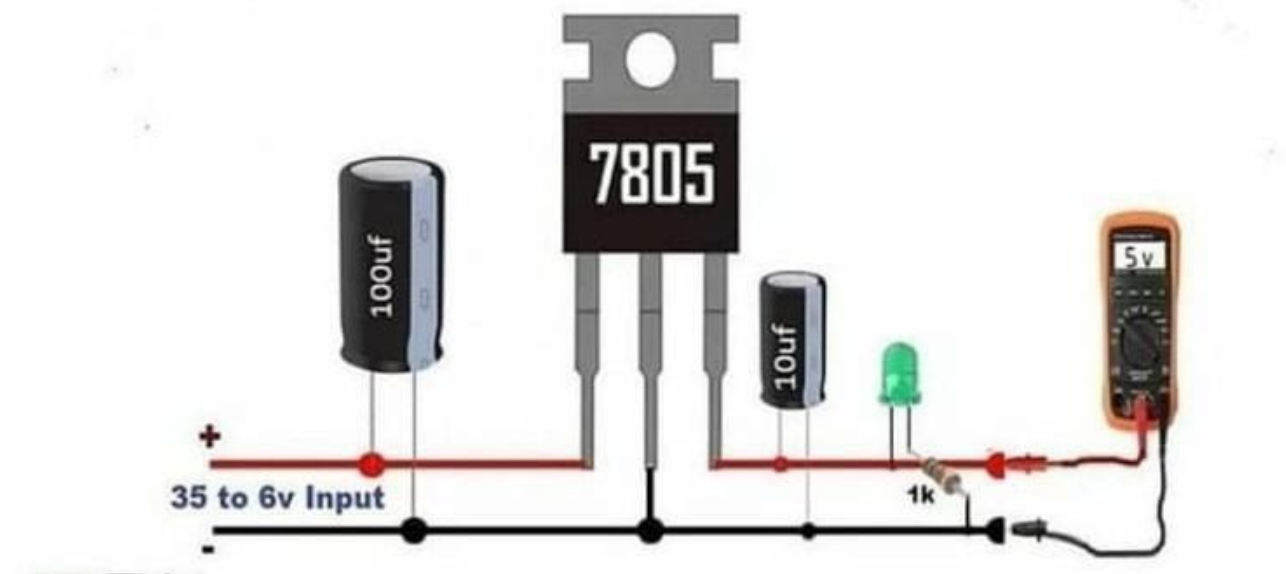
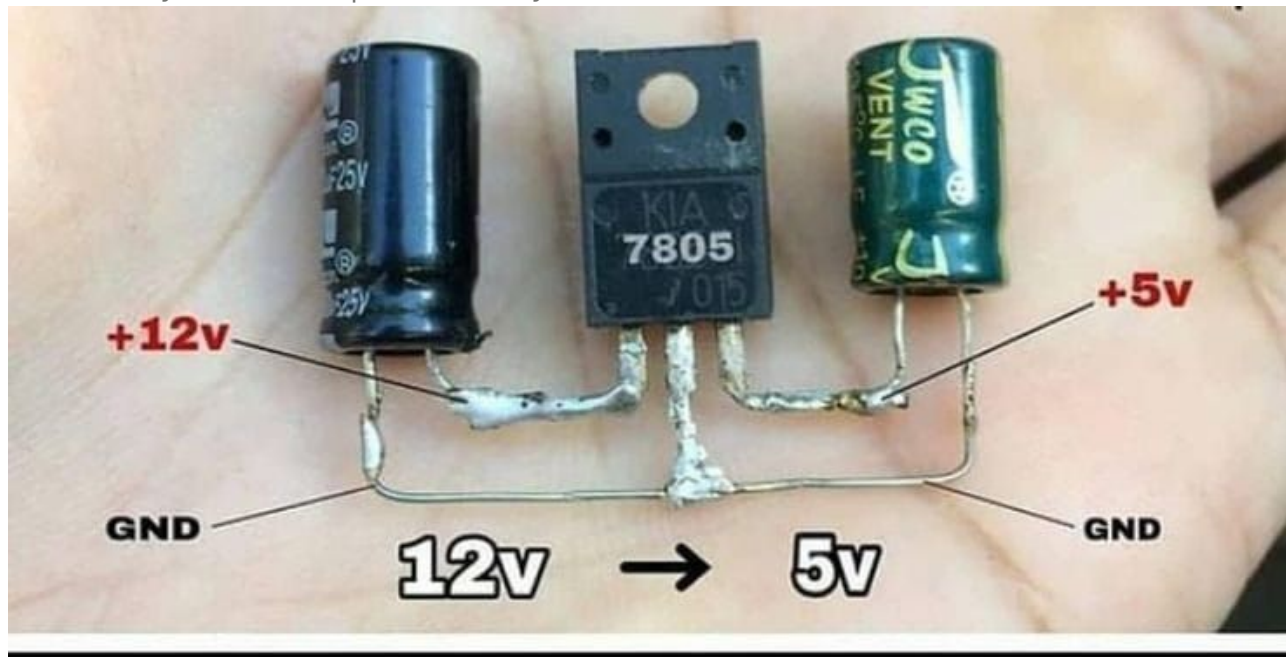


Mbsm.pro, 7805, 12/5Volt, Regulator, Circuit, Diagram

Category: electronics

written by rober us | 16 January 2024



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Components:

- **7805 Voltage Regulator IC:** This three-pin integrated circuit (IC) is the heart of the circuit. It regulates the voltage to a constant 5 volts at its output, even if the input voltage varies.
- **Input Capacitor (C_{in}):** This capacitor helps to filter out any unwanted ripple or noise from the input voltage, providing a smoother input to the regulator.
- **Output Capacitor (C_{out}):** This capacitor helps to smooth out any voltage fluctuations at the output, ensuring a stable 5 volts for the connected circuitry.
- **Heatsink (optional):** If the regulator is expected to handle significant

current, a heatsink may be necessary to dissipate heat and prevent overheating.

Connections:

1. **Input Pin (VIN):** Connect this pin to the unregulated DC input voltage source.
2. **Ground Pin (GND):** Connect this pin to the ground of both the input and output circuits.
3. **Output Pin (VOUT):** Connect this pin to the load or circuitry that requires a regulated 5 volts.

Key Points:

- **Input Voltage Range:** The 7805 can handle input voltages ranging from 7 to 35 volts.
- **Output Voltage:** The fixed output voltage is 5 volts.
- **Maximum Output Current:** The 7805 can provide up to 1 amp of output current.
- **Heat Management:** If using high input voltages or driving high currents, a heatsink is essential for proper heat dissipation.

Common Applications:

- Powering microcontrollers, sensors, and other low-power electronics
- Providing a stable voltage reference for circuits
- Creating a 5-volt power supply for DIY projects
- Used in various electronic devices like computers, audio equipment, and industrial machinery

Input Amperage:

- **Not fixed:** The 7805's input amperage is not a fixed value, but rather depends on the demands of the connected load.
- **Regulates voltage, not current:** The regulator's primary function is to maintain a constant 5-volt output, but it adjusts the input current as needed to achieve this.

Simplified Equation: $\text{Input Amperage} \approx \text{Output Amperage} \approx \text{Load Current}$
(approximately, as there's some internal power consumption)

Output Amperage:

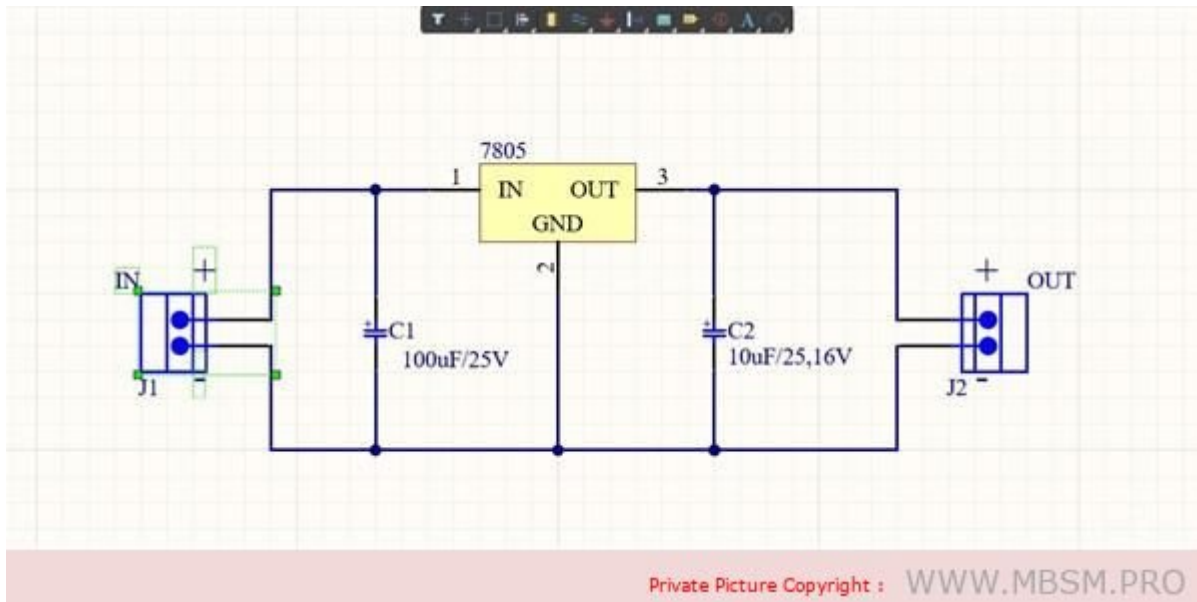
- **Maximum Output Current:** The 7805 can provide a maximum output current of 1 amp.
- **Heat Considerations:** If the load requires close to 1 amp, a heatsink is crucial to prevent overheating and potential damage.

Key Points:

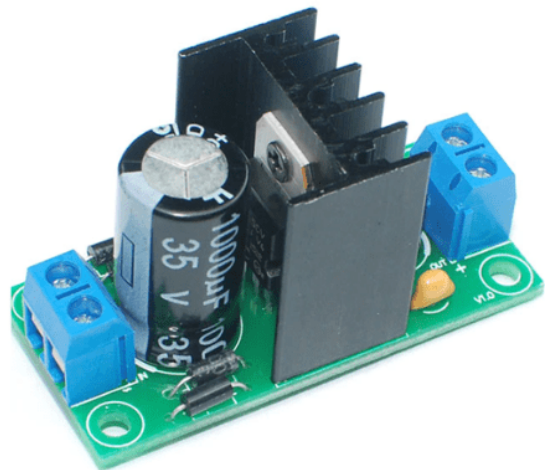
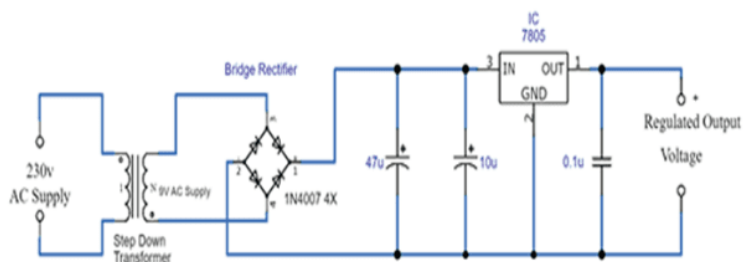
- **Input Current Matches Load Demand:** The 7805's input current will automatically adjust to match the current required by the load.
- **Maximum Output Current 1 Amp:** The regulator can deliver up to 1 amp of current at its output.
- **Heatsink for Higher Currents:** If using the regulator near its maximum output current, a heatsink is essential for proper heat dissipation.

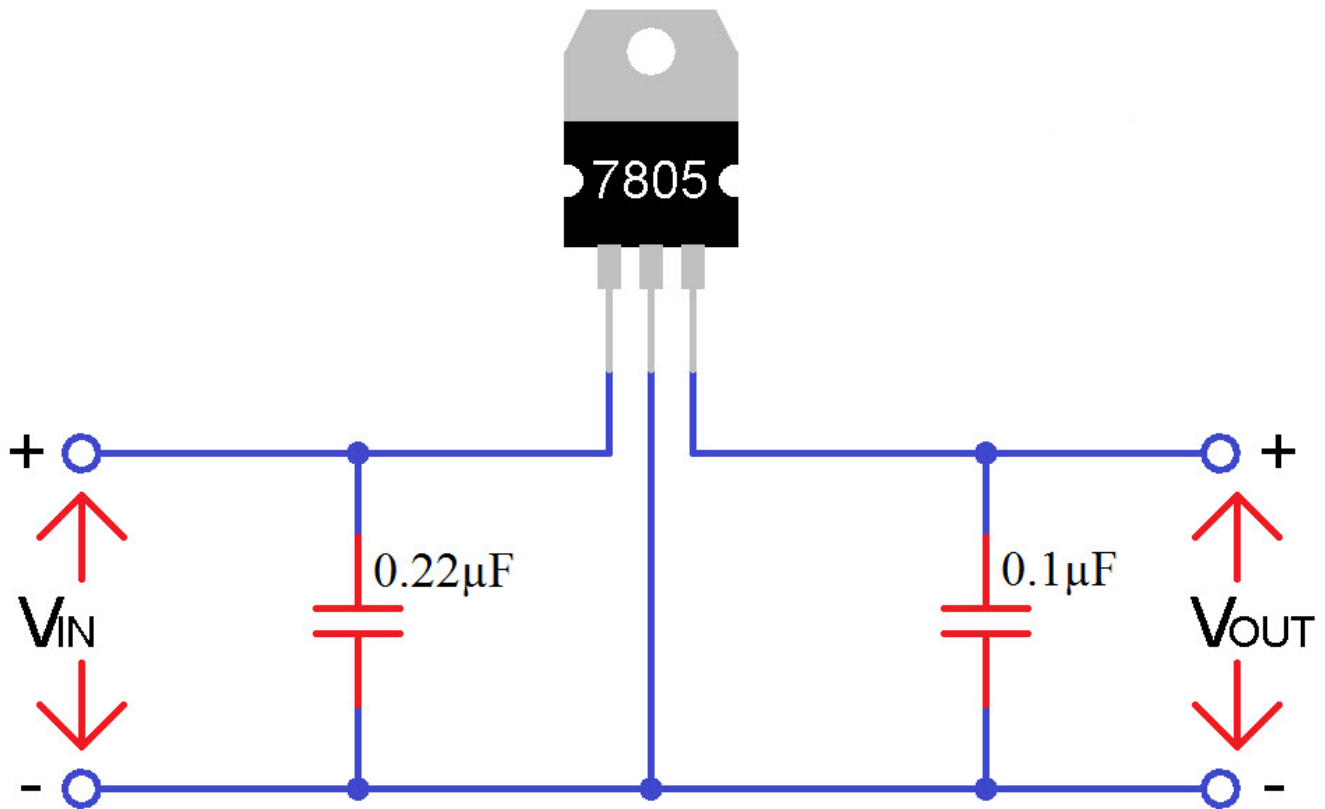
Additional Considerations:

- **Efficiency:** The 7805 is a linear regulator, so it does dissipate some power as heat, especially at higher input voltages and currents.
- **Power Dissipation:** Consider the power dissipation (input voltage – output voltage) * output current to determine if a heatsink is necessary.
- **Alternatives:** For higher efficiency or higher output currents, consider switching regulators.



7805 Voltage Regulator

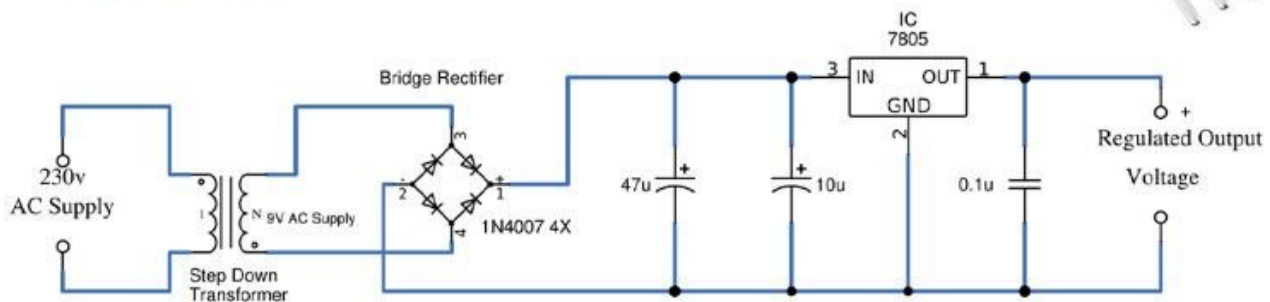




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7805

Voltage Regulator Circuit



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