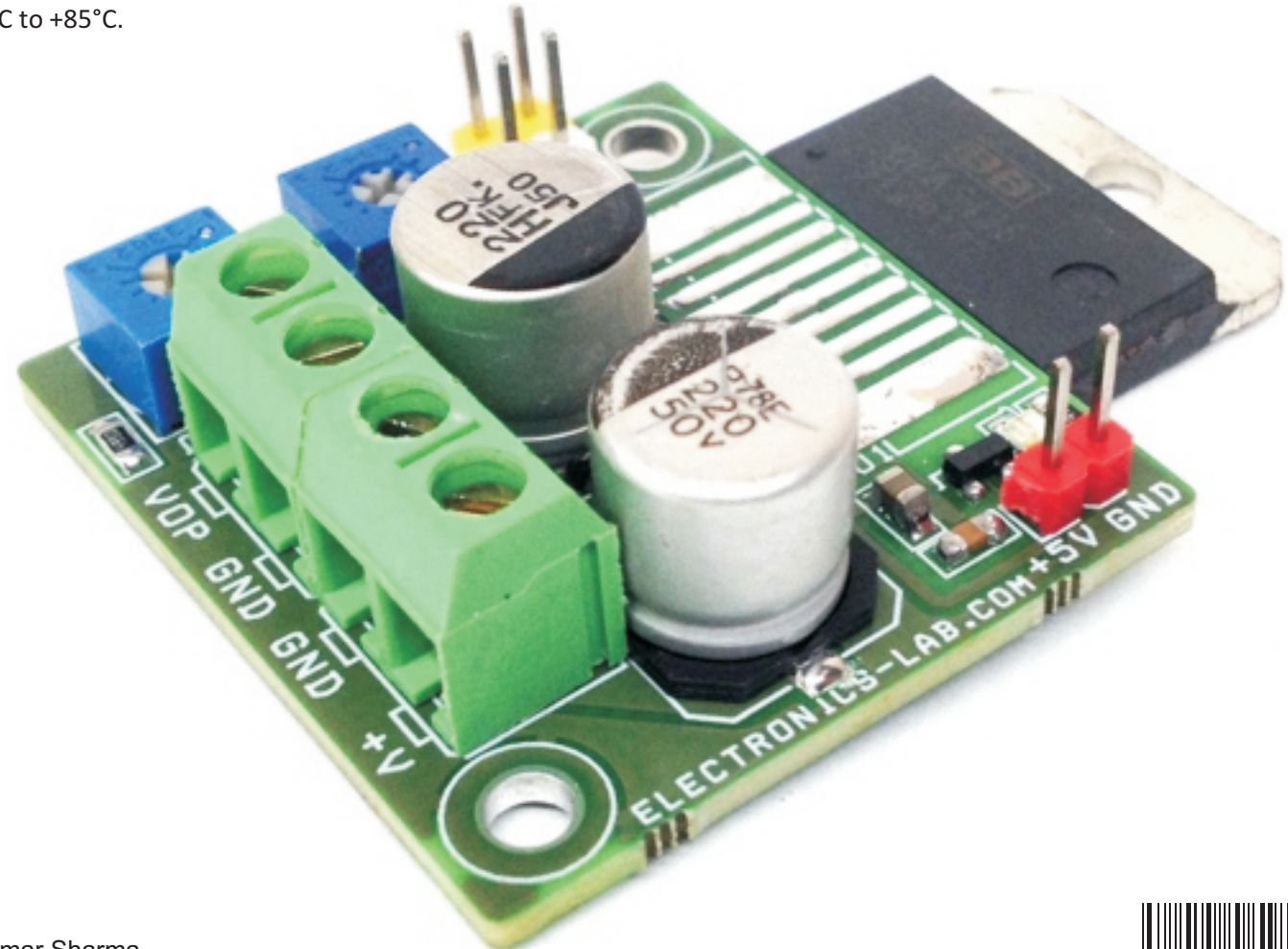


1.2V-25V/10A Adjustable Power Supply Using Power Op-Amp

Small size power supply based on OPA549 power op-amp provides output voltage 1.2V to 25V with 0 to 10A adjustable current limit. Two onboard Trimmer potentiometer provided to adjust the voltage and current, LED D1 over temperature indicator. The circuit works with input supply of 30V DC and logic supply 5V DC. IC required large size heat sink to work with full 10A current range. Screw terminals for input and output connections. The OPA549 is a low-cost, high-voltage/high-current operational amplifier ideal for driving a wide variety of loads. This laser-trimmed monolithic integrated circuit provides excellent low-level signal accuracy and high output voltage and current. The OPA549 operates from either single or dual supplies for design flexibility. The input common-mode range extends below the negative supply. The OPA549 is internally protected against over-temperature conditions and current overloads. In addition, the OPA549 provides an accurate, user-selected current limit. Unlike other designs which use a “power” resistor in series with the output current path, the OPA549 senses the load indirectly. This allows the current limit to be adjusted from 0A to 10A with a resistor/potentiometer, or controlled digitally with a voltage-out or current-out Digital-to-Analog Converter (DAC). The Enable/Status (E/S) pin provides two functions. It can be monitored to determine if the device is in thermal shutdown, and it can be forced low to disable the output stage and effectively disconnect the load. The OPA549 is available in an 11-lead power package. Its copper tab allows easy mounting to a heat sink for excellent thermal performance. Operation is specified over the extended industrial temperature range, -40°C to $+85^{\circ}\text{C}$.

Features

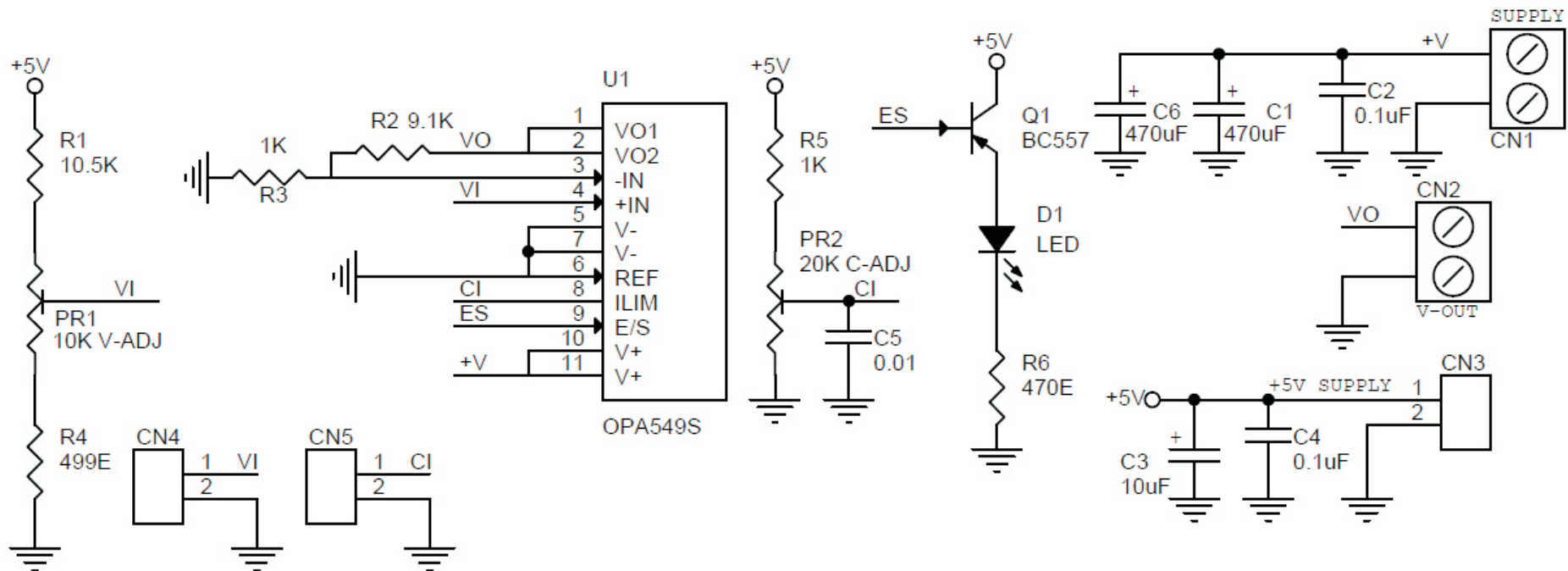
- Input Supply 30V DC
- Logic Supply 5V DC
- Output 1.2V to 25V DC
- Load Current Limit Adjustable 0 To 10A
- Thermal Shutdown LED Indicator

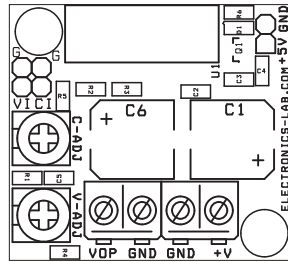


A programmable source and sink power supply can easily be built using the OPA549. Both the output voltage and output current are user controlled. See Figure 12 for a circuit using potentiometers to adjust the output voltage and current while Figure 13 uses DACs. An LED connected to the E/S pin through a logic gate indicates if the OPA549 is in thermal shutdown.

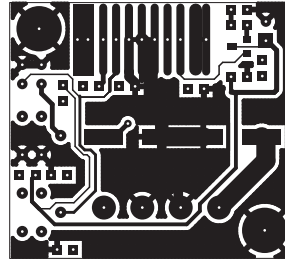
ADJUSTABLE CURRENT LIMIT

The OPA549's accurate, user-defined current limit can be set from 0A to 10A by controlling the input to the ILIM pin. Unlike other designs, which use a power resistor in series with the output current path, the OPA549 senses the load indirectly. This allows the current limit to be set with a 0 μ A to 633 μ A control signal. In contrast, other designs require a limiting resistor to handle the full output current (up to 10A in this case). Although the design of the OPA549 allows output currents up to 10A, it is not recommended that the device be operated continuously at that level. The highest rated continuous current capability is 8A. Continuously running the OPA549 at output currents greater than 8A will degrade long-term reliability.

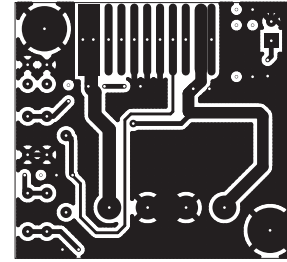




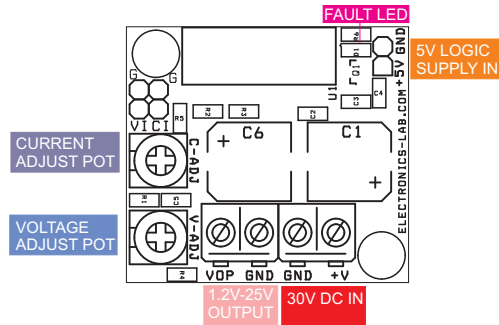
SILK SCREEN TOP



TOP LAYER



BOTTOM LAYER



BOM			
SR.	QNTY	REF	DESC
1	2	CN1,CN2	2 PIN SCREW TERMINALS
2	3	CN3,CN4,CN5	2 PIN HEADER CONNECTOR
3	2	C1,C6	470uF/50V SMD
4	2	C2,C4	0.1uF SMD 0805
5	1	C3	10uF SMD
6	1	C5	0.01uF SMD 0805
7	1	D1	LED
8	1	PR1	10K V-ADJ TRIMMER
9	1	PR2	20K C-ADJ TRIMMER
10	1	Q1	BC857 SMD
11	1	R1	10.5K SMD 0805
12	1	R2	9.1K SMD 0805
13	2	R3,R5	1K SMD 0805
14	1	R4	499E SMD 0805
15	1	R6	470E SMD 0805
16	1	U1	OPA549S