

LM3410X SEPIC 6-Pin LLP Demo Board

National Semiconductor
Application Note 1775
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Introduction

The demo board included in this shipment converts 2.7V to 5.5V input, and illuminates a 320mA 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 below describes the parts used on this demo board. A schematic and layout have also been included below

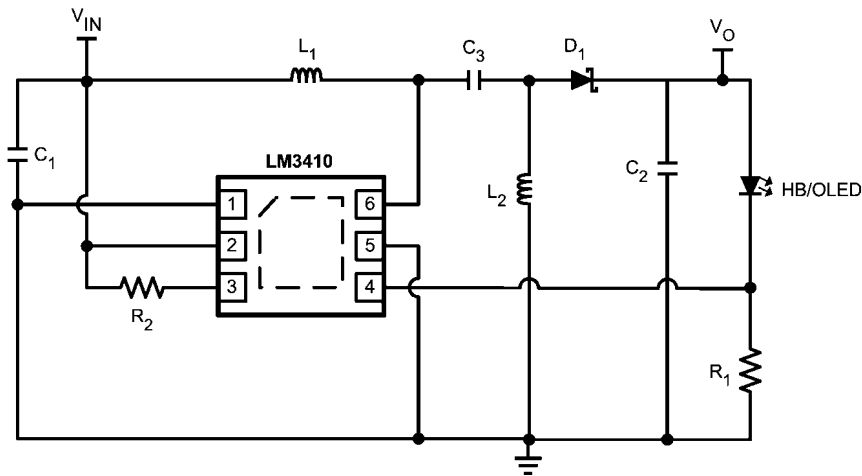
along with measured performance characteristics. The above restrictions for the input voltage are valid only for the demo board as shipped with the demo board schematic below.

Operating Conditions

$$V_{IN} = 2.7V \text{ to } 5.5V$$

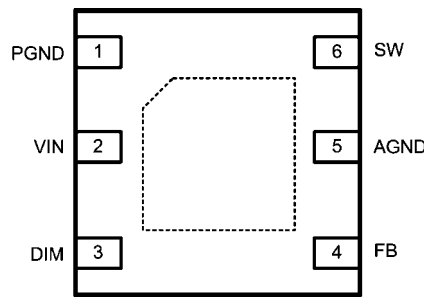
$$V_O \approx V_F + V_{FB} \approx 3.2V + 0.198V \approx 3.4V$$

$$I_O = 320mA$$



LM3410X 6-Pin LLP HB/OLED Schematic

30048901



Pinout

30048902

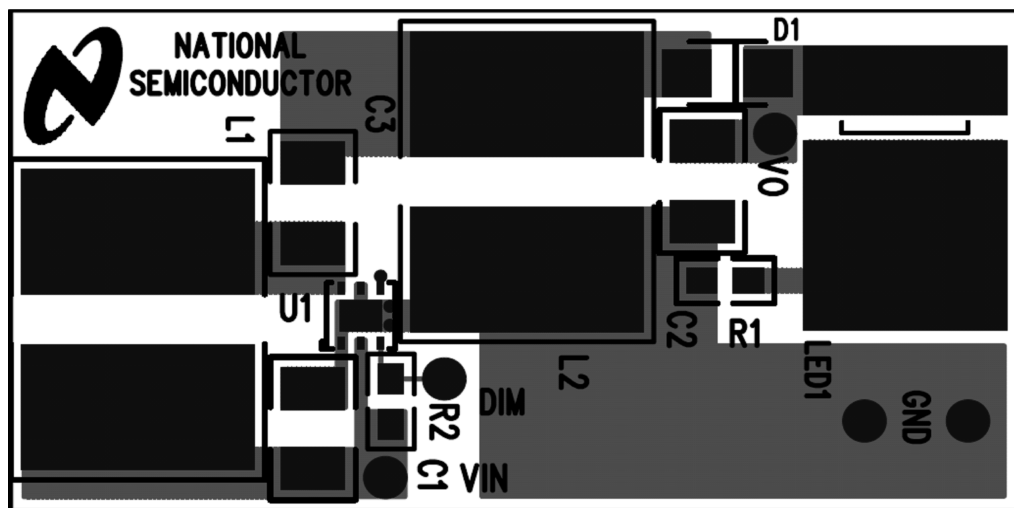
Pin Descriptions - 6 Pin LLP

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 $V_{IN} + 0.3V$.
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 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.

Bill of Materials LM3410X

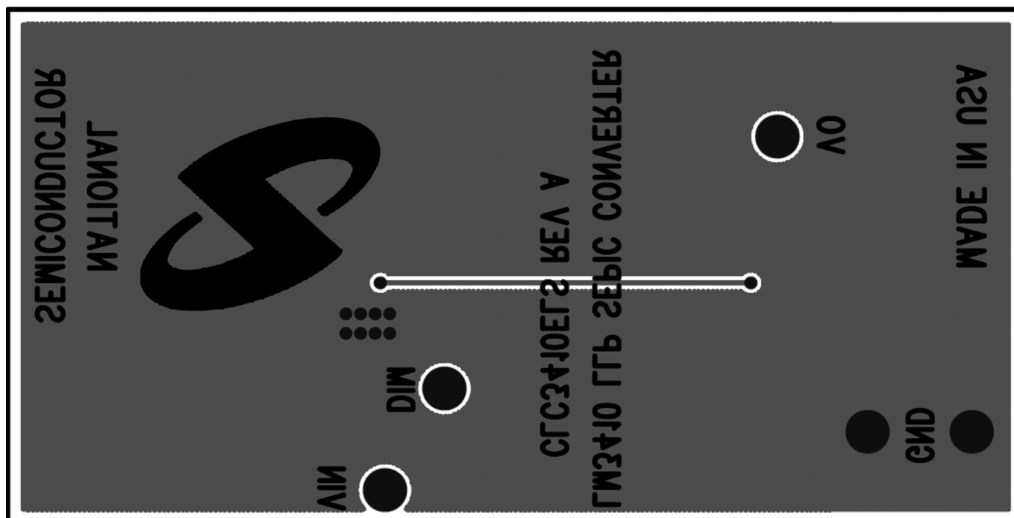
Part ID	Part Value	Manufacturer	Part Number
U1	2.8A I_{SW} LED Driver	NSC	LM3410XSD
C1 Input Cap	10 μ F, 6.3V, X5R	TDK	C1608X5R0J106K
C2 Output Cap	4.7 μ F, 25V, X5R	TDK	C2012X5R1E475K
C3 Cap	2.2 μ F, 25V, X5R	TDK	C2012X5R1E225M
D1, Catch Diode	0.4V _f , Schotky 1A, 20VR	Diodes Inc	DFLS120L
L1 & L2	4.7 μ H 3A	Coilcraft	MSS6132-472
R1	2 x 1.33 Ω , 1% (parallel)	Vishay	CRCW0805R634JNTALR
R2	100k Ω , 1%	Vishay	CRCW080510003F
HB/OLED	3.4V _f , 350mA	TT Electronics/Optek	OVSPWBCR44

PCB Layout



Top Layer

30048903



Bottom Layer

30048904

Notes

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Power Management	www.national.com/power	Green Compliance	www.national.com/quality/green
Switching Regulators	www.national.com/switchers	Distributors	www.national.com/contacts
LDOs	www.national.com/lido	Quality and Reliability	www.national.com/quality
LED Lighting	www.national.com/led	Feedback/Support	www.national.com/feedback
Voltage References	www.national.com/vref	Design Made Easy	www.national.com/easy
PowerWise® Solutions	www.national.com/powerwise	Applications & Markets	www.national.com/solutions
Serial Digital Interface (SDI)	www.national.com/sdi	Mil/Aero	www.national.com/milaero
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