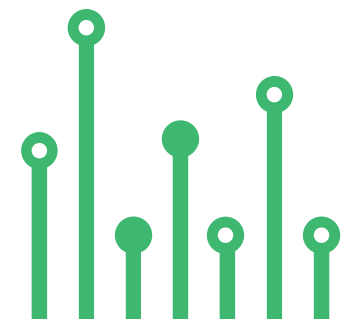


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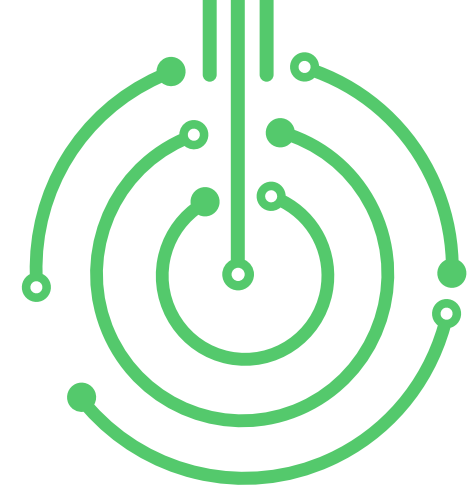
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POWER SUPPLY



Continuous Conduction Mode Pre-Converter Module for Power Factor Controller



SKU: EL135307

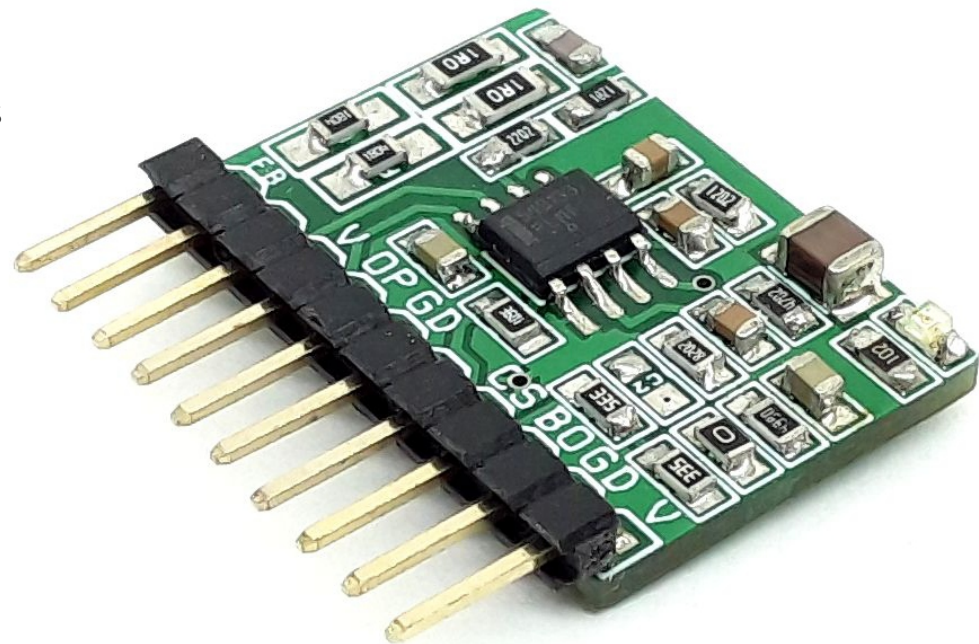
Continuous Conduction Mode Pre-Converters Module for Power Factor Controller



This compact module shown here is a Continuous Conduction Mode (CCM) Power Factor Correction Step up Pre-Converter. All-important inputs and output pins are broken out for use in your application, making this board hackable! Please refer to the datasheet of the NCP1654 chip for easy alteration and configuration of the board as per requirements. This board controls the power switch conduction time (PWM) in fixed frequency mode and is dependent on the instantaneous coil current. This module drastically simplifies the PFC implementation scheme. It also integrates high safety features that make the NCP1654 module ideal for robust and compact PFC stages like an effective input power runaway clamping circuit. Please refer to the application schematic to create a powerful PFC using this pre-driver module. The chip is available with various options for frequency such as 65Khz, 133Khz, and 200Khz. Choose the appropriate chip as per frequency requirement This project is tested with a 65Khz oscillator chip.

FEATURES

- Supply 15V DC
- ± 1.5 A Totem Pole Gate Drive, can drive TO247 and TO220 MOSFETS
- Average Current Continuous Conduction Mode
- Fast Transient Response
- Very Few External Components
- Very Low Startup Currents ($< 75 \mu\text{A}$)
- Very Low Shutdown Currents ($< 400 \mu\text{A}$)
- Low Operating Consumption
- Accurate Fully Integrated 65
- Latching PWM for cycle-by-cycle Duty-Cycle Control
- Internally Trimmed Internal Reference
- Undervoltage Lockout with Hysteresis
- Soft-Start for Smoothly Startup Operation
- Shutdown Function
- PCB Dimensions 26.04 X 17.94MM



Safety Features

- Inrush Current Detection
- Overvoltage Protection
- Undervoltage Detection for Open Loop Detection or Shutdown
- Brown-Out Detection
- Soft-Start
- Accurate Overcurrent Limitation
- Overpower Limitation

VCC

This pin is the positive supply of the IC. The circuit typically starts to operate when VCC exceeds 10.5 V and turns off when VCC goes below 9 V. After start-up, the operating range is 9 V up to 20 V.

CS (Current Sense)

This pin sources a current I_{CS} which is proportional to the inductor current I_L . The sense current I_{CS} is for overcurrent protection (OCP), overpower limitation (OPL) and PFC duty cycle modulation. When I_{CS} goes above 200 μA , OCP is activated and the Drive Output is disabled.

BO (VBO) Brown-Out/In

BO pin detects a voltage signal proportional to the average input voltage. When VBO goes below V_{BOL} , the circuit that detects too low input voltage conditions (brown-out), turns off the output driver and keeps it in low state until VBO exceeds V_{BOH} . This signal which is proportional to the RMS input voltage V_{ac} is also for overpower limitation (OPL) and PFC duty cycle modulation.

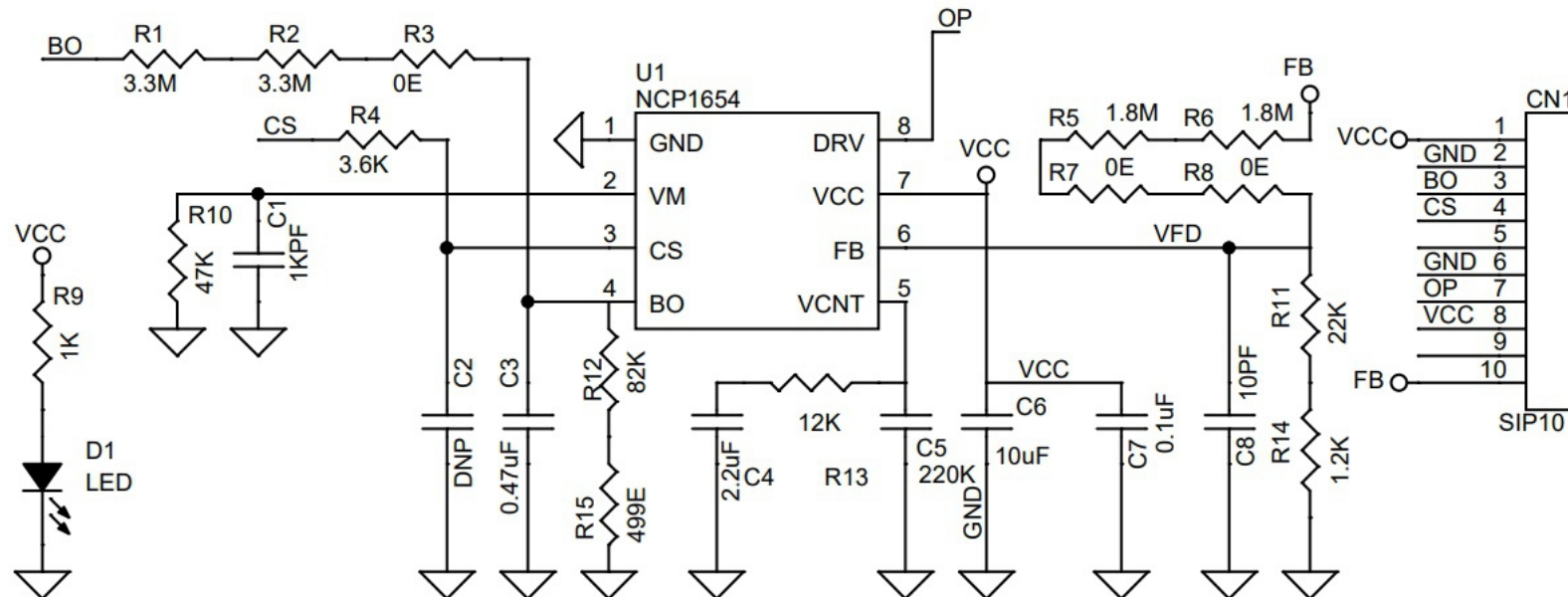
VFB (Voltage Feedback/Shutdown)

This pin receives a feedback signal VFB that is proportional to the PFC circuits output voltage. This information is used for both the output regulation, the overvoltage protection (OVP), and output undervoltage protection (UVP) to protect the system from damage at feedback abnormal situation. When VFB goes above 105% V_{REF} , OVP is activated and the Drive Output is disabled. When VFB goes below 8% V_{REF} , the device enters a low-consumption shutdown mode.

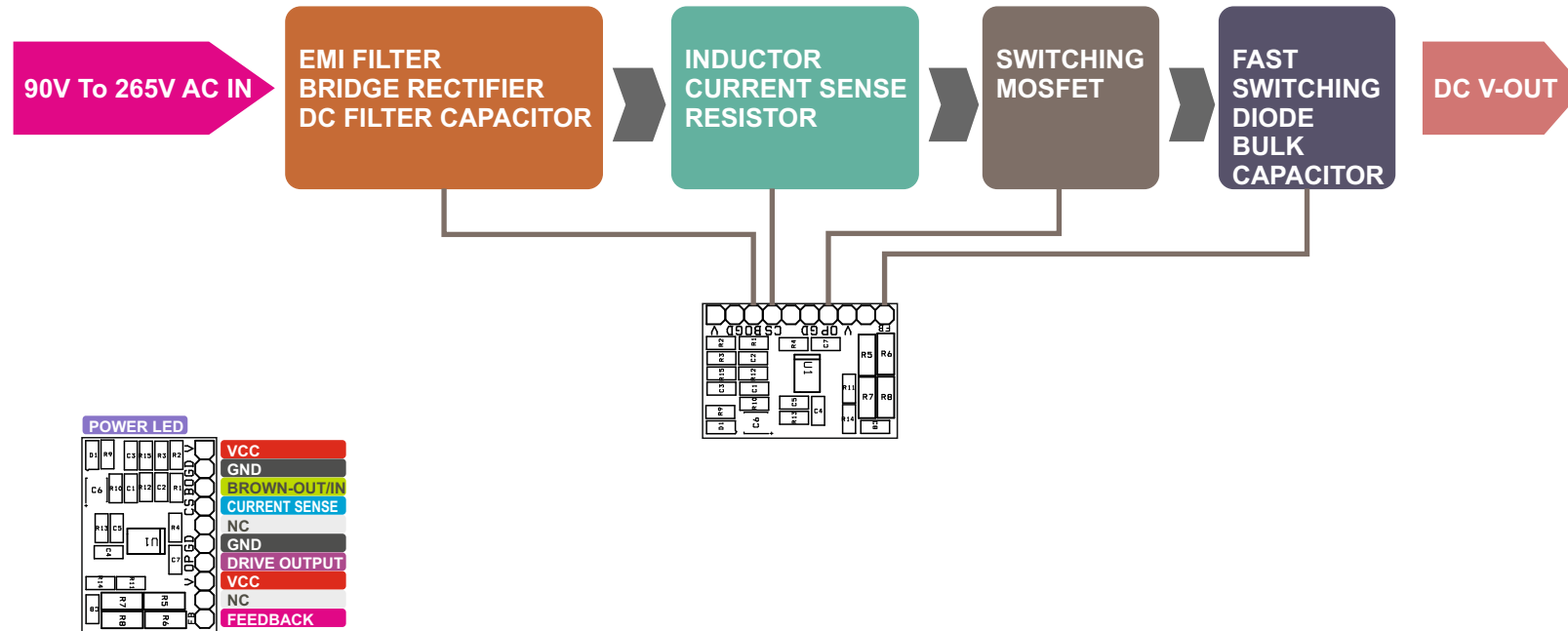
OP (Drive Output)

The high current capability of the totem pole gate drive ($\pm 1.5\text{A}$) makes it suitable to effectively drive high gate charge power MOSFET

Schematic



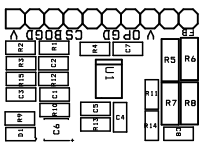
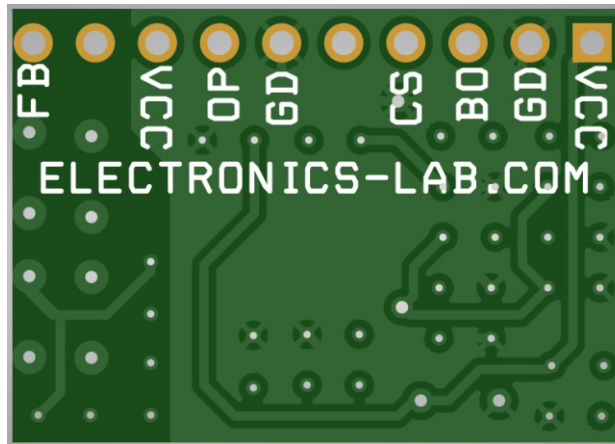
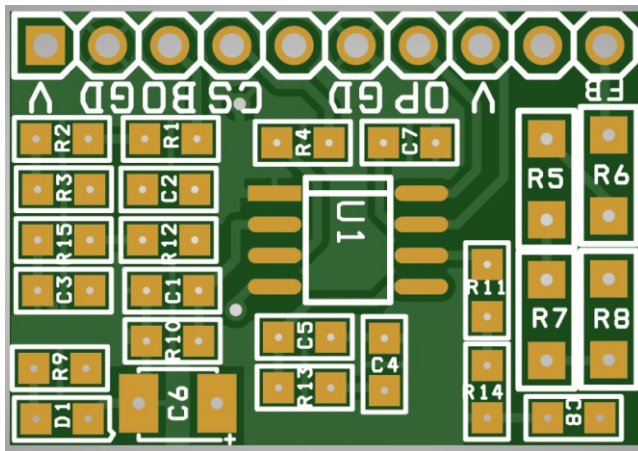
Connections



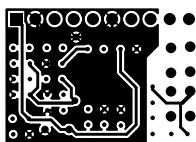
CONNECTIONS CONNECTOR Cn1

- Pin 1 = VCC 15V DC, Pin 2 = GND, Pin 3 = BO Brown-Out/IN, Pin 4 = CS, Pin 5 = NC, Pin 6 = GND, Pin 7 = Output (MOSFET Gate), Pin 8 = VCC 15V DC,
- Pin 9 = NC, Pin 10 = FB/Feedback Voltage
- D1 Power LED

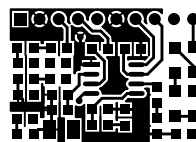
PCB



SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 26.04 X 17.94MM

Parts List

BOM						
NO.	QNTY.	REF.	DESC.	MANUFACTURER	SUPPLIER	SUPPLIER'S PART NO
1	1	CN1	10 PIN MALE HEADER RIGHT ANGLE PITCH 2.54MM	WURTH	DIGIKEY	732-2670-ND
2	1	C1	1KPF(1nF)/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
3	1	C2	DNP			
4	1	C3	0.47uF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
5	1	C4	2.2uF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
6	1	C5	220KF(0.22uF)/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
7	1	C6	10uF/25V CERAMIC SMD SIZE 1210 OR 1206	YAGEO/MURATA	DIGIKEY	
8	1	C7	0.1uF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
9	1	C8	10PF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
10	1	D1	LED RED SMD SIZE 0805	OSRAM	DIGIKEY	475-1278-1-ND
11	2	R1,R2	3.3M 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
12	2	R7,R8	0E SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
13	1	R4	3.6K 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
14	2	R5,R6	1.8M 5% SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
15	1	R9	1K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
16	1	R10	47K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
17	1	R11	22K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
18	1	R12	82K 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
19	1	R13	12K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
20	1	R14	1.2K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
21	1	R15	499E 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
22	1	U1	NCP1654BD65R2G	ONSEMI	DIGIKEY	NCP1654BD65R2GOSCT-ND
23	1	R3	0E SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	

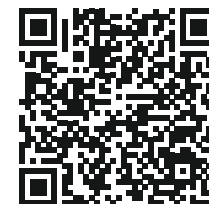
Notes



APP

Android App

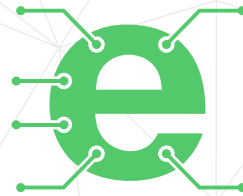
DOWNLOAD



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

SCAN QR CODE





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