

## AN-1664 LM2735X 5-Pin SOT23 Demo Board

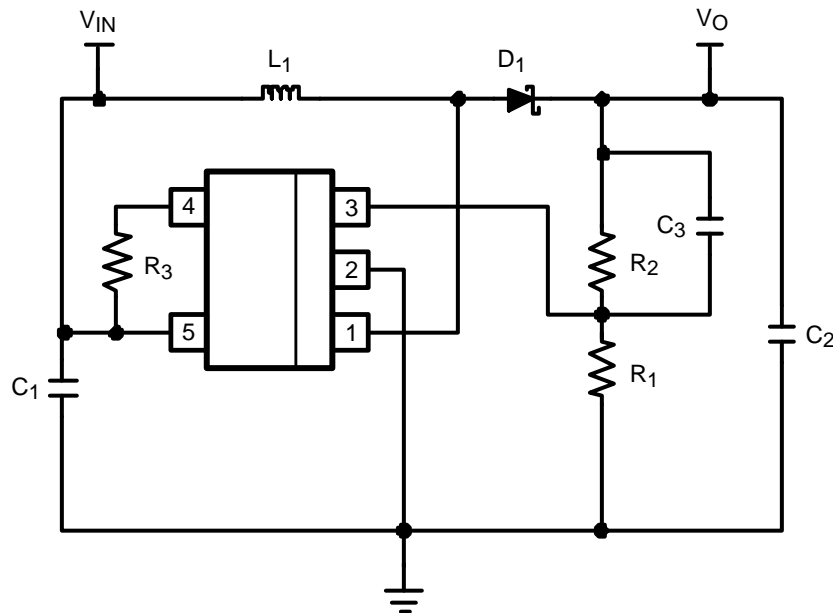
### 1 Introduction

This demo board uses the LM2735X 1.6MHz DC-DC switching regulator that converts 3V to 5.5V input to 12V output for up to 500mA load current depending on  $V_{in}$ . 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](#).

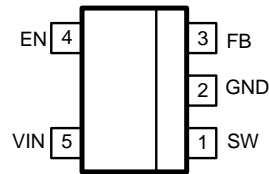
### 2 Operating Conditions

- $V_{IN} = 3V$  to  $5.5V$
- $V_O = 12V$
- $I_{O\_max}$  @  $3V_{in} = 300mA$
- $I_{O\_max}$  @  $5V_{in} = 500mA$



**Figure 1. LM2735X 5-Pin SOT Schematic**

### 3 Pin Description for 5-Pin SOT23



**Figure 2. Pin-Out**

**Table 1. Pin Description**

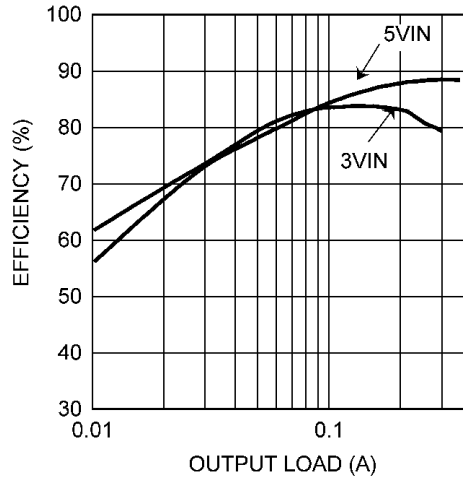
Pin	Name	Function
1	SW	Output switch. Connect to the inductor, output diode.
2	GND	Signal and power ground pin. Place the bottom resistor of the feedback network as close as possible to this pin.
3	FB	Feedback pin. Connect FB to external resistor divider to set output voltage.
4	EN	Shutdown control input. Logic high enables operation. Do not allow this pin to float or be greater than $V_{IN} + 0.3V$ .
5	VIN	Supply voltage for power stage, and Input supply voltage.

### 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
C2 Output Cap	10 $\mu$ F, 25V, X5R	TDK	C3216X5R1E106M
C3 Comp Cap	330pF	TDK	C1608X5R1H331K
D1, Catch Diode	0.4V <sub>f</sub> Schottky 1A, 20V <sub>R</sub>	ST	STPS120M
L1	6.2 $\mu$ H 3A	Coilcraft	MSS7341-622
R1	10.2k $\Omega$ , 1%	Vishay	CRCW06031022F
R2	86.6k $\Omega$ , 1%	Vishay	CRCW06038662F
R3	100k $\Omega$ , 1%	Vishay	CRCW06031003F

**5 LM2735X  $\eta$  vs Load Current,  $V_o = 12V$**



**Figure 3. LM2735X  $\eta$  vs Load Current,  $V_o = 12V$**

6 PCB Layout

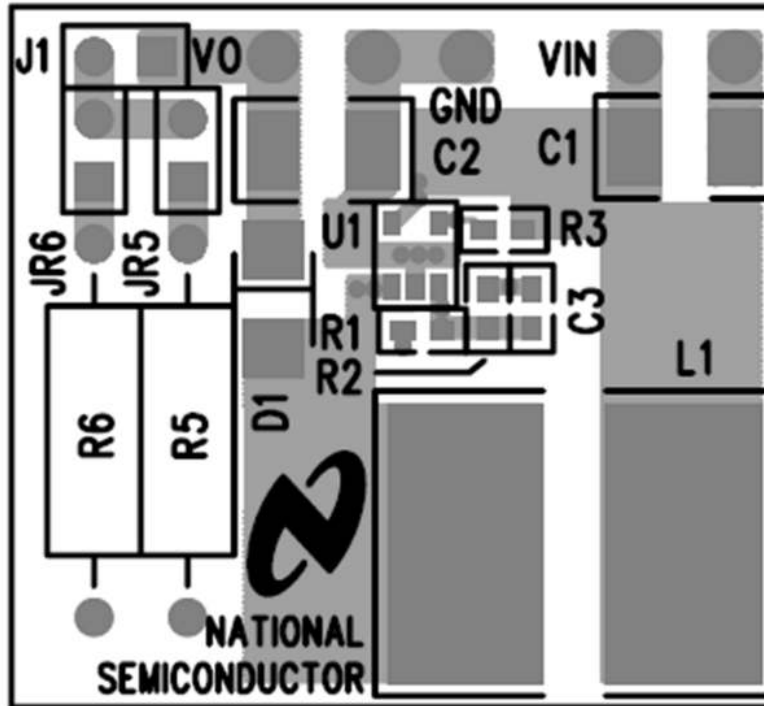


Figure 4. Top Layer

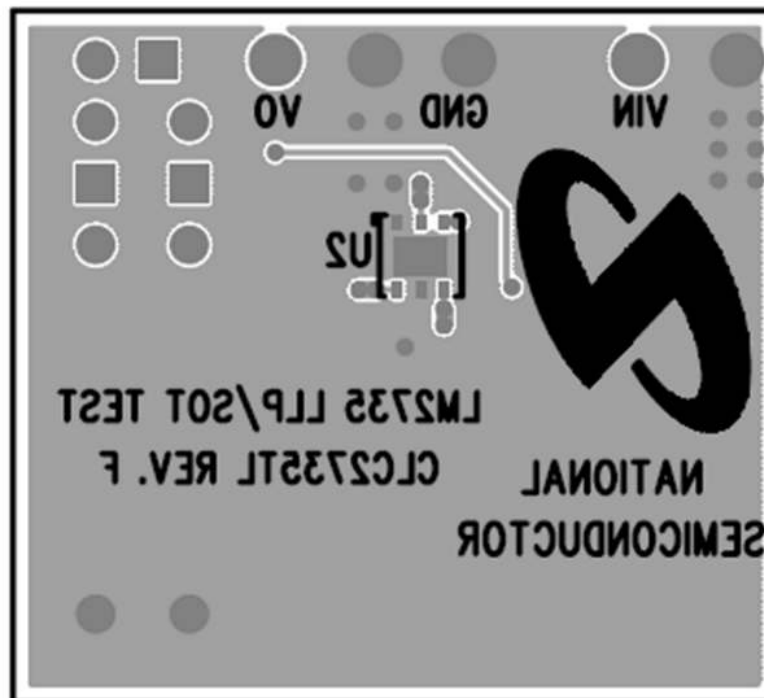


Figure 5. Bottom Layer

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