

## High Current MOSFET Based Power Switch with Gate Driver

This power load switch project provides a simple and inexpensive method for power control. It is intended for driving a resistive or inductive load. A TTL logic signal from the system turns the load switch ON and OFF. The project consists of a low ohm N-Channel Power Trench MOSFET FDB0300N1007L and Gate driver MAX5048 chip. The load can be controlled by applying a PWM signal or Logic input.

The MAX5048A is a high-speed MOSFET driver capable of sinking/sourcing 7.6A/1.3A peak currents. These devices take logic input signals and drive a large external MOSFET. The MAX5048A has noninverting inputs that give the user greater flexibility in controlling the MOSFET. They feature two separate outputs working in a complementary mode, offering flexibility in controlling both turn-on and turn-off switching speeds.

**Note:** This project is designed to drive resistive loads such as heaters lamps or LEDs. For Inductive loads such as solenoids and motors use a clamp diode across the load.

### MOSFET FDB0300N1007L- N-Channel Power Trench 100V, 200Amps

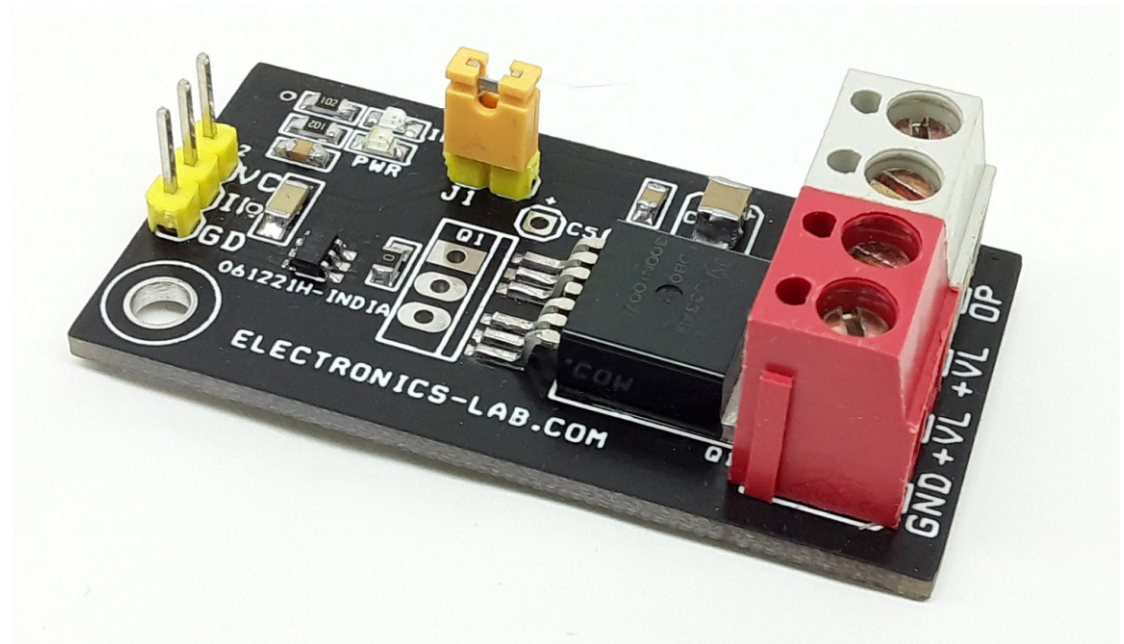
- VGS 10V = 3 mOhms ID 26 Amps
- VGS 6V = 4.5 mOhms ID 20 Amps

### Operating Power Supply – 5V to 12V

- Close Jumper J1
- CN2: Pin 2 PWM or Logic In, Pin 3 GND
- CN1: Load Supply 5V to 12V
- CN3: Load
- Capacitor C3 0.1uF/50V
- Capacitor C4 10uf-100uF 16V SMD Size 1210
- Capacitor C5 220uf/25V

### Operating Power Supply – 12V to 60V

- Open Jumper J1
- CN2: Pin 1 Apply 12V VCC, Pin 2 PWM or Logic In, Pin 3 GND
- CN1: Load Supply 12V to 60V
- CN3: Load
- Do Not Install Capacitor C3
- Capacitor C4 1uf/75V SMD Size 1210
- Capacitor C5 Electrolytic 220uF-470uF/63V

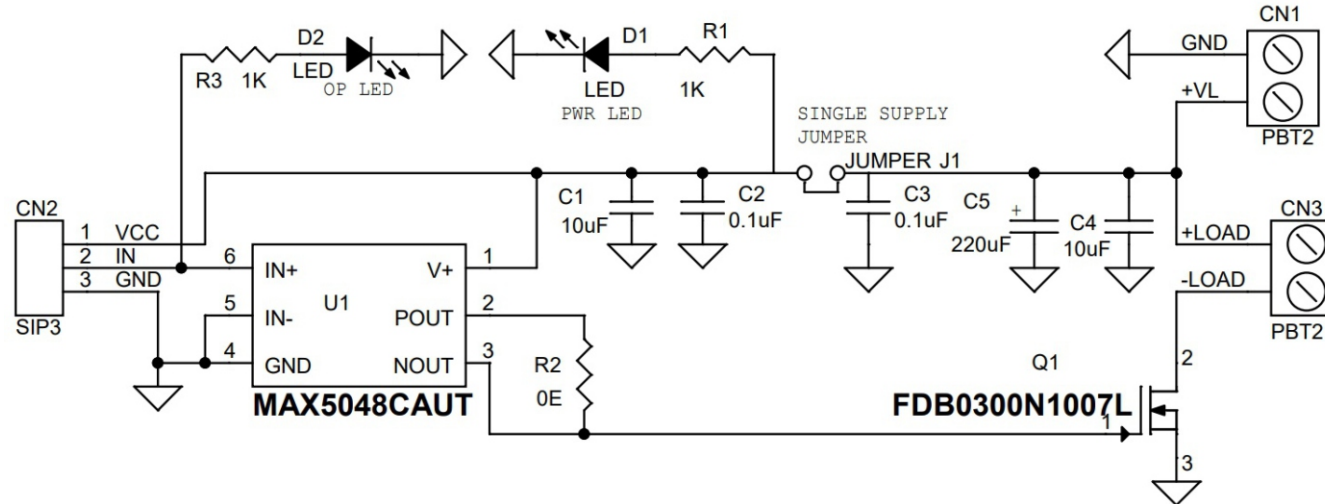


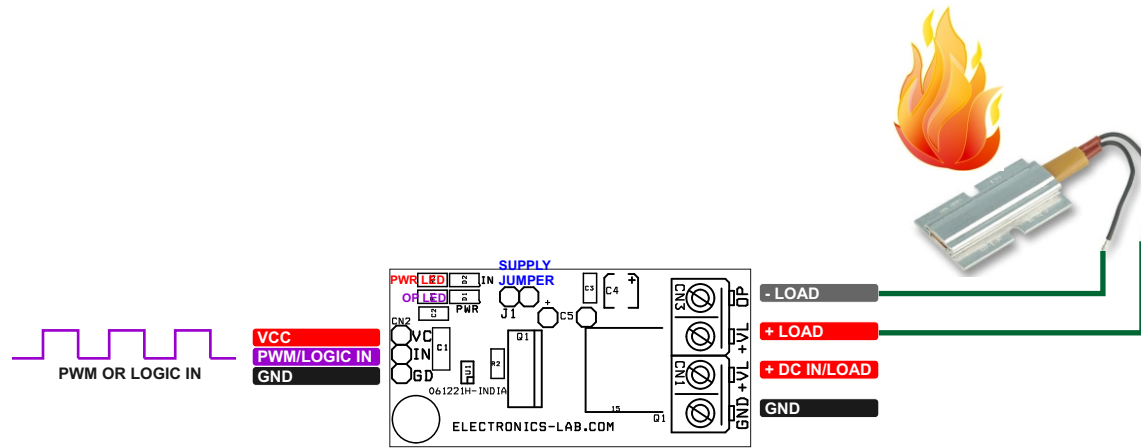
## Application

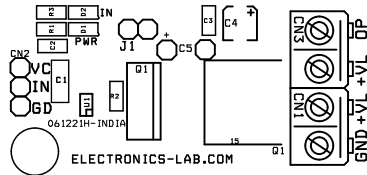
- Heater Control
- High Current LED Dimmer or ON/OFF
- Solenoid
- DC Motors
- Power Management (High Current Power ON/OFF)
- Lamp Dimmer or Lamp ON/OFF Control
- Battery Protection Under/Over Voltage
- Under and Over Current Switch

## Features

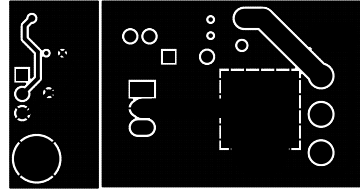
- Supply 5V to 12 V Single Supply Operation (Load 10 Amps Continues Without Fan, 15 Amps with Fan)
- Supply 12V to 60V (Required Dual Supply for Load and Gate Driver) Load Up to 20Amps
- Input PWM or Logic 3.3V to 12V
- PWM Frequency Input up to 50Khz (Tested)
- PCB Dimensions 48.42 x 25.24 mm



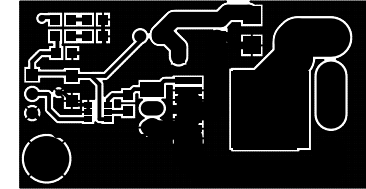




SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 48.42MM X 25.24MM

BOM						
NO	QNTY.	REF.	DESC	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	2	CN1,CN3	2 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX	DIGIKEY	277-1247-ND
2	1	CN2	3 PIN MALE HEADER 2.54MM	WURTH	DIGIKEY	732-5316-ND
3	2	C1	10uF/25V SMD SIZE 1206	MURATA/YAGEO	DIGIKEY	
4	2	C2,C3	0.1uF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
5	1	C5	220uF/63V	RUBYCON	DIGIKEY	1189-3786-ND
6	2	D1,D2	LED SMD SIZE 0805	LITE ON INC	DIGIKEY	160-1427-1-ND
7	1	J1	JUMPER/SHUNT 2 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5315-ND
8	1	Q1	FDB0300N1007L	ON SEMI	DIGIKEY	FDB0300N1007LCT-ND
9	2	R1,R3	1K 5% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
10	1	R2	0E SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
11	1	U1	MAX5048CAUT	MAXIM	DIGIKEY	MAX5048CAUT+TCT-ND
12	1	C4	10uF/50V SMD SIZE 1210	MURATA/YAGEO	DIGIKEY	
13	1	J1	SHUNT FOR JUMPER	SULINS INC	DIGIKEY	S9001-ND