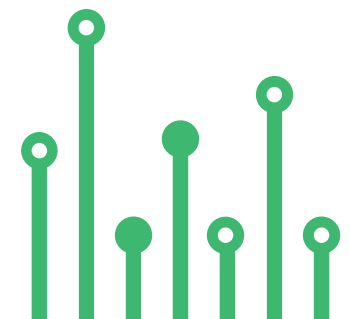


THE  
**electronics-lab**  
.com  
from ideas to  
**boards**

[electronics-lab - Projects](#) | [Embedded News](#) | [Online Community](#) | [e-Shop](#)

Open Source Hardware Electronics Projects

[electronics-lab.com /projects](https://electronics-lab.com/projects)





POWER SUPPLY



**9V @ 45mA  
Boost Converter  
Output with  
Input 2.1V to  
5.5V**



SKU: EL134709

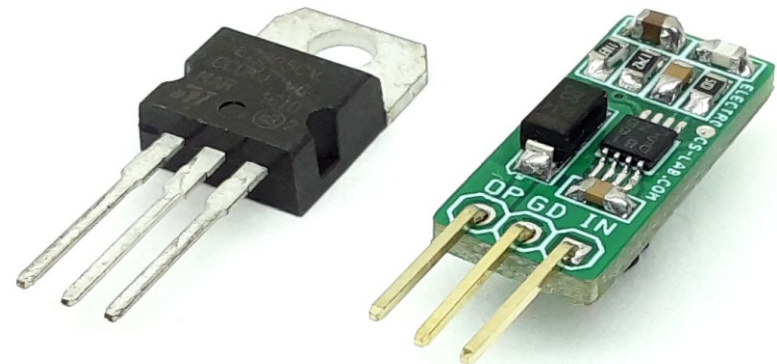
# 9V @ 45mA Boost Converter Output with Input 2.1V to 5.5V



The project shown here is a boost converter that provides **9V DC** output from **2.1V to 5.5V** input. It is a good choice for battery-operated devices where the converter can be connected to 2x 1.5V, 3 x 1.5V Battery, 1 x Li-ion, 2 x NICAD, 2 x NIMH, and provide 9V Output. The board is built using **BD8158FVM** chip and the pin configuration is the same as TO220 **78xx** LDO and the size is also the same. Output is very accurate and provides approx. **85% efficiency** at an operating frequency of **1.2Mhz**.

## Features

- Input 2.1V to 5.5V (2 X NIMH Battery, 2 X NICAD Battery, 1X Li-Ion Battery 3.6V, 2X AA/AAA battery)
- 3 Pin Header Pitch 2.54MM for Output and Input (Pin Configuration same as TO220 LDO Such as LM7805)
- Output 9V DC
- Output Current 45mA
- 85% Efficiency
- Output Voltage +/-1%
- Current Mode PWM System
- Built-In Under-Voltage Lockout Protection Circuit
- Built-In Over-Current Protection Circuit
- Built-In Thermal Shutdown Circuit
- PCB Dimensions 20.16 x 9.05 mm



## Protection Circuit

(UVLO/TSD) UVLO (under-voltage lockout protection circuit) shuts down the circuit when the voltage is equal or lower than 1.8V. Thermal shutdown circuit shuts down IC's operation at 175°C and recovers at 160°C.

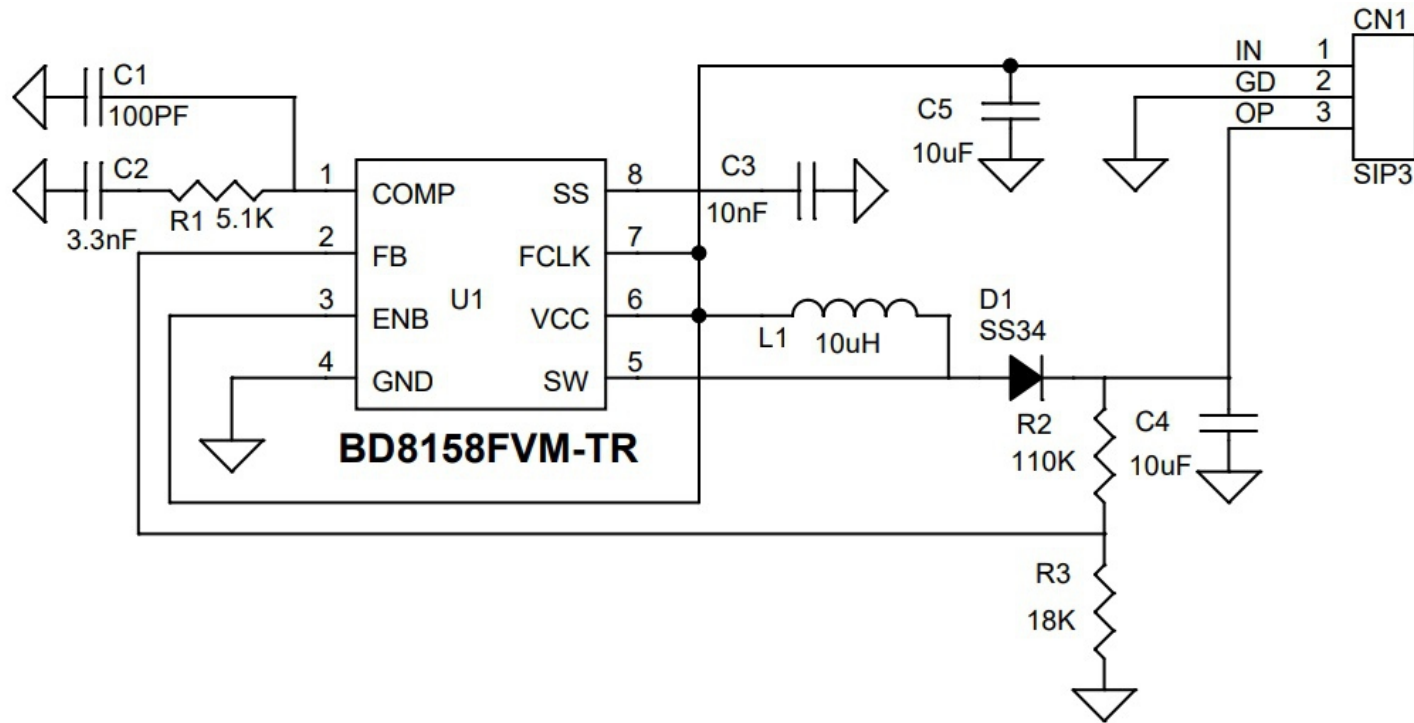
## Over-Current Protection Circuit

(OCP) Current flowing to the power FET is detected by voltage at the CURRENT SENSE and the Over-Current protection operates at 3A. When the Over-Current protection activates, the switching is turned OFF and the SS pin capacity is discharged.

## Soft-Start

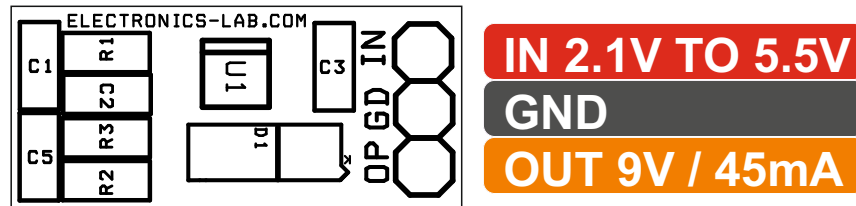
Circuit Since the output voltage rises gradually while restricting the current at the time of start-up, it is possible to prevent the output voltage overshoot or the inrush current.

# Schematic



# Connections

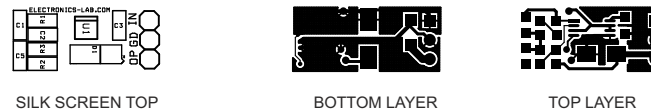
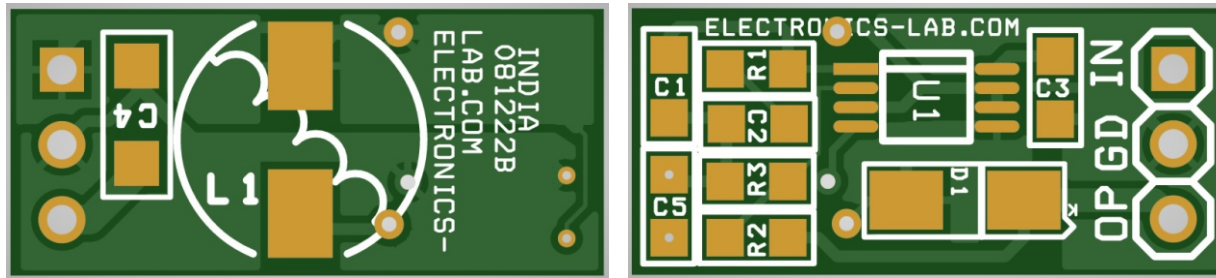
---



## Connections

- Pin 1 = Input 2.1V to 5.5V, Pin 2 = GND, Pin 3 = Output 9V DC – 45mA

# PCB



PCB DIMENSIONS 20.16MM X 9.05MM

# Parts List

---

BOM						
NO	QNTY	REF.	DESC	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	1	CN1	3 PIN MALE HEADER RIGHT ANGLE PITCH 2.54MM	WURTH	DIGIKEY	
2	1	C1	100PF/25V CERAMIC SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
3	1	C2	3.3nF/25V CERAMIC SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
4	1	C3	10nF/25V CERAMIC SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
5	1	C4	10uF/25V CERAMIC SMD SIZE 1206	MURATA/YAGEO	DIGIKEY	
6	1	D1	SS34 SMD FAST SWITCHING DIODE	TAIWAN SEMI	DIGIKEY	1801-SS34TR-ND
7	1	L1	10uH/SMD 8MM	EATON	DIGIKEY	283-SDCH1V6028-100M-RCT-ND
8	1	R1	5.1K/1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
9	1	R2	110K/1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
10	1	R3	18K/1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
11	1	U1	BD8158FVM-TR	ROHM	DIGIKEY	BD8158FVMCT-ND
12	1	C5	10uF/25V CERAMIC SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	



# Notes

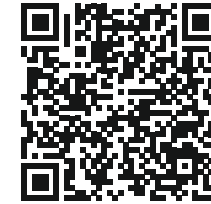
---



## APP

### Android App

DOWNLOAD



Android App launched in 2017 and has 100k+ downloads - rated with 4.5 stars.

SCAN QR CODE





Keep  
In touch..

electronics-lab  
.com

info@electronics-lab.com  
www.electronics-lab.com

from ideas to **boards**

