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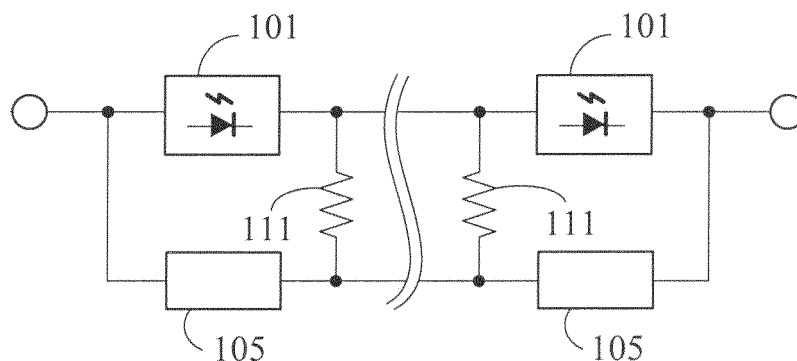
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(54) **LED device with voltage-limiting unit and shunt current-limiting resistance**

(57) The present invention provides a LED device with the voltage-limiting unit and the shunt current-limiting resistance wherein a voltage-limiting unit is connected in series with a current-limiting resistance then connected in parallel with two ends of a LED, so that to con-

stitute the light-emitting unit, thereby when plural of the light-emitting units are connected in series (including connected in series and parallel), the current of LED loaded with higher end voltage passing through the voltage-limiting unit is prevented to be overly high when subject to abnormal high voltage.

FIG. 3





EUROPEAN SEARCH REPORT

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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	US 2005/168162 A1 (INOUE TAKAO [JP]) 4 August 2005 (2005-08-04) * paragraph [0024] - paragraph [0024] * * paragraph [0033] - paragraph [0033] * * paragraph [0037] - paragraph [0039] * * figures 4, 6 *	1-9	INV. H05B33/08
X	US 2005/206325 A1 (WAKOU SHINGO [JP] ET AL) 22 September 2005 (2005-09-22) * paragraph [0102] - paragraph [0106] * * figure 18 *	1	
X	US 2002/047606 A1 (GUTHRIE DON W [US] ET AL) 25 April 2002 (2002-04-25) * paragraph [0024] - paragraph [0035] * * figure 2 *	1	
A	WO 2010/091321 A1 (AEROSPACE OPTICS INC [US]; COLEY CRAIG JAY [US]) 12 August 2010 (2010-08-12) * paragraph [0026] - paragraph [0026] * * figure 3 *	3-9	TECHNICAL FIELDS SEARCHED (IPC)
A	US 2008/157689 A1 (KATO AKIRA [JP]) 3 July 2008 (2008-07-03) * paragraph [0046] - paragraph [0065] * * figure 4 *	3-9	H05B
A	DE 10 2006 029957 A1 (OSRAM OPTO SEMICONDUCTORS GMBH [DE]) 3 January 2008 (2008-01-03) * paragraph [0045] - paragraph [0049] * * figures 3, 4 *	3-9	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 11 October 2013	Examiner Bagge af Berga, Hans
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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EUROPEAN SEARCH REPORT

Application Number
EP 12 15 4768

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 20 2010 000890 U1 (CHEN HUI SAN [TW]; WANG CHIH TSAI [TW]) 8 April 2010 (2010-04-08) * paragraph [0029] - paragraph [0031] * * figure 2A *	3-9	
A	WO 2008/050380 A1 (PIONEER CORP [JP]; PIONEER TOHOKU CORP [JP]; TOGASHI MASATO [JP]; MORI) 2 May 2008 (2008-05-02) * paragraph [0009] - paragraph [0015] * * figure 2 *	3-9	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 11 October 2013	Examiner Bagge af Berga, Hans
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	

1
EPO FORM 1503 03.82 (P04C01)

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ON EUROPEAN PATENT APPLICATION NO.**

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The members are as contained in the European Patent Office EDP file on
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11-10-2013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005168162 A1	04-08-2005	CN 1652652 A	10-08-2005
		JP 2005216812 A	11-08-2005
		US 2005168162 A1	04-08-2005
US 2005206325 A1	22-09-2005	JP 2005266397 A	29-09-2005
		US 2005206325 A1	22-09-2005
US 2002047606 A1	25-04-2002	CA 2459968 A1	20-03-2003
		EP 1428414 A1	16-06-2004
		US 2002047606 A1	25-04-2002
		WO 03024158 A1	20-03-2003
WO 2010091321 A1	12-08-2010	US 2010295469 A1	25-11-2010
		WO 2010091321 A1	12-08-2010
US 2008157689 A1	03-07-2008	JP 4858444 B2	18-01-2012
		US 2008157689 A1	03-07-2008
		WO 2007034680 A1	29-03-2007
DE 102006029957 A1	03-01-2008	DE 102006029957 A1	03-01-2008
		TW 200808121 A	01-02-2008
		WO 2008000209 A1	03-01-2008
DE 202010000890 U1	08-04-2010	DE 202010000890 U1	08-04-2010
		US 2011169408 A1	14-07-2011
WO 2008050380 A1	02-05-2008	NONE	