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EV3216DJ-00A

1.3MHz, 36V

Boost Converter Evaluation Board

GENERAL DESCRIPTION

The EV3216DJ-00A is the evaluation board for the MP3216. The MP3216 is a current mode step up converter intended for small, low power applications. The MP3216 switches at 1.3MHz and allows the use of tiny, low cost capacitors and inductors to achieve a compact solution.

The MP3216 includes under-voltage lockout, over voltage protection and thermal overload protection preventing damage in the event of an output overload. In addition, MP3216 can disconnect all loads from input DC power supply. The output short circuit protection prevents the Schottky diode and IC from damage. The MP3216 is available in small 6-pin TSOT23 package.

FEATURES

- Internal 0.6Ω Power MOSFET
- Up to 36V Output Voltage
- 1.3MHz Fixed Switching Frequency
- 42V Over Voltage Shutdown
- Cycle-by-Cycle Over Current Protection
- UVLO, Thermal Shutdown
- Output Disconnection
- Output Short Protection
- Available in TSOT23-6 Packages

APPLICATIONS

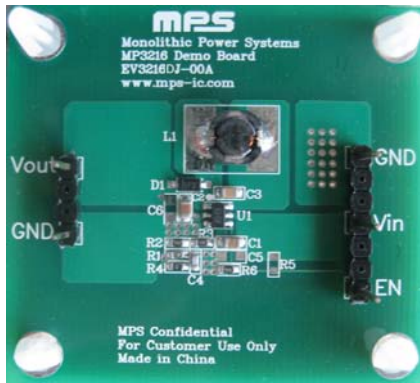
- Portable Applications
- Handheld Computers and PDAs
- Digital Still Cameras

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ELECTRICAL SPECIFICATION

| Parameter | Symbol | Value | Units |
|----------------|------------------|-------|-------|
| Input Voltage | V _{IN} | 5 | V |
| Output Voltage | V _{OUT} | 33 | V |
| Output Current | I _{OUT} | 10 | mA |

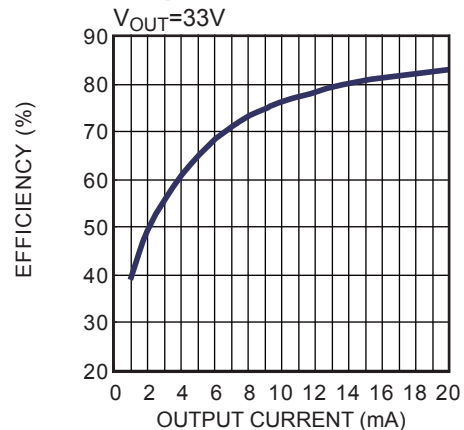
EV3216DJ-00A EVALUATION BOARD

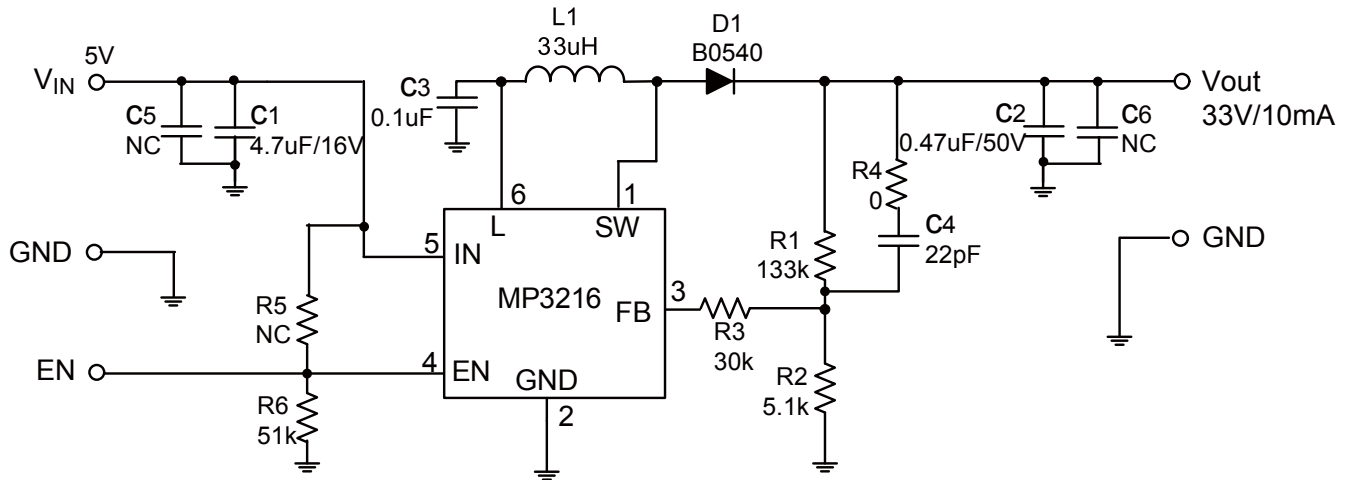


(L x W x H) 2.0" x 1.8" x 0.2"
5.0cm x 4.5cm x 0.5cm

| Board Number | MPS IC Number |
|--------------|---------------|
| EV3216DJ-00A | MP3216DJ |

Efficiency vs. Output Current



EVALUATION BOARD SCHEMATIC

EV3216DJ-00A BILL OF MATERIALS

| Qty | Ref | Value | Description | Package | Manufacturer | Part Number |
|-----|--------|--------|-----------------------------|----------|--------------|---------------------|
| 1 | C1 | 4.7µF | Ceramic Capacitor, 16V, X5R | 0805 | muRata | GRM21BR71C475KA73L |
| 1 | C2 | 0.47µF | Ceramic Capacitor, 50V, X7R | 0805 | muRata | GRM21BR71H474KA88 |
| 1 | C3 | 0.1µF | Ceramic Capacitor, 16V, X7R | 0603 | muRata | GRM188R71C104KA01D |
| 1 | C4 | 22pF | Ceramic Capacitor, 50V, COG | 0603 | muRata | GRM1885C1H220JA01D |
| 2 | C5, C6 | NC | | | | |
| 1 | D1 | B0540 | Diode Schottky, 40V, 0.5A | SOD-123 | Diodes Inc | B0540W |
| 1 | L1 | 33µH | Inductor, 0.63 A | D63LCB | TOKO | D53LCB-#A921CY-330M |
| 1 | R1 | 133kΩ | Resistor, 1% | 0603 | Yageo | RC0603FR-07133KL |
| 1 | R2 | 5.1kΩ | Resistor, 1% | 0603 | Yageo | RC0603FR-075K1L |
| 1 | R3 | 30kΩ | Resistor, 1% | 0603 | Yageo | RC0603FR-0730KL |
| 1 | R4 | 0Ω | Resistor | 0603 | Any | |
| 1 | R5 | NC | | | | |
| 1 | R6 | 51kΩ | Resistor | 0603 | Any | |
| 1 | U1 | MP3216 | Boost Converter | TSOT23-6 | MPS | MP3216DJ-LF-Z R2 |

PRINTED CIRCUIT BOARD LAYOUT

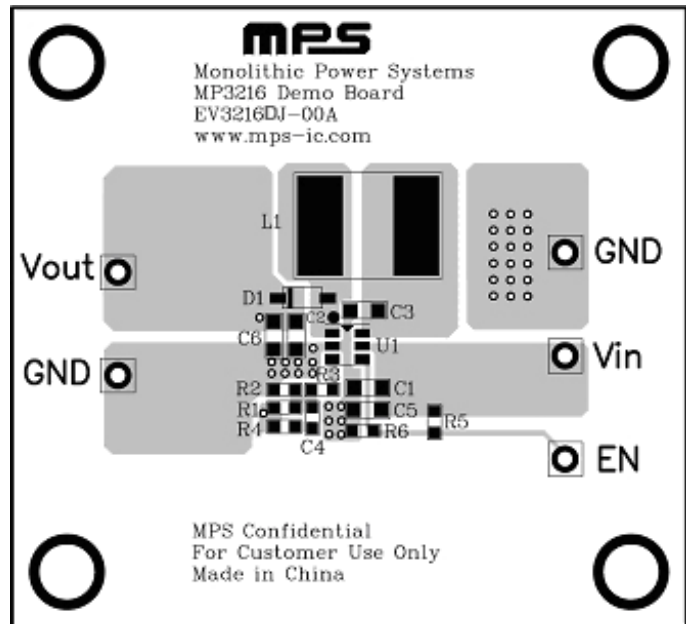


Figure 1—Top Layer

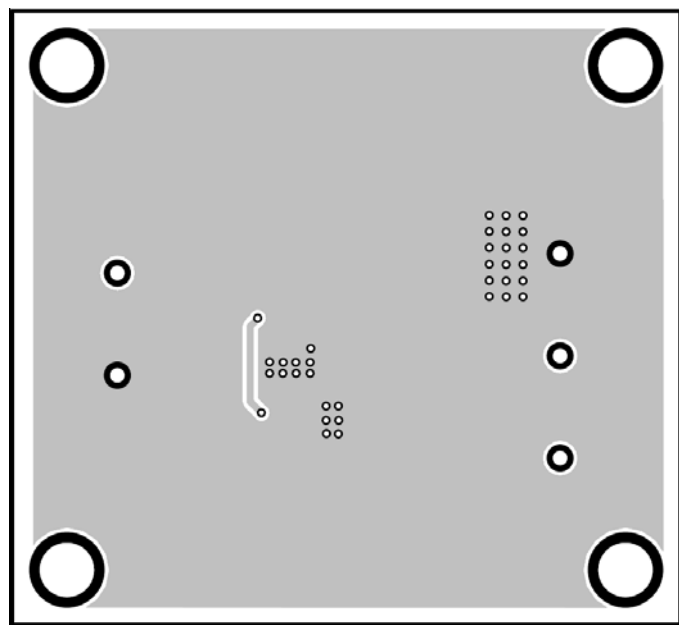


Figure 2—Bottom Layer

QUICK START GUIDE

The output voltage of this board is set to 33V. The board layout accommodates most commonly used inductors and output capacitors.

1. Preset Power Supply to $V_{IN} = 5V$.
2. Turn Power Supply off.
3. Connect Power Supply terminals to:
Positive (+): V_{in}
Negative (-): GND
4. Connect Load to:
Positive (+): V_{out}
Negative (-): GND
5. Turn Power Supply on after making connections.
6. The MP3216 is enabled once $V_{EN} > 2V$. To disable the MP3216, short EN to GND.
7. The output voltage V_{OUT} can be changed by varying R1. Calculate the new value using the formula:

$$R1 = \frac{R2(V_{OUT} - V_{FB})}{V_{FB}}$$

Where $V_{FB} = 1.24V$ and $R2 = 5.1k\Omega$

For example, for $V_{OUT} = 33V$

$$R1 = \left(\frac{33 - 1.24}{1.24} \right) \times 5.1k\Omega = 130.6k\Omega$$

There choose a 133 k Ω standard 1% value.

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