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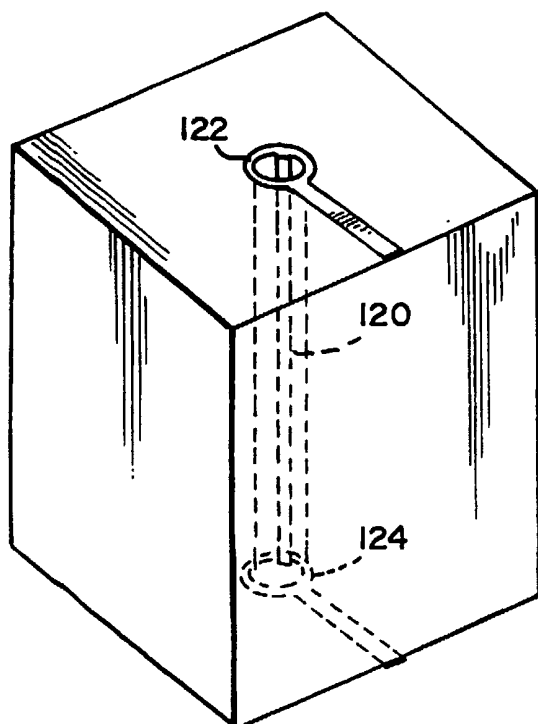
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- Declarations under Rule 4.17:**
— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations
— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

[Continued on next page]

(54) Title: PRINTED CIRCUIT BOARD HAVING INDUCTIVE VIAS



(57) Abstract: A printed circuit board (10) includes at least one via (40) providing a conductive path through the printed circuit board (10). The via (40) comprises at least one axially extending conductive strip (120) formed by cutting material from a metal barrel (42) lining the interior wall of the via (40).



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A. CLASSIFICATION OF SUBJECT MATTER

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

B. FIELDS SEARCHED

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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, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 017, no. 542 (E-1441), 29 September 1993 (1993-09-29) -& JP 05 152702 A (TOSHIBA CORP), 18 June 1993 (1993-06-18) abstract	1-4, 11, 12, 14-16, 18, 19
X	--- PATENT ABSTRACTS OF JAPAN vol. 1999, no. 14, 22 December 1999 (1999-12-22) -& JP 11 251702 A (NISSHA PRINTING CO LTD), 17 September 1999 (1999-09-17) abstract --- -/--	1, 2, 11, 12, 14, 15, 18, 19

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☒ Patent family members are listed in 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.
X	ANDERSON R C ET AL: "PRINTED CIRCUIT BOARDS WITH MULTICONDUCTOR THROUGH-HOLES" TECHNICAL DIGEST - WESTERN ELECTRIC, WESTERN ELECTRIC. NEW YORK, US, no. 41, January 1976 (1976-01), pages 1-2, XP002008961 the whole document	1,2,11, 12,14, 15,18, 19,21,26
Y	----	22
Y	PATENT ABSTRACTS OF JAPAN vol. 017, no. 069 (E-1318), 10 February 1993 (1993-02-10) & JP 04 273410 A (TAIYO YUDEN CO LTD), 29 September 1992 (1992-09-29) abstract	22
X	----	
X	PATENT ABSTRACTS OF JAPAN vol. 016, no. 271 (E-1218), 18 June 1992 (1992-06-18) -& JP 04 064278 A (SUMITOMO BAKELITE CO LTD), 28 February 1992 (1992-02-28) abstract	1-3,6, 10-12, 14-16, 18,19
X	----	
X	EP 0 467 698 A (NORTHERN TELECOM LTD) 22 January 1992 (1992-01-22) claims 1,2,7,12; figures	1-5, 11-20
X	----	
X	DE 23 23 529 A (KAMMERMEIER) 28 November 1974 (1974-11-28) claims; figures	1,2,5, 11-15, 17-20
X	----	
X	DE 28 09 841 A (ISKRA) 21 September 1978 (1978-09-21) claim 1; figures	1-4,6-9, 11,12, 14-16, 18-20
X	----	
X	US 4 838 800 A (LYNCH) 13 June 1989 (1989-06-13) the whole document	1-5, 11-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 05152702	A	18-06-1993	NONE	
JP 11251702	A	17-09-1999	NONE	
JP 04273410	A	29-09-1992	NONE	
JP 04064278	A	28-02-1992	NONE	
EP 0467698	A	22-01-1992	CA EP 2023361 A1 0467698 A2	21-01-1992 22-01-1992
DE 2323529	A	28-11-1974	DE 2323529 A1	28-11-1974
DE 2809841	A	21-09-1978	YU DE 66477 A1 2809841 A1	27-04-1983 21-09-1978
US 4838800	A	13-06-1989	NONE	