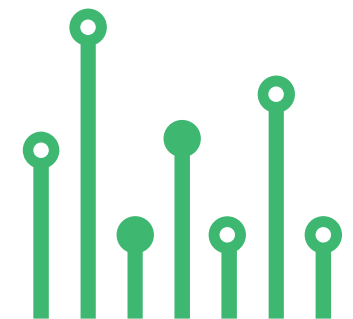


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**High Current/High
Voltage OPAMP
with Boost Output
Current Greater
Than 1A**



SKU: EL150179

High Current/High Voltage OPAMP with Boost Output Current Greater Than 1A



This project provides High Voltage and High Current output swing. The board is built using OPA454 OPAMP and 2 x high current NPN/PNP BJT Transistors. Output transistors Q1 and Q2 provide positive and negative output currents to the load. The project works with an input power supply up to +/-50V DC. OPAMP Vout swings from +47V to -48V and OP output swings from +44.1V to -45.1V at 1A. Connect the J1 jumper to GND (EC Middle Pin + GND Pin) to Enable the output.

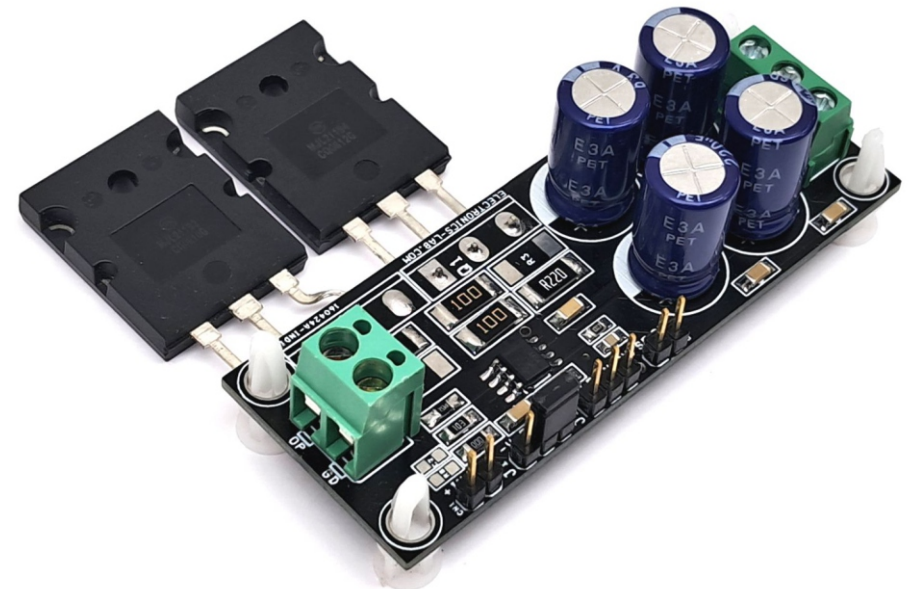
The output can be independently disabled using the Enable or Disable Pin that has its common return pin to allow easy interface to low-voltage logic circuitry. This disable is accomplished without disturbing the input signal path, not only saving power but also protecting the load.



Note: If current regulation is not required, the ISEN pin should be directly connected to the PCB ground plane, thus shunt resistor R4 should be 0 Ohms. Refer data sheet of the chip for change the load current regulation.

FEATURES

- Power Supply +/-50V DC (Range +/-5V to +/-50V DC)
- Output Current Swings 1Amp
- Output swings from +44.1 V to -45.1 V at $I_L = 1$ A (Supply Dual 50V)
- Input +/-1V
- Independent Output Disable or Shutdown
- 4X4MM Mounting Holes
- PCB Dimensions 76.20X29.37MM



Application

- Servo Drivers
- Test Equipment
- Transducer Drivers
- High-Voltage Compliance Current Sources
- General High-Voltage Regulators and Power

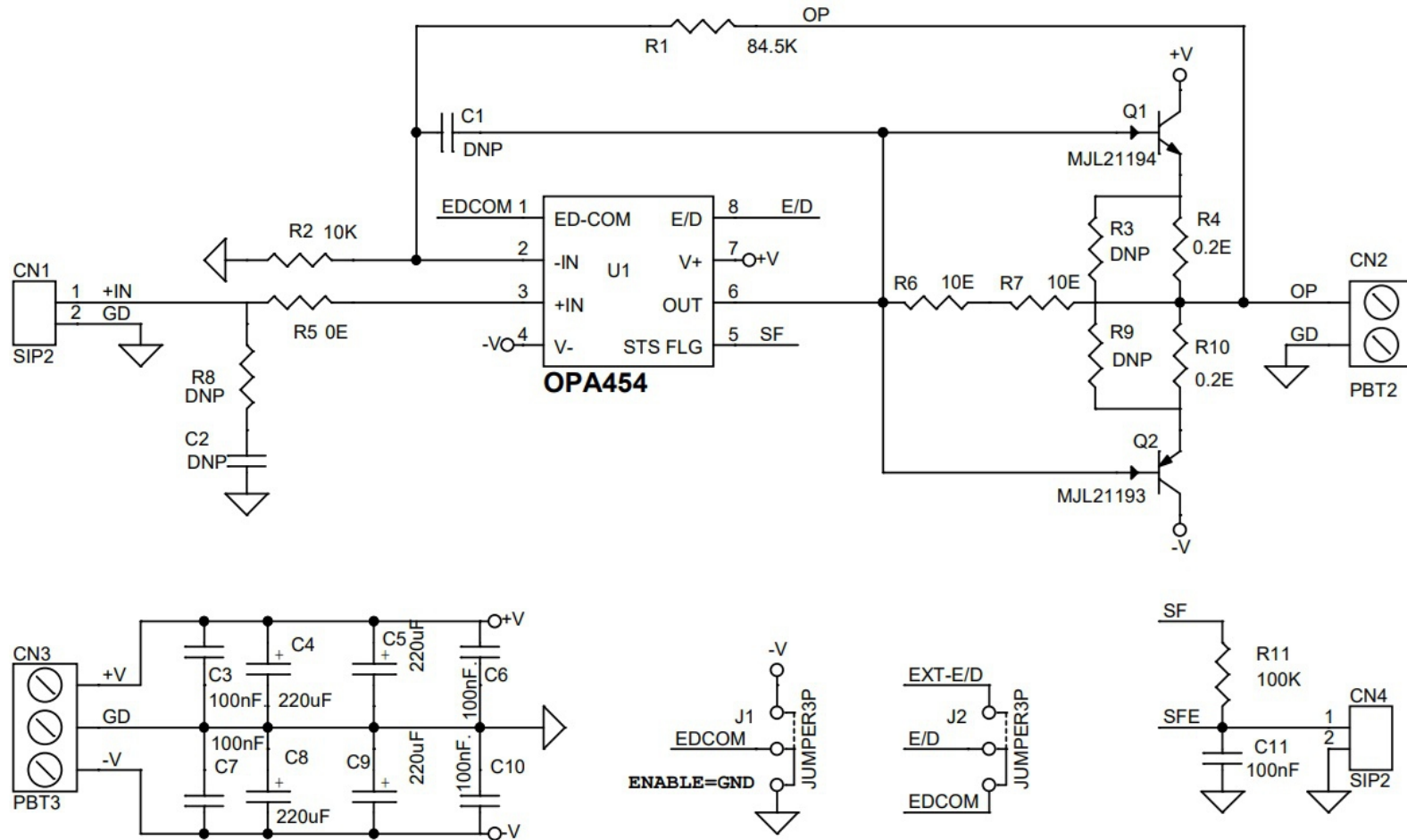
The OPA454 device is a low-cost operational amplifier with high voltage (100 V) and relatively high current drive (50 mA). The OPA454 device is a low-cost operational amplifier with high voltage (100 V) and relatively high current drive (50 mA). It is unity-gain stable and has a gain-bandwidth product of 2.5 MHz

The OPA454 is internally protected against overtemperature conditions and current overloads. It is fully specified to perform over a wide power-supply range of ± 5 V to ± 50 V or on a single supply of 10 V to 100 V. The status flag is an open-drain output that allows it to be easily referenced to standard low-voltage logic circuitry. This high-voltage operational amplifier provides excellent accuracy, wide output swing, and is free from phase inversion problems that are often found in similar amplifiers.

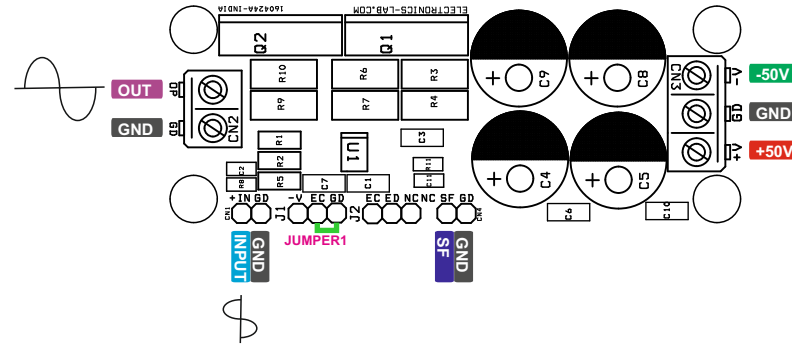
ENABLE and E/D Com

If left disconnected, E/D Com is pulled near V^- (negative supply) by an internal 10- μ A current source. When left floating, ENABLE is held approximately 2 V above E/D Com by an internal 1- μ A source. Even though the active operation of the OPA454 results when the ENABLE and E/D Com pins are not connected, a moderately fast, negative-going signal capacitively coupled to the ENABLE pin can overpower the 1- μ A pullup current and cause device shutdown. This behavior can appear as an oscillation and is encountered first near extreme cold temperatures. If the enable function is not used, a conservative approach is to connect ENABLE through a 30-Pf capacitor to a low-impedance source. Another alternative is the connection of an external current source from V^+ (positive supply) sufficient to hold the enable level above the shutdown threshold.

Schematic



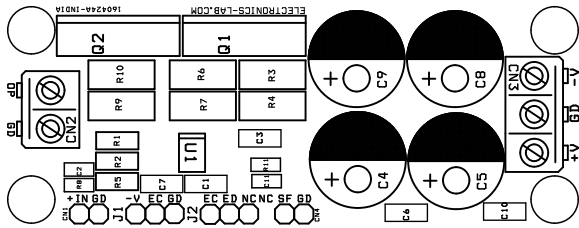
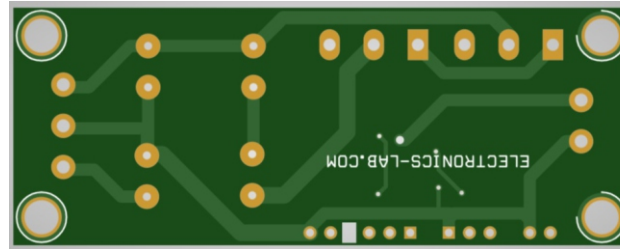
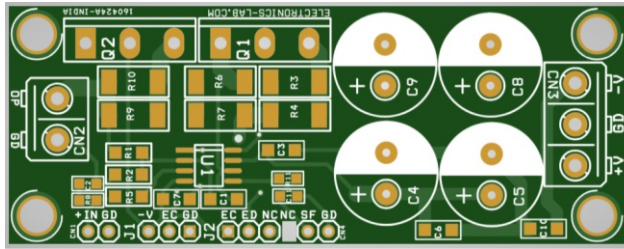
Connections



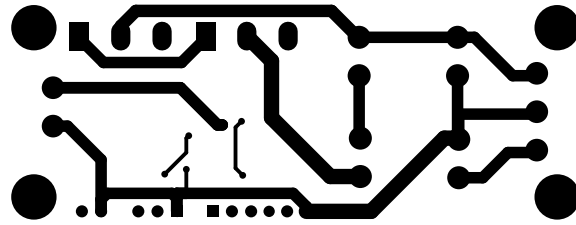
Connections

- CN1: Pin 1 = Input Signal +/-1V, Pin 2 = GND
- CN2: Pin 1 = Output, Pin 2 = GND
- CN3: Pin 1 = +50V DC, Pin 2 = GND, Pin 3 = -50V DC
- CN4: Pin 1 = SF This pin goes active for either an overcurrent or overtemperature condition, Pin 2 = GND
- J1: Enable/Disable, Connect to GND = Enable
- J2: No Use Pin 1 = EDCOM, Pin 2 = E/D, Pin 3 NC

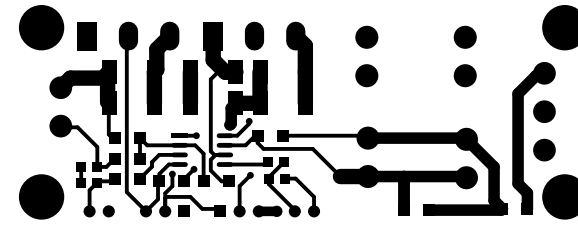
PCB



SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 76.20X29.37MM

Parts List

BOM						
NO.	QNTY.	REF.	DESC.	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	2	CN1,CN4	2 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5315-ND
2	1	CN2	2 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX	DIGIKEY	277-1247-ND
3	1	CN3	3 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX	DIGIKEY	277-1248-ND
4	5	C1,C2,R3,R8,R9	DNP			
5	4	C3,C6,C7,C10	100nF/63V CERAMIC SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
6	4	C4,C5,C8,C9	220uF/63V ELECTROLYTIC	NICHICON	DIGIKEY	493-1942-ND
7	1	C11	100nF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
8	2	J1,J2	3 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5316-ND
9	1	Q1	MJL21194 TO247	ONSEMI	DIGIKEY	MJL21194GOS-ND
10	1	Q2	MJL21193 TO247	ONSEMI	DIGIKEY	MJL21193GOS-ND
11	1	R1	84.5K 1% SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
12	1	R2	10K 1% SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
13	2	R4,R10	0.2E 1% SMD SIZE 2512	YAGEO/MURATA	DIGIKEY	
14	1	R5	0E SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
15	2	R6,R7	10E 5% SMD SIZE 2512	YAGEO/MURATA	DIGIKEY	
16	1	R11	100K 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
17	1	U1	OPA454 SOIC8	TI	DIGIKEY	296-41370-1-ND
18	1	J1-SHUNT	SHUNT FOR JUMPER J1	SULINS CONNECT	DIGIKEY	S9001-ND

Notes

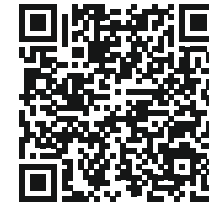
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