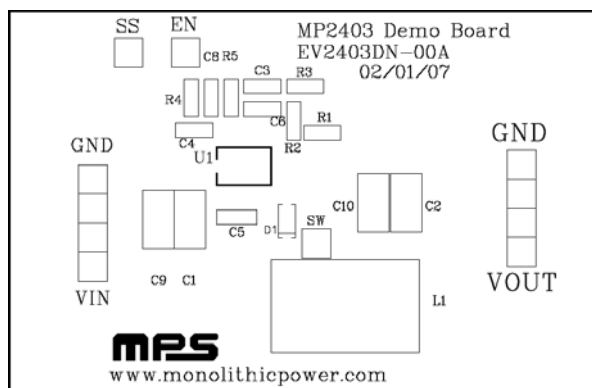


Figure 1—Top Silk Layer

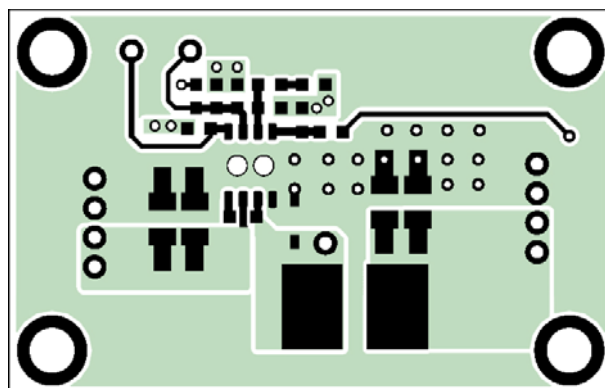


Figure 2—Top Layer

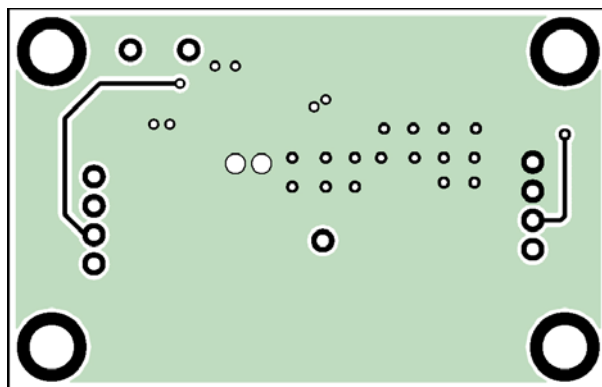


Figure 3—Bottom Layer

QUICK START GUIDE

The output voltage of this board is preset to 3.3V. The board is laid out to accommodate most commonly used inductors and output capacitors.

1. Connect the positive and negative ends of the load to the V_{OUT} and GND pins, respectively.
2. Connect the input voltage ($4.6V \leq V_{IN} \leq 32V$) and input ground to the VIN and GND pins, respectively.
3. To turn on the MP2403, apply an enable voltage V_{EN} to the EN pin. Drive EN higher than 2.0V to turn on the MP2403 or lower than 1.1V to turn it off.
4. The output voltage V_{OUT} can be programmed by varying R1. Calculate the new value using the formula:

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

Where $V_{FB} = 0.8V$ and $R2 = 10k\Omega$.

For example, for $V_{OUT} = 3.3V$:

$$R1 = R2 \times \left(\frac{V_O}{V_{FB}} - 1 \right) = 10k\Omega \times \left(\frac{3.3}{0.8} - 1 \right) = 31.25k\Omega$$

for the closest standard 1% value.

RECOMMENDED COMPONENTS FOR STANDARD OUTPUT VOLOTAGES

This board is programmed for most standard output voltages. The following table lists recommended components for some standard output voltages.

Table 1—Recommended Components for Standard Output Voltages

Vout	R1 (1%)	R2 (1%)
0.8V	0	10k Ω
1.2V	5k Ω	10k Ω
1.8V	12.5k Ω	10k Ω
2.5V	21.25k Ω	10k Ω
3.3V	31.25k Ω	10k Ω
5.0V	52.5k Ω	10k Ω

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