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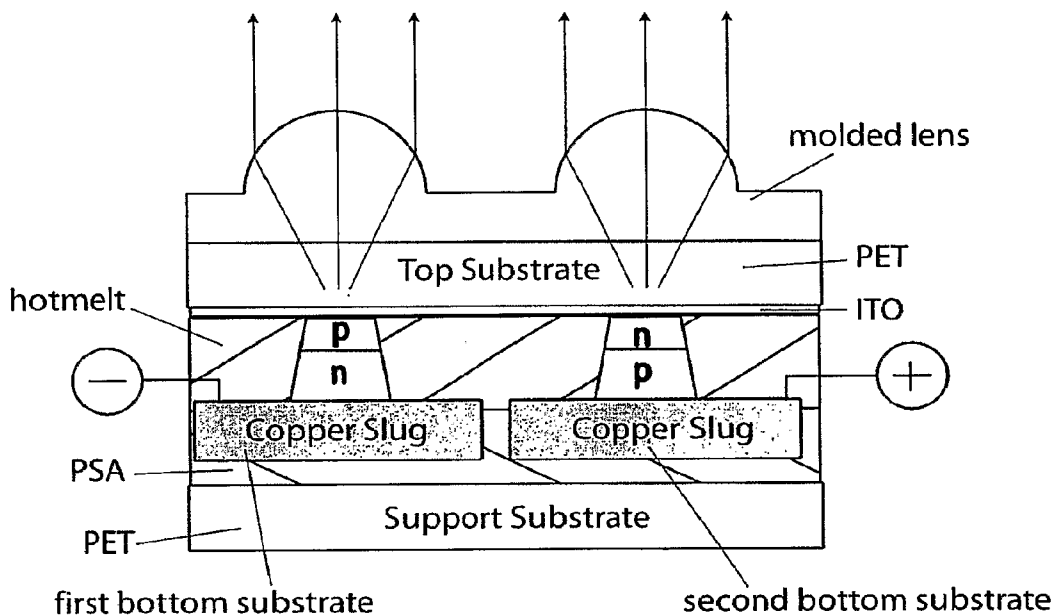
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(54) Title: SOLID STATE LIGHT SHEET AND BARE DIE SEMICONDUCTOR CIRCUITS WITH SERIES CONNECTED BARE DIE CIRCUIT ELEMENTS



(57) Abstract: An electronically active sheet includes a bottom substrate having a bottom electrically conductive surface. A top substrate having a top electrically conductive surface is disposed facing the bottom electrically conductive surface. An electrical insulator separates the bottom electrically conductive surface from the top electrically conductive surface. At least one bare die electronic element is provided having a top conductive side and a bottom conductive side. Each bare die electronic element is disposed so that the top conductive side is in electrical communication with the top electrically conductive surface and so that the bottom conductive side is in electrical communication with the bottom electrically conductive surface.

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## INTERNATIONAL SEARCH REPORT

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PCT/US2007/014147A. CLASSIFICATION OF SUBJECT MATTER  
INV. H01L25/075 H01L33/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
H01L G02F F21K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 465 256 A (MICRO PHOTONICS TECHNOLOGY [DK]) 6 October 2004 (2004-10-06)  paragraphs [0030] - [0034], [0043]; figure 2	1-3, 5-10, 12-17, 19,20
Y	WO 2005/099310 A (ARTICULATED TECHNOLOGIES LLC [US]; DANIELS JOHN J [US]; NELSON GREGORY) 20 October 2005 (2005-10-20) the whole document	1-20
Y	US 2005/127379 A1 (NAKATA JOSUKE [JP]) 16 June 2005 (2005-06-16) the whole document	1-20
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 Further documents are listed in the continuation of Box C. See patent family annex.

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005/233504 A1 (DOI MASATO [JP] ET AL) 20 October 2005 (2005-10-20) the whole document	
A	JP 61 089683 A (TOKYO SHIBAURA ELECTRIC CO) 7 May 1986 (1986-05-07) the whole document	

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/014147

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1465256	A	06-10-2004	NONE
WO 2005099310	A	20-10-2005	AU 2005232074 A1 20-10-2005 CA 2560701 A1 20-10-2005 EP 1736035 A2 27-12-2006 JP 2007531321 T 01-11-2007 KR 20070011419 A 24-01-2007
US 2005127379	A1	16-06-2005	CA 2463981 A1 01-05-2003 CN 1479946 A 03-03-2004 EP 1445804 A1 11-08-2004 WO 03036731 A1 01-05-2003 JP 3904559 B2 11-04-2007 TW 512542 B 01-12-2002
US 2005233504	A1	20-10-2005	CN 1698077 A 16-11-2005 JP 2004273596 A 30-09-2004 WO 2004079700 A1 16-09-2004 KR 20050118100 A 15-12-2005 TW 246107 B 21-12-2005
JP 61089683	A	07-05-1986	NONE