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EV2364DF-01A

1.5A, 23V, 1.4MHz Dual
Step-Down Converter Evaluation Board

DESCRIPTION

The EV2364DF-01A is an evaluation board for the MP2364, a dual output, monolithic step-down switch mode converter with built-in internal power MOSFETs. It achieves 1.5A continuous output current for each output over a wide input supply range with excellent load and line regulation.

The MP2364's current mode operation provides fast transient response and eases loop stabilization.

Its fault protection includes cycle-by-cycle current limiting and thermal shutdown. In shutdown mode the regulator draws 40µA of supply current.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V _{IN}	4.75 to 23	V
Output Voltage A	V _{OUTA}	3.3	V
Output Voltage B	V _{OUTB}	2.5	V

FEATURES

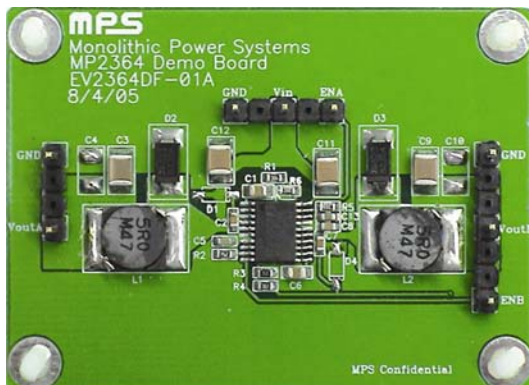
- 1.5A Current for Each Output
- Ceramic Input and Output Capacitors
- Up to 90% Efficiency
- Fixed 1.4MHz Frequency
- Wide 4.75V to 23V Operating Input Range

APPLICATIONS

- Distributed Power Systems
- I/O and Core Supplies
- DSL Modems
- Set Top Boxes
- Cable Modems

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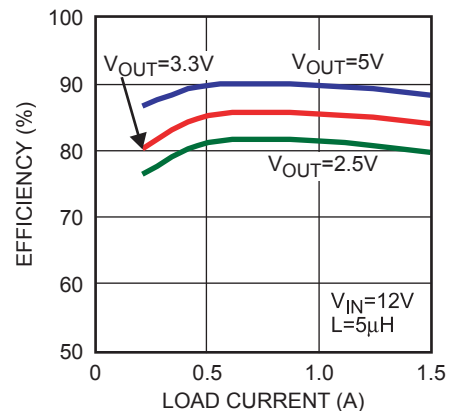
EV2364DF-01A EVALUATION BOARD



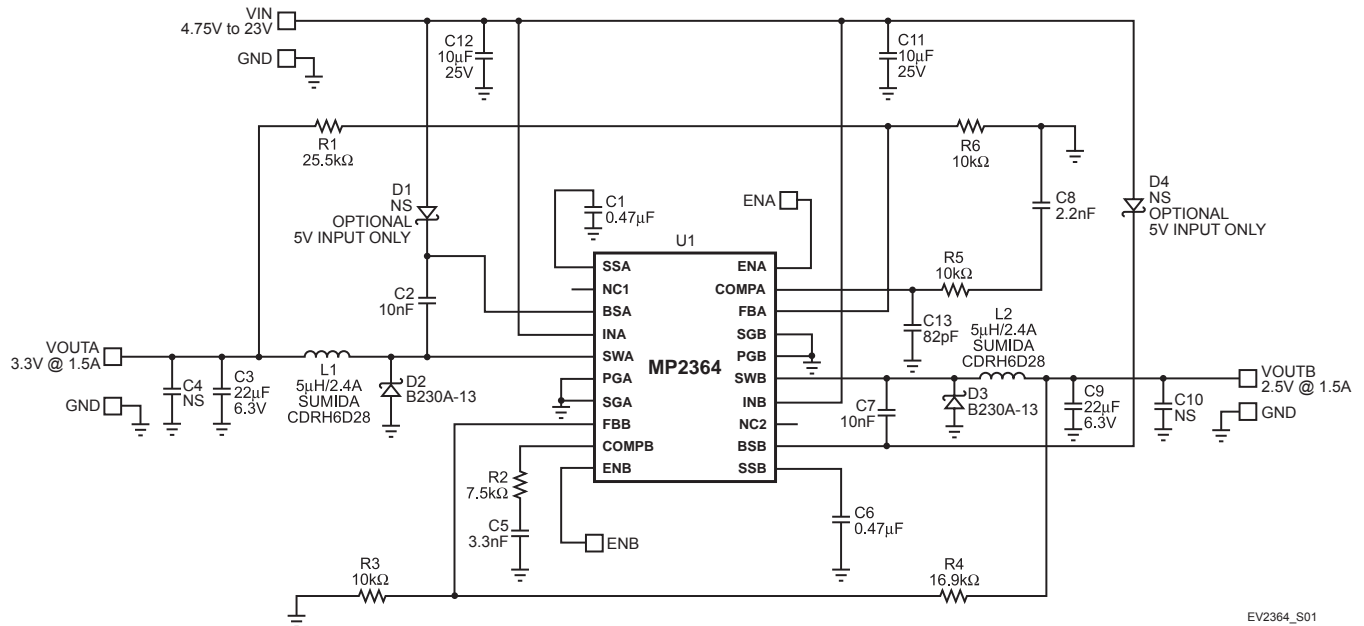
(L x W x H) 2.2" x 1.6" x 0.4"
(5.5cm x 4.1cm x 1.0cm)

Board Number	MPS IC Number
EV2364DF-01A	MP2364DF

Efficiency vs Load Current



EVALUATION BOARD SCHEMATIC



EV2364_S01

EV2364DF-01A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer P/N	Distributor P/N
2	C1, C6	0.47μF	Ceramic Capacitor, 16V, X7R	0805	TDK: C2012X7R1C474K	Digikey: 445-1357-1-ND
2	C2, C7	10nF	Ceramic Capacitor, 50V, X7R	0603	TDK: C1608X7R1H103K	Digikey: 445-1311-1-ND
2	C3, C9	22μF	Ceramic Capacitor, 6.3V, X5R	1210	TDK: C3225X5R0J226M	Digikey: 445-1404-1-ND
	C4, C10		Do Not Stuff			
1	C5	3.3nF	Ceramic Capacitor, 50V, X7R	0603	Panasonic: ECJ-1VB1H332K	Digikey: PCC1778CT-ND
1	C8	2.2nF	Ceramic Capacitor, 50V, X7R	0603	TDK: C1608X7R1H222K	Digikey: 445-1309-1-ND
2	C11, C12	10μF	Ceramic Capacitor, 25V, X7R	1210	TDK: C3225X7R1E106M	Digikey: 445-1434-1-ND
1	C13	82pF	Ceramic Capacitor, 50V, NPO	0603	TDK: C1608C0G1H820J	Digikey: 445-1280-1-ND
	D1, D4		Do Not Stuff			
2	D2, D3		Schottky Diode, 30V, 2A, SMA		Diodes Inc: B230A-13	Digikey: B230ADICT-ND
2	L1, L2		Inductor, 5uH, 2.4A, SMD		Sumida: CDRH6D28-5R0NC	
1	R1	25.5kΩ	Resistor, 1%	0603	Any	Any
1	R2	7.5kΩ	Resistor, 5%	0603	Any	Any
3	R3, R5, R6	10kΩ	Resistor, 1%	0603	Any	Any
1	R4	16.9kΩ	Resistor, 1%	0603	Any	Any
1	U1		DC/DC Converter, TSSOP20		MPS: MP2364DF	

PRINTED CIRCUIT BOARD LAYOUT

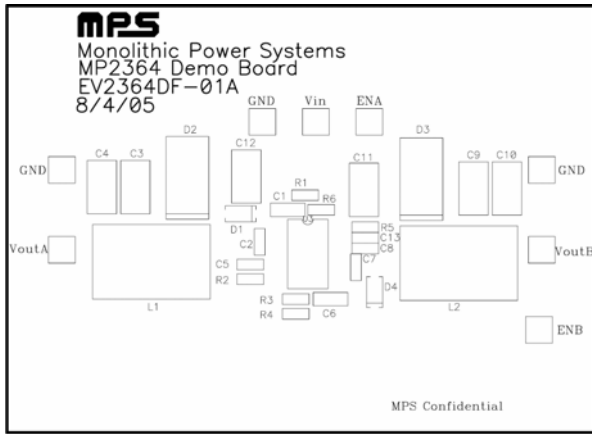


Figure 1—Top Silk Layer

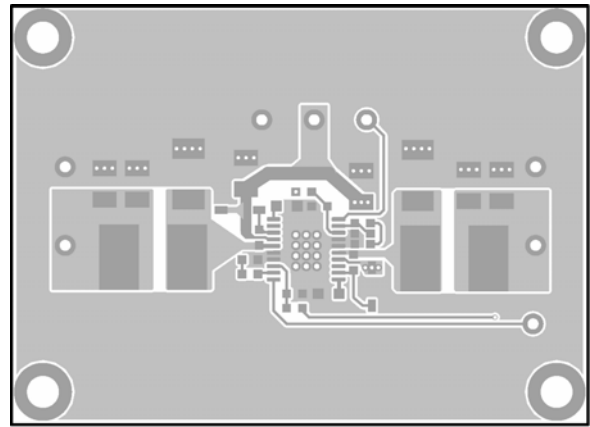


Figure 2—Top Layer

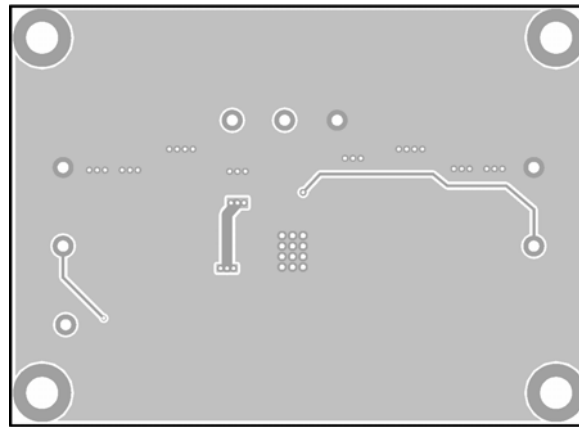


Figure 3—Bottom Layer

QUICK START GUIDE

The output voltages of this board are set to 3.3V (V_{OUTA}) and 2.5V (V_{OUTB}). The board layout accommodates most commonly used inductors and output capacitors.

1. Attach the positive and negative ends of the first load to the V_{OUTA} and GND pins, respectively. If using both outputs, attach the positive and negative ends of the second load to the V_{OUTB} and GND pins, respectively.
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 of the power supply output to the GND pin.
4. Turn the power supply on. The MP2364 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 and less than 0.7V to turn it off.
6. The output voltages V_{OUTA} and V_{OUTB} can be changed by varying R1 and R4, respectively. Calculate the new values by the following formulae:

$$R1 = R6 \times \left(\frac{V_{OUTA}}{0.92} - 1 \right)$$

$$R4 = R3 \times \left(\frac{V_{OUTB}}{0.92} - 1 \right)$$

Where R6 = 10k Ω and R3 = 10k Ω

Example:

For V_{OUTA} = 3.3V:

$$R1 = 10k\Omega \times \left(\frac{3.3}{0.92} - 1 \right) = 25.9k\Omega$$

Therefore, use a 25.5k Ω standard 1% value resistor.

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