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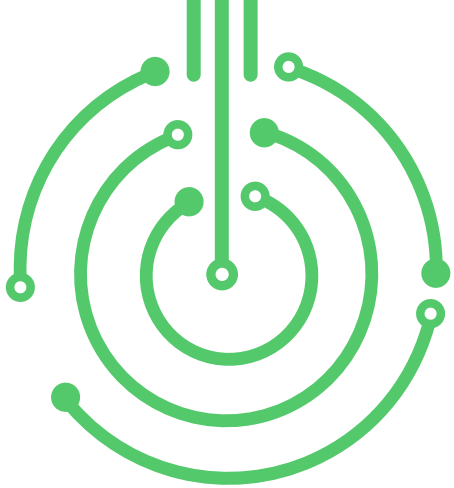


12-75V Input to 10V Output DC-DC Buck Converter

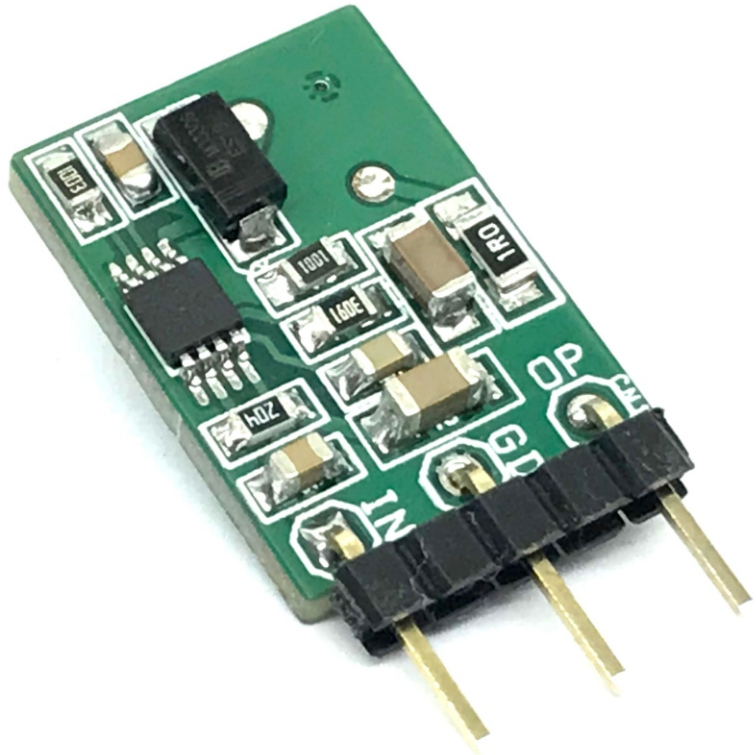
SKU: EL145644

12-75V Input to 10V Output DC-DC Buck Converter

This is a versatile synchronous Buck DC/DC converter built using the LM5007 chip. It operates with an input voltage range 12V to 75VDC, and provides 10V/250mA output. The regulator can provide load current up to 400mA, but it is advisable to draw only 250mA due to the small thermal area (small PCB). The default output of the converter is set to 10Vdc. The output is adjustable by changing the feedback resistor values R1 and R4. You may refer to the datasheet of the LM5007 chip for more info.

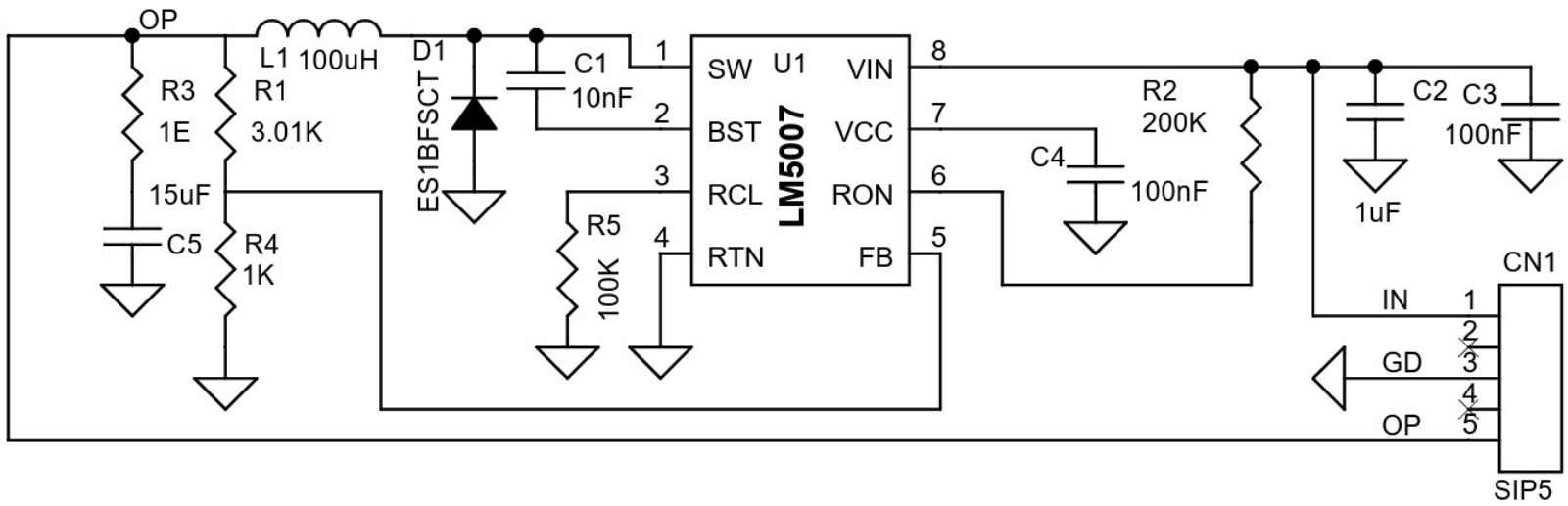
FEATURES

- Operating Input Voltage Range of 12 V to 75 V
- Output 10V @ 250mA (Output Up to 400mA with forced Air)
- Adjustable Output Voltage
- High Efficiency Operation
- Adaptive Constant On-Time Control Architecture
- Ultra-Fast Transient Response
- No Control Loop Compensation Required
- Nearly Constant Switching Frequency
- PWM On-Time Varies Inversely with Input Voltage
- Low Input Quiescent Current
- Inherent Protection Features for Robust Design
- Intelligent Current Limit Protection
- VCC and Gate Drive UVLO Protection
- Thermal Shutdown Protection with Hysteresis
- PCB Dimensions 20 X 14.29MM

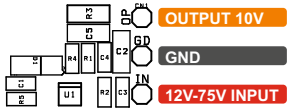


The LM5007 Step down-switching regulator features all of the functions needed to implement low-cost, efficient, Buck bias regulators. This high-voltage regulator contains an 80V, 0.7A N-channel Buck switch. The regulator is based on a hysteretic control scheme using an on-time inversely proportional to input voltage (VIN). This feature allows the operating frequency to remain relatively constant with load and input voltage variations. The hysteretic control requires no control loop compensation while providing fast load transient response. Additional protection features include: Thermal Shutdown, VCC undervoltage lockout, and maximum duty–cycle limiter. LM5007 can be used in numerous applications to efficiently regulate step-down higher voltage input This regulator is well suited for 48V telecom and the new 42V automotive power bus ranges. The LM5007 operates in discontinuous conduction mode at light load currents or continuous conduction mode at heavier load currents. In discontinuous conduction mode, current through the output inductor starts at zero, ramps up to the peak value during the buck switch on time, and then back to zero during buck switch-off time. In discontinuous conduction mode, the operating frequency can be relatively low and will vary with load. Therefore, at light loads, the conversion efficiency is maintained, since switching losses decrease with reduction in switching frequency.

Schematic


OP
L1 100uH
D1
ES1BFSCT
C1
10nF
R3
1E
R1
3.01K
15uF
C5
R4
1K
R5
100K
SW
U1
BST
RCL
RTN
LM5007
VIN
VCC
RON
FB
1
2
3
4
8
7
6
5
R2
200K
C4
100nF
C2
1uF
C3
100nF
CN1
IN
GD
OP
1
2
3
4
5
SIP5

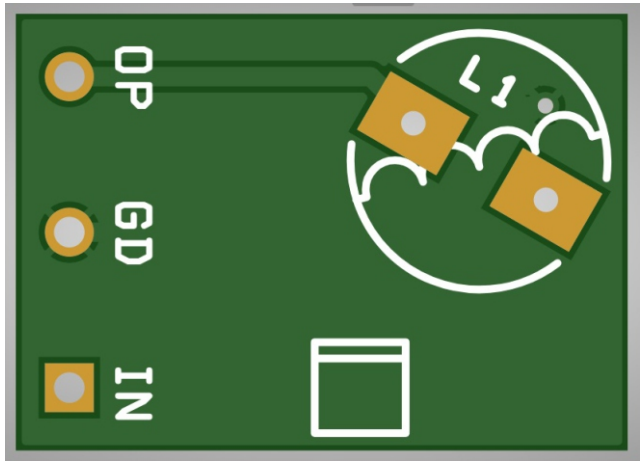
Connections

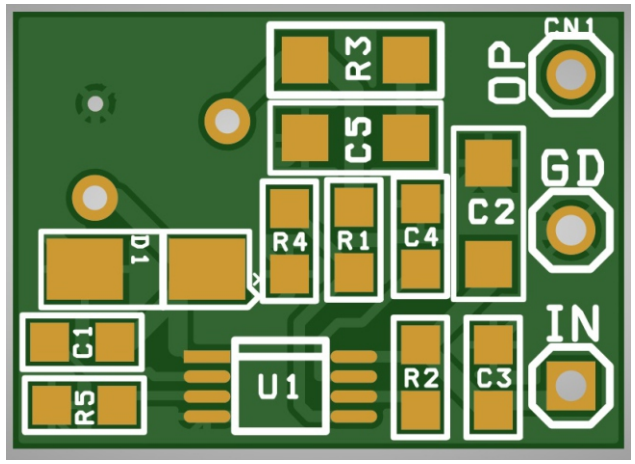


Connections

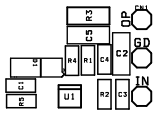
- Pin 1 = Voltage Input 12V to 75V
- Pin 2 = NC
- Pin 3 = GND
- Pin 4 = NC
- Pin 5 = Output 10V, 250mA

PCB

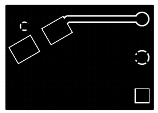




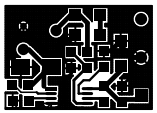
PCB GERBER FILES AVAILABLE



SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 20 X 14.29MM

Parts List

BOM						
NO.	QNTY.	REF.	DESC.	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	1	CN1	5 PIN MALE HEADER PITCH 2.54MM	ADAM TECH	DIGIKEY	2057-PH1RB-05-UA-ND
2	1	C1	10nF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
3	1	C2	1uF/100V CERAMIC SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
4	2	C3,C4	100nF/100V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
5	1	C5	15uF/25V CERAMIC SMD SIZE 1206	TDK	DIGIKEY	445-14681-1-ND
6	1	D1	ES1B 100V /1A ULTRA FAST	ONSEMI	DIGIKEY	ES1BFSCT-ND
7	1	L1	100uH/700mA	BOURNS	DIGIKEY	SRN6045-101MCT-ND
8	1	R1	3.01K 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
9	1	R2	200K 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
10	1	R3	1E 5% SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
11	1	R4	1K 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
12	1	R5	100K 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
13	1	U1	LM5007 8VSSOP	TI	DIGIKEY	296-35287-1-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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