

## GENERAL DESCRIPTION

The EV3217DJ-00A is the evaluation board for Voltage Doubler Circuit. It is implemented by MP3217, a current mode step up converter intended for small, low power applications. The MP3217 switches at 670kHz and allows the use of tiny, low cost capacitors and inductors to achieve a compact solution.

The MP3217 includes under-voltage lockout, over voltage protection and thermal overload protection preventing damage in the event of an output overload. The MP3217 is available in small 6-pin TSOT23 package.

## ELECTRICAL SPECIFICATION

| Parameter      | Symbol    | Value | Units |
|----------------|-----------|-------|-------|
| Input Voltage  | $V_{IN}$  | 3.3   | V     |
| Output Voltage | $V_{OUT}$ | 70    | V     |
| Output Current | $I_{OUT}$ | 1     | mA    |

## FEATURES

- Internal 0.6Ω Power MOSFET
- Up to 70V Output Voltage
- 670kHz Fixed Switching Frequency
- Over Voltage Shutdown
- Cycle-by-Cycle Over Current Protection
- UVLO, Thermal Shutdown
- Available in TSOT23-6 Packages

## APPLICATIONS

- APD Bias Generation
- Portable Applications
- Handheld Computers and PDAs
- Digital Still Cameras

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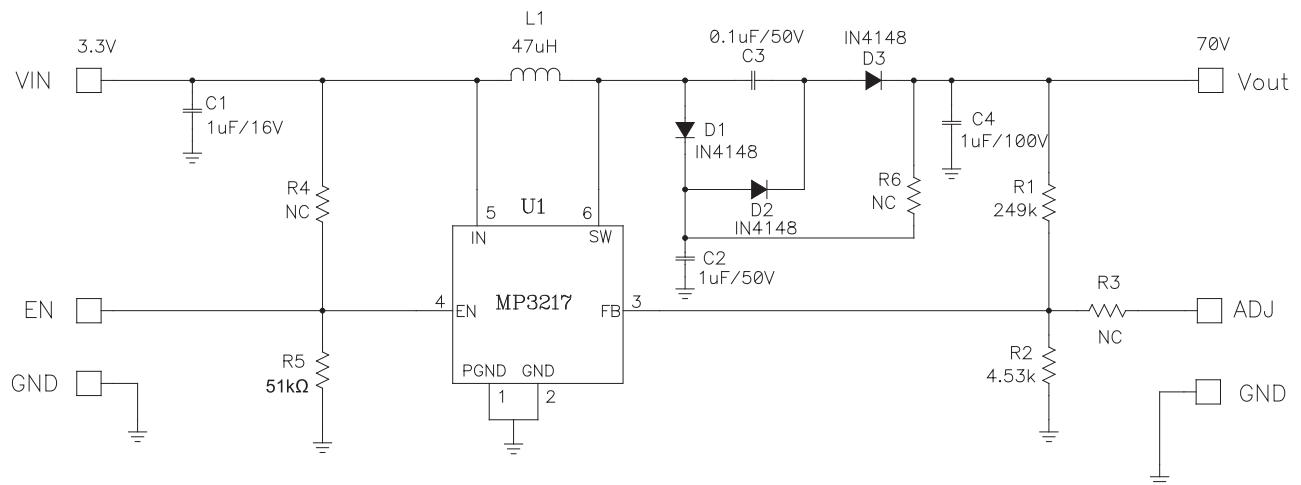
## EV3217DJ-00A EVALUATION BOARD



(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 |
|--------------|---------------|
| EV3217DJ-00A | MP3217DJ      |

## EVALUATION BOARD SCHEMATIC



## EV3217DJ-00A BILL OF MATERIALS

| Qty | Ref        | Value  | Description                  | Package  | Manufacturer | Part Number         |
|-----|------------|--------|------------------------------|----------|--------------|---------------------|
| 1   | C1         | 1µF    | Ceramic Capacitor, 16V, X7R  | 0805     | muRata       | GRM21BR71C105KA01L  |
| 1   | C2         | 1µF    | Ceramic Capacitor, 50V, X7R  | 0805     | muRata       | GRM21BR71H105KA12L  |
| 1   | C3         | 0.1µF  | Ceramic Capacitor, 50V, X7R  | 0805     | muRata       | GRM21BR71H104KA01L  |
| 1   | C4         | 1µF    | Ceramic Capacitor, 100V, X7R | 1210     | muRata       | GRM32ER72A105KA01L  |
| 3   | D1, D2, D3 | 1N4148 | Diode, 75V, 0.15A            | SOD-323  | Diodes Inc.  | 1N4148WS-7-F        |
| 1   | L1         | 47µH   | Inductor, 0.53A              | D63LCB   | TOKO         | D63LCB-#A921CY-470M |
| 1   | R1         | 249kΩ  | Resistor, 1%                 | 0603     | Yageo        | RC0603FR-07249KL    |
| 1   | R2         | 4.53kΩ | Resistor, 1%                 | 0603     | Yageo        | RC0603FR-074K53L    |
| 3   | R3, R4, R6 | NC     |                              |          |              |                     |
| 1   | R5         | 51kΩ   | Resistor                     | 0603     | Any          |                     |
| 1   | U1         | MP3217 | Boost Converter              | TSOT23-6 | MPS          | MP3217DJ-LF-Z       |

## PRINTED CIRCUIT BOARD LAYOUT

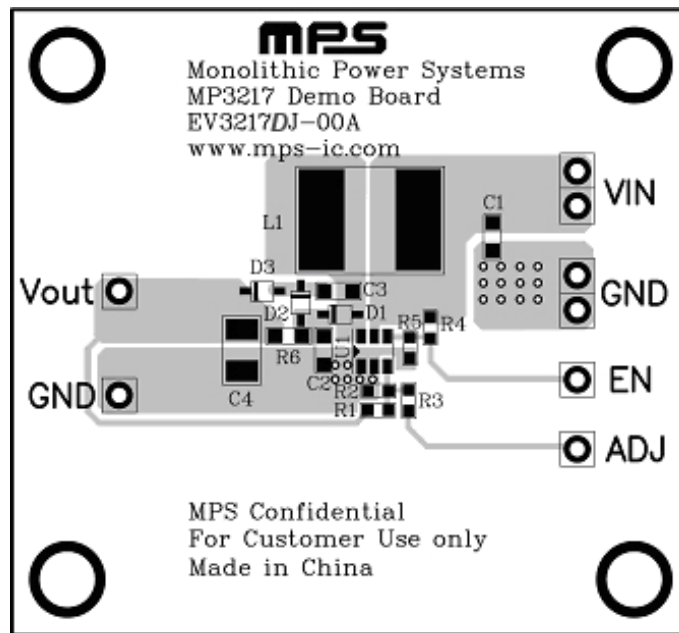


Figure 1—Top Layer

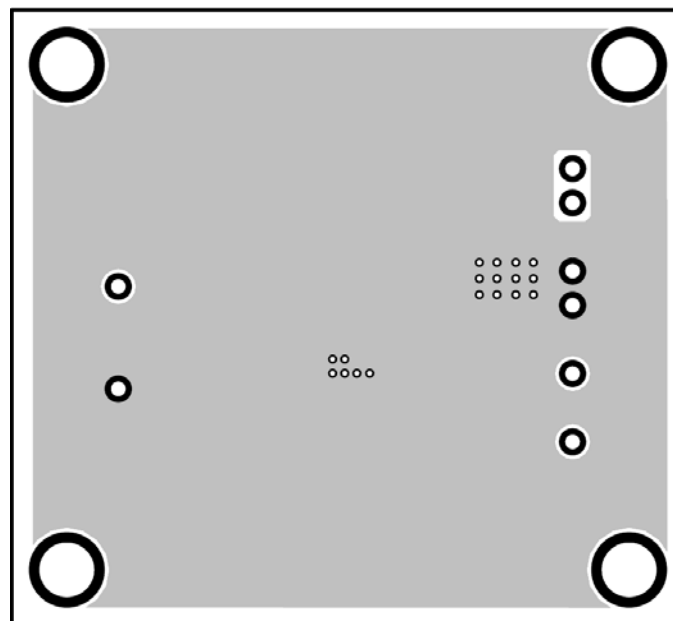


Figure 2—Bottom Layer

## QUICK START GUIDE

The output voltage of this board is set to 70V. The board layout accommodates most commonly used inductors and output capacitors.

1. Preset Power Supply to  $V_{IN} \approx 3.3V$ .
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 MP3217 is enabled once  $V_{EN} > 2V$ . To disable the MP3217, 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  $R2 = 4.53k\Omega$

For example, for  $V_{OUT} = 70V$

$$R1 = \left( \frac{70 - 1.24}{1.24} \right) \times 4.53k\Omega = 251.19k\Omega$$

There choose a 249 k $\Omega$  standard 1% value.

8. The output voltage  $V_{OUT}$  can be also modified by external adjustable voltage  $V_{ADJ}$  thru ADJ pin. Calculate the adjustable voltage value using the formula:

$$V_{ADJ} = \left( 1 + \frac{R3}{R1} + \frac{R3}{R2} \right) \cdot V_{FB} - \frac{R3}{R1} \cdot V_{OUT}$$

9. For normal boost application, open D2, D3, C2 and short R6, the output voltage can be boosted up to 36V by varying R1 using the formula above.

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