



## 1.0 Design Specifications

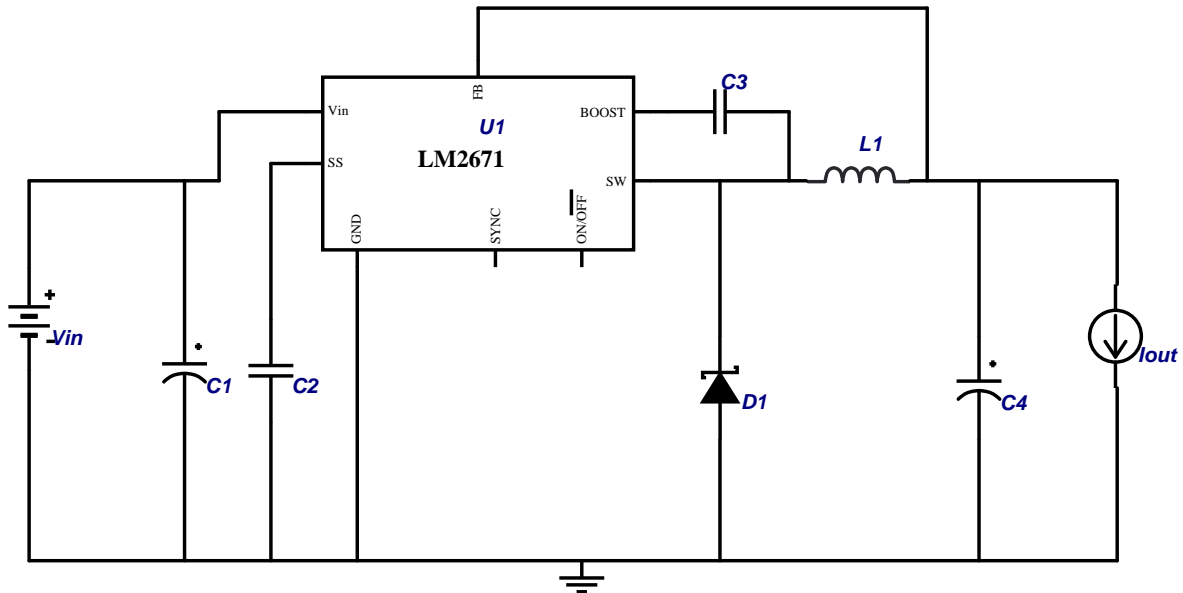
Inputs	Outputs #1
VinMin=24.00 V	Vout1=3.30 V
VinMax=24.00 V	Iout1=0.50 A

## 2.0 Design Description

The design uses buck topology to generate 3.3V output using LM2671 buck controller operating at 260kHz. This is a simple switcher which requires a minimum number of external components and includes internal frequency compensation. Operating at 260kHz allows the design to use smaller size filter components. PC board layout is critical in achieving low switching losses and clean, stable operation. The switching power stage requires particular attention. Few points to note for this design are:

- 1) Decoupling capacitors are as close to IC pins as possible. Keep separate power ground plane.
- 2) Input and output capacitors are connected to the power ground plane; all other capacitors are connected to the signal ground plane.
- 3) Feedback connections are short, direct, and routed away from any noisy traces (i.e. switch node).

## 3.0 Schematic



689758\_608\_0

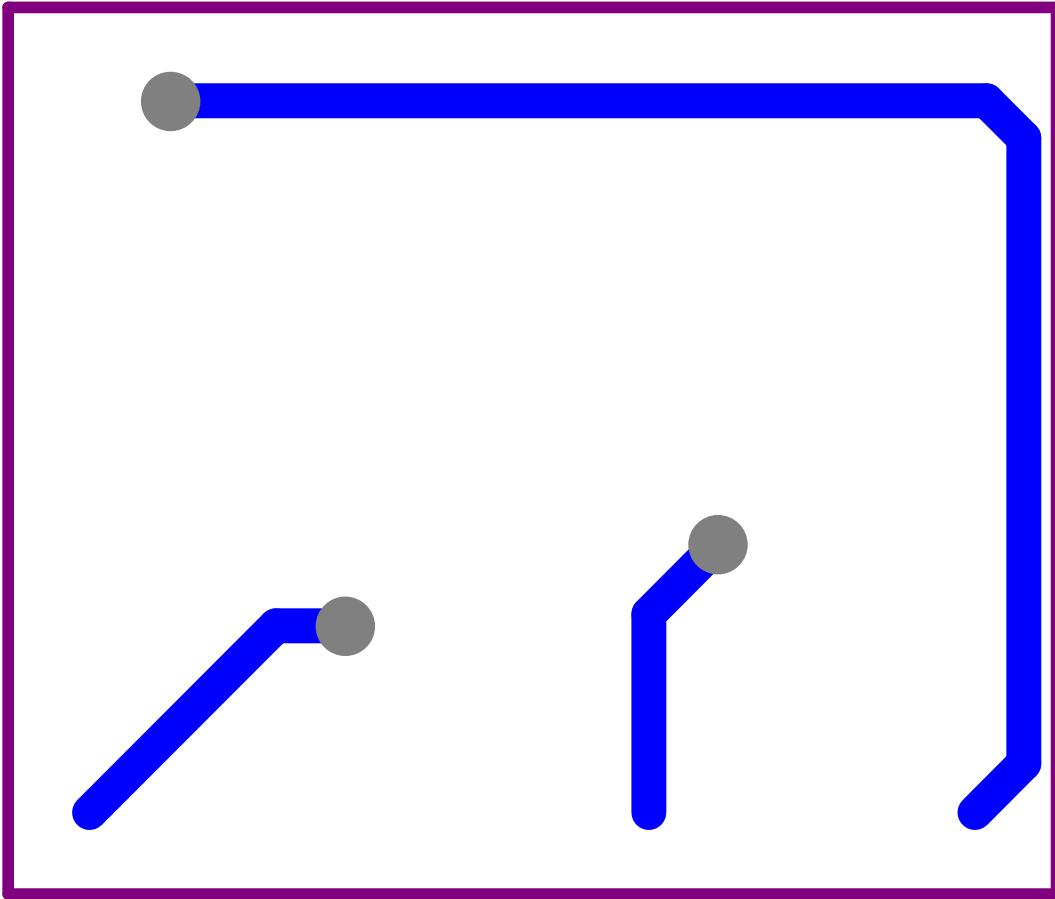
FIGURE 1. Example Schematic Showing Connection for all Components.

## 4.0 Bill Of Materials

Part	Manufacturer	Part#	Attributes
C1	TDK	C3216X7R1E105	1u F
C2	Optional	Optional	
C3	Vishay	VJ0805A103KXXAT	10n F
C4	Sanyo	6CV100EX	100u F, 0.03 Ohms

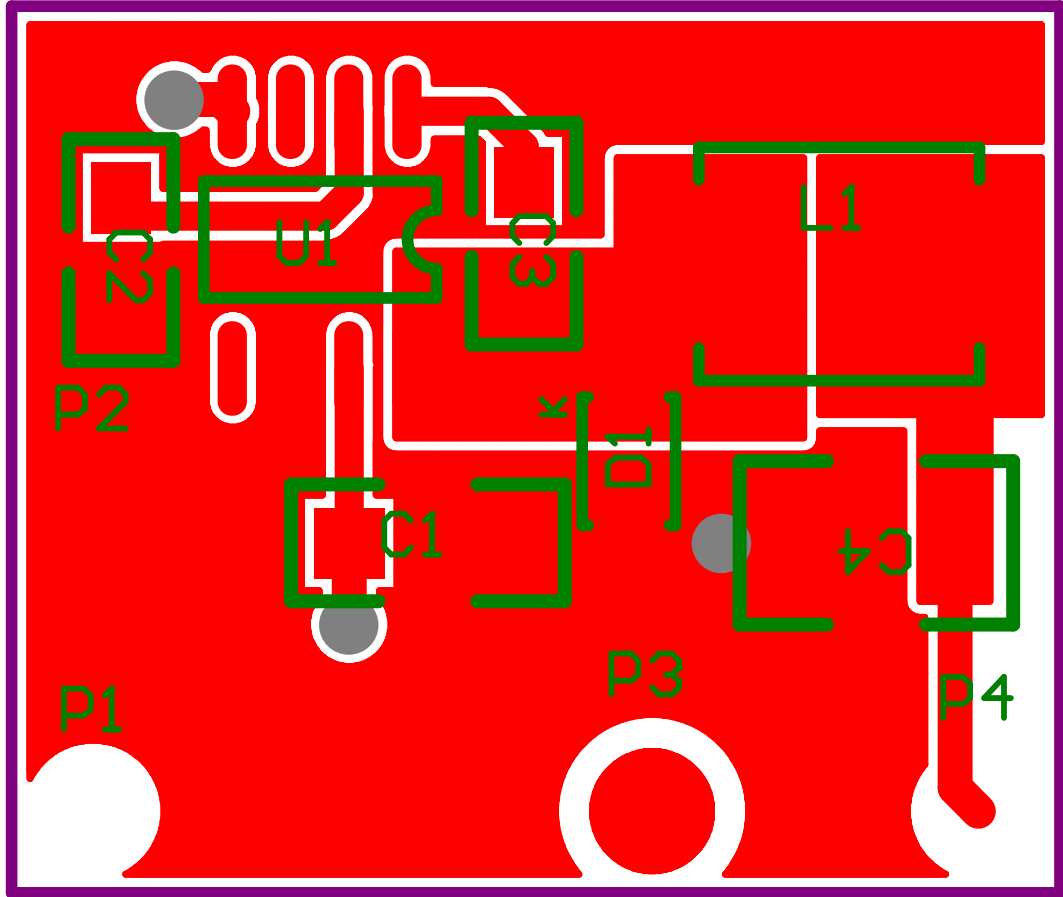
Part	Manufacturer	Part#	Attributes
D1	ONSEMI	MBR0530	0.43 V
L1	TDK	SLF6028T-470MR59-PF	47u H, 0.21 Ohms
U1	National Semiconductor	LM2671	

## 5.0 Layout



PADC\_NSC0334\_lo\_1

**FIGURE 2. Board's Bottom View**



PADC\_NSC0334\_1o\_2

FIGURE 3. Board's Top View

# Notes

## Notes

National Semiconductor's design tools attempt to recreate the performance of a substantially equivalent physical implementation of the design. Reference designs are created using National's published specifications as well as the published specifications of other device manufacturers. While National does update this information periodically, this information may not be current at the time the reference design is built. National and/or its licensors do not warrant the accuracy or completeness of the specifications or any information contained therein. National and/or its licensors do not warrant that any designs or recommended parts will meet the specifications you entered, will be suitable for your application or fit for any particular purpose, or will operate as shown in the simulation in a physical implementation. National and/or its licensors do not warrant that the designs are production worthy. You should completely validate and test your design implementation to confirm the system functionality for your application.

National does not assume any responsibility for use of any circuitry described, no circuit patent licenses are implied and National reserves the right at any time without notice to change said circuitry and specifications.

For the most current product information visit us at [www.national.com](http://www.national.com).

### LIFE SUPPORT POLICY

NATIONAL'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT AND GENERAL COUNSEL OF NATIONAL SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which,
  - (a) are intended for surgical implant into the body, or
  - (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

### BANNED SUBSTANCE COMPLIANCE

National Semiconductor certifies that the products and packing materials meet the provisions of the Customer Products Stewardship Specification (CSP-9-111C2) and the Banned Substances and Materials of Interest Specification (CSP-9-111S2) and contain no "Banned Substances" as defined in CSP-9-111S2.

Leadfree products are RoHS compliant.



**National Semiconductor Americas Customer Support Center**  
 Email: [new.feedback@nsc.com](mailto:new.feedback@nsc.com)  
 Tel: 1-800-272-9959

**National Semiconductor Europe Customer Support Center**  
 Fax: +49 (0) 180-530-85-86  
 Email: [europe.support@nsc.com](mailto:europe.support@nsc.com)  
 Deutsch Tel: +49 (0) 69 9508 6208  
 English Tel: +49 (0) 870 24 0 2171  
 Français Tel: +33 (0) 1 41 91 8790

**National Semiconductor Asia Pacific Customer Support Center**  
 Email: [ap.support@nsc.com](mailto:ap.support@nsc.com)

**National Semiconductor Japan Customer Support Center**  
 Fax: 81-3-5639-7507  
 Email: [jpn.feedback@nsc.com](mailto:jpn.feedback@nsc.com)  
 Tel: 81-3-5639-7560