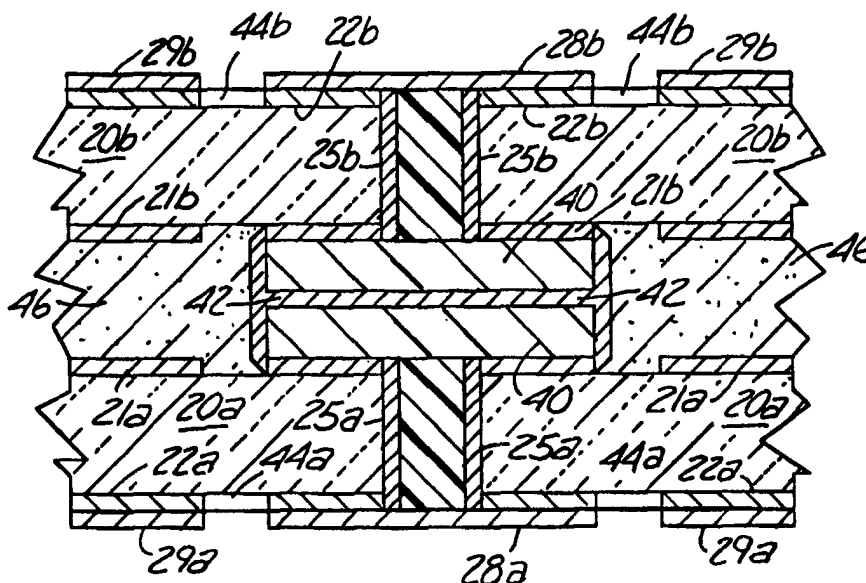




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(21) International Application Number: PCT/US98/02665 (22) International Filing Date: 13 February 1998 (13.02.98) (30) Priority Data: 08/799,128 13 February 1997 (13.02.97) US (71) Applicant: GENERAL DYNAMICS INFORMATION SYSTEMS, INC. [US/US]; 3190 Fairview Park Drive, Falls Church, VA 22042-4523 (US). (72) Inventors: PAI, Deepak, K.; 11516 22nd Avenue South, Burnsville, MN 55337 (US). DENNY, Ronald, R.; 6845 Bryant Avenue North, Brooklyn Center, MN 55430 (US). CHEVALIER, Jeanne, M.; 5444 South Park Drive, Savage, MN 55378 (US). SCHWARTZ, George, F., III; 12 Loring Road, Hopkins, MN 55305 (US). WEBSTER, Clark, F.; 712 East Fourth Street, Northfield, MN 55057 (US). LUFKIN, Robert, M.; 2241 Overlook Drive, Bloomington, MN 55431 (US). KRINKE, Terrance, A.; 2909 Troseth Road, Roseville, MN 55113 (US). (74) Agent: ANGUS, Robert, M.; Kinney & Lange, P.A., Suite 1500, 625 Fourth Avenue South, Minneapolis, MN 55415-1659 (US).		(81) Designated States: JP, KR. Published <i>With international search report.</i> (88) Date of publication of the international search report: 18 February 1999 (18.02.99)

(54) Title: LAMINATED MULTILAYER SUBSTRATES



(57) Abstract

A process of laminating large-layer-count (LLC) substrates (20a, 20b) includes formation of first and second vias through respective substrates (20a, 20b). A conductive path (21a, 21b, 25a, 25b, 22a, 22b, 28a, 28b) is formed through each of the respective vias, and posts (40, 42) are formed on the respective vias, electrically connected to the respective conductive path (21a, 21b, 25a, 25b, 22a, 22b, 28a, 28b). A non-flowable adhesive layer (46) having an aperture is provided between the LLC substrates (20a, 20b) so that the posts (40, 42) confront each other through the aperture. The LLC substrates (20a, 20b) are pressed together through the non-flowable adhesive layer (46) to mechanically bond them together, and so that the posts (40, 42) abut each other. Simultaneously, the posts (40, 42) are electrically bonded to each other in the aperture.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US98/02665**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) :H01L 21/44, 23/053

US CL :438/118, 614; 257/700

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)

U.S. : 438/108, 118, 119, 128, 612, 613, 614, 615, 616; 257/700, 690, 698

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 practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,146,674 A (FRANKENY et al) 15 September 1992 (15.09.92), entire document.	1-16
A	US 5,196,371 A (KULESZA et al) 23 March 1993 (23.03.93), entire document.	1-16
A	US 5,384,952 A (MATSUI) 31 January 1995 (31.01.95), entire document.	1-16
A	US 5,357,674 A (LUMBARD) 25 October 1994 (25.10.94), entire document.	1-16
A	US 4,818,728 A (RAI et al) 04 April 1989 (04.04.89), entire document.	1-16
A	US 4,814,855 A (HODGSON et al) 21 March 1989 (21.03.89), entire document.	1-16

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INTERNATIONAL SEARCH REPORT

International application No.
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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 4,612,083 A (YASUMOTO et al) 16 September 1986 (16.09.86), entire document.	1-16