AN-1775 LM3410X SEPIC 6-Pin LLP Demo Board

1 Introduction

The demo board included in this shipment converts 2.7V to 5.5V input, and illuminates a 285mA HB/OLED using the LM3410X 1.6MHz LED driver switching converter. This is a 2-layer board using the bottom layer as a Ground plane.

A bill of materials (see Table 2) describes the parts used on this demo board. A schematic and layout have also been included below 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 below.

Operating Conditions

V_{IN} = 2.7V to 5.5V

$V_O \cong V_F + V_{FB} \cong 3.1V + 0.198V \cong 3.3V$

I_O = 285mA

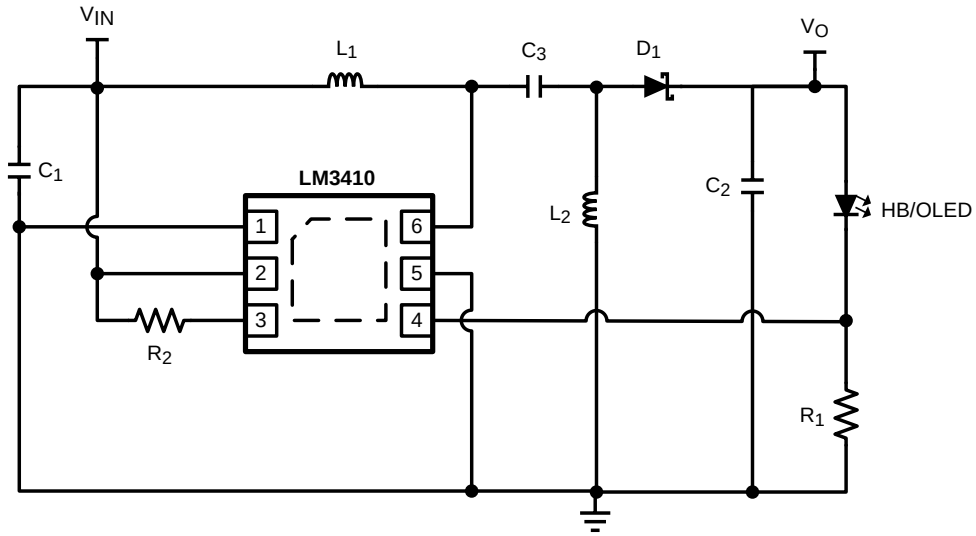

Figure 1. LM3410X 6-Pin LLP HB/OLED Schematic

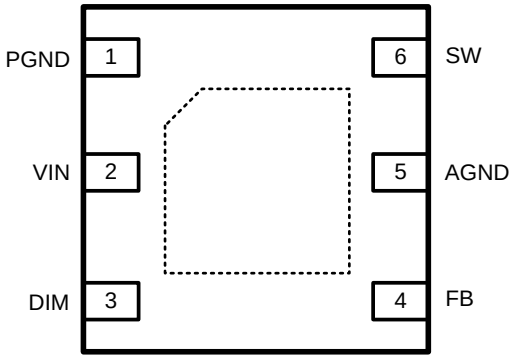

Figure 2. Pinout

2 Pin Descriptions - 6 Pin LLP

Table 1. Pin Descriptions - 6 Pin LLP

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	DIM	Dimming & shutdown control input. Logic high enables operation. Duty Cycle from 0 to 100%. Do not allow this pin to float or be greater than VIN + 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 this pin & pin 4.
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 vias from DAP to bottom layer GND plane.

3 Bill Of Materials LM3410X

Table 2. Bill Of Materials LM3410X

Part ID	Part Value	Manufacturer	Part Number
U1	2.8A I_{SW} LED Driver	NSC	LM3410XSD
C1 Input Cap	10µF, 6.3V, X5R	TDK	C3216X5R0J106K
C2 Output Cap	4.7µF, 25V, X5R	TDK	C2012X5R1E475K
C3 Cap	2.2µF, 25V, X5R	TDK	C3216X5R1E225M
D1, Catch Diode	0.4V_f, Schotky 1A, 20VR	Diodes Inc	DFLS120L
L1 & L2	4.7µH 3A	Coilcraft	MSS6132-472
R1	2 x 1.33Ω, 1% (parallel)	Vishay/Dale	CRCW08051R33FKEA
R2	100kΩ, 1%	Vishay/Dale	CRCW0805100KFKEA
HB/OLED	3.5V_f, 350mA	TT Electronics/Optek	OVSPW1BCR44

4 PCB Layout

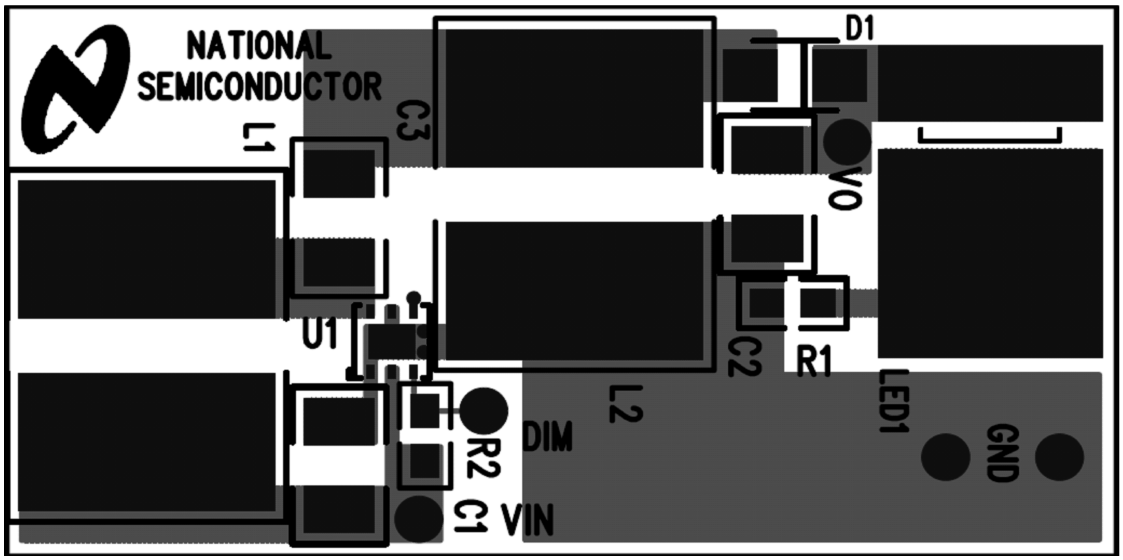

Figure 3. Top Layer

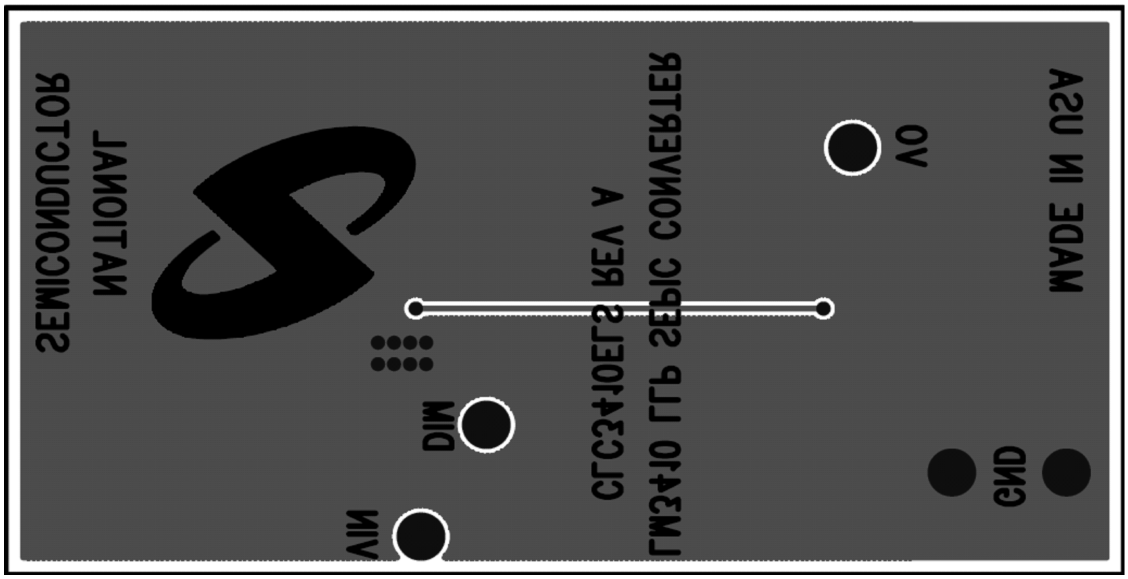

Figure 4. Bottom Layer

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