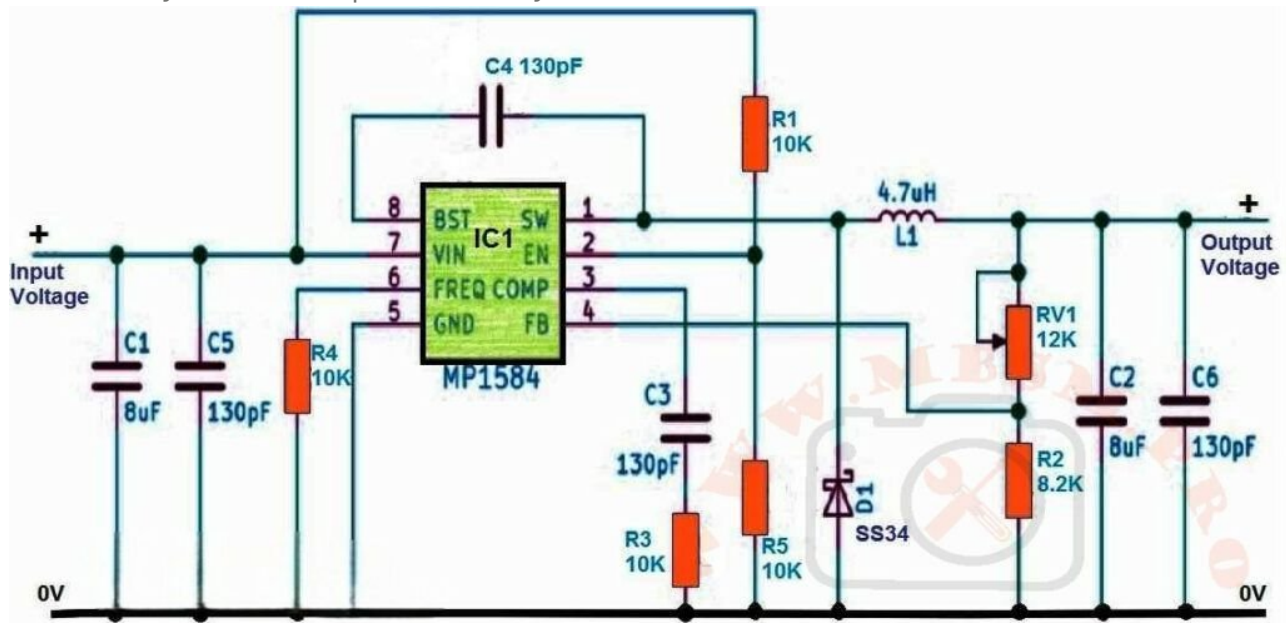


Mbsm.pro, 3A Adjustable voltage regulator circuit from 12 v to 5 v DC

Category: électronique

written by rober us | 16 January 2024



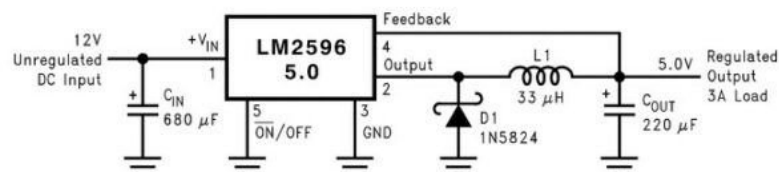
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1. Switching Regulator with Adjustable Output:

- **High Efficiency:** Ideal for high-current applications due to their efficient power conversion, reducing heat generation.
- **Wide Input Voltage Range:** Often handle a broad range of input voltages.
- **Compact Size:** Typically smaller than linear regulators with similar current ratings.
- **Adjustability:** Some switching regulator ICs offer built-in adjustable output voltage control.

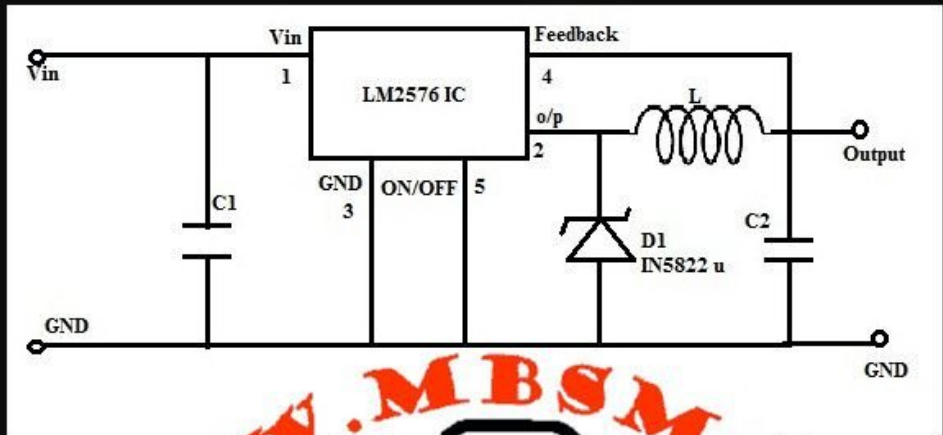
Examples of Switching Regulator ICs with Adjustable Output:

LM2596



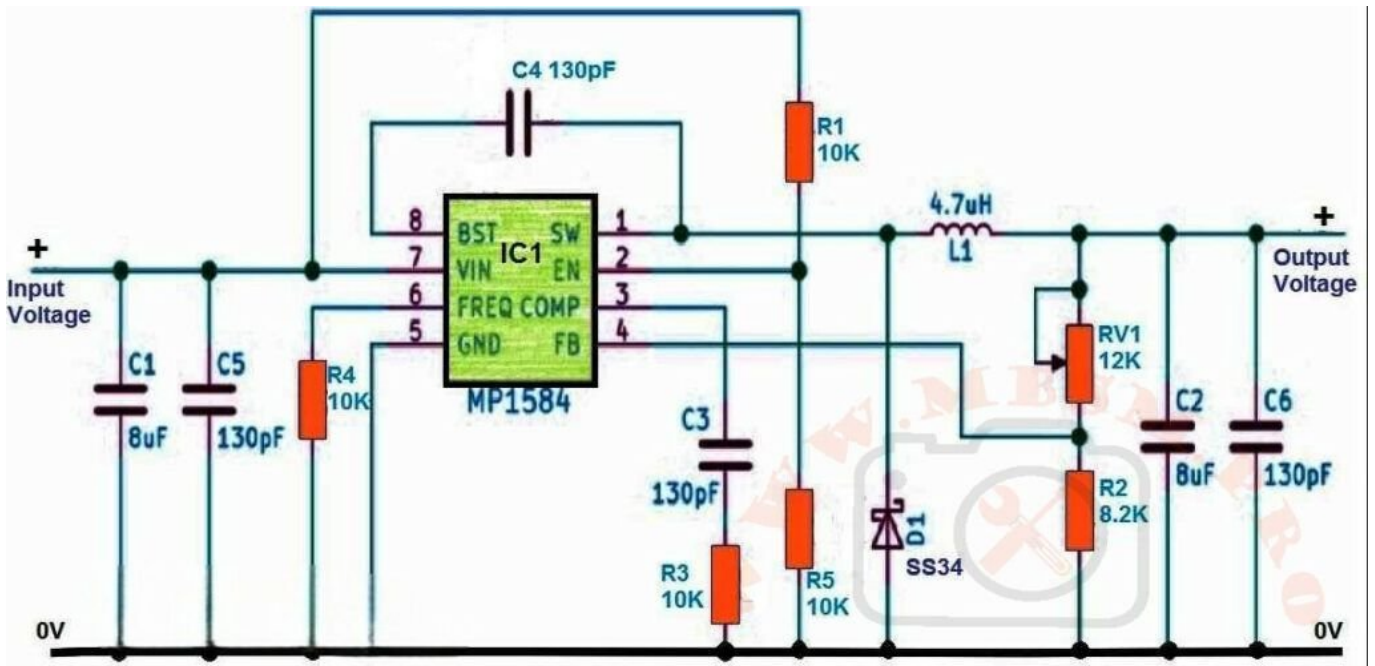
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LM2576



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MP1584



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2. Linear Regulator with External Pass Transistor and Adjustable Control:

- **Simpler Design:** Uses a linear regulator IC, an external power transistor, and adjustable control components.
- **Less Efficient:** Dissipates excess power as heat, requiring adequate heatsinking.

Components:

- **Linear Regulator IC:** Provides basic voltage regulation, but with a limited current output.

- **Power Transistor:** Handles high current flow.
- **Heatsink:** Dissipates heat from the transistor.
- **Adjustable Resistors:** Allow for fine-tuning of the output voltage.

Additional Considerations:

- **Heat Dissipation:** Both switching and linear regulators with high currents generate heat. Provide sufficient heatsinking.
- **Input Voltage Range:** Ensure the regulator can handle your input voltage range.
- **Desired Adjustment Range:** Choose a regulator that offers the level of output voltage adjustability you need.
- **Safety Features:** Consider regulators with overcurrent protection, thermal protection, and short-circuit protection.

Specific Circuit Design and Component Selection:

- Depend on your exact current, voltage, and adjustability requirements.
- Consult datasheets and application notes for the chosen regulator ICs for detailed guidance.