

3 Phase Isolated Hall-effect Current Sense Amplifier with +/-600-V Working Voltage and +/-46Amp Measurement Range

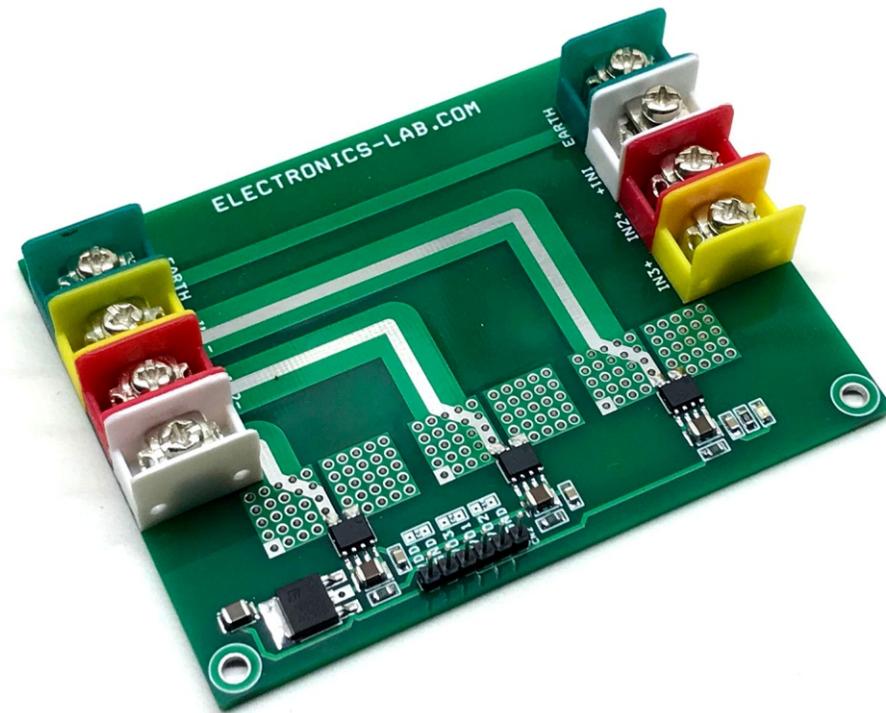
The project described here is a 3-Phase isolated Hall-effect current sense amplifier with +/-600-V working voltage range. The current sensor senses magnetic flux generated from current passing through the lead frame at common-mode voltages 0 to 600V DC and provides proportional output voltage. The circuit is based on TMCS1101 IC which is a galvanically isolated Hall-effect current sensor capable of DC or AC current measurement with high accuracy, excellent linearity, temperature stability and has a bandwidth of 80KHz. A low-drift, temperature-compensated signal chain provides < 1.5% full-scale error across the device temperature range. The input current flows through an internal 1.8-m Ω conductor that generates a magnetic field measured by an integrated Hall-effect sensor. This structure eliminates external concentrators and simplifies design. Low conductor resistance minimizes power loss and thermal dissipation. Inherent galvanic insulation provides a 600-V lifetime working voltage and 3-kVRMS basic isolation between the current path and circuitry. Integrated electrical shielding enables excellent common-mode rejection and transient immunity. The output voltage is proportional to the input current with 50mV/A sensitivity. Fixed sensitivity eliminates radiometry errors, and improves supply noise rejection. The current polarity is considered positive when flowing into the positive input pin. The circuit is capable of sensing bidirectional current with +/-46A measurement range.

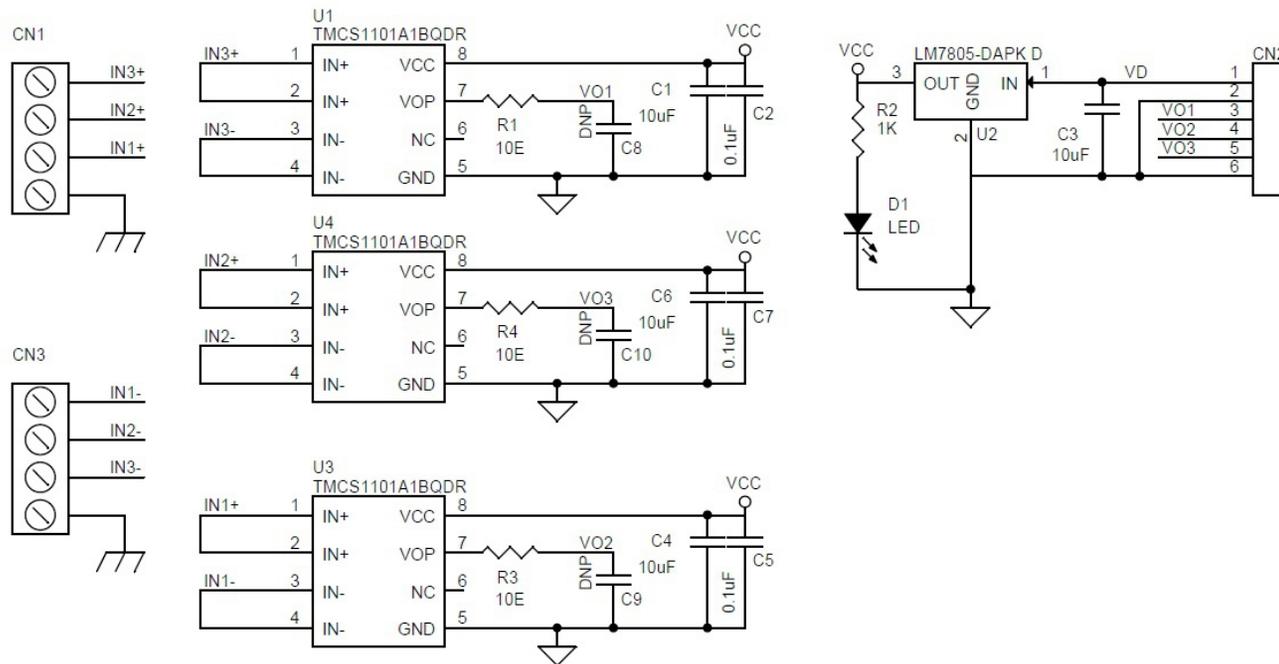
Features

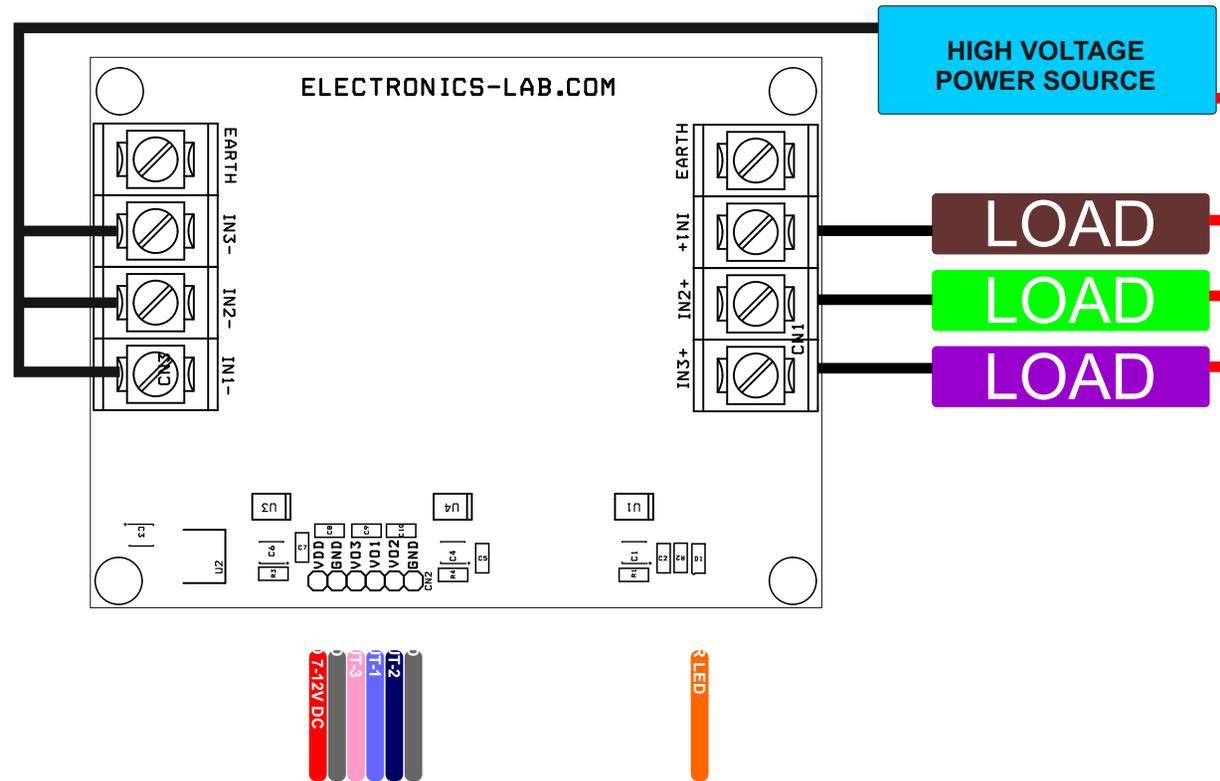
- Power Supply 7V to 12V DC
- Current sensor Range +/-46Amps (Bidirectional) AC Or DC
- Bidirectional Current Sensing
- Output 50mV/A (Normally 2.5V/0Amp)
- Working Voltage +/-600V
- Zero drift internal reference
- Signal Bandwidth 80Khz
- PCB Dimensions 97MM X 72.71 MM

Applications

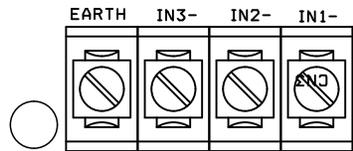
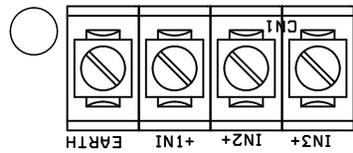
- Inline Motor Phase Current Sensing
- 3 Phase Motor or Load Current measurement
- 3 Phase DC or AC Power Monitoring





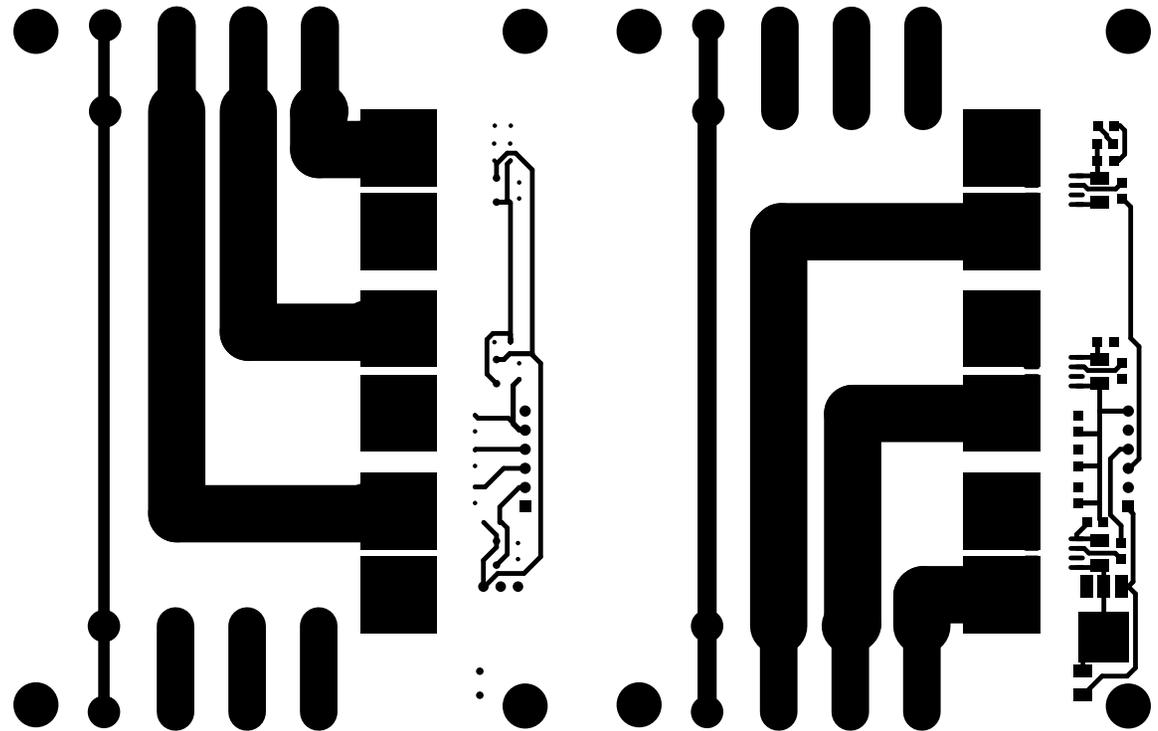
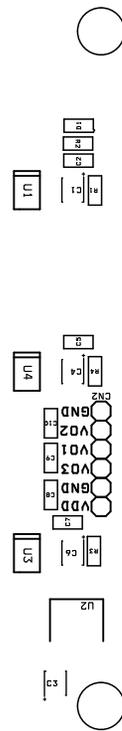


BOM						
NO.	QNTY.	REF.	DESC.	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	2	CN1,CN3	4 PIN TERMINAL BLOCKS	TE CONNECTIVITY	DIGIKEY	A98483-ND
2	1	CN2	6 PIN MALE HEADER 2.54MM PITCH	WURTH	DIGIKEY	732-5319-ND
3	4	C1,C3,C4,C6	10uF/16V SMD SIZE 1210	MURATA/YAGEO	DIGIKEY	
4	3	C2,C5,C7	0.1uF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
5	3	C8,C9,C10	DNP			
6	1	D1	LED SMD SIZE 0805		DIGIKEY	475-1415-1-ND
7	3	R1,R3,R4	10E 5% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
8	1	R2	1K 5% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
9	3	U1,U3,U4	TMCS1101A1BQDR	TI	MOUSER	595-TMCS1101A1BQDT
10	1	U2	LM7805-DAPK D	TI	DIGIKEY	LM78M05CDT-ND



SILK SCREEN

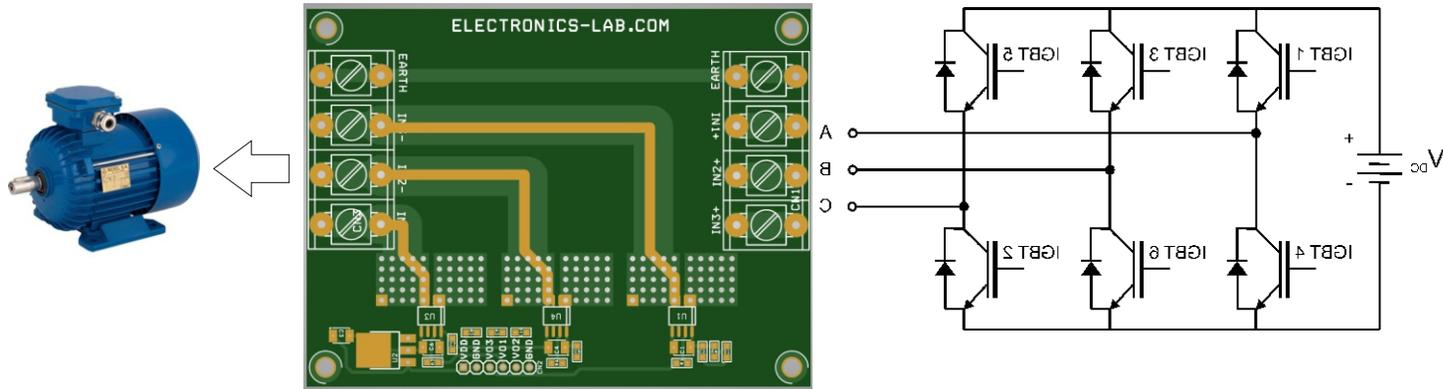
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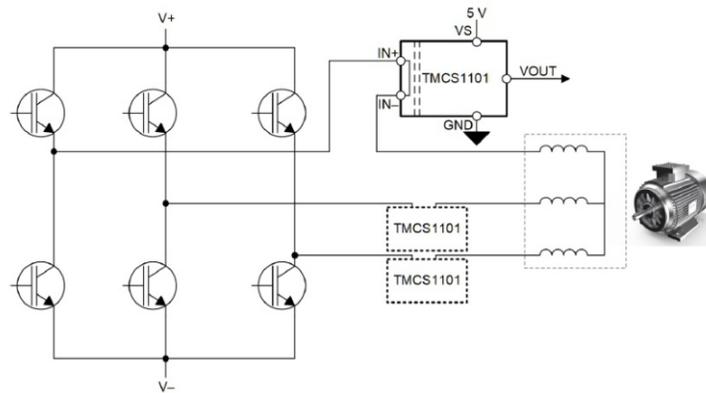
TOP BOTTOM LAYER

TOP LAYER

PCB DIMENSION 97MM X 72.71MM



3 Phase Current Feedback Output



Inline Motor Phase Current Sensing