EV2303ADN-01A
3A, 28V, 360kHz Synchronous Rectified Step-Down Converter EV Board

The Future of Analog IC Technology

DESCRIPTION

The EV2303ADN-01A is an evaluation board for the MP2303A, a monolithic synchronous buck regulator.

EV2303ADN evaluation board is a fully assembled and tested PCB. It generates a +3.3V output voltage at load currents up to 3A from a 4.7V to 28V input voltage range. An adjustable soft-start prevents inrush current at turn-on.

The MP2303A switches at 360kHz and achieve up to 95% efficiency with the supplied components.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	4.7 – 28	V
Output Voltage	V_{OUT}	3.3	V
Output Current	I_{OUT}	3	A

FEATURES

- 3A Output Current
- Wide 4.7V to 28V Operating Input Range
- 3.3V Output

APPLICATIONS

- Distributed Power Systems
- Pre-Regulator for Linear Regulators
- Notebook Computers
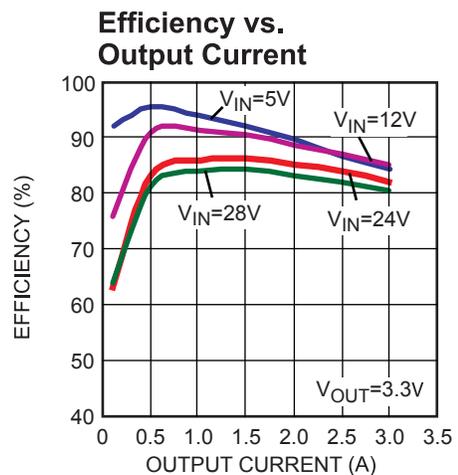
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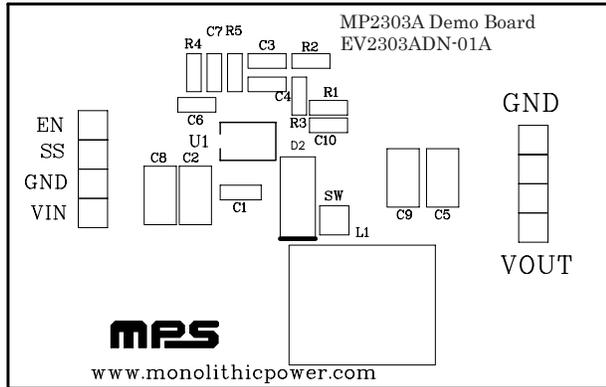
EV2303ADN-01A EVALUATION BOARD

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

Board Number	MPS IC Number
EV2303ADN-01A	MP2303A

Efficiency vs. Output Current

EVALUATION BOARD SCHEMATIC

EV2303ADN-01A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	C1	10nF	Ceramic Capacitor, 50V, X7R	SM0603	TDK	C1608X7R1H103K
1	C2	4.7µF	Ceramic Capacitor, 50V, X7R	SM1210	Murata	GRM32ER71H475KA88L
1	C3	3.3nF	Ceramic Capacitor, 50V, X7R	SM0603	TDK	C1608X7R1H332K
0	C4, C7 C8, C10	NS	Not Stuffed			
2	C5, C9	22µF	Ceramic Capacitor, 16V, X5R	SM1210	TDK	C3225X5R1C226M
1	C6	0.1µF	Ceramic Capacitor, 50V, X7R	SM0603	TDK	C1608X7R1H104K
1	R1	31.6kΩ	Resistor, 1%	SM0603	Yageo	RC0603FR-0731K6L
1	R2	4.99kΩ	Resistor, 1%	SM0603	Yageo	RC0603FR-074K99L
1	R3	10kΩ	Resistor, 1%	SM0603	Yageo	RC0603FR-0710KL
1	R4	100kΩ	Resistor, 5%	SM0603	Any	
0	R5	NS	Not Stuffed			
0	D1	NS	Not Stuffed			
1	L1	10µH	Inductor, 4.3A	SMD	TOKO	D104C-919AS-100M
		10µH	Inductor, 4.3A	SMD	TDK	VLF10045T-100M4R3
		10µH	Inductor, 4.0A	SMD	Wurth	744066100
		10µH	Inductor, 4.58A	SMD	Cooper	DR1050-100R
1	U1		DC-DC Converter	SOIC8	MPS	MP2303ADN

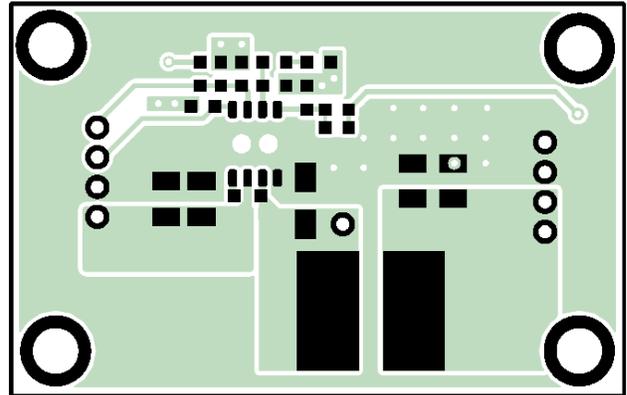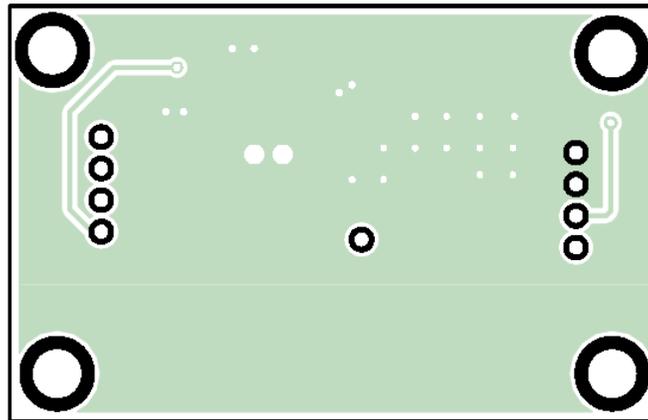## PRINTED CIRCUIT BOARD LAYOUT

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 VOUT and GND pins, respectively.

2. Connect the input voltage (4.7V ≤ V_{IN} ≤ 28V) and input ground to the VIN and GND pins, respectively.

3. To turn on the MP2303A, apply an enable voltage V_{EN} to the EN pin. Drive EN higher than 1.3V to turn on the MP2303A.

4. The output voltage V_{OUT} can be programmed by varying R1. Calculate the new value using the formula:

$$R1 = R3 \times (\frac{V_{OUT}}{V_{FB}} - 1)$$

Where V_{FB} = 0.8V and R3 = 10kΩ.
For example, for V_{OUT} = 3.3V:

$$R1 = R3 \times (\frac{V_{OUT}}{V_{FB}} - 1) = 10k\Omega \times (\frac{3.3}{0.8} - 1) = 31.25k\Omega$$

for the closest standard 1% value

RECOMMENDED COMPONENTS FOR STANDARD OUTPUT VOLTAGES

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

V_{OUT}	R1 (1%)	R3 (1%)
0.8V	0	10kΩ
1.2V	4.99kΩ	10kΩ
1.8V	12.4kΩ	10kΩ
2.5V	21.5kΩ	10kΩ
3.3V	31.6kΩ	10kΩ
5.0V	52.3kΩ	10kΩ