# EV3217DJ-00A

**670kHz, 70V**
**Voltage Doubler Evaluation Board**

The Future of Analog IC Technology

## 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.

## 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

## 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 |

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

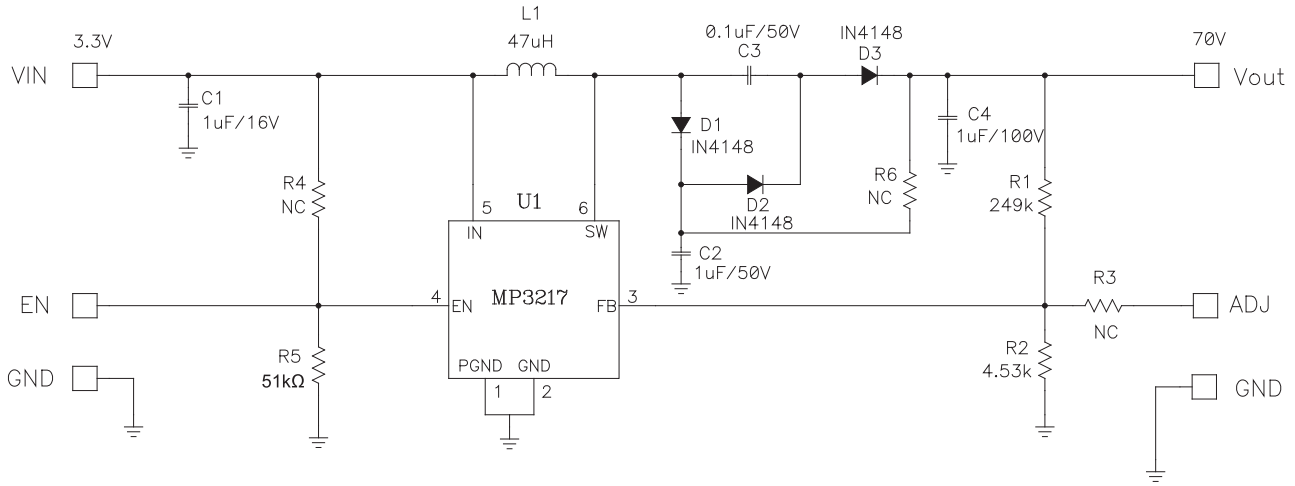
## EV3217DJ-00A EVALUATION BOARD

**(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 |


MPS Proprietary Information. Unauthorized Photocopy and Duplication Prohibited.
© 2011 MPS. All Rights Reserved.

## 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 |


MPS Proprietary Information. Unauthorized Photocopy and Duplication Prohibited.
© 2011 MPS. All Rights Reserved.

## PRINTED CIRCUIT BOARD LAYOUT

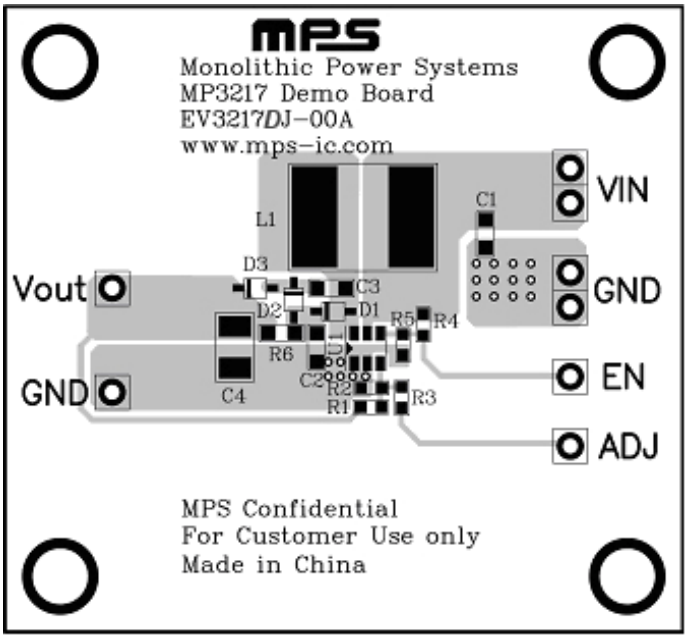



**Figure 1—Top Layer**

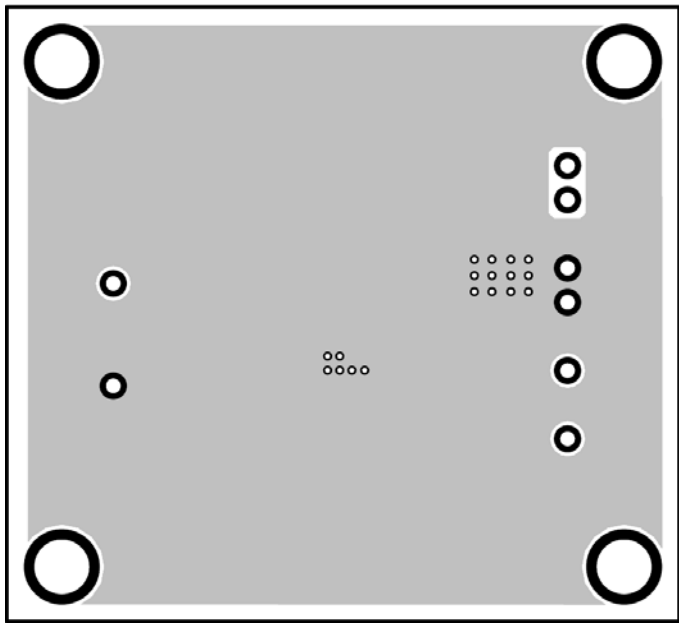


**Figure 2—Bottom Layer**


MPS Proprietary Information. Unauthorized Photocopy and Duplication Prohibited.
© 2011 MPS. All Rights Reserved.

## 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 $V_{IN}$ =3.3V.
2. Turn Power Supply off.
3. Connect Power Supply terminals to:

   Positive (+): Vin

   Negative (–): GND
4. Connect Load to:

   Positive (+): Vout

   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 = 4.53kΩ

   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 kΩ 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.

**NOTICE:** The information in this document is subject to change without notice. Please contact MPS for current specifications. Users should warrant and guarantee that third party Intellectual Property rights are not infringed upon when integrating MPS products into any application. MPS will not assume any legal responsibility for any said applications.


MPS Proprietary Information. Unauthorized Photocopy and Duplication Prohibited.
© 2011 MPS. All Rights Reserved.