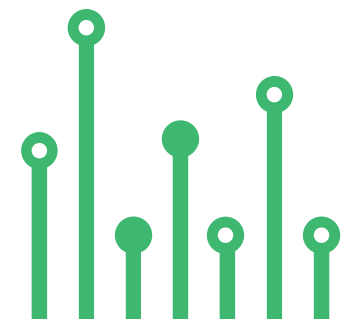THE

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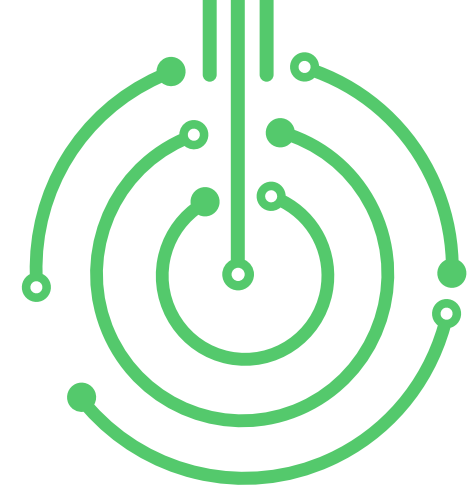**electronics-lab -** Projects | Embedded News | Online Community | e-Shop

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Breakout Board for UCC28019 and UCC28180 PFC Controller

SKU: EL138953

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# Breakout Board for UCC28019 and UCC28128 PFC Controller

This is a breakout board for UCC28019 and UCC28128 PFC controllers. This module enables users to build a high-power PFC (Power Factor Correction) controller. Active PFC uses the boost topology operating in Continuous Conduction Mode (CCM). The controller is suitable for systems in the 100 W to >2 kW range over a wide-range universal ac line input. The startup current during an under-voltage lockout is less than 200 µA. The user can control low-power standby mode by pulling the VSENSE pin below 0.77 V. Low-distortion wave-shaping of the input current using average current mode control is achieved without input line sensing, reducing the Bill of Materials component count. Simple external networks allow for flexible compensation of the current and voltage control loops. The switching frequency is internally fixed and trimmed to better than 5% accuracy at 25°C. Fast 1.5-A gate peak current drives the external switch.

Numerous system-level protection features include peak current limit, soft over-current detection, open-loop detection, input brown-out detection, output over-voltage protection/under-voltage detection, a no-power discharge path on VCOMP, and overload protection on ICOMP. Soft-Start limits boost current during start-up. A trimmed internal reference provides accurate protection thresholds and regulation set-point. An internal clamp limits the gate drive voltage to 12.5 V.

FEATURES

- Supply 12V to 15V
- 8-pin Solution Without Sensing Line Voltage Reduces External Components
- Wide-Range Universal AC Input Voltage
- Fixed 65-kHz Operating Frequency
- Maximum Duty Cycle of 97%
- Output Over/Under-Voltage Protection
- Input Brown-Out Protection
- Cycle-by-Cycle Peak Current Limiting
- Open Loop Detection
- Low-Power User Controlled Standby Mode
- PCB Dimensions 26.35 X 21.91 MM
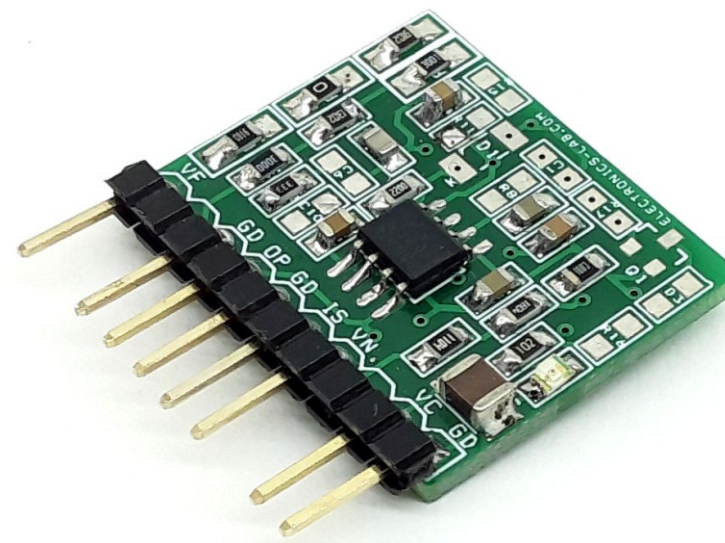
Note: The PFC controller module is published here. The second part (mainboard) is 350W Power Factor Boost Converter for Inverter-Fed BLDC and PMSM Motors
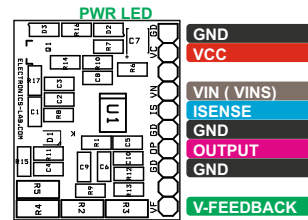
Note: This module can accommodate two chips UCC28019 and UCC28180, refer data sheet of both chips to select the components as per user requirement.

APPLICATIONS

- CCM Boost Power Factor Correction Power Converters in the 100 W to >2 kW Range
- Server and Desktop Power Supplies
- Telecom Rectifiers
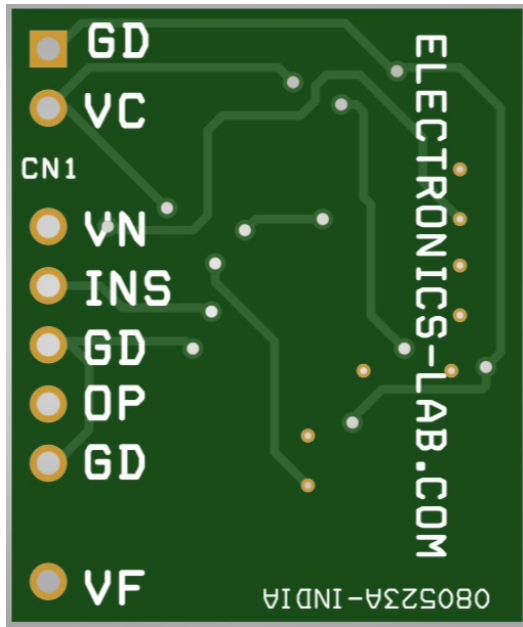- Industrial Electronics
- Home Electronics

Schematic

Connections

Connections and Other Details

– Connector Cn1
– Pin 1 = GND,
– Pin 2 = VCC,
– Pin 3 = NC,
– Pin 4 = VINS (Input AC Voltage Sense)
– Pin 5 = ISN (ISENSE) Current Sense
– Pin 6 = GND
– Pin 7 = Output (MOSFET GATE)
– Pin 8 = GND
– Pin 9 = NC
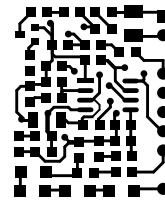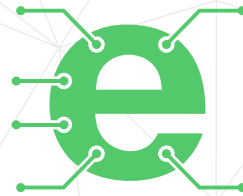– Pin 10 = VF-Voltage Feed from DC Output
– D2: Power LED

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PCB

PCB GERBER FILES AVAILABLE
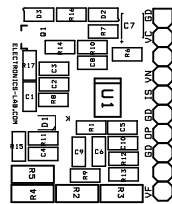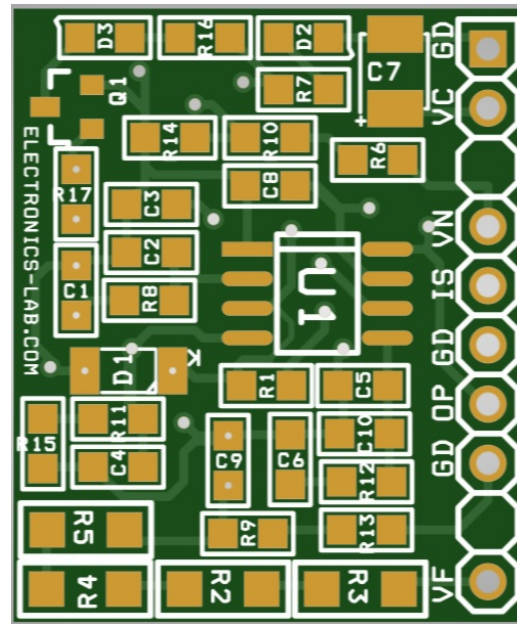
SILK SCREEN TOP
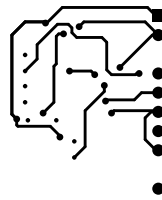
BOTTOM LAYER

TOP LAYER

PCB DIMENSIONS 26.35 X 21.91 MM

Parts List

NO	QNTY	REF.	DESC	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
			BOM			
1	1	CN1	10 PIN MALE HEADER PITCH 2.54MM	MOLEX	MOUSER	538-22-28-8100
2	10	Q1,D1,C1,D3,R8,C10,R11,R15,R16,R17	DNP			DO NOT INSTALL
3	1	C2	1.2nF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
4	1	C3	1nF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
5	1	C4	0.68uF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
6	1	C5	0.22uF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
7	1	C6	3.3uF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
8	1	C7	10uF/25V CERAMIC SMD SIZE 1210	YAGEO/MURATA	DIGIKEY	
9	1	C8	100nF/50V Ceramic SMD Size 0805	YAGEO/MURATA	DIGIKEY	
10	1	C9	820PF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
11	1	D2	LED RED SMD SIZE 0805	OSRAM	DIGIKEY	475-1278-1-ND
12	1	R1	220E 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
13	1	R2	91K 1% SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
14	1	R3	910K 1% SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
15	1	R4	3K 1% SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
16	1	R5	1E 1% SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
17	1	R6	1.8M 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
18	1	R7	1K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
19	1	R9	13K 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
20	1	R10	1.1M 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
21	1	R12	33.2K 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
22	1	R13	300E 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
23	1	R14	100K 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
24	1	U1	UCC28019 SOIC8	TI	DIGIKEY	296-34749-5-ND

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Notes

APP

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Android App

DOWNLOAD

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

SCAN QR CODE

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