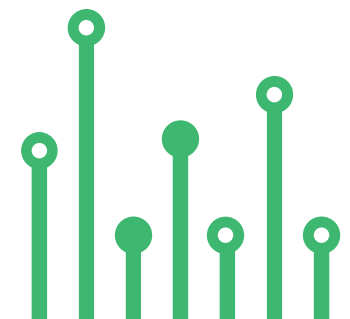


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POWER SUPPLY



5V – 4A Buck Converter using NR110E



SKU: EL134630

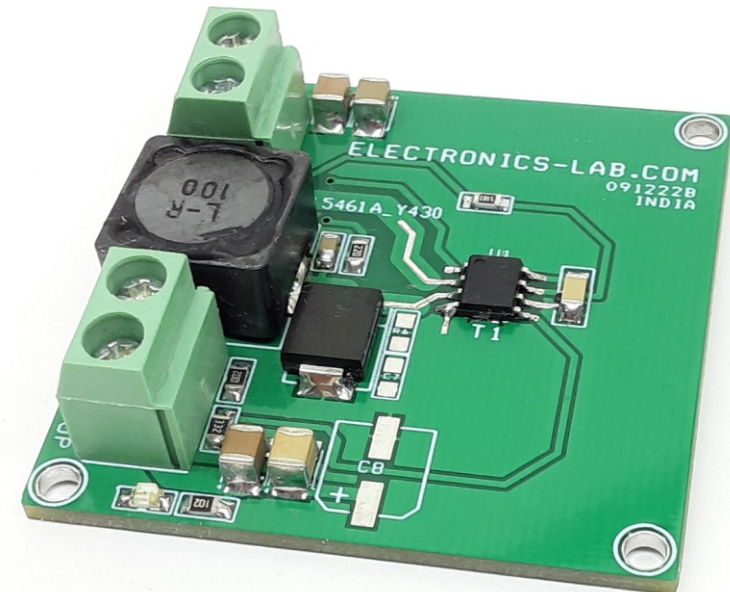
5V – 4A Buck Converter using NR110E



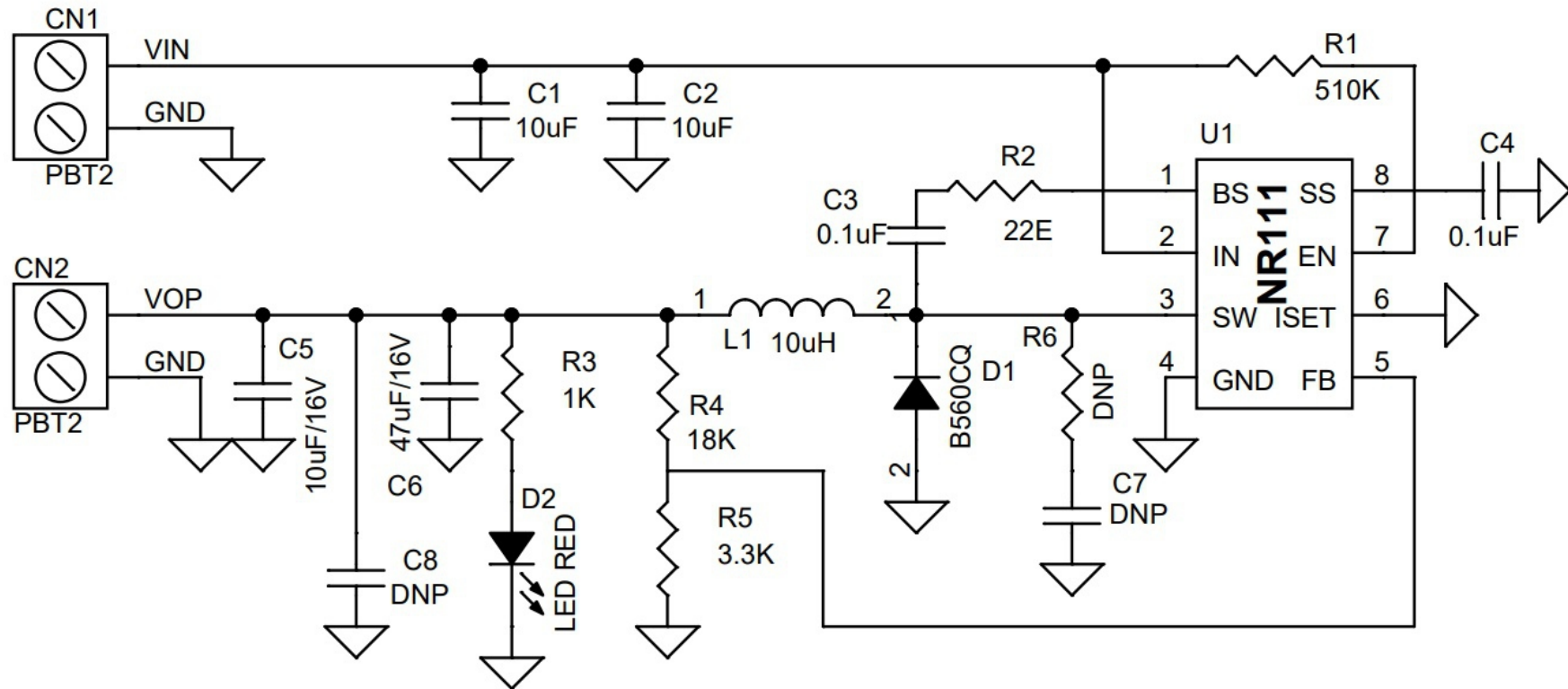
This powerful buck converter can efficiently produce 5V@4A with an input voltage between 7V to 31V. The project is built using the NR110E chip from Sanken Semiconductor. The IC integrates the power MOSFET. With current mode control, ultra-low ESR capacitors, such as ceramic capacitors are used. The ICs have protection functions such as Overcurrent Protection (OCP), Undervoltage Lockout (UVLO), and Thermal Shutdown (TSD). An adjustable Soft-start by an external capacitor C4 prevents the excessive inrush current at start-up. The feature of increasing efficiency at light loads allows the project to be used in energy-saving applications. Due to the ICs integrating phase compensation circuit the number of external components count is low. Screw terminal provided for easy input and output connections. D2 Power LED indicates the output. The project provides an efficiency of up to 94%.

FEATURES

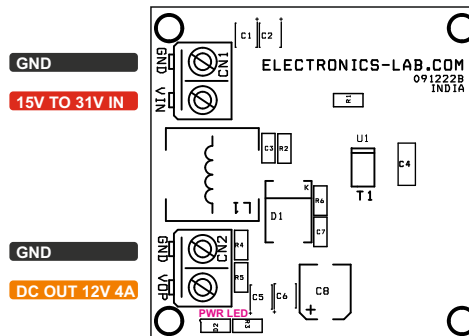
- Input Supply 7V to 31V
- Output 5V DC
- Maximum Load 4 Amps
- Operating Frequency 350Khz
- Efficiency Up to 94%
- Current Mode PWM Control
- Soft Start Function
- Over Current Protection (Drooping) Auto Restart – Threshold 5.5Amps
- Thermal Shutdown (Auto Restart) – Threshold 165 Degree Cent.
- Thermal Shutdown Restart Hysteresis of Temperature 20 Degree Cent.
- Undervoltage Lockout
- PCB Dimensions 43.18 x 43.18mm
- 4 X 2.5MM Mounting Holes



Schematic



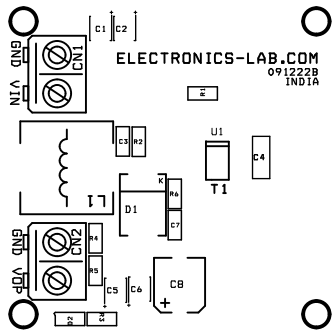
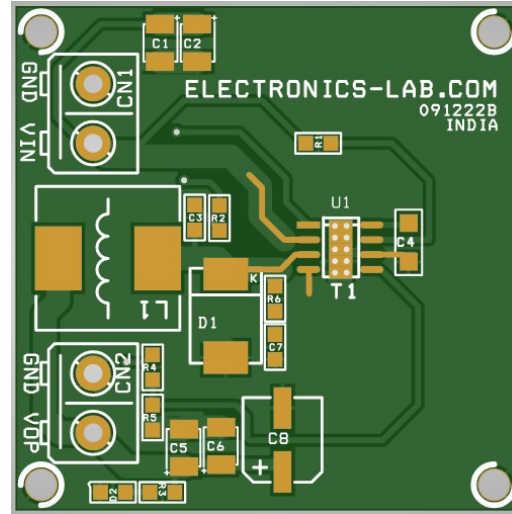
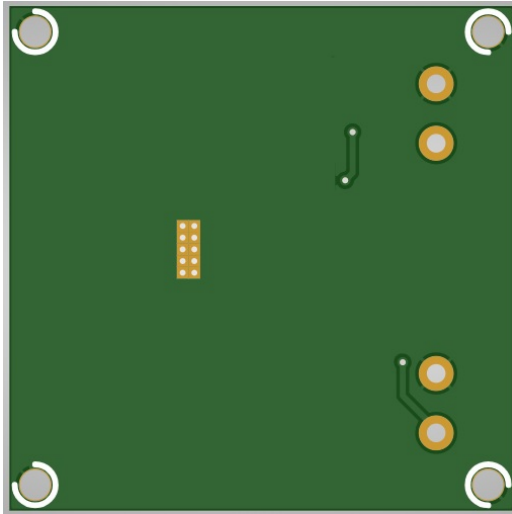
Connections



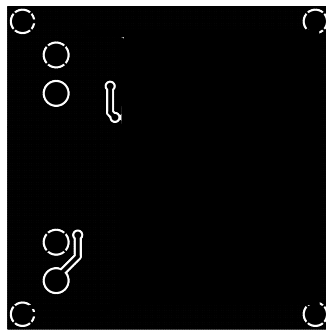
Connections

- CN1: Pin 1 = 7V to 31V DC Input, Pin 2 = GND
- CN2: Pin 1 = 5V DC Output, Pin 2 = GND
- D2 LED: Output LED

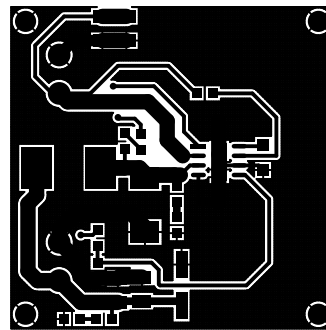
PCB



SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 43.18 X 43.18MM

Parts List

BOM						
NO	QNTY.	REF.	DESC	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	2	CN1,CN2	2 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX	DIGIKEY	277-1247-ND
2	2	C1,C2	10uF/35V CERAMIC SMD SIZE 1210	MUARATA/YAGEO	DIGIKEY	
3	1	C3	0.1uF CERAMIC SMD SIZE 0805	MUARATA/YAGEO	DIGIKEY	
4	1	C5	10uF/16V CERAMIC SMD SIZE 1210	MUARATA/YAGEO	DIGIKEY	
5	1	C6	47uF/16V CERAMIC SMD SIZE 1210	MUARATA/YAGEO	DIGIKEY	
6	3	R6,C7,C8	DNP			
7	1	D1	B560CQ FAST DIODE	DIODE INCORP	DIGIKEY	B560CQ-13-FDICT-ND
8	1	D2	LED RED SMD SIZE 0805	OSRAM	DIGIKEY	475-1278-1-ND
9	1	L1	10uH/10A	CHILISIN ELECTRONICS	DIGIKEY	553-BFSI00090908100M05TR-ND
10	1	R1	510K 1% SMD SIZE 0805	MUARATA/YAGEO	DIGIKEY	
11	1	R2	22E 5% SMD SIZE 0805	MUARATA/YAGEO	DIGIKEY	
12	1	R3	1K 5% SMD SIZE 0805	MUARATA/YAGEO	DIGIKEY	
13	1	R4	18K 1% SMD SIZE 0805	MUARATA/YAGEO	DIGIKEY	
14	1	R5	3.3K 1% SMD SIZE 0805	MUARATA/YAGEO	DIGIKEY	
15	1	U1	NR111 SOIC8	SANKEN	DIGIKEY	NR111ECT-ND
16	1	C4	0.1uF/50V CERAMIC SMD SIZE 1206	MUARATA/YAGEO	DIGIKEY	



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electronics-lab
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info@electronics-lab.com
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