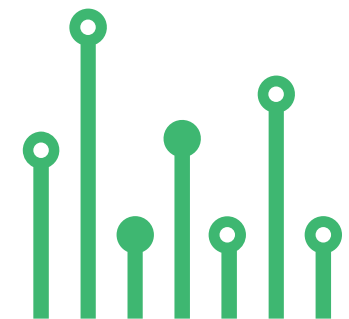THE

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DC Motor Control Using Joystick

SKU: EL140743

DC Motor Control Using Joystick

This is a compact, low-profile, and high-performance DC motor driver that provides easy control of a DC motor using a joystick. This small-size board can drive small to medium-sized brushed DC motors with up to 2.5A continuous and 6A peak currents. It is an Arduino-compatible project that helps users develop their own code and drive DC brushed motor as per application requirements. The Arduino-compatible hardware consists of an ATMEGA328 microcontroller and IFX9201 H-Bridge chip.

ARDUINO CODE

Arduino example code is available and the user will be able to drive a DC brushed motor up to 2.5A using a joystick. Follow the link below to learn more about programming the new ATMEGA328 chip using Arduino IDE.

https://docs.arduino.cc/built-in-examples/arduino-isp/ArduinoToBreadboard

Applications

- – Camera Pan Tilt Head
- – Linear/Rotary Actuator
- – Camera Slider
- – Robotics
- – Motorized Curtains
- – Lifting Equipment
- – Medical equipment/Furniture
- – Camera Focus/Zoom Motor
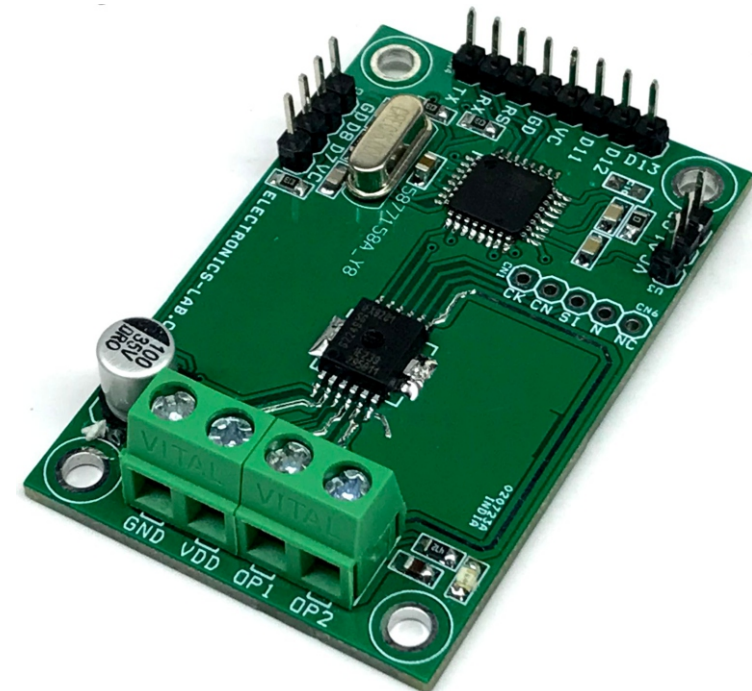
FEATURES

- Power Supply for the Load 8V to 30V DC (Max 36V)
- Motor Lead up to 2.5A Peak 6Amps
- Over Current Shutdown Threshold 8Amps
- Logic Supply 5.0 V
- No Heatsink Required
- PWM Frequency 975Hz
- On Board Power LED
- Screw Terminals for Motor and Power Supply Connections
- PCB Dimensions 57.47 x 37.15MM

Varius other possible applications with this hardware

- Motor Speed Control Using Potentiometer
- Motor Control with Limit Switch, Limit switch can be connected to D7 and D8 Pin of Connector CN5
- Motor Velocity Control using Encoder, encoder can be connected to D7/D8 of CN5

Selecting a DC motor

The project can drive small DC motors with peak currents of up to 6 A. The achievable continuous drive current is lower and depends on supply voltage, switching frequency and the cooling conditions. Realistic continuous drive currents for this project are in the range of 1 A to 2.5 A. Many motors for toys, RC models or robotics fall in this range.
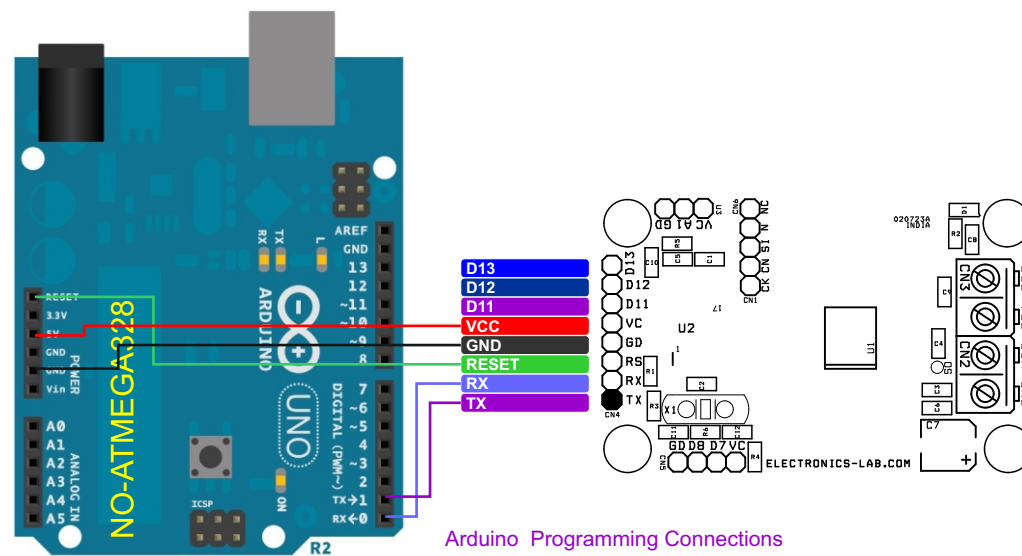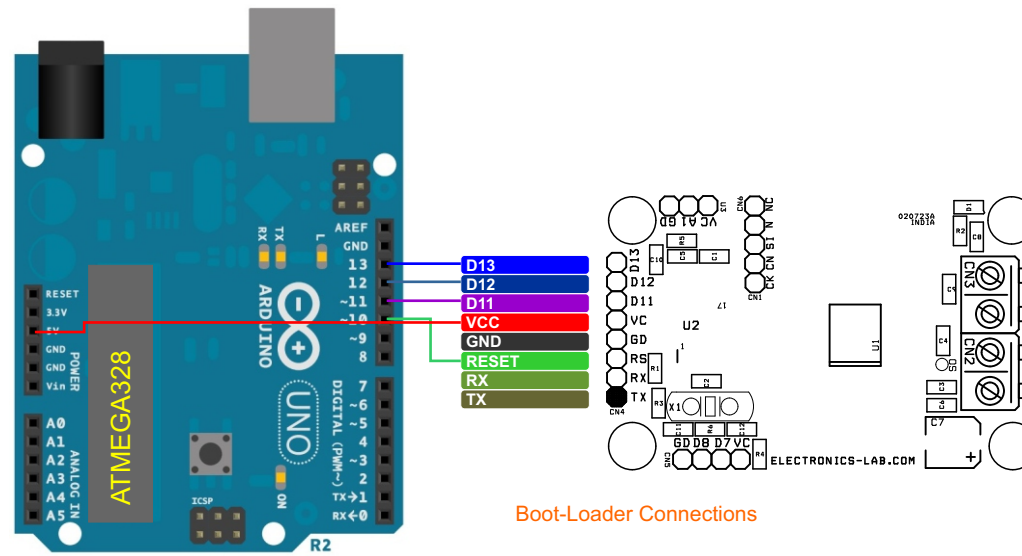
Arduino Pin

- Arduino D5 = PWM Pin of IFX9201 H-Bridge
- Arduino D6 = Direction Pin of IFX9201 H-Bridge
- Arduino D4 = Disable Pin of IFX9201 H-Bridge (High = Disable, Low = Enable)
- Arduino D5 = PWM IFX9201 H-Bridge

Project is built using IFX9201 H-Bridge chip, more info about similar can be found here

https://www.electronics-lab.com/project/6a-h-bridge-with-pwm-dir-input-and-spi-interface/

Open Source Hardware Projects

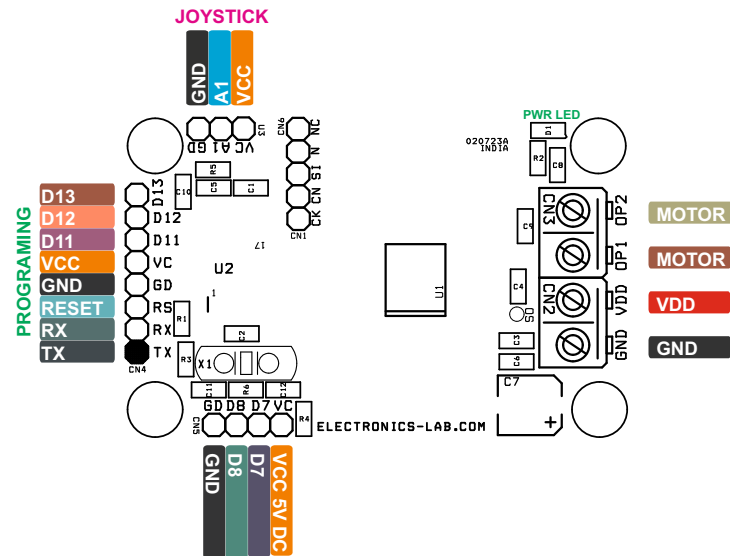**Protection and Diagnostics; Both output stages of the IFX9201SG are equipped with fault diagnostic functions:**

- Short-to-supply voltage (SCVS)
- Short to ground (SCG)
- Open load (OL)
- Over-temperature (OT)

Boot-Loader Connections

Arduino Programming Connections

Schematic
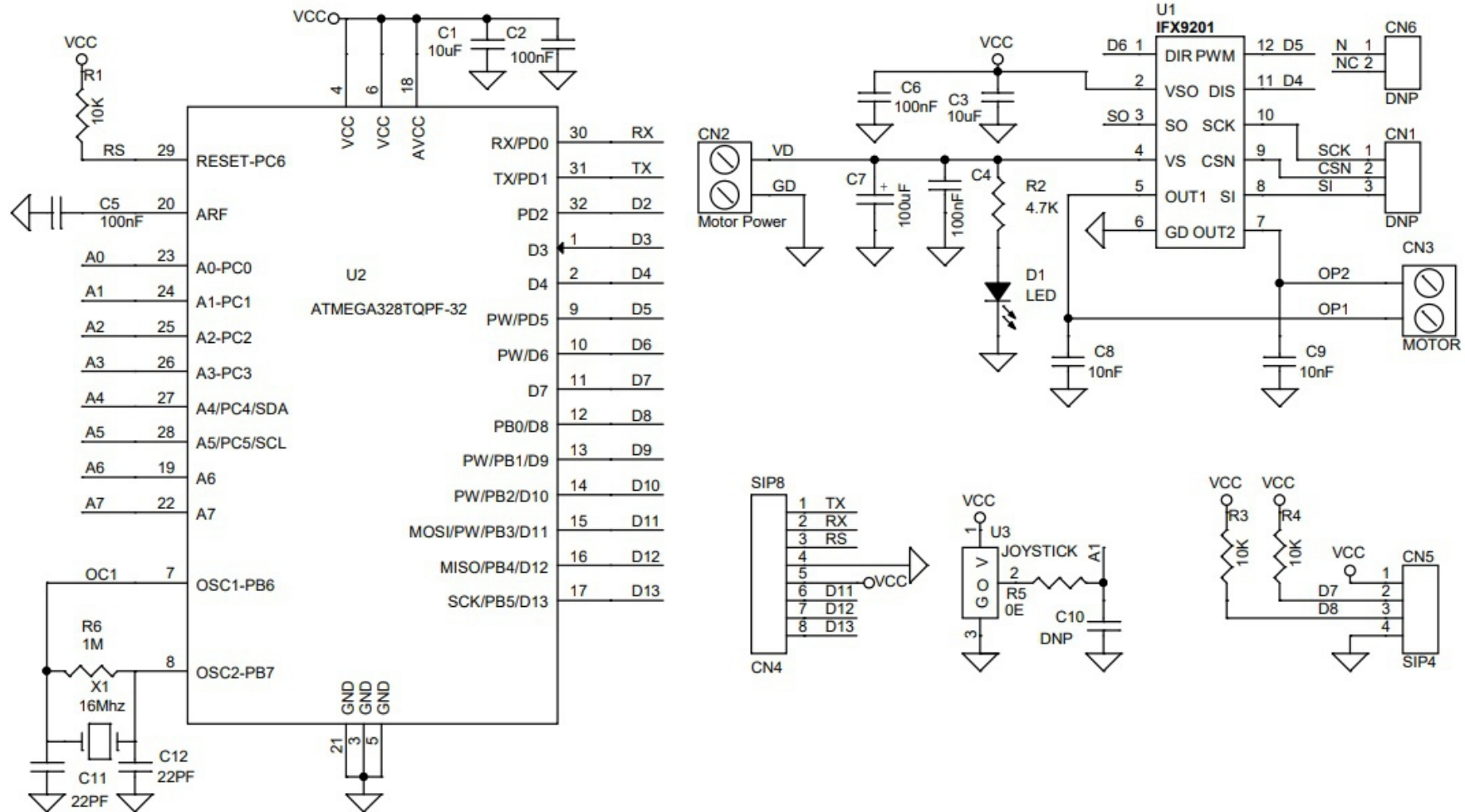
Connections

Connections and Other Details

- – CN1: Optional No Use
- – CN2: Power Supply for Motor Pin 1 = VDD 8 to 30V DC, Pin 2 = GND
- – CN3: Motor Connections, Pin 1 = Motor, Pin 2 = Motor
- – CN4: Arduino Programming/Bootloader Connector, Pin 1 = RX, Pin 2 = TX, Pin 3 = Reset, Pin 4 GND, Pin 5 = VCC, Pin 6 = D11, Pin 7 = D12, Pin 8 = 13
- – CN4: Optional Limit Switch, Pin 1 = VCC, Pin 2 = Arduino D7, Pin 3 = Arduino D8, Pin 4 = GND
- – U2: Joystick, Pin 1 VCC, Pin 2 = Analog A1, Pin 3 = GND
- – D1: Power LED for Motor Supply

PCB

PCB GERBER FILES AVAILABLE
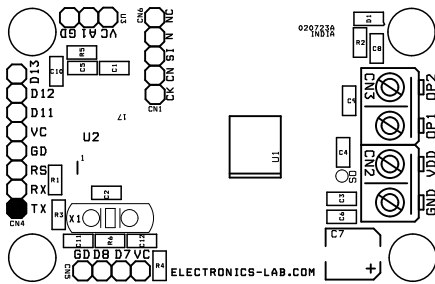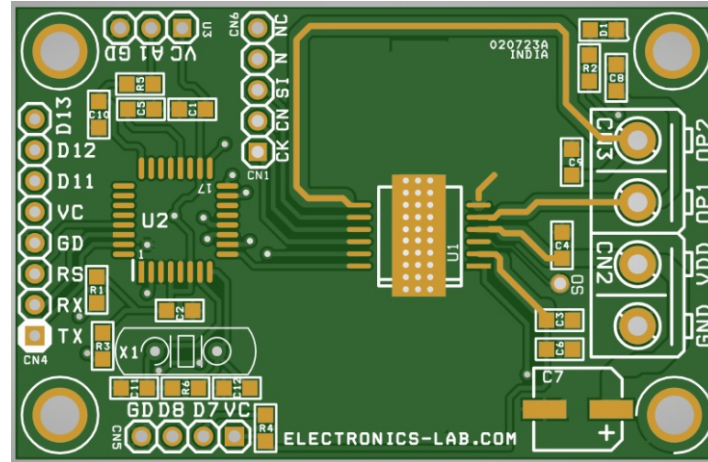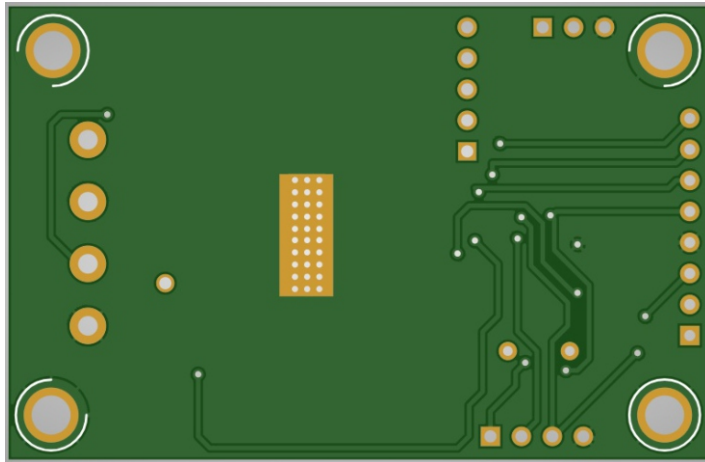
SILK SCREEN TOP
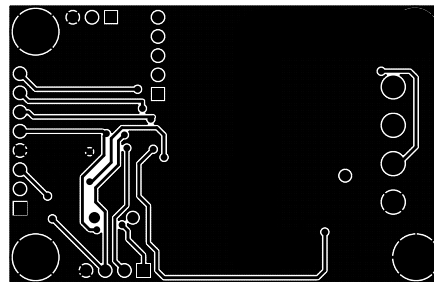
BOTTOM LAYER

TOP LAYER

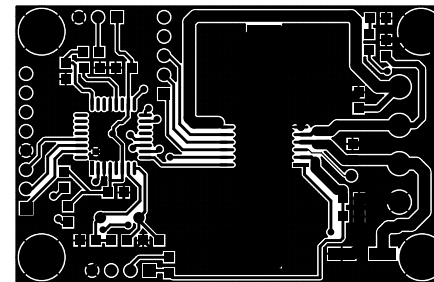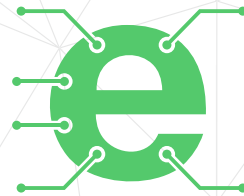**PCB DIMENSIONS 55.25MM X 37.47MM**

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Parts List

NO	QNTY.	REF	DESC.	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
			BOM			
1	3	CN1,CN6,C10	DNP			DO NOT INSTALL
2	1	CN2	2 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX	DIGIKEY	277-1247-ND
3	1	CN3	2 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX	DIGIKEY	277-1247-ND
4	1	CN4	8 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5321-ND
5	1	CN5	4 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5317-ND
6	2	C1,C3	10uF/35V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
7	4	C2,C4,C5,C6	100nF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
8	1	C7	100uF/35V ELECTROLYTIC	RUBYCON	DIGIKEY	1189-1620-1-ND
9	2	C8,C9	10nF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
10	2	C11,C12	22PF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
11	1	D1	LED RED SMD SIZE 0805	OSRAM	DIGIKEY	475-1278-1-ND
12	3	R1,R3,R4	10K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
13	1	R2	4.7K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
14	1	R5	0E SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
15	1	R6	1M 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
16	1	U1	IFX9201	INFINION	DIGIKEY	IFX9201SGAUMA1CT-ND
17	1	U2	ATMEGA328TQPF-32	MICROCHIP	DIGIKEY	ATMEGA328PB-AURCT-ND
18	1	U3	3 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5316-ND
19	1	X1	16Mhz	ECS INC	DIGIKEY	X1103-ND

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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