8. Thorium reactor in Norway - electronic resources. URL :: http://publicatom.ru/blog/energy/5817.html (date treatment 01.12.2014g.)

Elimination of insomnia with LED

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1. Description of the physical phenomena on which the installation is functioning.

If a person wants to sleep, he needs 8 hours of sleep. Man cut this rate to six hours a day, because he is watch TV and use the computer in the evenings. It can cause many diseases. Melatonin is a regulator of sleep in the body. Its concentration is increased in the evening and at night, and induces sleep. It is facilitates sleep. Melatonin is a hormone. It is pharmacological discovery of the last century. Melatonin is used today for the treatment and prevention of many diseases.

Melatonin has the following functions:

- facilitates sleep, restores rhythm of sleep;
- has anti-stress properties;
- slows the aging process;
- enhances immunity;
- participates in the regulation of blood pressure, gastrointestinal function, work cells of the brain, cerebration;
- has the antitumor effect;
- eliminates the headache;
- involved in the regulation of body weight.

Raising and lowering the concentration of melatonin is controlled by the amount of light. When it gets dark, melatonin increases, and we want to sleep. Bright light inhibits the production of melatonin. Blue light with a wavelength of 446-477 nm suppresses melatonin synthesis. blue colors predominate in the daytime, when a person is awake. Light is yellow-orange in the evening, and the synthesis of melatonin increases, the body is prepared for bed.

This formula is the color temperature of light

$$\text{Color temperature} = 0{,}0029/\ \text{Wavelength}$$

It is about 6500 K.

$$0.0029/6500=4.461*10^{-7}\ (\text{m}) = 446\ (\text{nm})$$

This corresponds to a wavelength of fluorescent light.

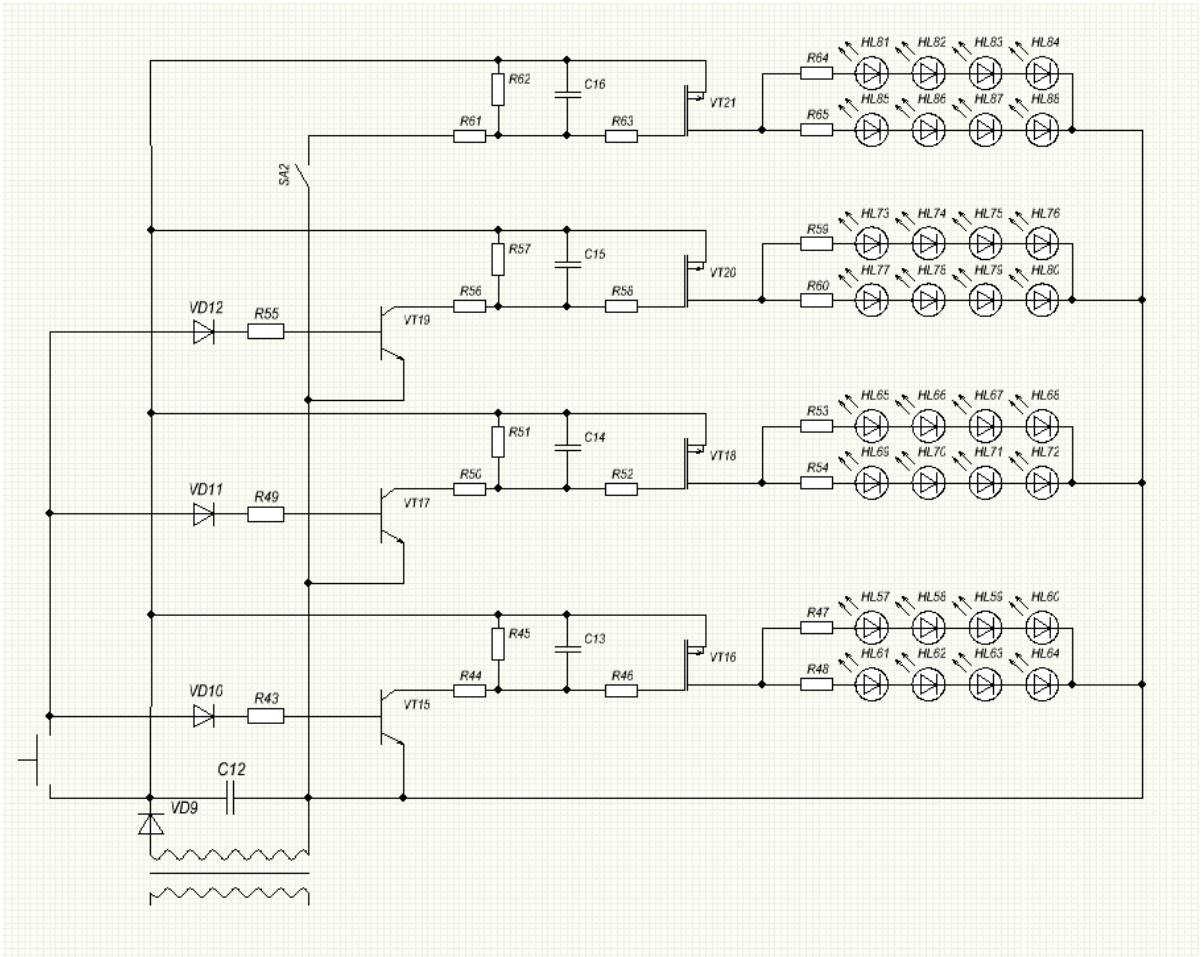
If you look at a color temperature of your monitor or TV, most likely it is 6500 K - This value is set by default. Light that is emitted by them suppresses melatonin synthesis.

The solution is to eliminate the use of computer, mobile and TV in the evening. If a sleep disorder is already present, or you are running on the computer in the evening, you can use our installation.

2. Installation design

The installation contains 32 LEDs: 8 white, 8 yellow, 8 orange and 8 blue. White, yellow and orange LEDs are used for better sleep, and blue LEDs are used to waking up. B You want to sleep, press the button. First, all LEDs are on, and the light is warm, so, it

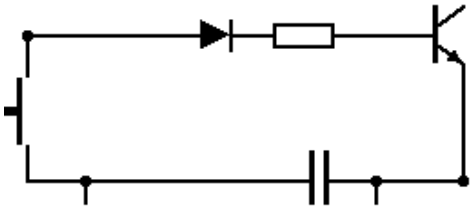
indicates that it was evening. You spread a bed, wash, and all this time the night light prepares your body for sleep. White LEDs includes a first. The light will be even warmer, melatonin produced faster. 8 orange LEDs are also turned off and 8 yellow LEDs in the warmest light. You sleep. Then turn off they are. Be sure to include a toggle switch. It will include the blue LEDs in the morning and you wake up.



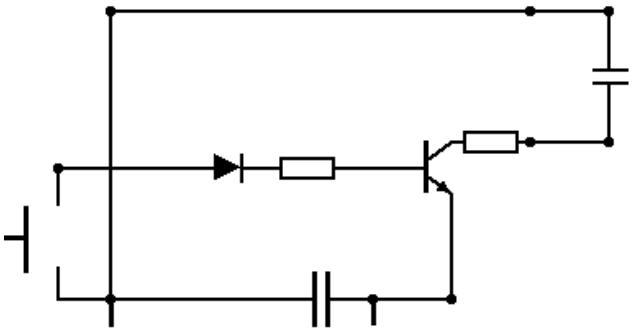
3. The principle of operation

1) Press

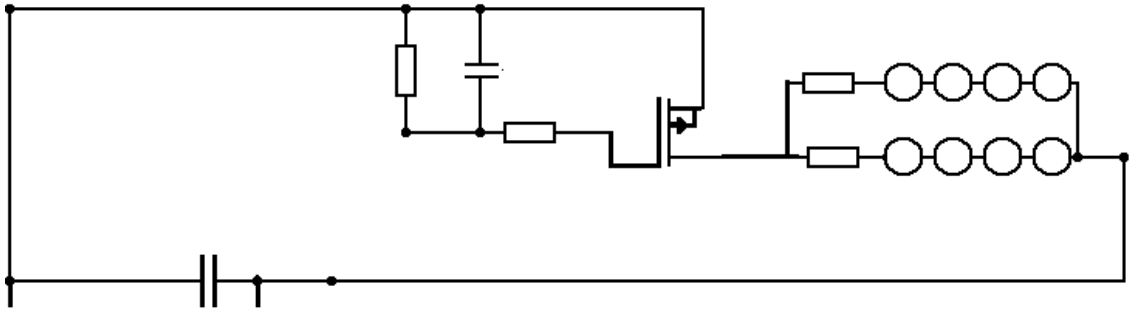
Juice starts to go through the diode. It passes through the base and opens bipolar transistors for the three groups of LEDs: white, orange and yellow.



2) Base open. Juice flows through the condenser and resistor, It is charged.

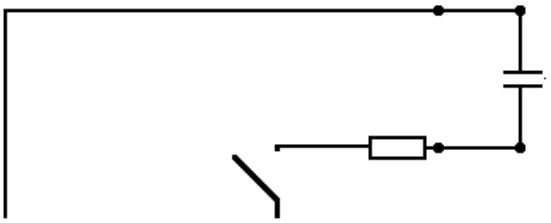


Then we turn off the button. Capacitors charge. Juice no longer goes through the base of the bipolar transistor and it closes. FETs Open and give Juice going through the LEDs. When the capacitors to discharge, the LEDs turn off.



Group of LEDs vary in capacitance of the capacitor and the resistance of the resistor. it regulates time of the work of LEDs

3) For blue LEDs capacitor is charged by turning the toggle switch and will be charged through a resistor.



Toggle switch off in the morning, after waking up.

Adjust the time of the LED can be a microprocessor. Reducing installation costs as well.

4. Cost

- 23 resistor. 0.1 rubles * 23 = 2.3 rubles.
- 5 capacitor. 1.8 rubles * 5 = 8 rubles.
- 4 diode. 4.3 rubles * 4 = 17.2 rubles.
- 3 bipolar transistors. 20 rubles * 3 = 60 rubles.
- 4 FETs. 50 rubles * 4 = 200 rubles.
- 32 LEDs. 3 rubles * 32 = 96 rubles.

All price 383,5 rubles.

References

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