



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
20.04.2011 Bulletin 2011/16

(51) Int Cl.:
H05B 33/08 (2006.01)

(21) Application number: **10468002.0**

(22) Date of filing: **31.05.2010**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
BA ME RS

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(30) Priority: **03.06.2009 SI 200900157**

(54) **Circuit for a temperature control of a LED diode**

(57) The subject of the invention is a circuit for a temperature control of a LED diode providing a possibility of changing luminous intensity of the LED diode as a function of ambient temperature, wherein an analogue voltage signal is generated as a function of detected temperature on a sensor circuit (1), wherein this signal is compared to a ramp frequency, which is internally set on

a regulator (3) by means of a resistor (2) and the signal of the regulator (3) generated based on the intersection point between the ramp frequency and the generated analogue voltage signal determines the current, the size of which depends on the width of the signal of the regulator (3) generated as a function of detected temperature on the sensor circuit (1). Figure 3 should appear in publication.

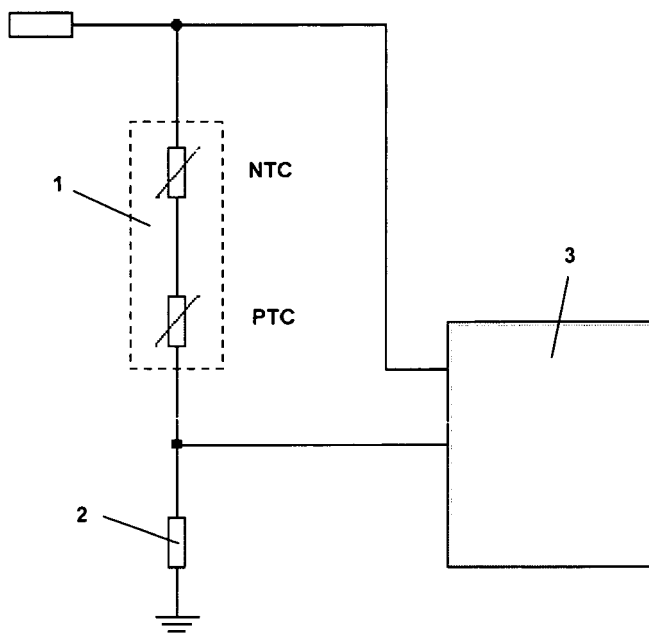


Fig. 3

Description

[0001] The subject of the invention is a circuit for a temperature control of a LED diode providing a possibility of changing luminous intensity of the LED diode as a function of ambient temperature. The described circuit can be used for controlling illumination as well, e.g. of car lamps and car fog lamps. The invention belongs to class F21V29/00 of the international patent classification.

[0002] The technical problem successfully solved by the circuit of the invention is high sensitivity of the luminous intensity of a LED diode to ambient temperature and consequently increase/decrease of the luminous intensity of LED diodes.

[0003] A solution to set technical problem relates to a problem of heating of luminous elements comprising LED diodes. A problem of excess heating of luminous elements comprising one or several LED diodes needs to be solved by means of adequate mechanical cooling systems or a structure of a housing of luminous elements that are effective in deflecting heat.

[0004] The circuit of the invention detects the temperature of a chip of the LED diode and controls the increase/decrease of the current running through the LED diode. By applying an adequate combination of NTC and PTC resistors and belonging elements for a proper functioning of the circuit it is possible to prepare such control voltage curve that will adequately generate current through the LED diode as a function of temperature of the chip of the LED diode.

[0005] The invention will now be explained in more detail by way of an embodiment and the belonging drawings, representing in:

Figure 1 a block diagram of the circuit of the invention;

Figure 2 curve of dependence of luminous intensity on the temperature of the LED diode;

Figure 3 control circuit structure.

[0006] According to the invention the problem is solved by a circuit for a temperature control of a LED diode generating an analogue voltage signal as a function of detected temperature on a sensor circuit 1 consisting of an NTC and a PTC resistor. This signal is compared to a ramp frequency, which is internally set on a regulator 3. Based on the intersection point between the ramp frequency and the generated analogue voltage signal an adequate signal of the regulator 3 is generated at the output terminal of the regulator 3, said signal opening a FET transistor and a diode port in an adequate width, through which current flows, the size of the current depending on the width of the signal of the regulator 3 generated as a function of detected temperature on the sensor circuit 1.

[0007] Figure 2 shows curves representing the situation on NTC and PTC resistors and the curve of voltage and current through the LED diode and herewith sensi-

tivity of the luminous intensity of the LED diode to temperature.

[0008] The circuit of the invention operates in the entire temperature range between -40° and 105° . Proper operation of the circuit of the invention is subject to adequate cooling by means of a cooler that can be arranged on the bottom side under the LED diode.

Claims

1. A circuit for a temperature control of a LED diode, characterized in that an analogue voltage signal is generated as a function of detected temperature on a sensor circuit (1), wherein this signal is compared to a ramp frequency, which is internally set on a regulator (3) by means of a resistor (2) and the signal of the regulator (3) generated based on the intersection point between the ramp frequency and the generated analogue voltage signal determines the current, the size of which depends on the width of the signal of the regulator (3) generated as a function of detected temperature on the sensor circuit (1).

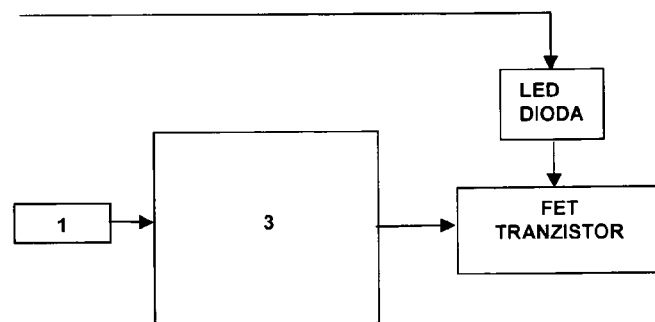


Fig. 1

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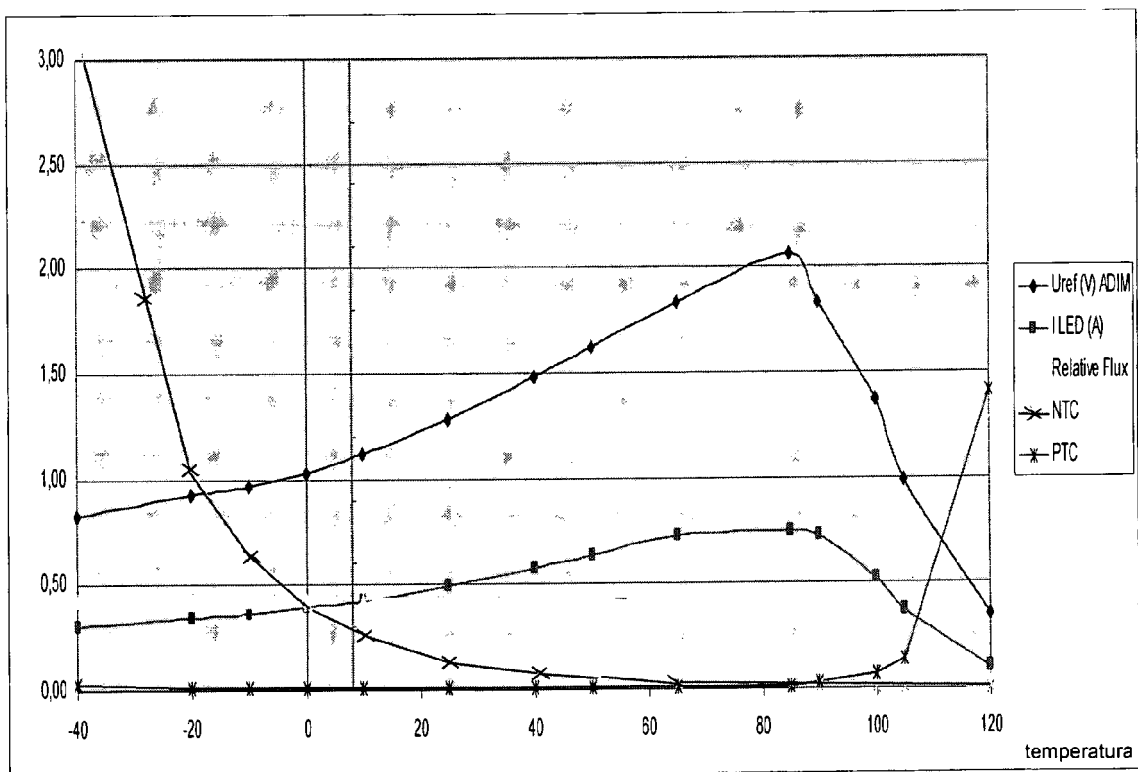


Fig. 2

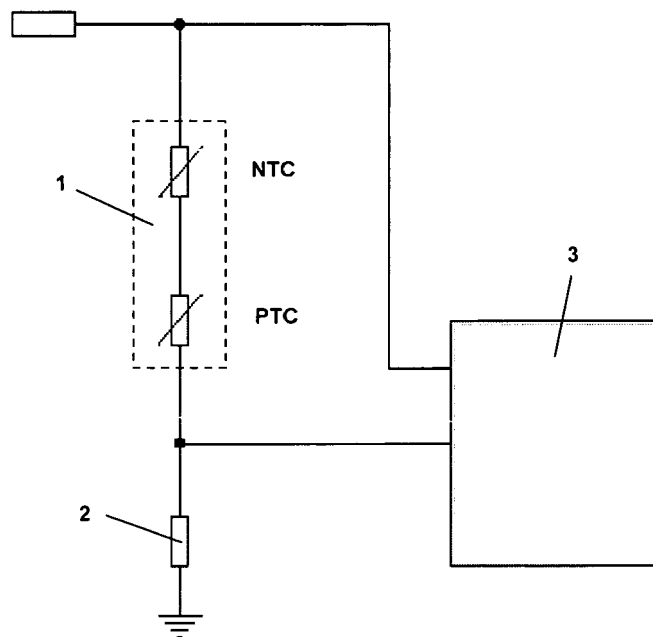


Fig. 3