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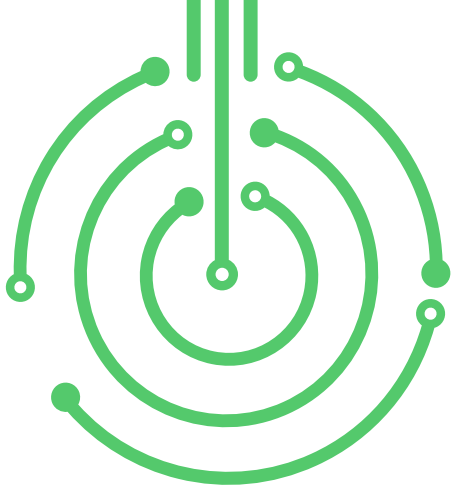


Low-Cost Boost Converter , 3.3V Input , 5V Output at 250mA

SKU: EL135097

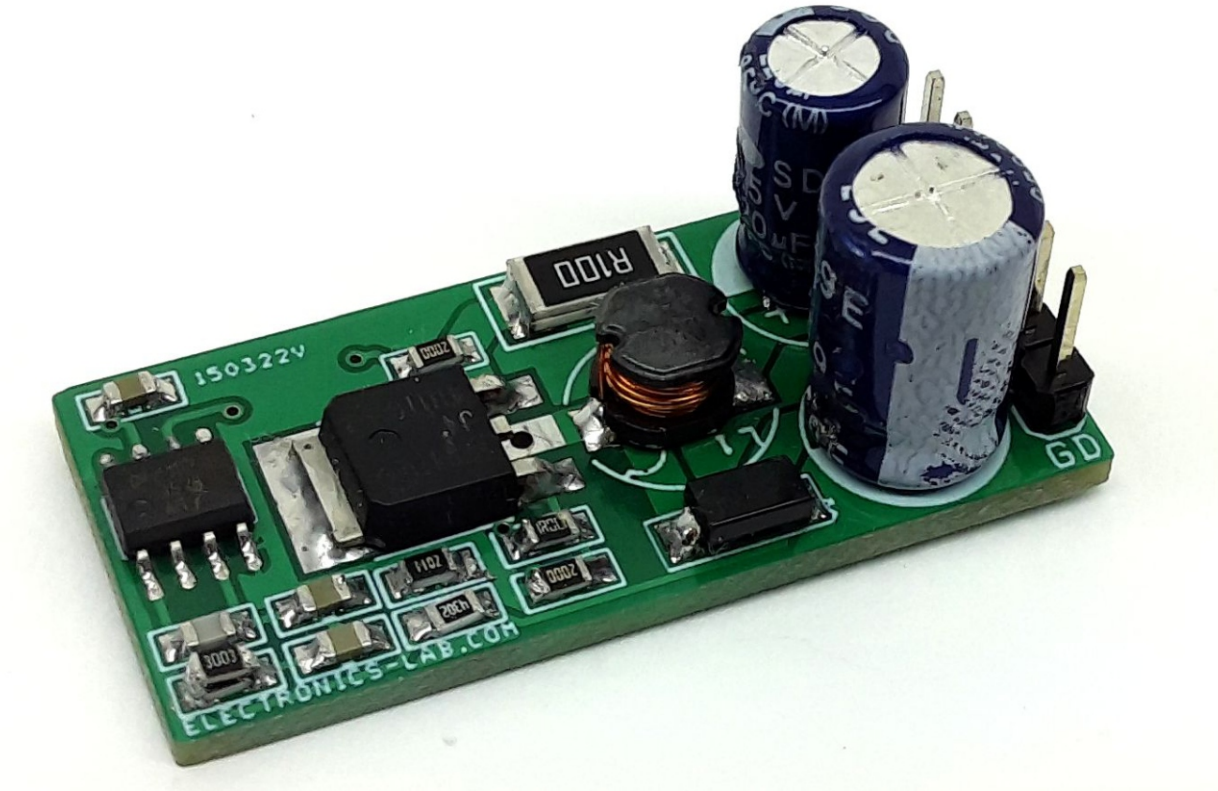
POWER SUPPLY

Low-Cost Boost Converter 3.3V Input, 5V Output at 250mA

This is a low-cost boost converter that converts a 3.3V input to 5V at 250mA load current. The LM2578A chip is used to build this project. The LM2578A is a switching regulator which can easily be set up for such DC-to-DC voltage conversion circuits as the buck, boost and inverting configurations. In this board, the IC is configured as a boost converter. The operating frequency is 50Khz.

Features

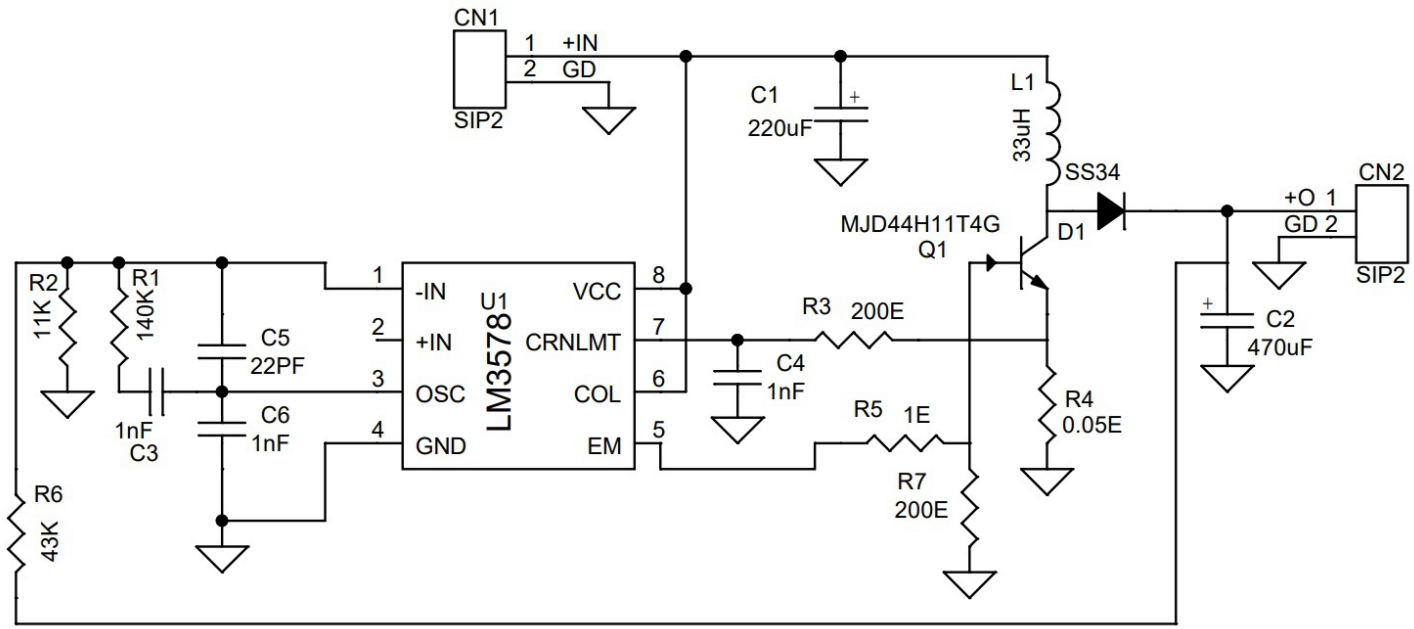
- Input Voltage 3.3V
- Output Voltage 5V DC (+/-5%)
- Output Current 250mA
- Efficiency Approx 80%
- Current Limit 2A
- Operating Frequency 50Khz
- Thermal Shutdown
- PCB Dimensions 38.58 x 17.94mm



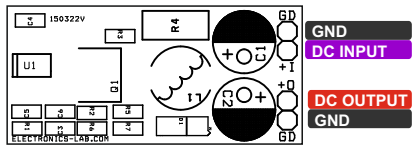
The boost or step-up converter converts a DC voltage to a higher DC voltage. When the switch software is turned on, energy is stored in the inductor L and the inductor current iL ramps up at a slope determined by the input voltage. Diode D is off during this period. Once the switch, SW, turns off, diode D starts to conduct and the energy stored in the inductor is released to the load. Current in the inductor ramps down at a slope determined by the difference between the input and output voltages.

The LM2578A is a switching regulator which can easily be set up for such DC-to-DC voltage conversion circuits as the buck, boost and inverting configurations. The LM2578A features a unique comparator input stage which not only has separate pins for both the inverting and non-inverting inputs but also provides an internal 1.0V reference to each input, thereby simplifying circuit design and p.c. board layout. The output can switch up to 750 mA and has output pins for its collector and emitter to promote design flexibility. An external current limit terminal may be referenced to either the ground or the Vin terminal, depending upon the application. In addition, the LM2578A has an onboard oscillator, which sets the switching frequency with a single external capacitor from <1 Hz to 100 kHz (typical).

Schematic


CN1
1 +IN
2 GD
SIP2
C1
220uF
L1
33uH
SS34
D1
MJD44H11T4G
Q1
CN2
+O 1
GD 2
SIP2
C2
470uF
R2
11K
R1
140K
C5
22PF
C6
1nF
1nF
C3
R6
43K
U1
LM3578
-IN
+IN
OSC
GND
VCC
CRNLMT
COL
EM
R3 200E
C4
1nF
R5 1E
R7
200E
R4
0.05E

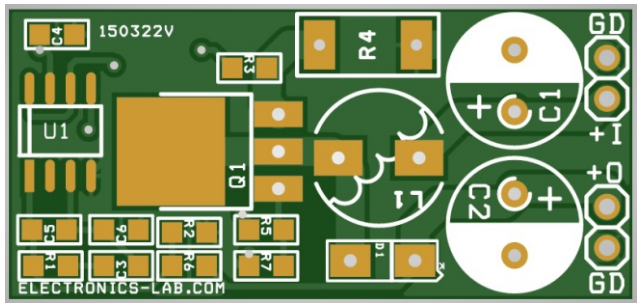
Connections

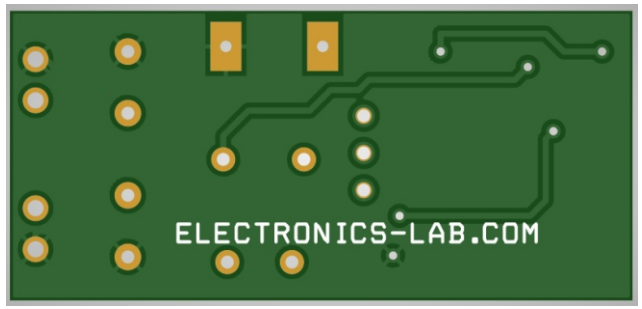


Connections

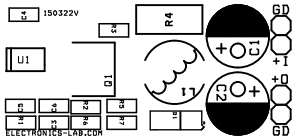
- CN1: Pin 1 = 3.3V DC Input, Pin 2 = GND
- CN2: Pin 1 = 5V DC Output, Pin 2 = GND

PCB

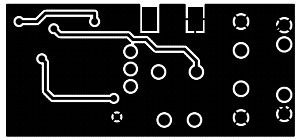




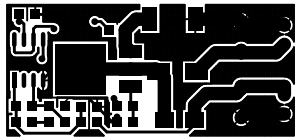
PCB GERBER FILES AVAILABLE



SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 38.58 X 17.94MM

Parts List

BOM						
NO	QNTY	REF.	DESC	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	2	CN1,CN2	2 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5315-ND
2	1	C1	220uF/16V ELECTROLYTIC 6.3MM	ELITE	DIGIKEY	4191-EV1C221MP26311EUCT-ND
3	1	C2	470uF/16V ELECTROLYTIC 8MM	NICHICON	DIGIKEY	UVR1C471MPDDTB-ND
4	3	C3,C4,C6	1nF/50V CERAMIC SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
5	1	C5	22PF/50V CERAMIC SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
6	1	D1	SS34 FAST SWITCHING DIODE	ONSEMI	DIGIKEY	SS34FSCT-ND
7	1	L1	33uH/2A	PULSE ELECTRONICS	DIGIKEY	553-AWVS00808040330M00CT-ND
8	1	Q1	MJD44H11T4G DPK	ONSEMI	DIGIKEY	MJD44H11T4GOSCT-ND
9	1	R1	140K 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
10	1	R2	11K 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
11	2	R3,R7	200E 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
12	1	R4	0.05E 1% SMD SIZE 2512	MURATA/YAGEO	DIGIKEY	
13	1	R5	1E 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
14	1	R6	43K 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
15	1	U1	LM3578 SOIC8	TI	DIGIKEY	296-35906-1-ND

Notes

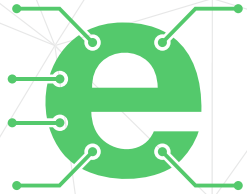
APP

Android App

DOWNLOAD

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

SCAN QR CODE



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