



The Future of Analog IC Technology™

EV2305DS-00A

4.75V to 23V IN, 2A OUT

Synchronous Buck Converter

EVALUATION BOARD

DESCRIPTION

The EV2305DS-00A is the evaluation board of MPS' MP2305 synchronous buck converter. It has a wide supply range from 4.75V to 23V and a continuous output current up to 2A. It features synchronous rectification for high efficiency with integrated high-side and low-side power MOSFETs. The output voltage is preset to 3.3V, but can be easily adjusted to other levels from 0.923V. Current mode control and integrated power MOSFETs minimize component counts, board area, and solution cost. Fault condition protections include cycle-by-cycle current limiting, thermal shutdown and under-voltage lockout. Programmable soft-start reduces turn-on stress. Small SO-8 package minimizes board area.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Supply Voltage	V_{IN}	4.75 to 23	V
Output Voltage	V_{OUT}	3.3	V
Output Current	I_{OUT}	0 to 2	A

FEATURES

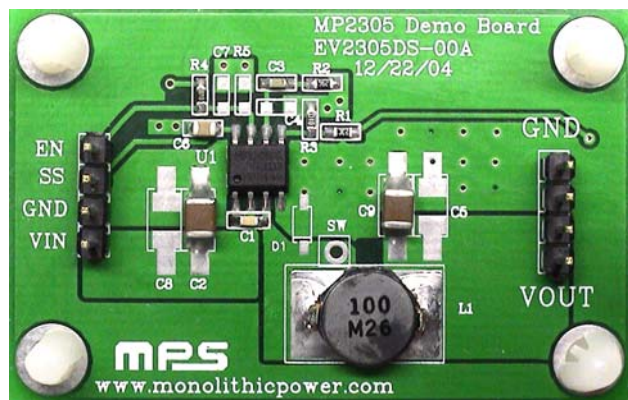
- Up to 2A Output Current
- Wide 4.75V to 23V Operating Input Range
- Monolithic Synchronous Buck with 130mΩ High-Side and Low-Side FETs
- Fixed 340KHz Frequency
- All Ceramic Input and Output Capacitors
- Programmable Soft-Start
- Programmable Input Under Voltage Lockout

APPLICATIONS

- Distributed Power Systems
- Networking Systems
- FPGA, DSP, ASIC Power Supplies
- Green Electronics/ Appliances
- Notebook Computers

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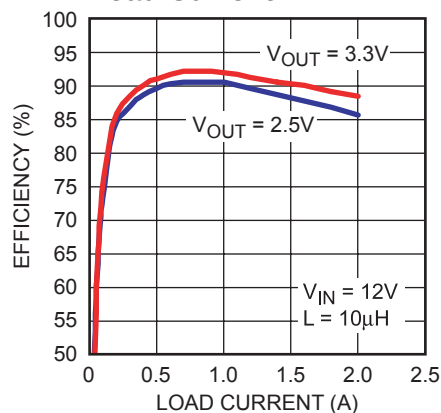
EV2305DS-00A EVALUATION BOARD



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

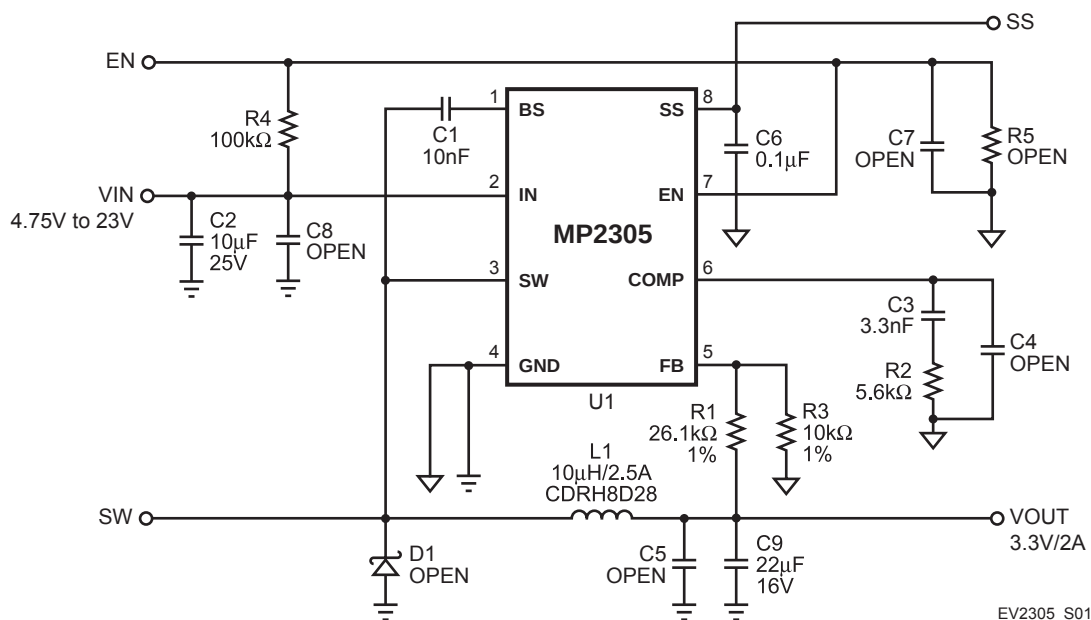
Board Number	MPS IC Number
EV2305DS-00A	MP2305DS

Efficiency vs Load Current



MP2305-EC01

EVALUATION BOARD SCHEMATIC



EV2305DS-00A BILL OF MATERIALS

Item	Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	1	C1	10nF	Ceramic Cap, 50V, X7R	SM0805	AVX	08055C103KAT2A
2	1	C2	10μF	Ceramic Cap, 25V, X5R	SM1210	AVX	12103D106KAT2A
3	1	C3	3.3nF	Ceramic Cap, 50V, X7R	SM0805	AVX	08055C332KAT2A
4	4	C4, C5 C7, C8	OPEN	Not Stuffed			
5	1	C6	0.1μF	Ceramic Cap, 50V, X7R	SM0805	AVX	08055C104KAT2A
6	1	C9	22μF	Ceramic Cap, 16V, X5R	SM1210	AVX	1210YD226KAT2A
7	1	D1		Do Not Stuff			
8	1	L1	10μH	Inductor, 2.5A	SMD	Sumida	CDRH8D28
9	1	R1	26.1kΩ	Resistor, 1%	SM0805	Panasonic	ERJ-6ENF2612V
10	1	R2	5.6kΩ	Resistor, 5%	SM0805	Panasonic	ERJ-6GEYJ562V
11	1	R3	10kΩ	Resistor, 1%	SM0805	Panasonic	ERJ-6ENF1002V
12	1	R4	100kΩ	Resistor, 5%	SM0805	Panasonic	ERJ-6GEYJ104V
13	1	R5	OPEN	Not Stuffed	SM0805		
14	1	U1		DC-DC Converter	SO8	MPS	MP2305DS

PRINTED CIRCUIT BOARD LAYOUT

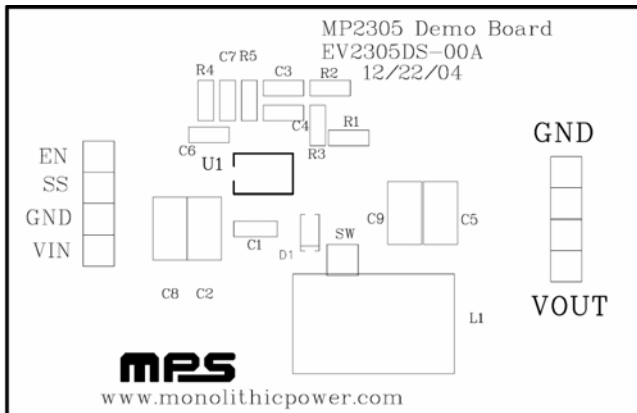


Figure 1—Top Silk Layer

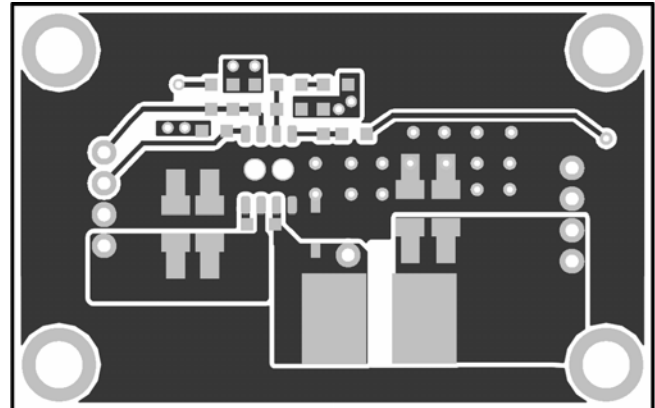


Figure 2—Top Layer

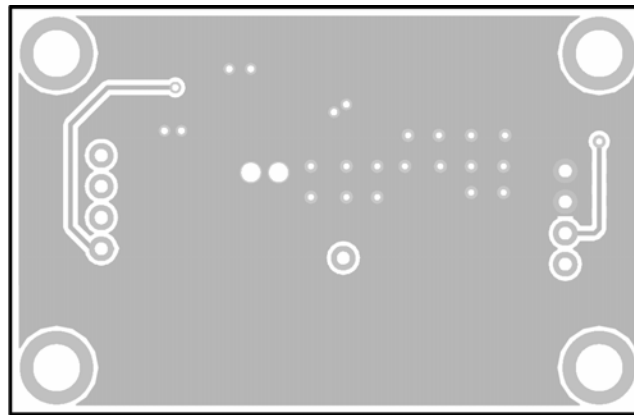


Figure 3—Bottom Layer

QUICK START GUIDE

1. Connect the positive terminals of the load to the VOUT pins and the negative terminals to the GND pins.
2. Preset the power supply output to 4.75V to 23V and turn it off.
3. Connect the positive terminal of the power supply output to the VIN pin and the negative terminal to the GND pin
4. Turn on the power supply; the MP2305 will automatically startup.
5. To use the Enable function, apply a digital input to the EN pin. Drive EN higher than 2.5V to turn on the regulator or less than 0.7V to turn it off.
6. An under voltage lockout (UVLO) function can be implemented by the addition of a resistor divider (R4 and R5). The EN threshold is 1.3V, so VIN UVLO threshold is: $\left(1 + \frac{R4}{R5}\right) \times 1.3V$.

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