

## **AN-1660 LM2735Y 6-Pin WSON Demo Board**

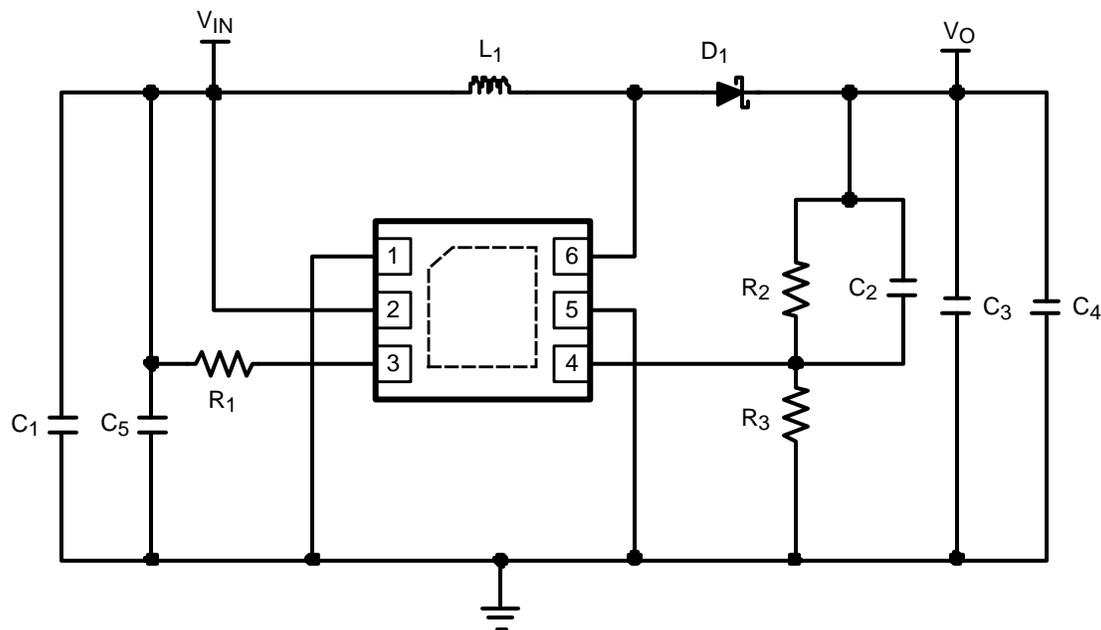
### **1 Introduction**

This demo board converts 3V to 5.5V input to 12V output for up to 500mA load current using the LM2735Y 520kHz DC-DC switching converter. This is a 2-layer board using the bottom layer as a Ground plane.

A bill of materials describes the parts used on this demo board. A schematic and layout have also been included, along with measured performance characteristics. The above restrictions for the input voltage are valid only for the demo board as shipped with the demo board schematic shown in [Figure 1](#).

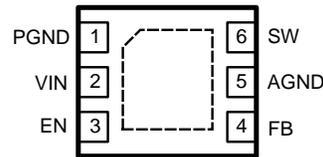
### **2 Operating Conditions**

- $V_{IN} = 3V$  to  $5.5V$
- $V_O = 12V$
- $I_O = 500mA$



**Figure 1. LM2735Y 6-Pin WSON Schematic**

### 3 Pin Description for 6-Pin WSON



**Figure 2. Pin-Out**

**Table 1. Pin Description**

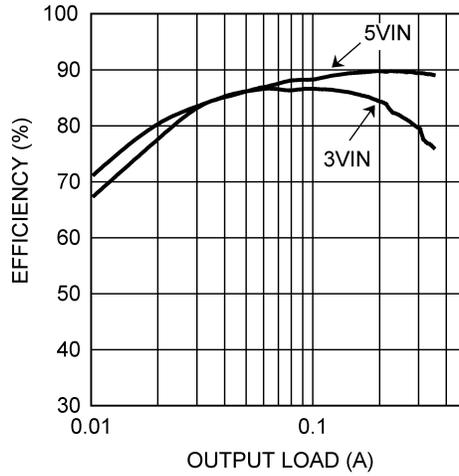
| Pin | Name | Function  |
|-----|------|---|
| 1   | PGND | Power ground pin. Place PGND and output capacitor GND close together.   |
| 2   | VIN  | Supply voltage for power stage, and Input supply voltage.   |
| 3   | EN   | Shutdown control input. Logic high enables operation. Do not allow this pin to float or be greater than $V_{IN} + 0.3V$ . |
| 4   | FB   | Feedback pin. Connect FB to external resistor divider to set output voltage.  |
| 5   | AGND | Signal ground pin. Place the bottom resistor of the feedback network as close as possible to pin 5                        |
| 6   | SW   | Output switch. Connect to the inductor, output diode.   |
| DAP | GND  | Signal & Power ground. Connect to pin 1 & pin 5 on top layer. Place 4-6 via's from DAP to bottom layer GND plane.         |

### 4 Bill of Materials

**Table 2. Bill of Materials**

| Part ID         | Part Value                                      | Manufacturer      | Part Number    |
|-----------------|---|-------------------|----------------|
| U1              | 2.1A Boost Regulator                            | Texas Instruments | LM2735         |
| C1 Input Cap    | 22 $\mu$ F, 6.3V, X5R                           | TDK               | C2012X5R0J226M |
| C5 Input Cap    | No Load   |                   |                |
| C3 Output Cap   | 10 $\mu$ F, 25V, X5R                            | TDK               | C3216X5R1E106M |
| C4 Output Cap   | No Load   |                   |                |
| C2 Comp Cap     | 330pF   | TDK               | C1608X5R1H331K |
| D1, Catch Diode | 0.4V <sub>f</sub> Schottky 1A, 20V <sub>R</sub> | ST                | STPS120M       |
| L1              | 22 $\mu$ H 2.3A                                 | Coilcraft         | DO3316P-223    |
| R3              | 10.2k $\Omega$ , 1%                             | Vishay            | CRCW06031022F  |
| R2              | 86.6k $\Omega$ , 1%                             | Vishay            | CRCW06038662F  |
| R1              | 100k $\Omega$ , 1%                              | Vishay            | CRCW06031003F  |

**5 LM2735Y  $\eta$  vs Load Current,  $V_o = 12V$**



**Figure 3. LM2735Y  $\eta$  vs Load Current,  $V_o = 12V$**

6 PCB Layout

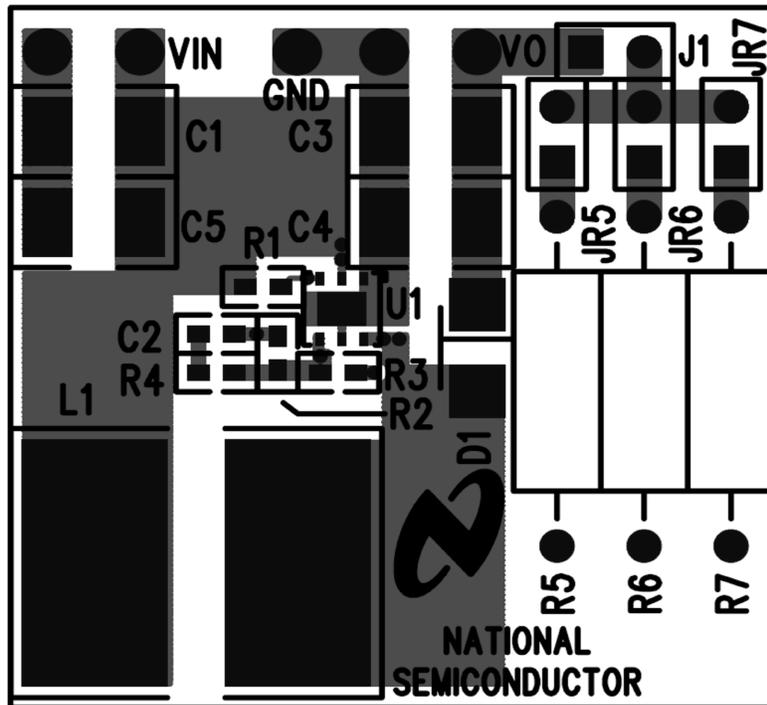


Figure 4. Top Layer

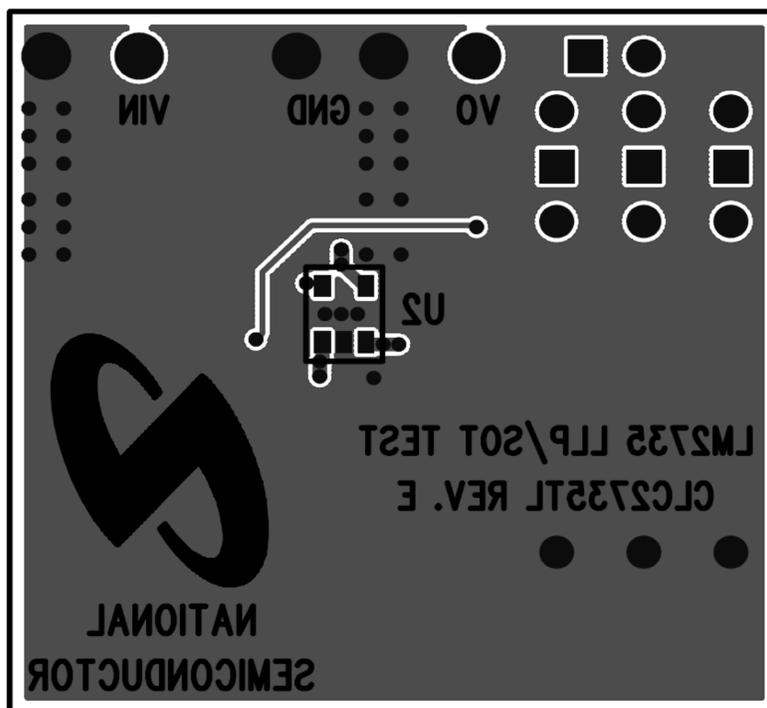


Figure 5. Bottom Layer

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