

LM317 Voltage Regulator

Overview

The LM317 device is an adjustable three-terminal positive-voltage regulator capable of supplying more than 1.5 A over an output-voltage range of 1.25 V to 37 V. It requires only two external resistors to set the output voltage. The device features a typical line regulation of 0.01% and typical load regulation of 0.1%. It includes current limiting, thermal overload protection, and safe operating area protection. Overload protection remains functional even if the ADJUST terminal is disconnected.

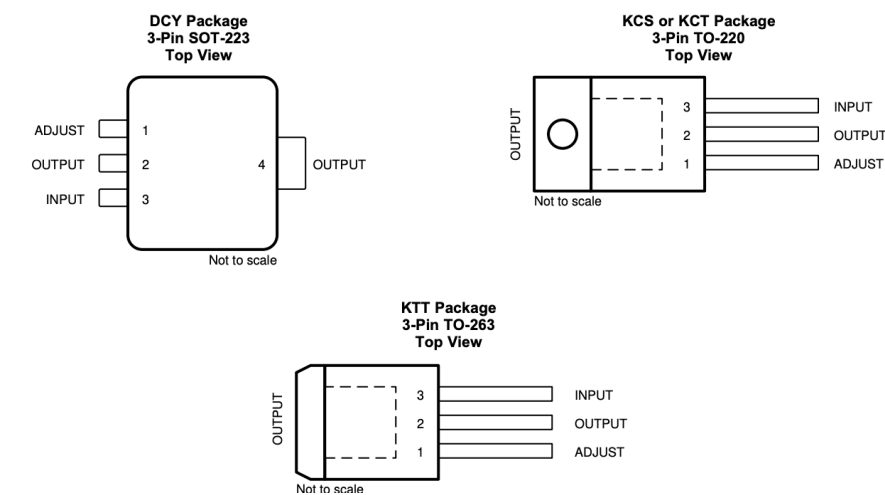
Features:

- Output voltage range adjustable from 1.25 V to 37 V
- Output current greater than 1.5 A
- Internal short-circuit current limiting
- Thermal overload protection
- Output safe-area compensation

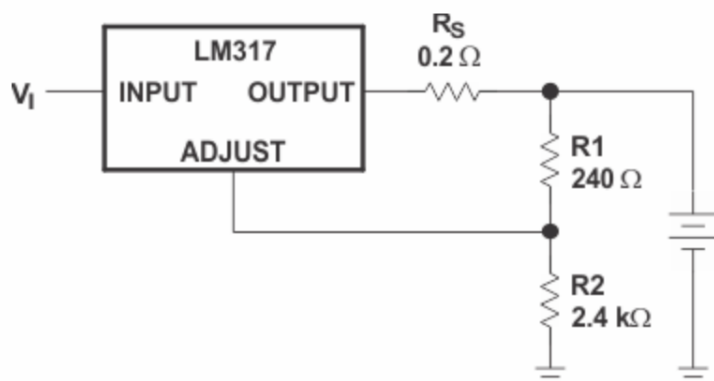
Specifications

Parameters	Package Pins Size	Features	Description
Output options			Adjustable Output
I _{out} (Max) (A)			1.5
V _{in} (Max) (V)			40
V _{in} (Min) (V)			3
V _{out} (Max) (V)			37
V _{out} (Min) (V)			1.25
Noise (uVrms)			38
I _q (Typ) (mA)			5
Thermal resistance θ_{JA} (°C/W)			24

Pin Configuration



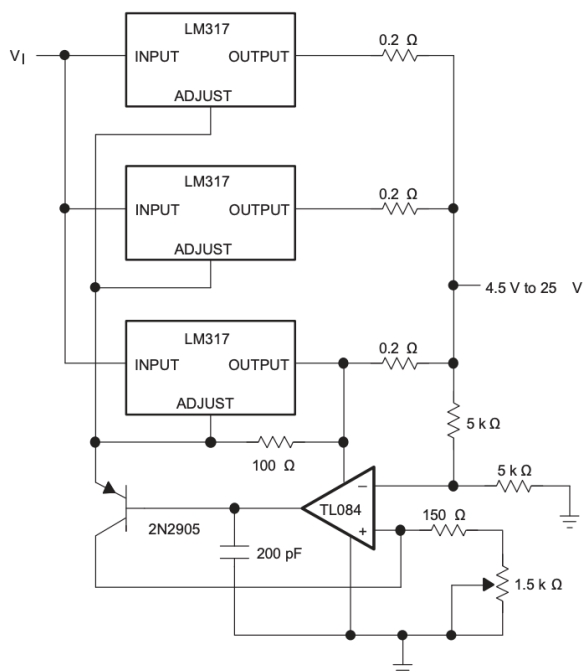
Wiring



Sample Circuits

9.3.11 Adjustable 4-A Regulator Circuit

This application keeps the output current at 4 A while having the ability to adjust the output voltage using the adjustable (1.5 k Ω in schematic) resistor.



9.3.12 High-Current Adjustable Regulator Circuit

The NPNs at the top of the schematic allow higher currents at V_{OUT} than the LM317 can provide, while still keeping the output voltage at levels determined by the adjustment pin resistor divider of the LM317.

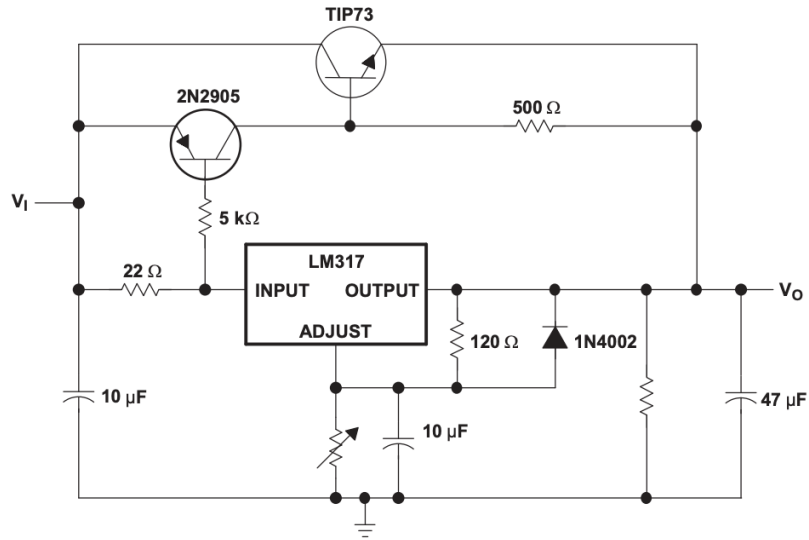


Figure 23. High-Current Adjustable Regulator Circuit

References

Reference	URL
Product Sheet	https://www.ti.com/product/LM317?utm_source=google&utm_medium=cpc&utm_campaign=app-null-null-GPN_EN-cpc-pf-google-ww&utm_content=LM317&ds_k=LM317&DCM=yes&gclid=CjwKCAiA6aSABhApEiwA6Cbm_8mslfojRSdbf92TxxAbqRYrkq48YGj8rKtIE-mIZHc-k-eqRCK99hoCKJAQAvD_BwE&gclsrc=aw.ds
Data Sheet	https://www.ti.com/lit/ds/symlink/lm317.pdf?ts=1611208104766&ref_url=https%253A%252F%252Fwww.ti.com%252Fproduct%252FLM317