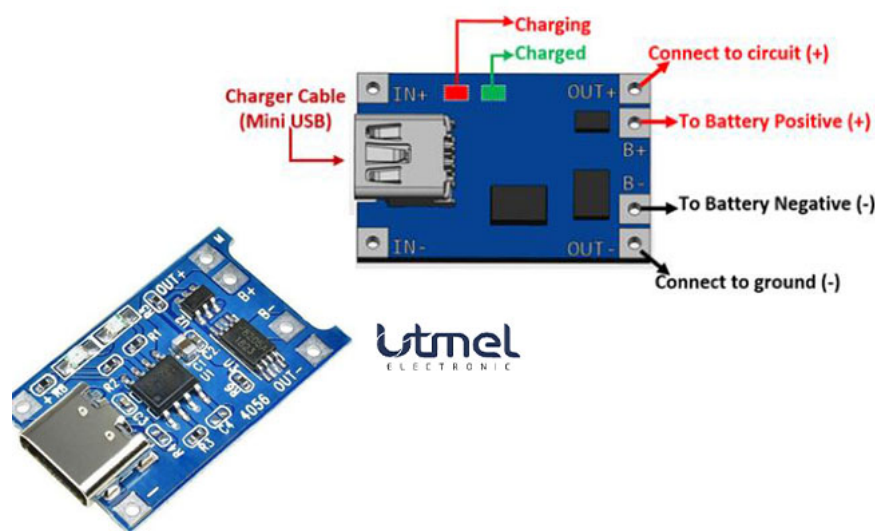The **TP4056** module is a lithium-ion battery linear charger. This module is capable of charging single-cell batteries. Most importantly, it offers to charge modes with constant current and constant voltage. The TP4056 is also a battery charger with a 4.2-volt set charge voltage.

TP4056 Pinout

TP4056 Pinout

No:	Pin Name	Description
1	OUT +	These pins output the positive voltage from the battery. It should be connected to the circuit which has to be powered by the battery
2	B +	Outputs positive voltage from the USB cable to charge to the battery. It should be connected to the positive of the battery
3	B -	Outputs negative voltage from USB cable for charging the battery. It should be connected to the negative of the battery
4	OUT -	This pin outputs negative voltage from the battery. It should be connected to the ground of the circuit which has to be powered by the battery
5	IN +	Should provide +5V, can be used if charge cable not available
6	IN -	Should provide the ground of the +5V supply, can be used if charge cable not available
7	LED Red	This LED turns on while the battery is charging
8	LED Green	This LED turns on after the battery is fully charged

Specifications

TPOWER TP4056 technical specifications, attributes, parameters and parts with similar specifications to TPOWER TP4056.

Type	Parameter		
Package / Case	ESOP-8	Packaging ⓘ	Tape & Reel (TR)
RoHS Status ⓘ	RoHS Compliant		

TP4056 Features

- This module can charge and discharge Lithium batteries safely

- Suitable for 18650 cells and other 3.7V batteries

- Charging current – 1A (adjustable)

- Input Voltage: 4.5V to 5.5V

- Full charge voltage 4.2V

- Protects battery from overcharging and over-discharging

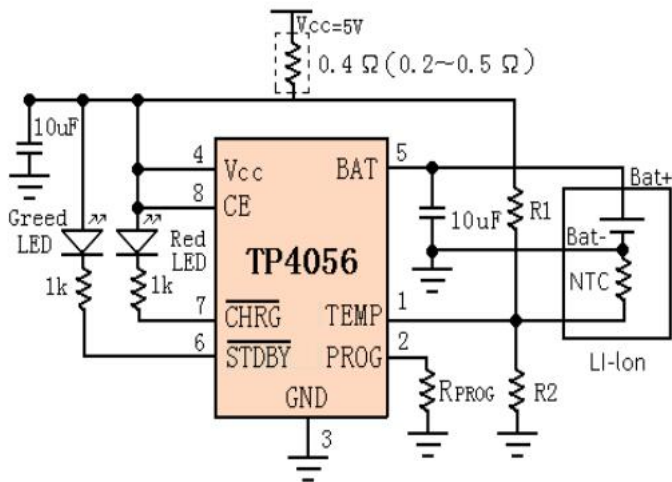- No verse polarity protection

TP4056 Equivalents

TP4056A (only charging), TP541

TP4056 Applications

- Solar Chargers

- Digital Cameras

- Portable Home Appliances

- Cell Phones & Tablets

- Charge and Discharge Lithium cells

- Commonly used with 18650 Li-ion batteries

- Power banks

- Used with 5V booster for powering Arduino projects

TP4056 Typical Applications

The charging current of the module is set to 1A by default. However, it can be changed by altering the **resistor** RPROG (R3 on the module) in the circuit diagram. The datasheet for the TP4056 datasheet may be seen below for more information.

TP4056 Application Circuit

The module will automatically stop charging after the Lithium battery is fully charged, and the Red LED will turn off and the Green LED will turn on to signal completion. As illustrated in the pin diagram above, the circuit can now be connected to the Circuit (Load) that must be powered by this battery. The voltage of the battery will be monitored as it is consumed by the circuit by the module (load). When it falls below the crucial level (3.7V), the module will separate your battery from the load and safeguard it from over-discharge.

Where to Use TP4056

It is ideal for charging 18650 cells and other 3.7V batteries because of its capacity to supply 4.2V. Because it only requires a few external components, it can be used in portable applications. Mobile phones, tablets, laptops, cameras, power banks, and a variety of other electronic gadgets all consume batteries; hence this module is used to charge them. This module can also be utilized with a USB port and a wall adaptor.
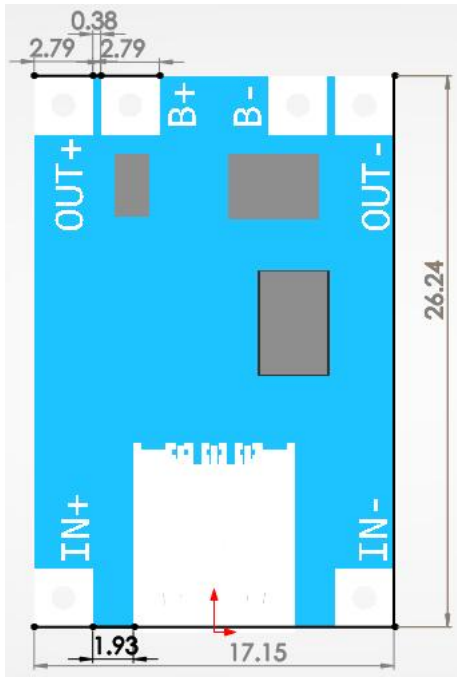
How to use TP4056

The TP4056 module is powered by a 5V supply from a micro USB cable or the IN+ and IN- solder pads. For the charger to correctly charge a battery connected at the output terminals, a current of at least 1A is necessary. Connect the B+ and B- connections to the cell you want to charge. The battery's power is supplied through the OUT+ and OUT- pads. As a result, if you're running a load, you can attach it to these two pads. But remember to disconnect the load from the module if you're charging a cell.

TP4056 Connection Schematic

TP4056 Dimension

TP4056 Dimension

TP4056 Manufacturer

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❝❞・ Frequently Asked Questions

What does a TP4056 do?

The TP4056 chip is a lithium-Ion battery charger for a single cell battery, protecting the cell from over and undercharging. It has two status outputs indicating charging in progress and charging complete. You can use it to charge batteries directly from a USB port since the working input voltage range is 4V ~ 8V.

How does TP4056 module work?

The charge voltage is fixed at 4.2V, and the charge current can be programmed externally with a single resistor. The TP4056 automatically terminates the charge cycle when the charge current drops to 1/10th the programmed value after the final float voltage is reached.

How many batteries can a TP4056 charge?

You can connect two lithium battery cells in parallel to form an equivalent single cell battery with a total capacity of twice that of the individual single cells, but we do not recommend connecting more than two cells at a time to this module.

What is output voltage of TP4056?

Output voltage: DC 4.2V. 4 chips, with a reasonable turn-off voltage, the charging circuit for each chipset 750mA, total 3A. Input connected two 5A Schottky diodes, 5V standard voltage input chip heat ideal (3.8V battery test).

Can TP4056 charge multiple batteries?

Don't. Just use one TP4056 and connect both cells in parallel after balancing them first. Don't connect batteries with more than 0.2V difference in parallel as this can risk fire and explosions (excessive charging current from one to another).
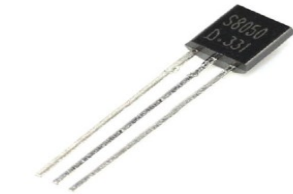
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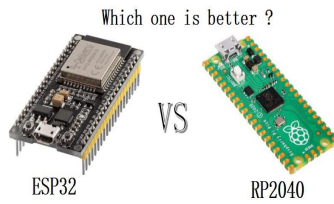### S8050 NPN Silicon Transistors: Datasheet, Pinout and Equivalent

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