

LIGEMDIO

An LED tester soldering kit



B

B

An ideal constant current driver supplies a specific amount of current regardless of supply voltage and other environmental conditions, like temperature. The LIGEMDIO's simple circuit does this reasonably well using only two NPN bipolar transistors and two resistors.

The circuit primarily relies on the near constant voltage drop between the base (B) and emitter (E) of transistor T2 to keep the voltage across R1 also 'constant'. In turn this keeps the current for the LED 'constant'.

This is an approximation. What other factors and features of the circuit affect the current the LED experiences?

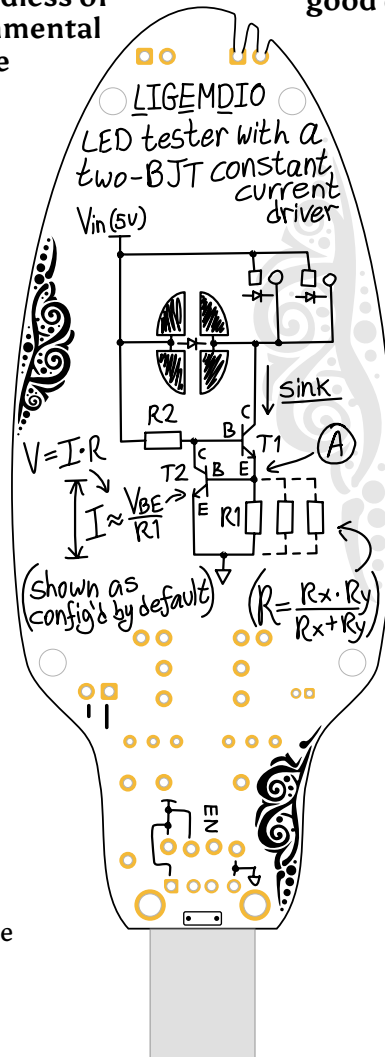
What is the voltage across at point A? What, then, is the current going through R1? What is the current through the LED under test? Are the values the same? If not, why? Why did we supply a 33Ω resistor and not one with a 'better' value? What values of resistors for R1, R2, and R3 would you use to get 5.7mA, 12mA, and 2.5mA? What happens when two LEDs are tested at the same time?

A simulation of the circuit could provide some answers.

LIGEMDIO is an LED tester soldering kit with a 'good enough' constant current LED driver.

A BOLDPORT CLUB PROJECT

PROJECT INFORMATION AT
[HTTP://BOLDPORT.COM/LIGEMDIO](http://boldport.com/ligemdio)



Place an SMD between the left (anode, 'power') and right (cathode, 'sink') quadrants, as configured by default. It is possible to configure the circuit to drive a four-pin common-anode LED using the jumpers.

Connect each quadrant to either 'power' or 'sink' (never both) by cutting the existing track or bridging using a solder 'blob'. Full circles indicate shorted jumper.

Use the pads around R1 to easily measure the voltage across it, then the current through it using Ohm's law.

LED3 is an indicator LED unrelated to the current driver. R3 and R4 are optional resistors to achieve specific currents. The resistors, C1, and LED3 can alternatively take SMD components.

Use J1 to connect external power when USB power isn't used. If the jumper connection is cut then an enable/PWM signal can be connected. You can insert and remove this four-pin connector without soldering.

Solder the USB connector on this side.

Test LEDs with legs using these connections. The square pad is for the LED's anode.

