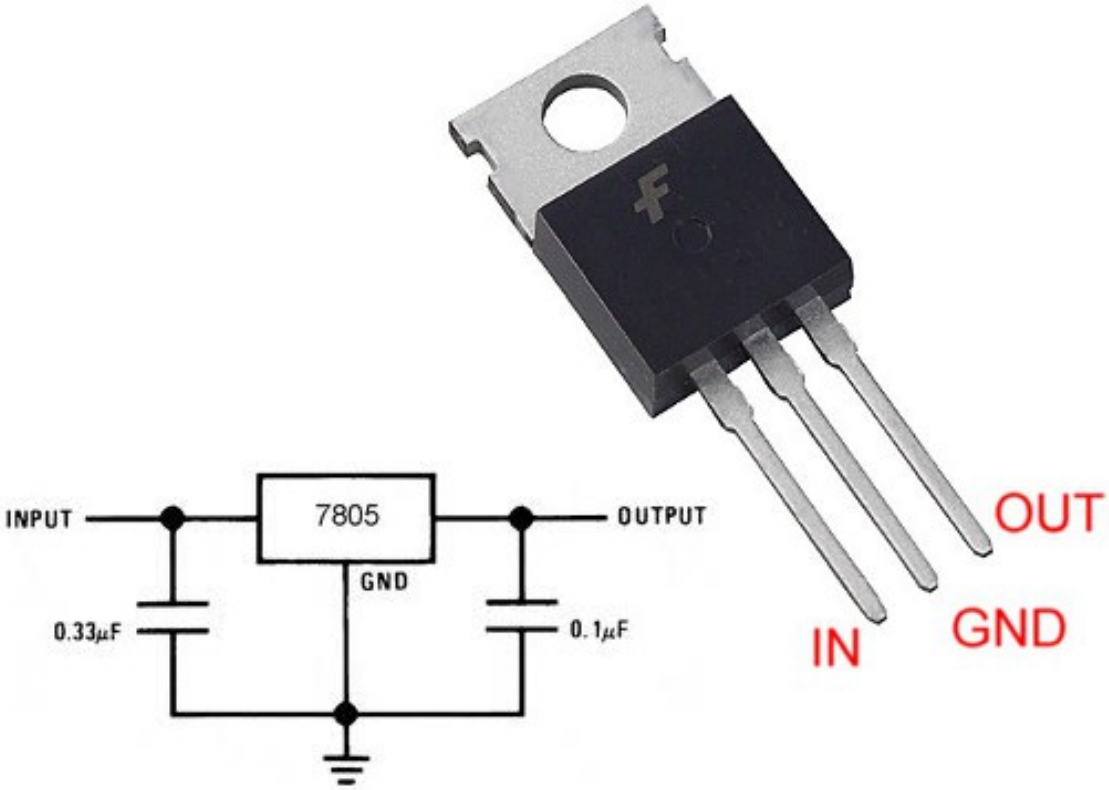
More cautionary tails

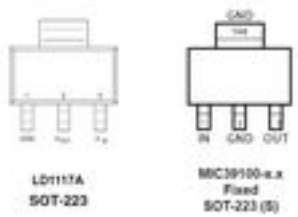
Screaming Circuits

I recently wrote about the horrors of LED marking variations [1]. Unfortunately, LEDs aren't the only place to find inconsistencies in our world. Another part to keep a close eye on is the ubiquitous three-terminal voltage regulator. For just short of a million years, pretty much all three-terminal voltage regulators followed the 78XX convention.



It is not completely universal though. Is saying "completely universal" repetitive and redundant? There are some regulators that divert from convention in thru-hole and in SMT form-factors. Despite the overwhelming prevalence of the 74XX pin-out, you may find some parts that dispense with convention and can bite.

Take the LM1085, low drop out (LDO) regulator, for example. It looks, for all intents and purposes, to be a standard TO-220 or TO-263 three-pin regulator. You'd look at it and assume that it's a direct replacement for any old 75XX series. But, rather than In-Out-Ground, it's pinned as Ground-Out-In. The LM1117T is the same.



[2]You might think: "Of course, it's different, the part numbering doesn't follow the 74XX number scheme." That sounds logical until you look at the

LM2940. It follows the 74XX pin convention, as does the MIC39100. It's not the LDO specification that justifies change the pin-out either. The LM2940 is also an LDO.

Unlike the LED polarity issue [1], this one isn't as likely to bite you during assembly. The SMT regulators can only go onto the board one way. If your CAD library footprint is correct, it will be assembled correctly. The thru-hole can be easily reversed though if your silk-screen isn't clear. Marking pin 1 on the board (and checking the CAD footprint) is the recommended approach.

Duane Benson
In the land of the insane, only the sane are crazy.

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