

1.2V to 35V @ 3A Adjustable Step-down Regulator using LM2596



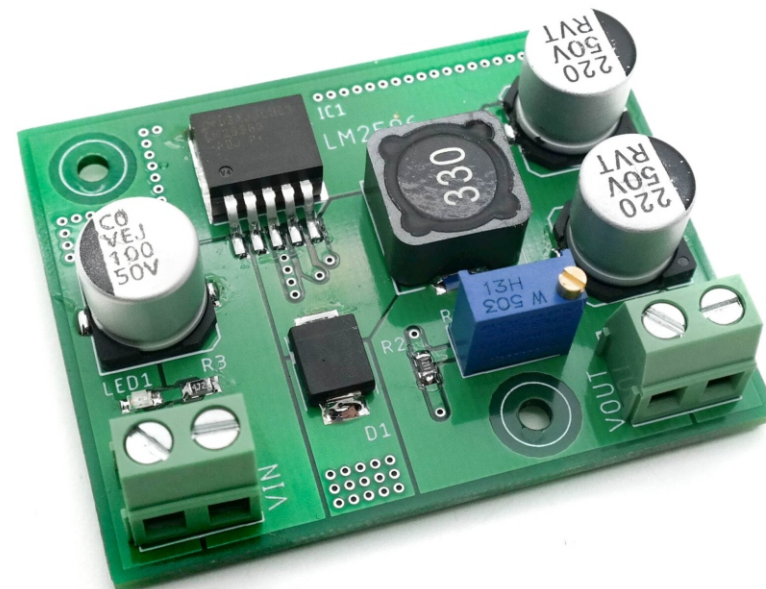
This is a highly efficient and compact project that is capable of driving a 3A load with excellent line and load regulation and adjustable output of 1.2V to 35V DC. The project is built around the LM2596-ADJ regulator which is ideally suited for easy and convenient design of step-down switching regulator using buck converter topology. The adjustable output version of LM2596 is internally compensated to minimize the number of external components to simplify the power supply design.

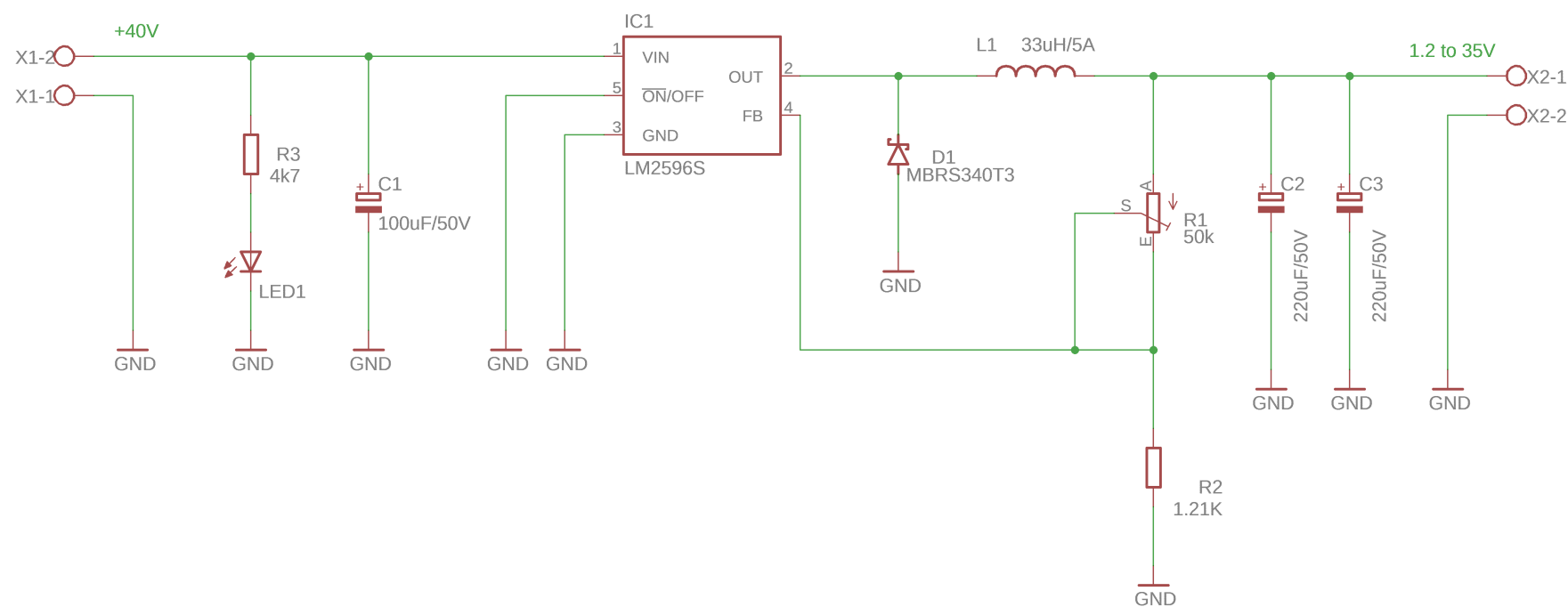
Lm2596 - 3.0 A, Step-Down Switching Regulator

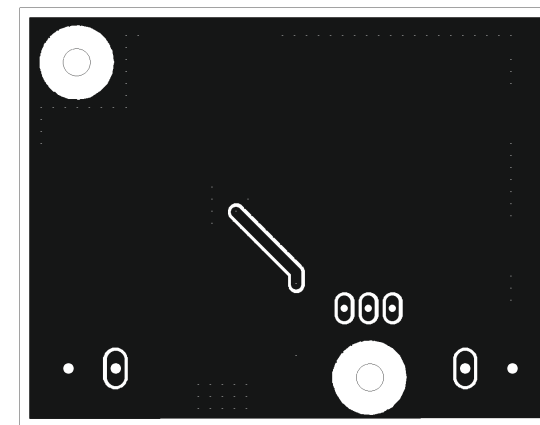
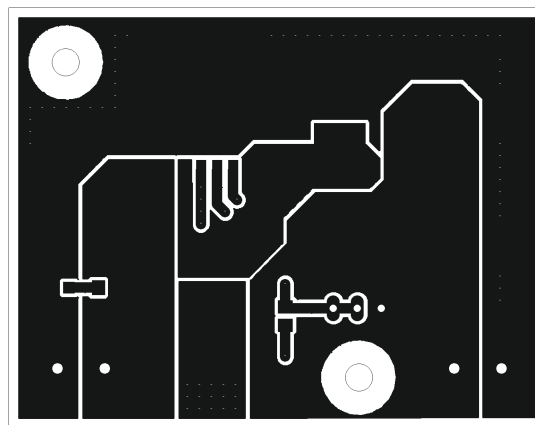
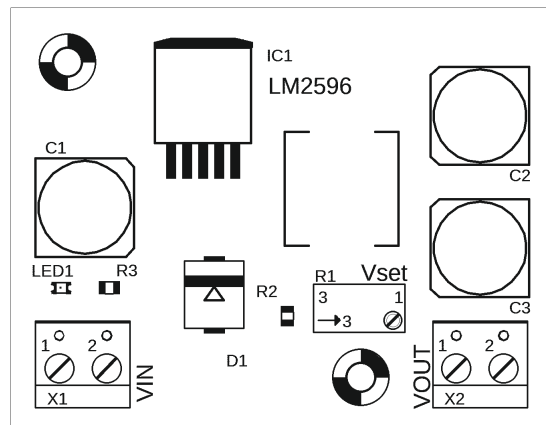
The LM2596 regulator is a monolithic integrated circuit ideally suited for easy and convenient design of a step-down switching regulator (buck converter). It is capable of driving a 3.0 A load with excellent line and load regulation. This device is available in adjustable output version and it is internally compensated to minimize the number of external components to simplify the power supply design. Since LM2596 converter is a switch-mode power supply, its efficiency is significantly higher in comparison with popular three-terminal linear regulators, especially with higher input voltages. The LM2596 operates at a switching frequency of 150 kHz thus allowing smaller sized filter components than what would be needed with lower frequency switching regulators. Available in a standard 5-lead TO-220 package with several different lead bend options, and D2PAK surface-mount package. The other features include a guaranteed 4% tolerance on output voltage within specified input voltages and output load conditions, and +/-15% on the oscillator frequency. External shutdown is included, featuring 80 uA (typical) standby current. Self-protection features include switch cycle-by-cycle current limit for the output switch, as well as thermal shutdown for complete protection under fault conditions.

Features

- Adjustable Output Voltage Range 1.23 V to 35 V
- Guaranteed 3 A Output Load Current
- Wide Input Voltage Range 3.2V to 40 V
- Input must be >1.5V higher than the output
- High Efficiency Up to 92%
- 150 kHz Fixed Frequency Internal Oscillator
- Thermal Shutdown and Current Limit Protection
- Internal Loop Compensation
- Precise potentiometer for voltage adjustment
- Output Ripple: $\leq 100\text{mV}$
- PCB dimensions 57.15 x 44.34 mm







Part	Value	Package	LCSC.com
R1	50k \pm 10% Precision Pot	TH	C118911
R2	1.21K 1%	SMD 0805	C228373
R3	4k7	SMD 0805	C229219
L1	33uH/5A	SMD 12MM INDUCTOR	C439422
C2 C3	220uF/50V	SMD ELECTROLYTIC	C3358
C1	100uF/50V	SMD ELECTROLYTIC	C249588
IC1	LM2596-ADJ	TO263 SMD	C29781
D1	MBRS340T3	SMC	C40326
D2	RED LED	SMD 0805	C192318
CN1 CN2	2 PIN SCREW TERMINALS	TH	C409161

