

AN-2167 LMZ10501 SIMPLE SWITCHER® Nano Module Demo Board

1 Introduction

The LMZ10501 and LMZ10500 SIMPLE SWITCHER nano modules are easy-to-use DC-DC solutions optimized for space-constrained applications. The LMZ10501 is capable of driving up to 1A load with excellent power conversion efficiency, output voltage accuracy, line and load regulation. The LMZ10500 is a 650mA version module, pin-to-pin compatible with the LMZ10501.

The LMZ10501 Demo Board is configured for 1.8V output voltage from 2.7V to 5.5V input. The resistor voltage divider R_T and R_B set the output voltage. The external capacitor C_{VC} bypasses the V_{CON} pin. The bottom of the board has a 3 - pin header for V_{IN} , GND, and V_{OUT} connections. For component selection and device details, see the device-specific data sheet.

2 Board Specifications

- $V_{IN} = 2.7V$ to $5.5V$
- $V_{OUT} = 1.8V$
- 1A max load (LMZ10501)
- 650mA max load (LMZ10500)
- 2MHz switching frequency
- 2 layer PCB with 1oz copper
- 11 x 13 mm PCB size
- 5 x 7 mm solution size

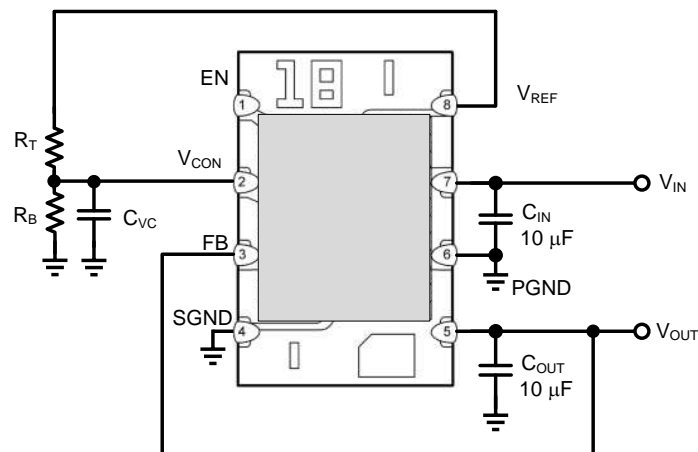


Figure 1. Schematic

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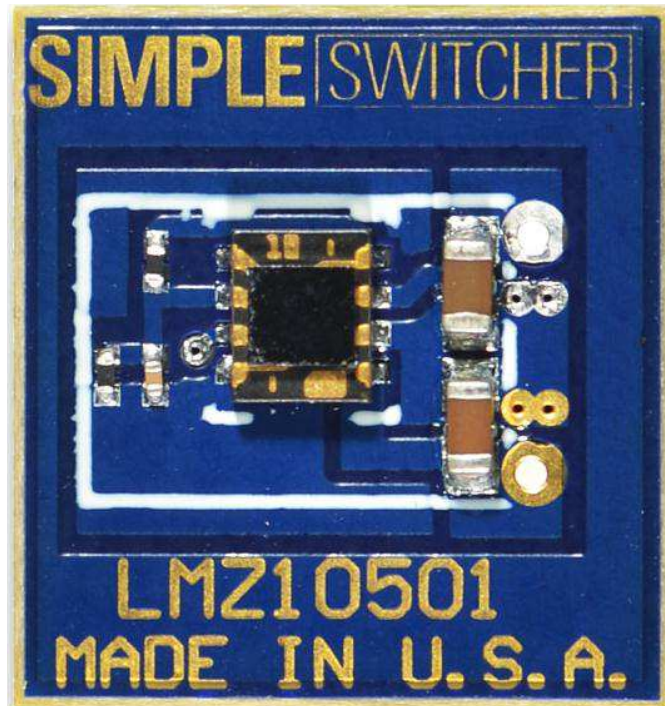


Figure 2. Board Top View

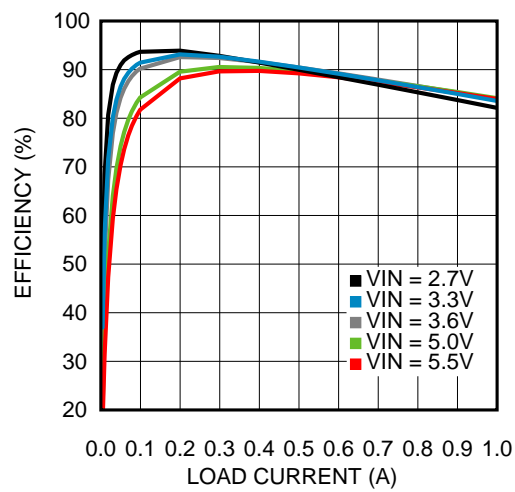


Figure 3. Efficiency $V_{OUT} = 1.8V$

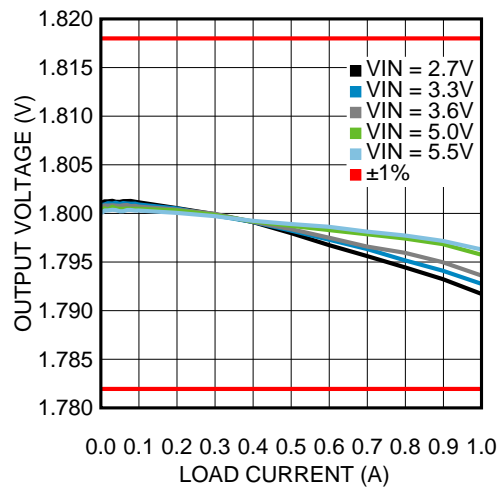


Figure 4. Line and Load Regulation

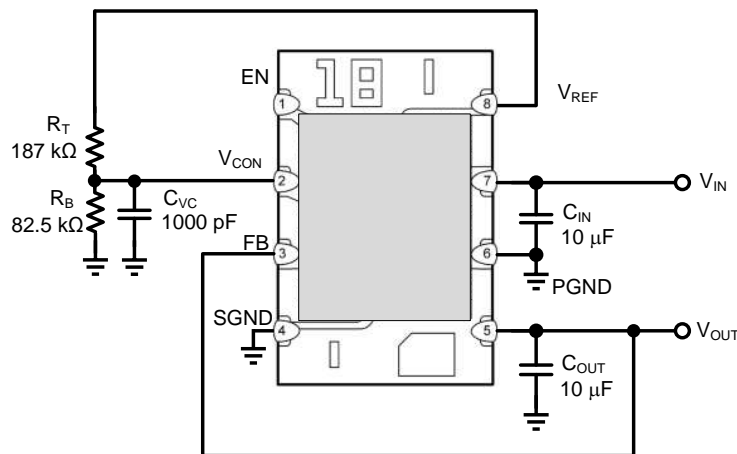


Figure 5. Demo Board Schematic

Table 1. LMZ10501 Demo Board Bill of Materials (BOM), VIN = 2.7V to 5.5V, VOUT = 1.8V, IOUT (MAX) = 1000mA

| Quantity | Designator | Description | Case Size | Manufacturer | Manufacturer P/N |
|----------|------------|-----------------------------|---------------------|-------------------|------------------|
| 1 | U1 | SIMPLE SWITCHER Nano Module | SE08A | Texas Instruments | LMZ10501SE |
| 2 | CIN, COUT | 10 μF, X5R, 10V | 0603 | TDK | C1608X5R1A106M |
| 1 | CVC | 1000 pF | 0201 | TDK | C0603X7R1C102K |
| 1 | RB | 82.5 kΩ | 0201 | Panasonic | ERJ-1GEF8252C |
| 1 | RT | 187 kΩ | 0201 | Panasonic | ERJ-1GEF1873C |
| 1 | J1 | 3-Pin male header | 2.54mm (0.1") pitch | Samtec, Inc | TSM-103-01-L-SV |

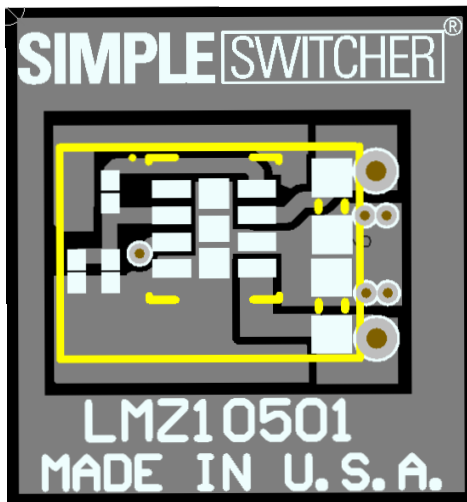


Figure 6. Demo Board Top Layer

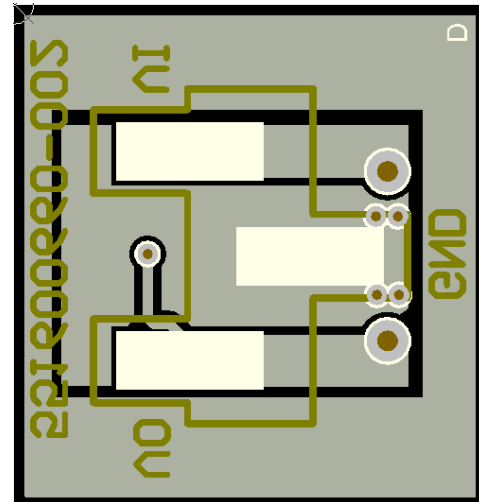


Figure 7. Demo Board Bottom Layer
Terminal Markings: VI = V_{IN} , VO = V_{OUT}

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