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(54) Bypass circuitry for serially coupled light emitting diodes and associated methods of operation

(57) The present technology is generally related to LED bypass circuits and associated methods of operation. In one embodiment, an LED bypass circuit includes a monitoring circuit and a switch. The monitoring circuit is coupled to the LED to monitor the differential voltage across the LED. The switch is coupled to the LED in parallel. When an open status is detected by the monitoring circuit, the switch is turned on to bypass the LED.

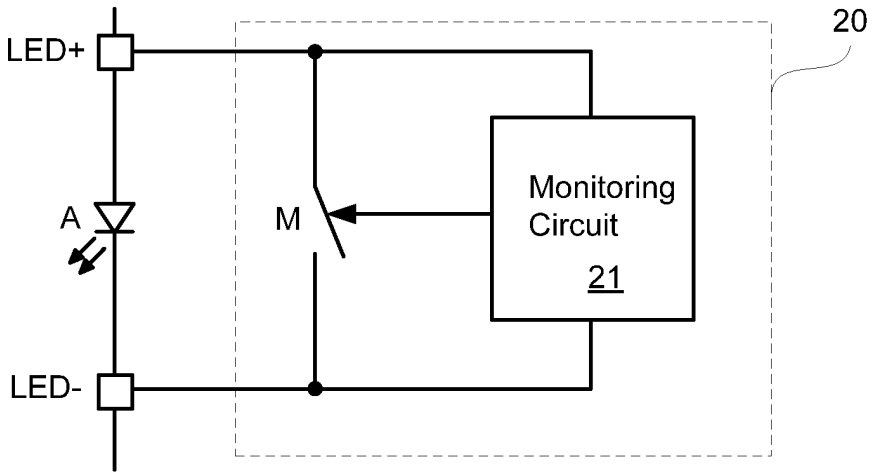


Figure 2

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EUROPEAN SEARCH REPORT

Application Number
EP 11 18 0344

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2009/138907 A2 (NXP BV [NL]; JANS WILLIAM P M M [NL]) 19 November 2009 (2009-11-19) * figure 2 * * page 6, line 29 - page 8, line 13 *	1-5,7, 12-15	INV. H05B33/08
X	US 2009/085489 A1 (CHANG PI-LUN [TW] ET AL) 2 April 2009 (2009-04-02) * paragraph [0021] - paragraph [0023]; figures 3,5 * * paragraph [0027] *	1,7,13	
X	WO 2010/034739 A1 (HELLA KGAA HUECK & CO [DE]; STUDNIORZ JOSEF [DE]; EDELMEIER RALF [DE]) 1 April 2010 (2010-04-01) * page 1, lines 19-25; figure 1 * * page 4, lines 3-22 *	1,7,13	
			TECHNICAL FIELDS SEARCHED (IPC) H05B

1 ~~The present search report has been drawn up for all claims~~

Place of search	Date of completion of the search	Examiner
Munich	13 December 2011	Fulcheri, Alessandro

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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Application Number
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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-7, 13-15

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 11 18 0344

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-7, 13-15

   Monitoring circuit for LED based illumination device. Comprises a first power supply input coupled to the first terminal of the capacitor; and a second power supply input coupled to the second terminal of the capacitor, wherein the capacitor is configured to be discharged by a bias current between the first power supply input and the second power supply input.

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2. claim: 8

   Monitoring circuit for LED based illumination device. Comprises a hold- on circuit configured to activate the switch for a predetermined period of time and to deactivate the switch when the predetermined period of time expires, wherein the hold-on circuit has an input and an output, the input of the hold-on circuit is coupled to an output terminal of the comparator and wherein the output of the hold-on circuit is coupled to the control input of the switch.

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3. claims: 9-11

   Monitoring circuit for LED based illumination device. Comprises a latch, comprising a set terminal, a reset terminal and an output, wherein the set terminal is coupled to the output of the monitoring circuit, and wherein the reset terminal is coupled to an anode of the target circuit, a pulse generator, comprising an input and an output, wherein the input is coupled to the output of the latch and a charge pump, comprising an input and an output, wherein the input is coupled to the output of the pulse generator and wherein the output is coupled to the control input of the switch.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 18 0344

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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13-12-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		EP 2329686 A1	08-06-2011
		WO 2010034739 A1	01-04-2010

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