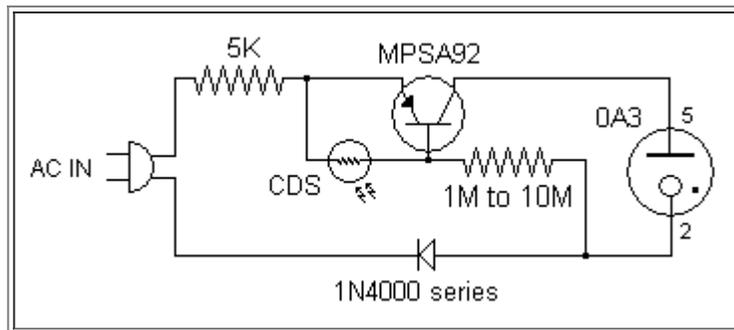


Voltage Regulator Tube Nightlight

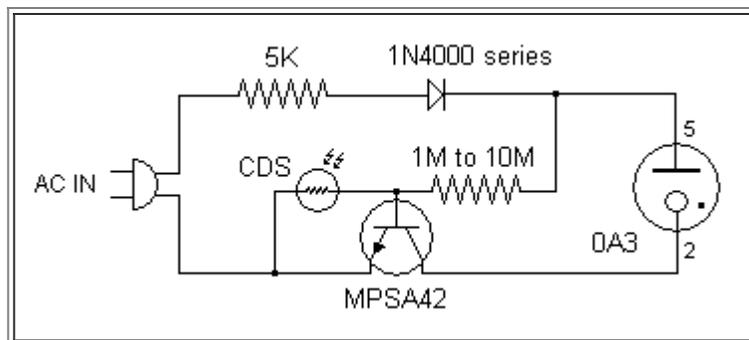
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This project uses a 0A3 (VR75) voltage regulator tube for a nightlight because of its nice orange neon glow. Most other voltage regulator tubes are filled with argon gas and give off a weak purple glow. Here, this project will light up a 0A3 when it gets dark and shut it off in light. There are two circuit designs, one uses a PNP transistor and the other design uses a NPN. Below is the schematic diagram of the first design using a PNP transistor:



The MPSA92 is a 300V PNP transistor. The 5K resistor I used is rated at 5W, but 2W should suffice. The 1Meg resistor can be rated at 1/4W, but 1/2W is safer. Moreover, the 1Meg bias resistor on the transistor may need adjusting depending on the CDS cell's light/dark resistance characteristics. The following circuit is the NPN version, which may require adjustments with the 1Meg resistor:



In some cases, the resistor may have to be less than 1Meg, but try not to go below 200K. Also keep in mind that this resistor also controls the sensitivity of the circuit to light. The 5K resistor is used to adjust the brightness of the VR tube by reducing the 120V mains supply. Less than 5K will brighten the tube but shorten its life, and greater than 5K will make the tube dimmer. Please note that

The 0C5 (VR105) will work instead of the 0A3 (VR75) but gives off a weak purple glow. The 5K resistor can be decreased to increase brightness. Also, while there is not a specific "type" of CDS cell that works best, the largest CDS cell from Radio Shack's CDS assortment works nicely along with a 1Meg bias resistor.

Pictures:



The 0A3 tube is active in both photos, the only difference is the camera's exposure settings. The nightlight will shut off completely in broad daylight.

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