

1.2V to 50V @ 3A – Adjustable Power Supply with 55Vdc Input

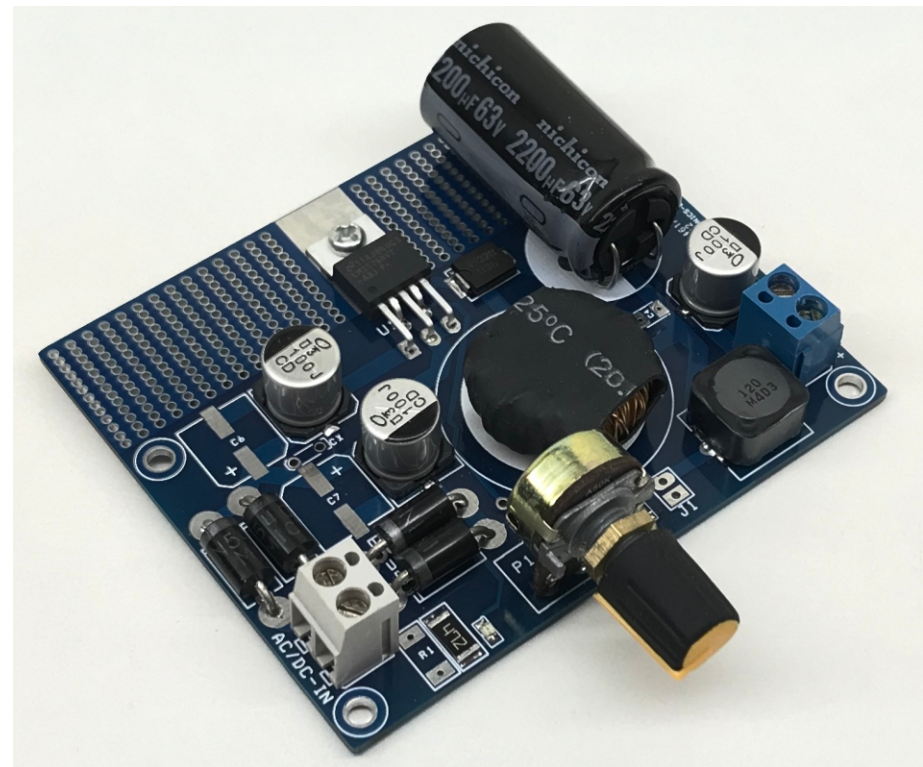
The project presented here is a wide input voltage range non-isolated DC-DC Converter, that provides a regulated, adjustable output voltage. The operating input supply is 55V DC and output regulated from 1.2V to 50V DC. The project built using LM2576HVT-ADJ IC. Screw terminals provided for easy input and output connections, onboard power LED at the input, bridge rectifier for AC/DC Input, an onboard potentiometer to adjust the output voltage, etc. This is a low-profile board with a thermal area on PCB that acts as a heatsink. An additional LC filter using C5 and L2 that reduces the output ripple by a factor of 10 or more is included in this circuit. The device has a current limiting feature to prevent the switching current from exceeding a safe value during an accidental overload on output.

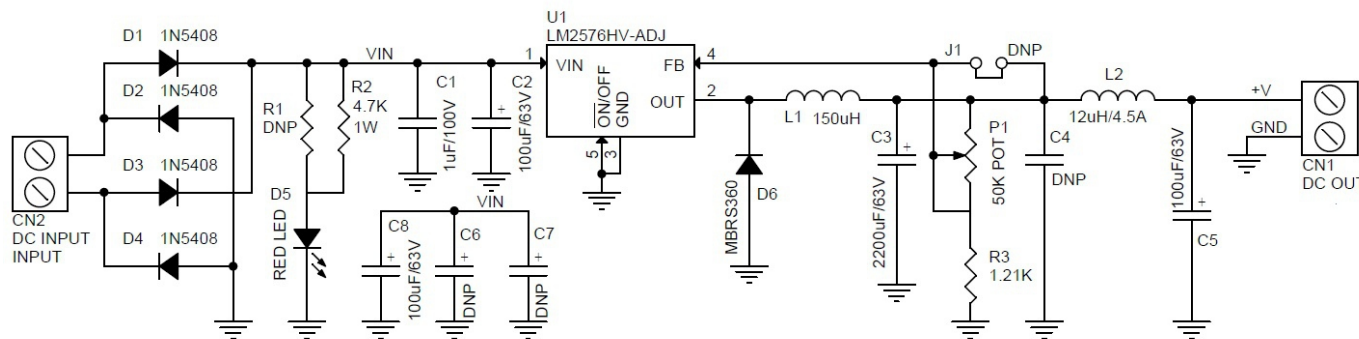
The **LM2576** series of regulators are monolithic integrated circuits that provide all the active functions for a step-down (buck) switching regulator, capable of driving 3-A load with excellent line and load regulation. These devices are available in fixed output voltages of 3.3 V, 5 V, 12 V, 15 V, and an adjustable output version. Requiring a minimum number of external components, these regulators are simple to use and include fault protection and a fixed-frequency oscillator. The LM2576 series offers a high-efficiency replacement for popular three-terminal linear regulators. It substantially reduces the size of the heat sink, and in some cases no heat sink is required. A standard series of inductors optimized for use with the LM2576 are available from several different manufacturers. This feature greatly simplifies the design of switch-mode power supplies. Other features include a $\pm 4\%$ tolerance on output voltage within specified input voltages and output load conditions, and $\pm 10\%$ on the oscillator frequency. External shutdown is included, featuring 50- μ A (typical) standby current. The output switch includes cycle-by-cycle current limiting, as well as thermal shutdown for full protection under fault conditions.

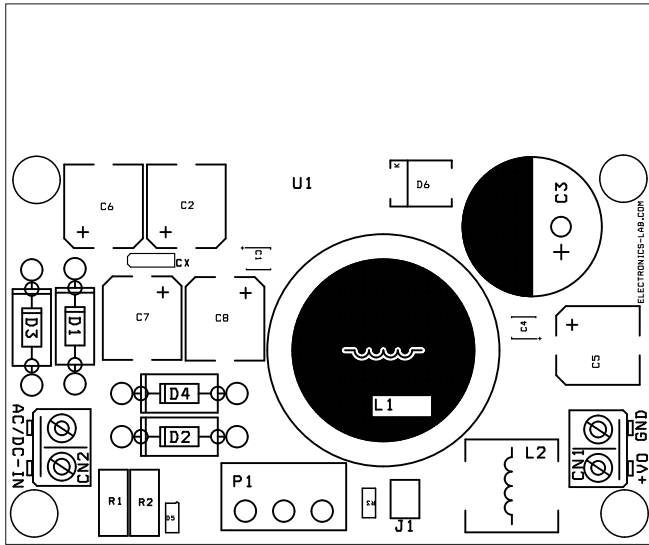
Note: The board works with DC input and due to the onboard rectifier the input polarity is not a problem. This project can also work with AC input, use appropriate filter capacitor for AC input needed, CX capacitor provision helps you to use THT capacitor at input DC line.

Features

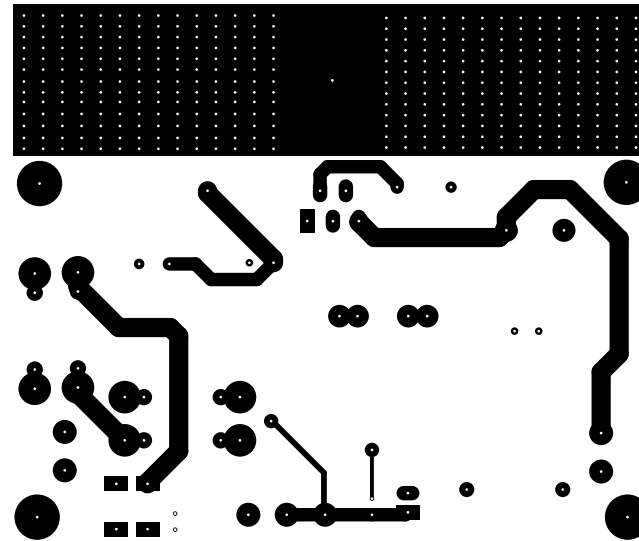
- Input voltage 55V
(it can work with Lower Input DC Supply, but the output will be lower)
- Bridge Rectifier at input so No polarity issue DC input
- Adjustable version output voltage range: 1.23 V to 50 V
 $\pm 4\%$ maximum over line and load conditions
- 3-A output current (Maximum)
- Cycle-by-Cycle Peak Current Limit for Overload Protection
- Power LED at input
- On board Potentiometer for Output Voltage Adjust
- Screw Terminal for Inputs and Output Connection
- Additional Inductor and Capacitor to reduce the Ripple
- 52-kHz Fixed-frequency internal oscillator
- Thermal shutdown and current limit protection
- PCB Dimensions 85MM X 71.60MM



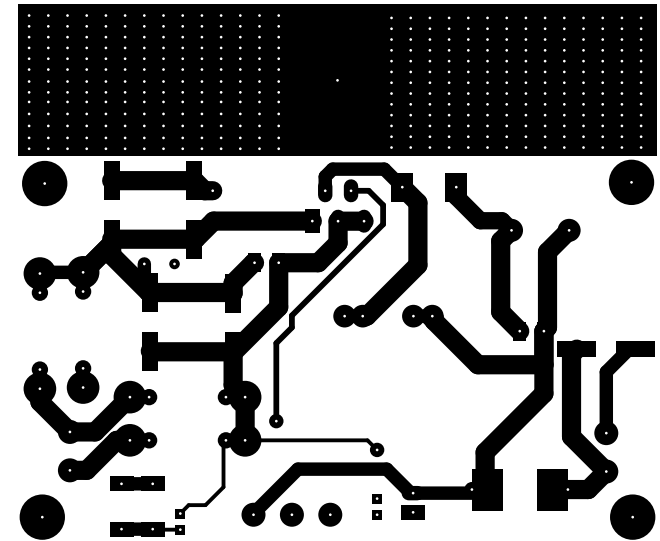




SILK SCREEN TOP

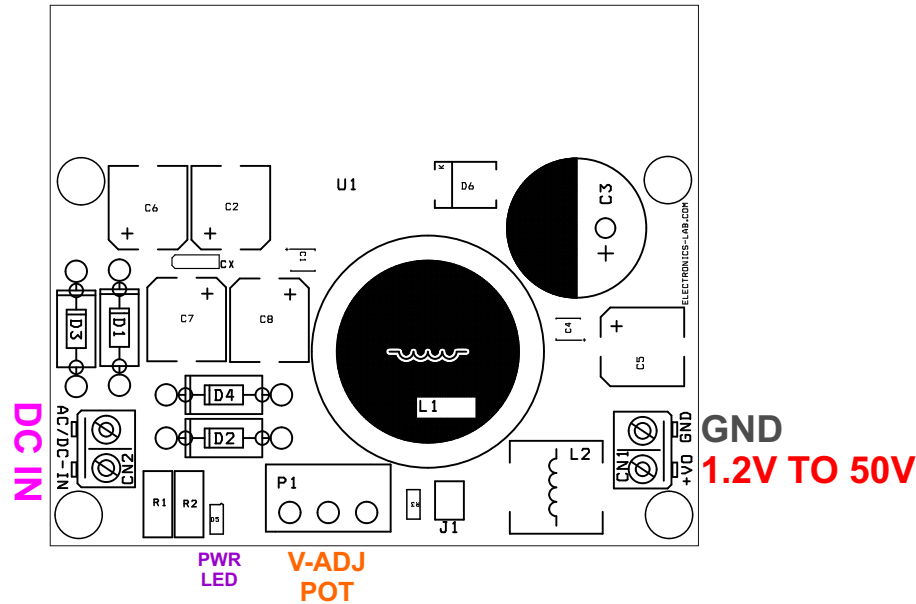


BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 85MM X 71.60MM



BOM						
NO	QNTY.	REF	DESC	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	1	CN1	2 PIN SCREW TERMENAL 5.08MM PITCH	WIEDMULLER	DIGIKEY	281-2888-ND
2	1	CN2	2 PIN SCREW TERMENAL 5.08MM PITCH	WIEDMULLER	DIGIKEY	281-2888-ND
3	1	C1	1uF/100V SMD SIZE 1206	MURATA/YAGEO	DIGIKEY	
4	3	C2,C5,C8	100uF/63V SMD	NICHICON	DIGIKEY	493-6185-1-ND
5	2	C3	2200uF/63V THT	NICHICON	DIGIKEY	493-1360-ND
6	5	R1,J1,C4,C6,C7	DNP			
7	4	D1,D2,D3,D4	1N5408	ON SEMI	DIGIKEY	1N5408FSTR-ND
8	1	D5	RED LED SMD SIZE 0805	OSRAM	DIGIKEY	475-1415-1-ND
9	1	D6	MBRS360	ON SEMI	DIGIKEY	MBRS360T3GOSCT-ND
10	1	L1	150uH/5A 30MM DIA	BOURNS	MOUSER	652-2200LL-151-H-RC
11	1	L2	20uH OR 12uH/4.5A 12MMX12MM	BOURNS	DIGIKEY	SRR1260-120MTR-ND
12	1	P1	50K POT 16MM	BOURNS	DIGIKEY	PDB181-K415K-503B-ND
13	1	R2	4.7K 5% SMD 2512 OR 1210	MURATA/YAGEO		
14	1	R3	1.21K 1% SMD SIZE0805	MURATA/YAGEO		
15	1	U1	LM2576HVT-ADJ TO220	TEXAS	DIGIKEY	LM2576HVT-ADJ/NOPB-ND