

HI VOLTAGE/CURRENT HALF BRIDGE DRIVER USING IR2153 & IGBT

IGBT based half bridge board has been designed for multiple applications, like induction heater driver, tesla coil driver, DC-DC converters, SMPS. High current and high voltage IGBT used to serve high power requirements.

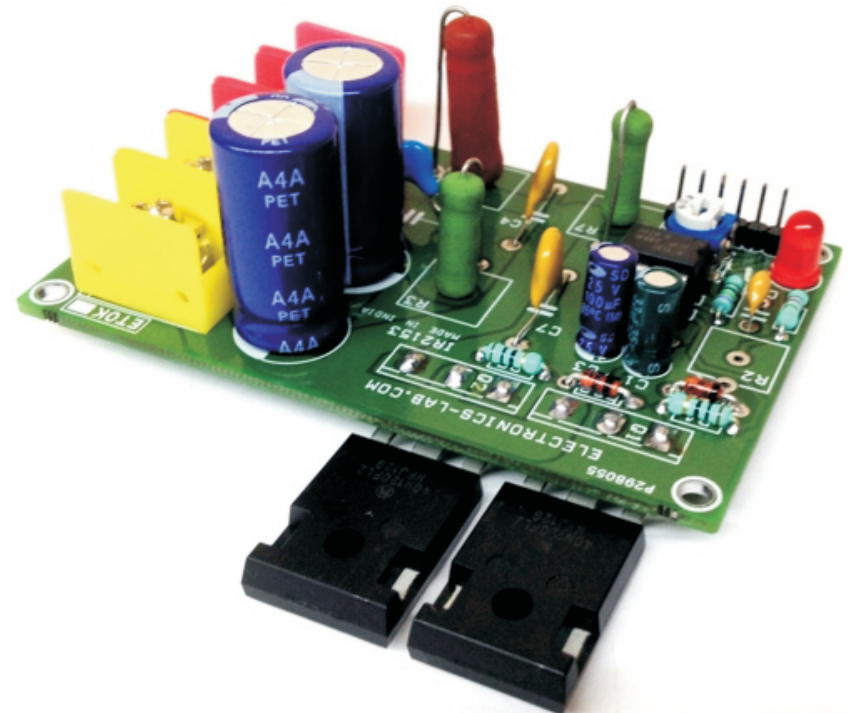
IGBT NGTB40N120FL2WG from ON semi and IR2153 from Infineon semiconductor are important parts of the circuit, IR2153 is a gate driver IC including inbuilt oscillator, 40A/1200V IGBT can handle large current. Gate driver circuit works with 15V DC and load supply 60V DC to 400V DC.

The **IR2153D(S)** are an improved version of the Popular IR2155 and IR2151 gate driver ICs, and incorporate a high voltage half-bridge gate driver with a front end oscillator similar to the industry standard CMO 555 timer. The IR2153 provides more functionality and is easier to use than previous ICs. A shutdown feature has been designed into the CT pin, so that both gate driver outputs can be disabled using a low voltage control signal. In addition, the gate driver output pulse widths are the same once the rising under voltage lockout threshold on VCC has been reached, resulting in a more stable profile of frequency vs time at startup. Noise immunity has been improved significantly, both by lowering the peak di/dt of the gate drivers, and by increasing the under voltage lockout hysteresis to 1V. Finally, special attention has been played to maximizing the latch immunity of the device, and providing comprehensive ESD protection on all pins.

Oscillation frequency adjustable by onboard Trimmer potentiometer, frequency spans approx. 12 KHz to 100 KHz, duty cycle 50%.

Features:

- Load Supply 60V to 400V DC
- Gate Driver Supply 15V DC
- Frequency Span 12 KHz to 100 KHz, Other frequency range possible, alter R5, PR1, C8
- Duty Cycle Approx. 50%
- PR1: Trimmer Potentiometer to set the frequency
- CN3: Logic Supply 15V DC
- CN1: Supply DC Input
- CN2 : L1 Load



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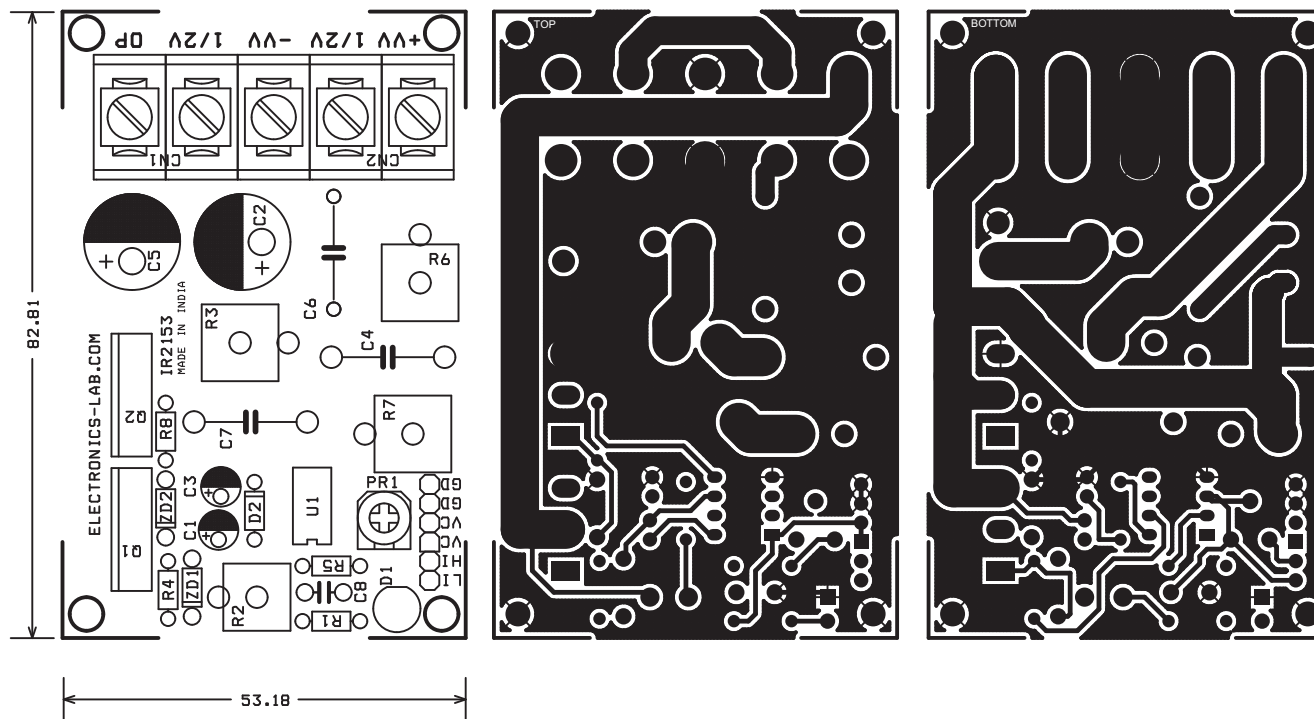
NOTE 1: The circuit is provided with few extra components which may be used as per application requirement other components can be omit as stated in BOM

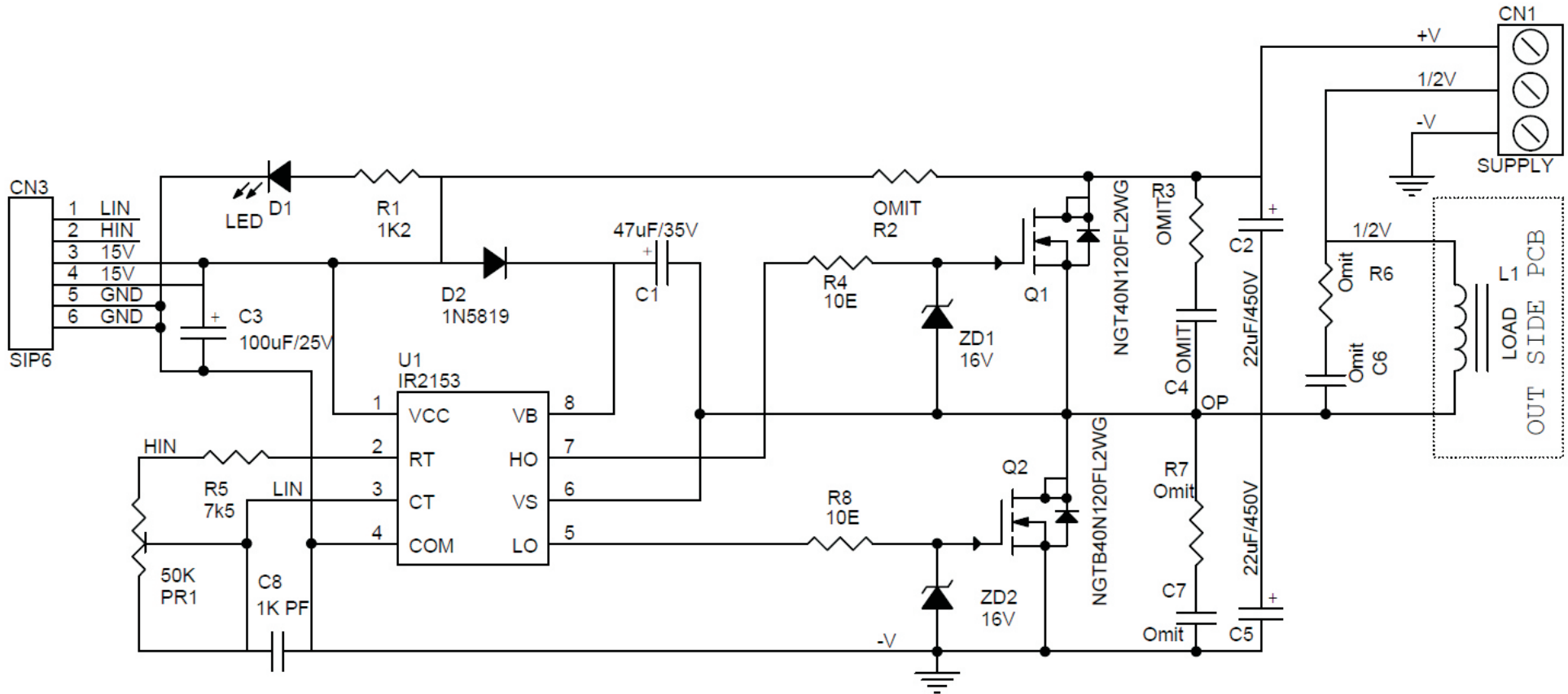
Note 2: Frequency span is determined by CT Capacitor (C8) and Trimmer Pot value refer data sheet for appropriate value for required frequency span. C8 1Kpf, R5=7k5 and PR1=50K provide frequency span 12 kHz to 100 kHz.

Note 3: Other Mosfet or IGBT can be used as per your current and voltage requirement.

Note 4: This board also can be used as half bridge driver using IR2101/IR2104 and Mosfet, Header CN3 Pin1 HIN, Pin2 LIN, Omit following components R5, PR1, C8 to use IR2101/IR2105

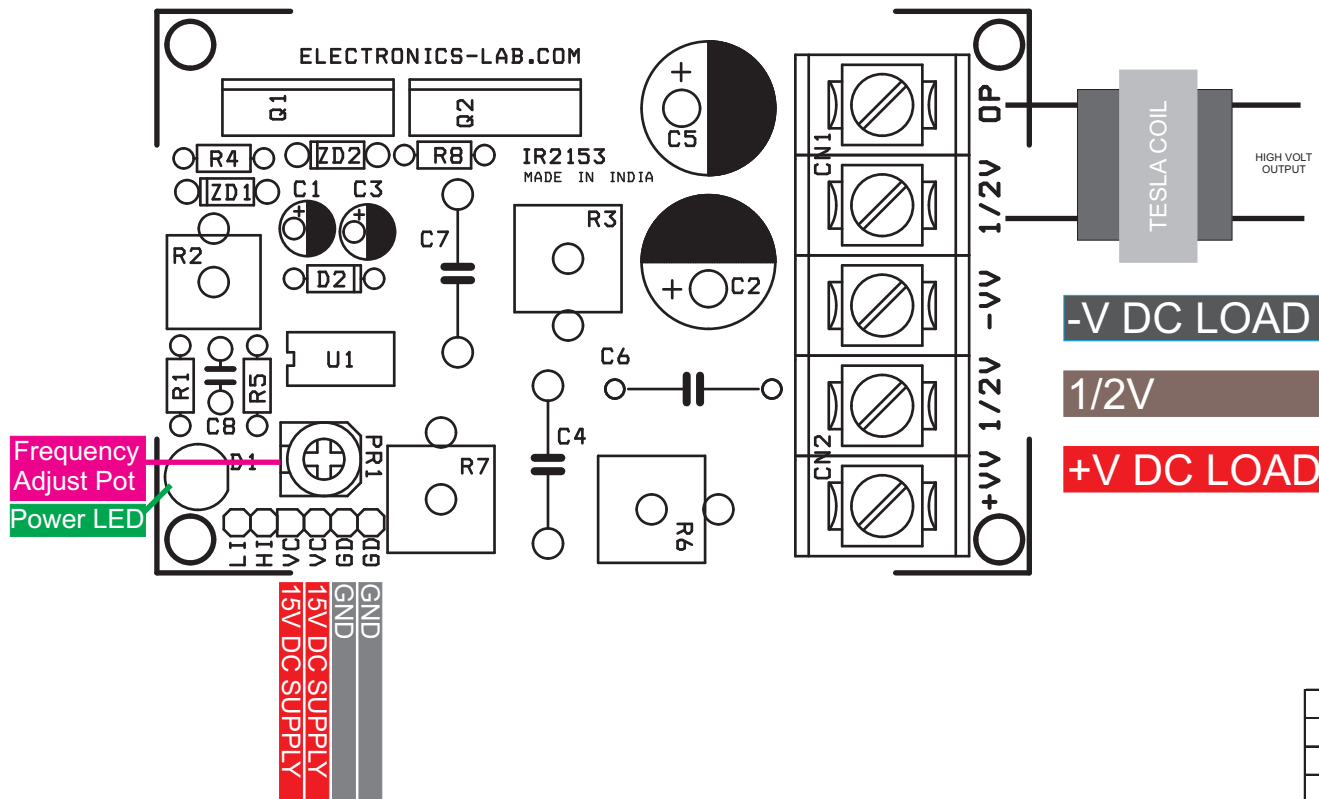
Note 5: IGBTs required large size heat sink.







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-V DC LOAD

1/2V

+V DC LOAD

BOM			
SR.	QNTY.	REF.	DESC.
1	1	CN1	3 PIN SCREW TERMINAL
2	1	CN2	2 PIN SCREW TERMINAL
3	1	CN3	6 PIN HEADER CONNECTOR
4	1	C1	47uF/35V
5	1	C2	22uF/450V
6	1	C3	100uF/25V
7	7	R2,R3,C4,R6,C6,R7,C7	Omit
8	1	C5	22uF/450V
9	1	C8	1K PF
10	1	D1	5MM LED
11	1	D2	1N5819
12	1	PR1	50K TRIMMER POT
13	1	Q1	NGTB40N120FL2WG
14	1	Q2	NGTB40N120FL2WG
15	1	R1	1K2
16	2	R4,R8	10E
17	1	R5	7k5
18	1	U1	IR2153
19	2	ZD1,ZD2	16V/1W

