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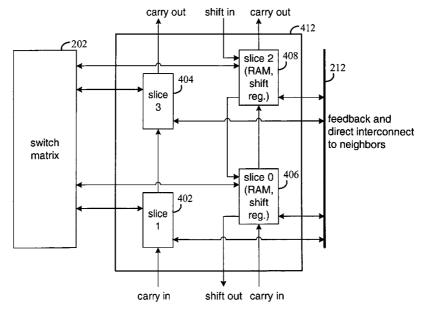
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(54) Title: PROGRAMMABLE LOGIC DEVICE HAVING HETEROGENEOUS PROGRAMMABLE LOGIC BLOCKS



(57) Abstract: A programmable logic device (PLD) having heterogeneous programmable logic blocks. In one embodiment, the PLD includes programmable interconnect circuitry and programmable input-output circuitry coupled to the programmable interconnect circuitry. An array of programmable logic blocks is coupled to the interconnect circuitry. Each programmable logic block includes a plurality of programmable logic elements coupled to the interconnect circuitry. Each of the programmable logic elements is programmable to implement a common set of functions, and at least one but less than all of the programmable logic elements is programmable to implement a set of supplemental functions.



INTERNATIONAL SEARCH REPORT

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CLASSIFICATION OF SUBJECT MATTER PC 7 H03K19/177 G110 G11C13/00 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) H03K G11C 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, WPI Data C. DOCUMENTS CONSIDERED TO BE RELEVANT Category ° Citation of document, with indication, where appropriate, of the relevant passages Belevant to claim No. χ US 6 118 298 A (ALLAIRE WILLIAM E ET AL) 1,4-6,812 September 2000 (2000-09-12) abstract; figures 19,20 χ US 4 758 985 A (CARTER WILLIAM S). 1,2,4,8 19 July 1988 (1988-07-19) abstract; figure 4A χ US 6 384 625 B1 (LEE ANDY L ET AL) 1,4,5,8 7 May 2002 (2002-05-07) abstract; figures 3,6 χ US 5 835 405 A (CHAN ALBERT L ET AL) 1,8 10 November 1998 (1998-11-10) abstract; figure 2 Further documents are listed in the continuation of box C. Patent family members are listed in annex. Special categories of cited documents: later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the "A" document defining the general state of the art which is not considered to be of particular relevance invention "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention filing date cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such docu-"O" document referring to an oral disclosure, use, exhibition or ments, such combination being obvious to a person skilled "P" document published prior to the international filing date but later than the priority date claimed in the art. "&" document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 13 November 2003 08/01/2004 Name and mailing address of the ISA Authorized officer European Patent Office, P.B. 5818 Patentlaan 2 Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016 Brown, J

INTERNATIONAL SEARCH REPORT

In tion on patent family members

PCT/US 03/17831

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
US 6118298 A	12-09-2000	US US US US DE DE EP JP	5889413 A 6288568 B1 6297665 B1 6323682 B1 6262597 B1 69711678 D1 69711678 T2 0940012 A1 2001504657 T 9823033 A1	30-03-1999 11-09-2001 02-10-2001 27-11-2001 17-07-2001 08-05-2002 26-09-2002 08-09-1999 03-04-2001 28-05-1998
US 4758985 A	19-07-1988	US JP JP CA DE DE GB GB JP JP JP	4706216 A 1754632 C 4047492 B 63001114 A 1255364 A1 3606406 A1 3645221 C2 3645224 C2 2171546 A ,B 2202355 A ,B 2202356 A ,B 1754622 C 4046488 B 61224520 A 6045912 A	10-11-1987 23-04-1993 04-08-1992 06-01-1988 06-06-1989 28-08-1986 23-04-1992 20-02-1992 28-08-1986 21-09-1988 21-09-1988 23-04-1993 30-07-1992 06-10-1986 18-02-1994
US 6384625 B1	07-05-2002	US US US US	6255846 B1 6084427 A 6121790 A 6278288 B1	03-07-2001 04-07-2000 19-09-2000 21-08-2001
US 5835405 A	10-11-1998	DE DE EP JP WO	69430320 D1 69430320 T2 0734573 A1 9509797 T 9516993 A1	08-05-2002 10-10-2002 02-10-1996 30-09-1997 22-06-1995