



The Future of Analog IC Technology®

EV2351DQ-00A

4.75V to 23V Input, 1.5A Output Step-Down DC/DC Converter

EVALUATION BOARD - INITIAL RELEASE

GENERAL DESCRIPTION

The EV2351DQ-00A is the Evaluation Board for MPS' MP2351 Step-Down DC/DC Converter. It features a wide supply range of 4.75V to 23V and a continuous output current up to 1.5A. The output voltage is set to 3.3V, but can be easily adjusted to other levels from 1.22V. A 1.4MHz high switching frequency allows the use of small, low cost capacitors and inductors. Current mode control and an integrated power MOSFET minimize component count, board area, and solution cost. Fault condition protection includes cycle-by-cycle current limiting, thermal shutdown, and under-voltage lockout. Internal soft-start reduces the turn-on stress. The small 10-pin QFN package minimizes board area.

FEATURES

- Up to 1.5A Output Current
- Wide 4.75 to 23V Operating Input Range
- Monolithic Buck with 180mΩ Internal FET
- Fixed 1.4MHz Frequency
- All Ceramic Input and Output Capacitors
- Programmable Input Under-Voltage Lockout

APPLICATIONS

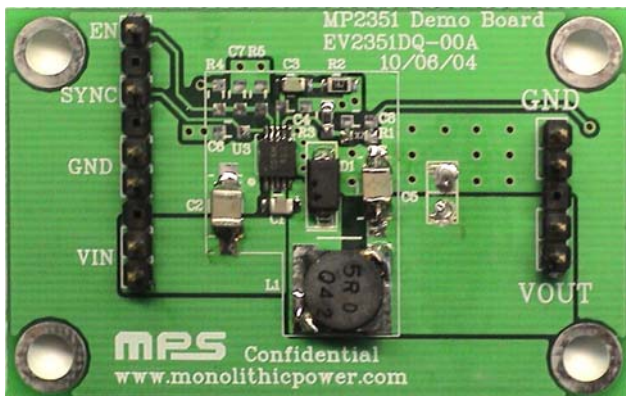
- Distributed Power Systems
- Battery Chargers
- DSL Modems
- Pre-Regulators for Linear Regulators

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ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Supply Voltage	V_{IN}	4.75 – 23	V
Output Voltage	V_{OUT}	5	V
Output Current	I_{OUT}	0 – 1.5	A

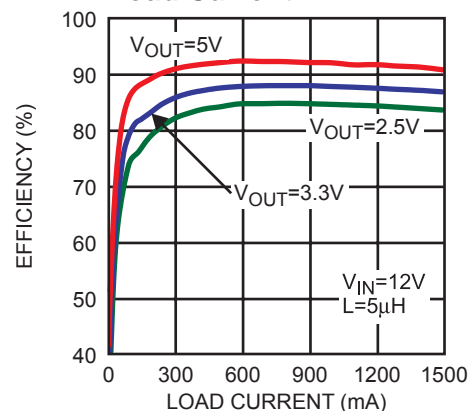
EV2351DQ-00A EVALUATION BOARD



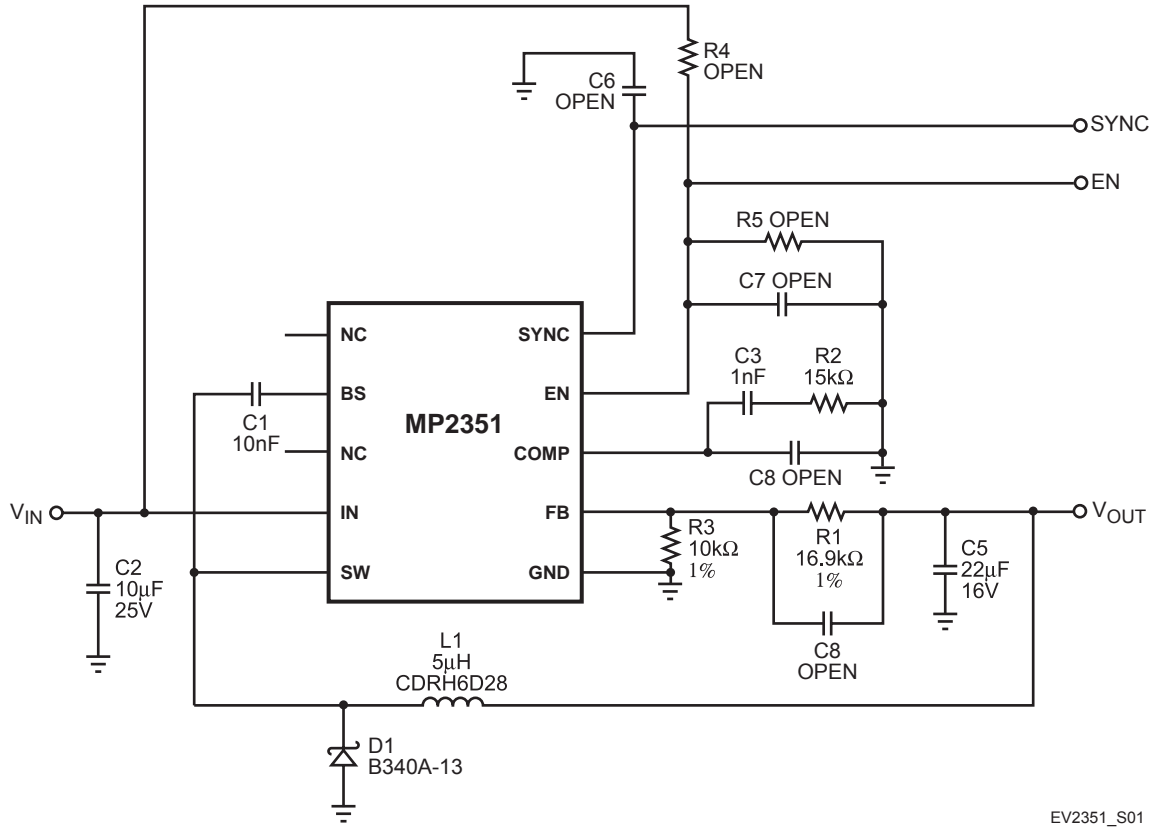
Dimensions (2.1"X x 1.3"Y x 0.4"Z)

Board Number	MPS IC Number
EV2351DQ-00A	MP2351

Efficiency vs Load Current



MP2351-EC01

EVALUATION BOARD SCHEMATIC


EV2351_S01

EV2351DQ-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	10nF	Ceramic Capacitor, 50V, X7R	SM0805	AVX	08055C103KAT2A
1	C2	10µF	Ceramic Capacitor, 25V, X5R	SM1210	AVX	12103D106KAT2A
1	C3	1nF	Ceramic Capacitor, 50V, X7R	SM0805	AVX	08055C102KAT2A
1	C5	22µF	Ceramic Capacitor, 16V, X5R	SM1210	AVX	1210YD226KAT2A
4	C4, C7, C6, C8		Do Not Stuff			
1	D1		Diode Schottky, 40V, 3A	SMA	Diodes Inc	B340A-13
1	L1	5µH	Inductor, 2.4A	SMD	Sumida	CDRH6D28-5R0NC
1	R1	16.9kΩ	Film Resistor, 1%	SM0805	Panasonic	ERJ-6ENF1692V
1	R2	15kΩ	Film Resistor, 5%	SM0805	Panasonic	ERJ-6GEYJ562V
1	R3	10kΩ	Film Resistor, 1%	SM0805	Panasonic	ERJ-6ENF1002V
2	R4, R5		Do Not Stuff			
1	U1		Step-Down Converter	QFN10	MPS	MP2351DQ

PRINTED CIRCUIT BOARD LAYOUT

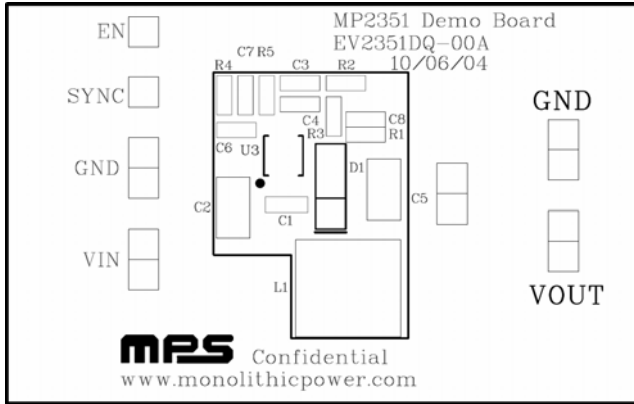


Figure 1—Top Silk Layer

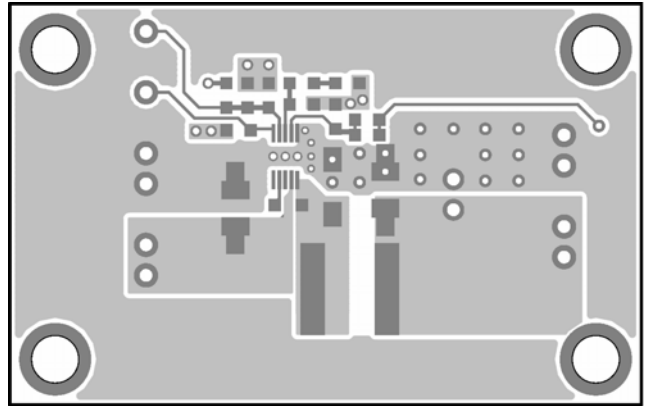


Figure 2—Top Layer

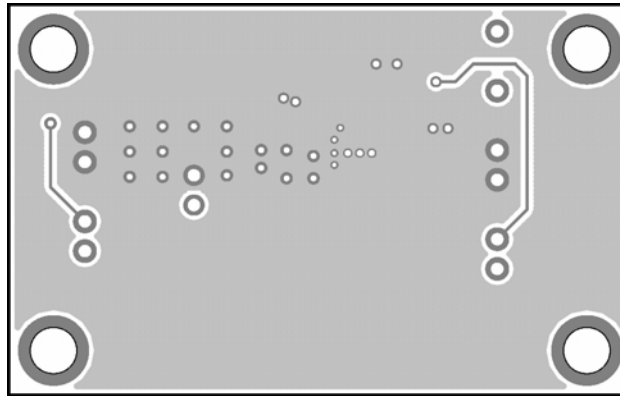


Figure 3—Bottom Layer

QUICK START GUIDE

1. Connect the positive terminal of the load to VOUT pins, and the negative terminal of the load to GND pins
2. Preset the power supply output to 4.75V – 23V and turn off the power supply.
3. Connect the positive terminal of the power supply output to the VIN pin and the negative terminal of the power supply output to the GND pin
4. Turn the power supply on. The MP2351 will automatically startup.
5. To use the Enable function, apply a digital input to EN pin. Drive EN higher than 2.5V to turn on the regulator, drive EN less than 0.7V to turn it off.
6. An input under voltage lockout (UVLO) function can be implemented by the addition of a resistor divider R4 and R5.

The EN threshold is 2.5V, so V_{IN} UVLO threshold is: $\left(1 + \frac{R4}{R5}\right) \times 2.5V$.

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