

Adjusting 78xx/79xx Regulators

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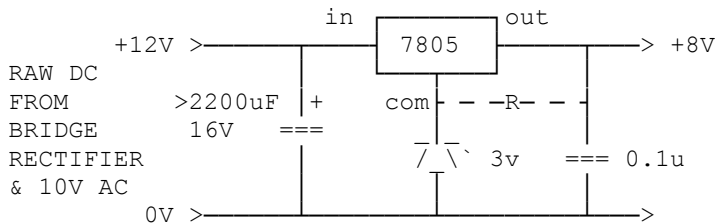
To : TECH@WW

By G8MNY

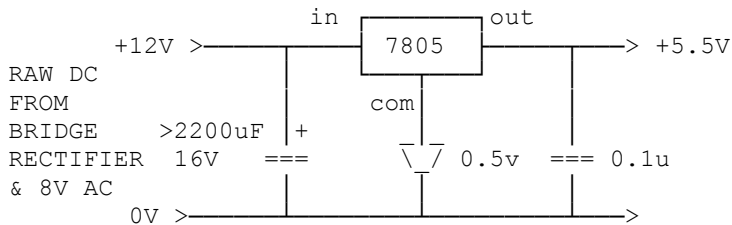
(Updated Feb 05)

There are 3 way to simply increase the regulator voltage.

1/ Add a series zener or diodes or a mixture in the common leg. Most makes of regulator put about 50uA down the common leg, this may affect the zener/diode drop. A pull up R of a few KΩ from the zener to the output could be needed with slightly leaky zeners/diode to get the desired drop.

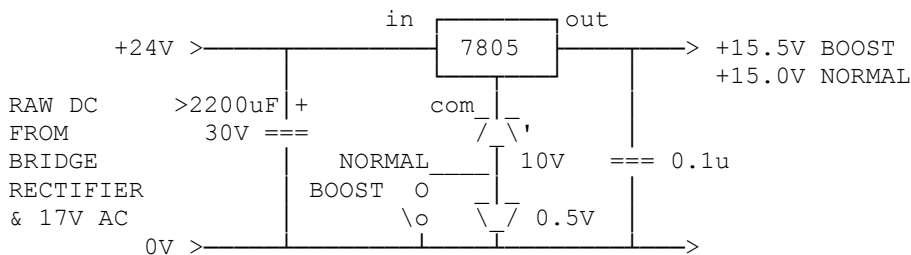


Thermal stability fair, as it is dependent on Reg + Zener, 3 – 5V zeners generally have the best stability!



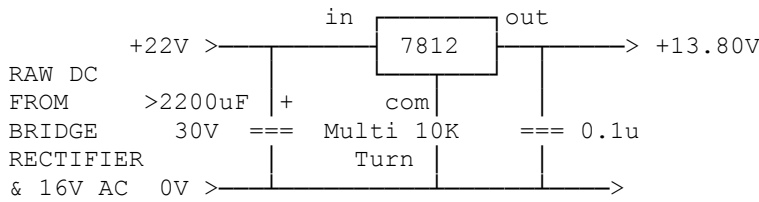
If the diode is an LED, the voltage increase could be 1 – 1.5V depending on the colour & current fed through it.

Thermal stability poor, as it is dependent on Reg + diode, the diode drop will alter quite a lot hot to cold.



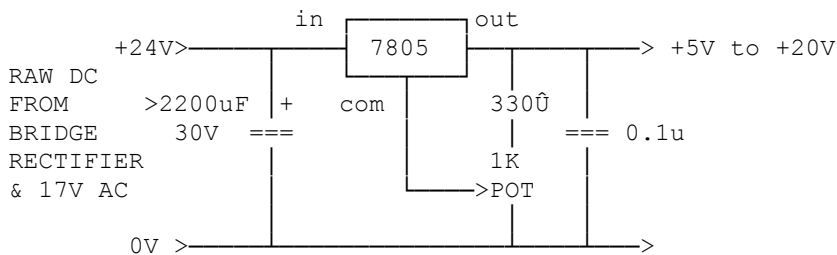
Thermal stability poor as it is dependent on Reg + Zener + diodes,

2/ Add a series R in the common leg. Most makes of regulator put about 50uA constant current down the common leg, so a small R can uplift the voltage.



Thermal stability is good, as it is dependent on Reg + the constant current through the R, but that will be regulator make dependent.

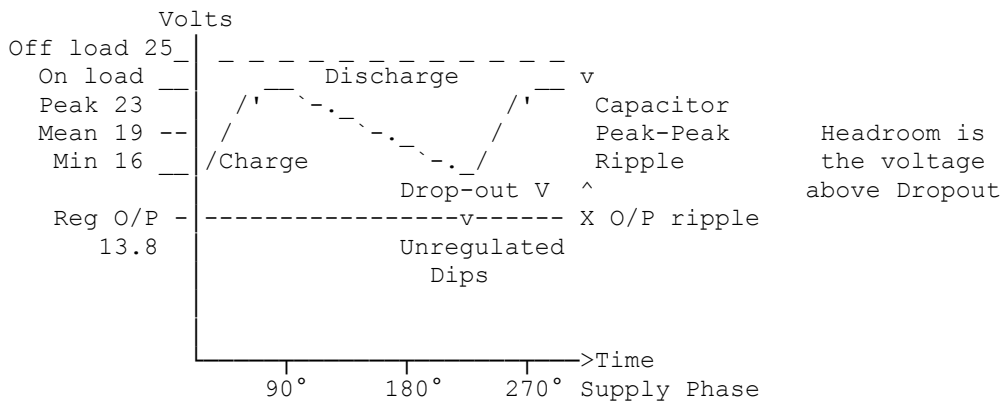
3/ Add a voltage offset ratio arm. The 330 & 1K pot give a zero to 4x max ratio arm, that magnifies the regulator voltage by up to 4 times, plus any voltage gained by adding resistance in series with the common leg.



Thermal stability good, as it is dependent on Reg/multiplier ratio.

NOTES

A/ For all 3 types the input must always exceed the O/P by at least 2V so that the regulator's drop out voltage is always exceeded. There are low drop out types available (0.3V - 1V).

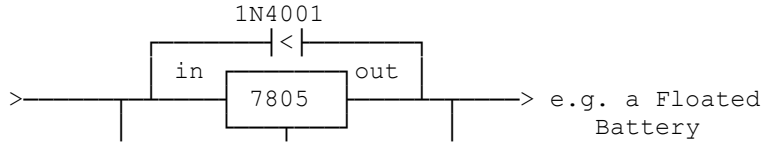


B/ The maximum input voltage must not exceed the regulator max (eg 40V) otherwise it may well go short circuit & put 40V on the Output.

C/ Many regulator types have Thermal shutdown & the current rating of 100mA, 0.5A or 1A may be limited by poor heat sinking in practice. The higher the head room voltage the more power has to be dissatisfied.

D/ The metal tabs must be insulated as they are connected to the regulator common on positive types, which in not ground! They are also the most negative part of a regulator so for -ve types that means the -ve input!

E/ If there is a possibility that the O/P may be powered but the input not a diode must be put output to input across the regulator to protect it.



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73 De John, G8MNY @ GB7CIP