The Future of Analog IC Technology

DESCRIPTION

The EV0034 is a MP1527 evaluation board configured to provide a regulated 12V output at up to 300mA from a 2.6V input or higher. The output voltage is adjustable from V_{IN} to 25V by changing resistors on the evaluation board.

The MP1527 has a high 1.3MHz switching frequency that allows for smaller external components, producing a compact solution for medium-to-high current step-up, flyback, and SEPIC applications.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	2.6 – 12	V
Output Voltage	V_{OUT}	12	V
Output Current	I_{OUT}	300	mA

FEATURES

- 2.6V Minimum Input Voltage
- 12V Output Voltage, Adjustable from V_{IN} to 25V
- Up to 90% Efficiency
- 1.3MHz Switching Frequency
- Fully Assembled and Tested

APPLICATIONS

- SOHO Routers, PCMCIA Cards, Mini PCI
- Handheld Computers, PDAs
- Cell Phones, Digital and Video Cameras
- Small LCD Displays

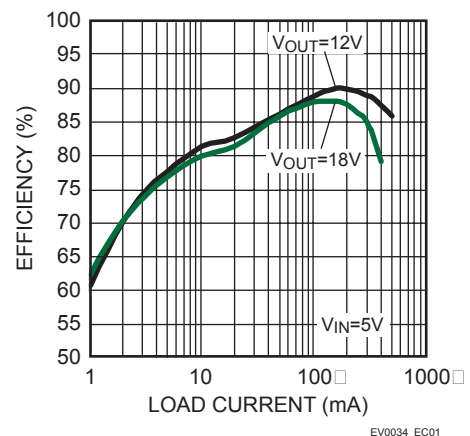"MPS" and "The Future of Analog IC Technology", are Trademarks of Monolithic Power Systems, Inc.
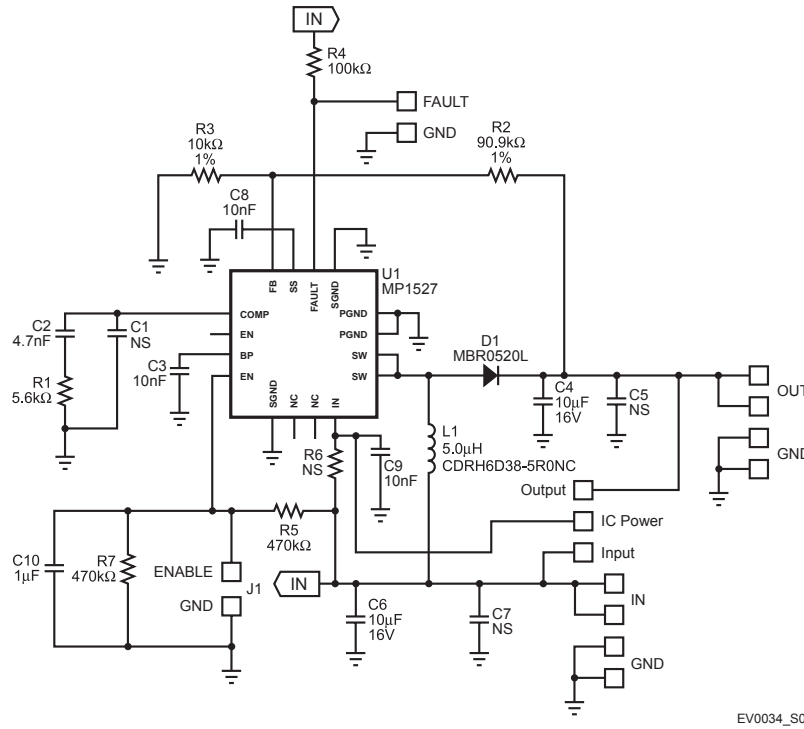
EV0034 EVALUATION BOARD

(L x W x H) 2.5" x 2.0" x 0.4"
(6.4cm x 5.0cm x 1.0cm)

Board Number	MPS IC Number
EV0034	MP1527DR

Efficiency vs Load Current

EVALUATION BOARD SCHEMATIC

EV0034_S01

EV0034 BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer: P/N
3	C1, C5, C7		No Stuff		
1	C2	4.7nF	Ceramic Capacitor, 50V, X7R	0805	AVX: 08055C472KAT2A
3	C3, C8, C9	10nF	Ceramic Capacitor, 50V, X7R	0805	AVX: 08055C103KAT2A
2	C4, C6	10µF	Ceramic Capacitor, 16V, X5R	1210	AVX: 1210YD106KAT2A
1	C10	1µF	Ceramic Capacitor, 16V, X7R	0603	TDK: C1608X7R1C105K
1	D1		Schottky Diode, 0.5A, 20V, SOD-123	SOD-123	Fairchild: MBR0520L
1	L1	5.0µH	Inductor, 2.9A	SMD	Sumida: CDRH6D38-5R0NC
1	R1	5.6kΩ	Resistor, 5%	0805	Panasonic: ERJ-6GEYJ562V
1	R2	90.9kΩ	Resistor, 1%	0805	Panasonic: ERJ-6ENFJ9092V
1	R3	10kΩ	Resistor, 1%	0805	Panasonic: ERJ-6ENFJ1002V
1	R4	100kΩ	Resistor, 5%	0805	Panasonic: ERJ-6GEYJ104V
2	R5, R7	470kΩ	Resistor, 5%	0805	Panasonic: ERJ-6GEYJ474V
1	R6		No Stuff		
1	U1		Step-Up Converter, 2A, Fixed Frequency		MPS: MP1527DR

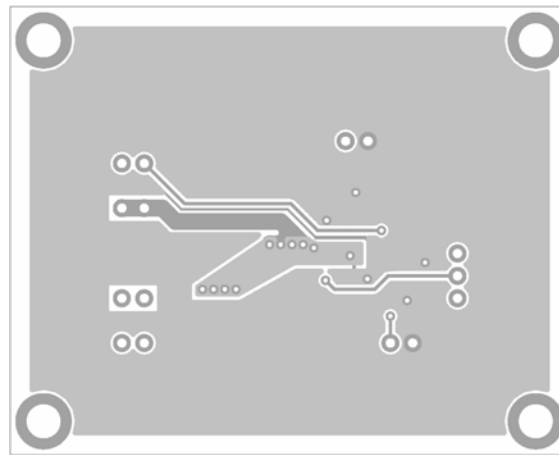# PRINTED CIRCUIT BOARD LAYOUT
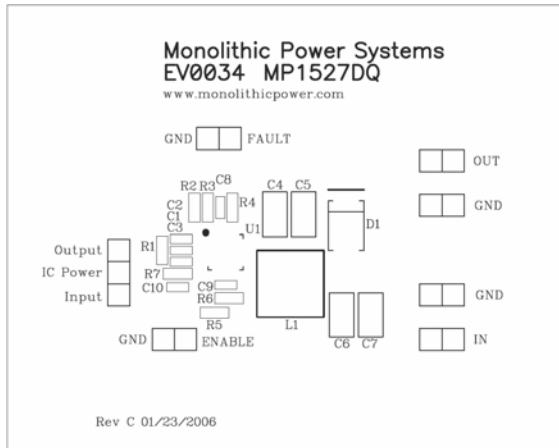
Figure 1—Top Silk Layer
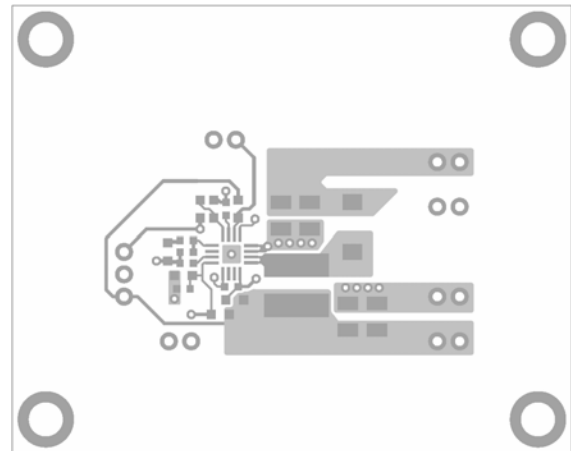
Figure 2—Top Layer

Figure 3—Bottom Layer

QUICK START GUIDE

The EV0034 is configured to produce a fixed 12V output voltage from an input voltage ranging from 2.6V to 12V:

1. Connect the positive and negative terminals of the load to the OUT and GND pins, respectively.

2. Preset the power supply output to between 2.6V and 12V, then turn it off.

3. Connect the positive and negative terminals of the power supply output to the IN and GND pins, respectively.

4. Connect the IN pin of the chip to the regulator's input supply V_{IN} for bootstrapped operation (boot-strapped operation is required for V_{IN} of less than 3V) through the IC Power jumper.

5. Turn the power supply on. The board is set up for automatic startup. Shunt the ENABLE jumper to disable the circuit. EN may be driven with an external digital signal to enable/disable the circuit.

6. Connect V_{IN} to the input power source and apply a 2.6V to 12V voltage.

7. To enable the MP1527 by an external signal, connect a 0V to 2V signal to the EN input. A low voltage at EN turns off the MP1527, a high voltage turns it on.

8. The output voltage V_{OUT} can be altered by changing the value of R2. Determine the new value of R2 using the following formula:

$$R2 = R3 \times \left(\frac{V_{OUT}}{V_{FB}} - 1 \right)$$

Where V_{FB}=1.22V and R3 remains 10kΩ.