

## LT8301 42V<sub>IN</sub> Micropower Isolated Flyback Converter with 65V/1.2A Switch

### DESCRIPTION

Demonstration circuit 2737A is an isolated flyback converter featuring the LT<sup>®</sup>8301. The demo circuit outputs 5V from input 10V to 32V, with a nominal 24V. The output current capability increases with the input voltage. The standby input current of the demo circuit is less than 950μA (typical) at V<sub>IN</sub> = 24V.

Table 1 summarizes the performance of the demo board at room temperature. The demo circuit can be easily modified and attached to a system board as the isolated power supply for quick evaluation.

The LT8301 data sheet gives a complete description of the part, operation and applications information. The data sheet must be read in conjunction with this quick start guide for demo circuit 2737A.

**Design files for this circuit board are available at**  
<http://www.linear.com/demo/DC2737A>

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### PERFORMANCE SUMMARY Specifications are at T<sub>A</sub> = 25°C

**Table 1**

| PARAMETER                            | CONDITIONS                                                      | MIN         | TYP  | MAX  | UNITS    |
|--------------------------------------|-----------------------------------------------------------------|-------------|------|------|----------|
| Input Voltage                        |                                                                 | 10          | 24   | 32   | V        |
| Standby Current                      | I <sub>OUT</sub> = 0mA, V <sub>IN</sub> = 24V                   |             | 950  |      | μA       |
| Output Voltage                       | V <sub>IN</sub> = 12V to 32V<br>I <sub>OUT</sub> = 6mA to 700mA | 4.75        | 5    | 5.25 | V        |
| Maximum Output Current               | V <sub>IN</sub> = 12V<br>V <sub>IN</sub> = 24V                  | 700<br>1000 |      |      | mA<br>mA |
| Output Voltage Ripple (Peak to Peak) | V <sub>IN</sub> = 24V, I <sub>OUT</sub> = 1A                    |             | 90   |      | mV       |
| Switching Frequency                  | V <sub>IN</sub> = 24V, I <sub>OUT</sub> = 1A                    |             | 190  |      | kHz      |
| Efficiency                           | V <sub>IN</sub> = 24V, I <sub>OUT</sub> = 1A                    |             | 83.2 |      | %        |

## QUICK START PROCEDURE

Demo circuit 2737A is easy to set up to evaluate the performance of the LT8301. Refer to Figure 1 for proper equipment setup and follow the procedure below.

1. With power off, connect the input power supply to the board through  $V_{IN}$  and GND terminals. Connect the load to the terminals  $V_{OUT}^{+}$  and  $V_{OUT}^{-}$  on the board.
2. Turn on the power at the input. Increase  $V_{IN}$  slowly to 10V.
3. Check for the proper output voltages. The output should be regulated at 5V ( $\pm 5\%$ ).
4. Once the proper output voltage is established, adjust the input voltage and load current within the operating range and observe the output voltage regulation, transient response, ripple voltage, efficiency and other parameters.

## QUICK START PROCEDURE

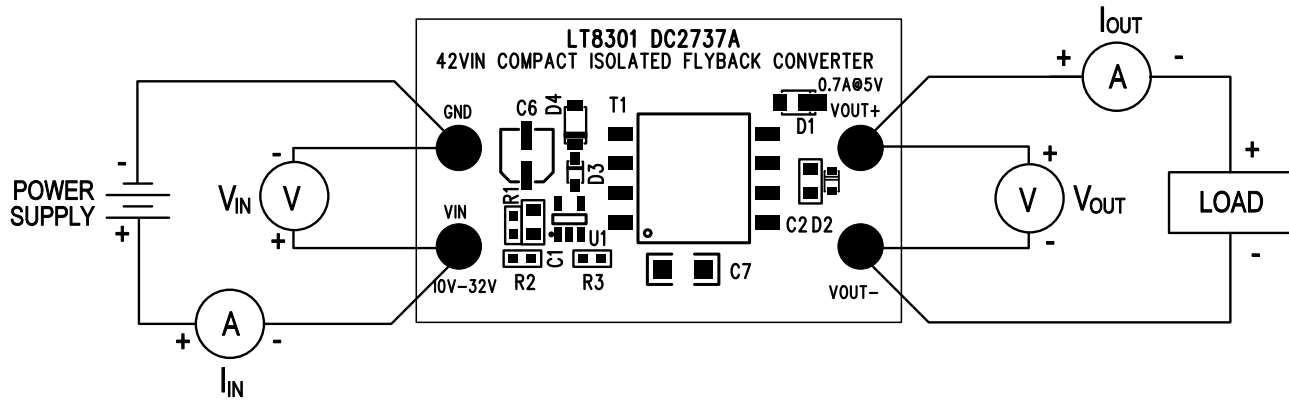


Figure 1. Proper Measurement Equipment Setup

# DEMO MANUAL DC2737A

## PARTS LIST

| ITEM                                 | QTY | REFERENCE          | PART DESCRIPTION                  | MANUFACTURER/PART NUMBER          |
|--------------------------------------|-----|--------------------|-----------------------------------|-----------------------------------|
| <b>Required Circuit Components</b>   |     |                    |                                   |                                   |
| 1                                    | 1   | C1                 | CAP, X5R, 4.7µF, 50V, 10%, 0805   | MURATA, GRM21BR61H475KE51L        |
| 2                                    | 1   | C2                 | CAP, X5R, 100µF, 6.3V, 20%, 0805  | MURATA, GRM21BR60J107ME15L        |
| 3                                    | 1   | C6                 | CAP, ALUM, 10µF, 50V              | PANASONIC, EFE-FTH100UAR          |
| 4                                    | 1   | C7                 | CAP, X7R, 3300pF, 630V, 10%, 1206 | MURATA, GRM31BR72J332KW01L        |
| 5                                    | 1   | D1                 | SCHOTTKY DIODE, 30V, 2A, SOD123F  | NXP, PMEG3020EH,115               |
| 6                                    | 1   | D2                 | ZENER DIODE, 5.6V, SOD-523        | DIODES, BZT52C5V6T-7-F            |
| 7                                    | 1   | D3                 | DIODE, 1N4148WS SOD323            | DIODES, 1N4148WS-7-F              |
| 8                                    | 1   | D4                 | ZENER DIODE, 20V, 500mW, SOD123   | CENTRAL, CMHZ5250B                |
| 10                                   | 1   | R1                 | RES, CHIP, 1M, 1/10W, 1% 0603     | VISHAY, CRCW06031M00FKEC          |
| 11                                   | 1   | R2                 | RES, CHIP, 210k, 1/10W, 1% 0603   | VISHAY, CRCW0603210KFKEA          |
| 12                                   | 1   | R3                 | RES, CHIP, 154k, 1/10W, 1% 0603   | VISHAY, CRCW0603154KFKEA          |
| 13                                   | 1   | T1                 | TRANSFORMER, 750313974            | WURTH, 750313974                  |
| 14                                   | 1   | U1                 | IC FLYBACK CONVERTER, SOT23-5     | LINEAR TECH, LT8301ES5#PBF        |
| <b>Hardware: For Demo Board Only</b> |     |                    |                                   |                                   |
| 9                                    | 5   | E1, E2, E3, E4, E5 | TESTPOINT, TURRET, 0.094" pbf     | MILL-MAX, 2501-2-00-80-00-00-07-0 |
| 15                                   | 4   | MH1, MH2, MH3, MH4 | STAND-OFF, NYLON 0.25"            | KEYSTONE, 8831(SNAP ON)           |



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