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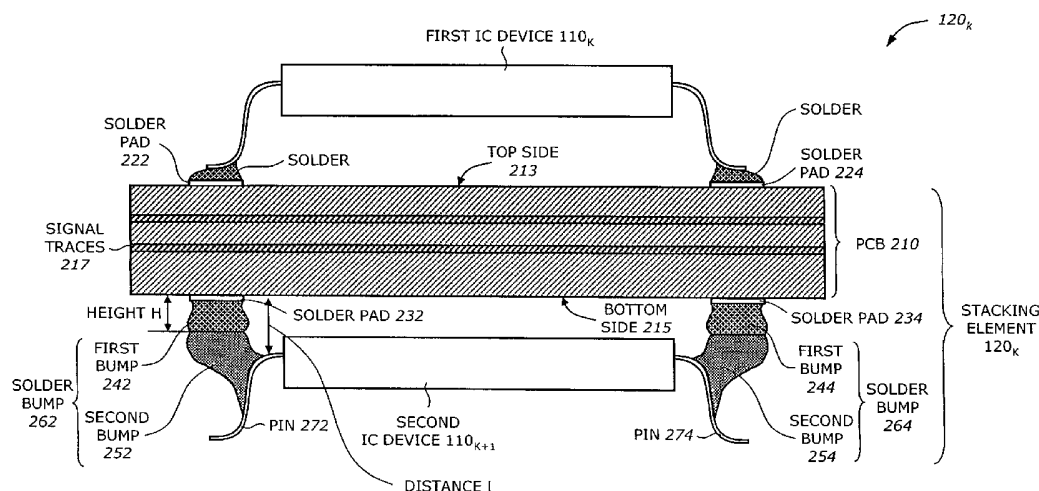
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(54) Title: STACKING MULTIPLE DEVICES USING DIRECT SOLDERING



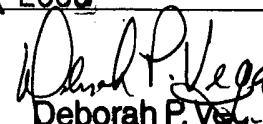
(57) Abstract: In one embodiment of the invention, a stacking element (120k) includes a printed circuit board (PCB) (210) and a plurality of solder bumps (242, 244). The PCB (210) has a top side (213) and a bottom side (215). The top side (213) is attached to first pins of a first device (110k). The plurality of solder bumps (242, 244) are on the bottom side (215) and attached to upper areas of second pins (272, 274) of a second device (110k+1) to provide electrical connections between the first pins and the second pins (272, 274).

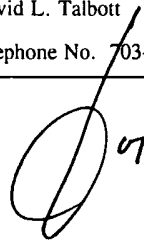
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/34923

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : H 05K 01/16 US CL : 174/260 According to International Patent Classification (IPC) or to both national classification and IPC</p>																							
<p>B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 174/260; 361/767, 769-779, 808; 439/65-75</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)</p>																							
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category *</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>US 4,074,342 A (HONN et al.) 18 February 1978 (18.02.1978)</td> <td>1, 9, 17</td> </tr> <tr> <td>Y,P</td> <td>US 6,271,480 B1 (YAMAGUTI et al) 07 August 2001 (07.08.2001)</td> <td>1-4, 7-12, 15-20, 23, 24</td> </tr> <tr> <td>Y</td> <td>US 5,349,495 A (VISEL et al) 20 September 1994 (20.09.1994)</td> <td>1-4, 7-12, 15-20, 23, 24</td> </tr> <tr> <td>Y</td> <td>US 5,412,538 A (KIKINIS et al) 02 May 1995 (02.05.1995)</td> <td>4, 7, 8, 12, 15, 16, 20, 23, 24</td> </tr> <tr> <td>A</td> <td>US 5,291,375 A (MUKAI) 01 March 1994 (01.03.1994)</td> <td>1-24</td> </tr> <tr> <td>A</td> <td>US 6,031,728 A (BEDOS et al) 29 February 2000 (29.02.2000)</td> <td>1-24</td> </tr> </tbody> </table>			Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	US 4,074,342 A (HONN et al.) 18 February 1978 (18.02.1978)	1, 9, 17	Y,P	US 6,271,480 B1 (YAMAGUTI et al) 07 August 2001 (07.08.2001)	1-4, 7-12, 15-20, 23, 24	Y	US 5,349,495 A (VISEL et al) 20 September 1994 (20.09.1994)	1-4, 7-12, 15-20, 23, 24	Y	US 5,412,538 A (KIKINIS et al) 02 May 1995 (02.05.1995)	4, 7, 8, 12, 15, 16, 20, 23, 24	A	US 5,291,375 A (MUKAI) 01 March 1994 (01.03.1994)	1-24	A	US 6,031,728 A (BEDOS et al) 29 February 2000 (29.02.2000)	1-24
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