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(71) Applicant: **MOLEX INCORPORATED** [US/US]; 2222
Wellington Court, Lisle, IL 60532 (US).

(72) Inventors: **PANELLA, Augusto, P.**; 2569 Midland Drive,
Naperville, IL 60564 (US). **LOPATA, John, E.**; 325
Hemlock Lane, Naperville, IL 60540 (US). **MCGRATH,
James, L.**; 248 Wren Drive, Bloomingdale, IL 60108
(US). **DUTTA, Arindum**; 31408 Village Green Boule-
vard, Warrenville, IL 60555 (US).

(74) Agent: **PAULIUS, Thomas, D.**; Molex Incorporated,
2222 Wellington Court, Lisle, IL 60532 (US).

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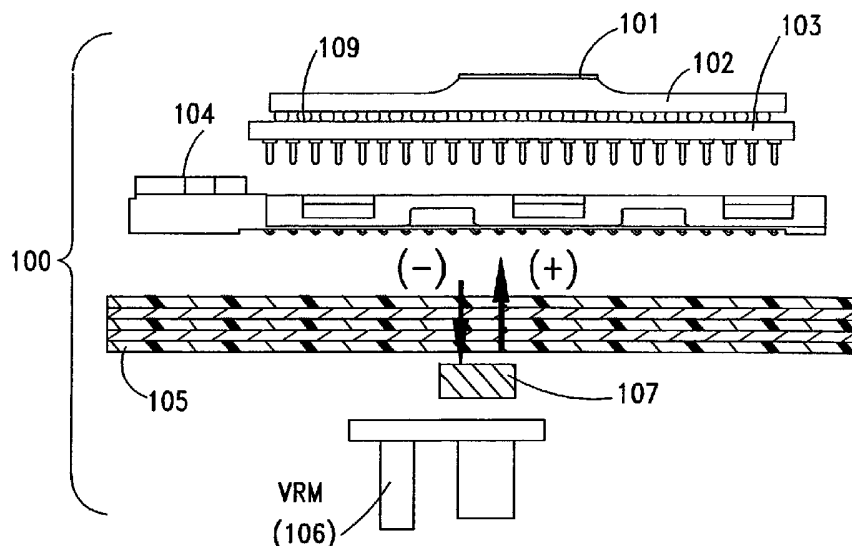
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(54) Title: POWER DELIVERY TO BASE OF PROCESSOR



(57) Abstract: A processor mounted to a circuit board is provided with regulated voltage through lower-inductance circuit board traces by mounting a voltage regulator module for the processor, on the side of the circuit opposite to the processor. Current from the voltage regulator is provided to the processor by way of one or more conductors between the regulator and processor that extend through the circuit board from one side to the other. Inductance attributable to lead length is reduced by locating the voltage regulator close to its load. Circuit board space on the processor side of the circuit board is increased by moving the voltage regulator to the opposite side.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

PCT/US 03/06488

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G06F1/26 G06F1/18

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)

IPC 7 G06F

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	US 5 481 436 A (WERTHER WILLIAM E) 2 January 1996 (1996-01-02) column 13, line 51 - line 55; claim 1; figures 10,11 ---	1-18
X	US 5 721 673 A (KLEIN DEAN A) 24 February 1998 (1998-02-24) column 4, line 3 - line 45; claim 1; figure 2A ---	19-22
A	US 5 734 555 A (MCMAHON JOHN FRANCIS) 31 March 1998 (1998-03-31) claim 1; figure 2 ---	1-18
A	US 5 734 555 A (MCMAHON JOHN FRANCIS) 31 March 1998 (1998-03-31) claim 1; figure 2 ---	1-22
A	US 6 046 911 A (PAGNANI DAVID PETER ET AL) 4 April 2000 (2000-04-04) claim 1; figure 1 ---	1-22
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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G document member of the same patent family

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European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Kirsten, K

INTERNATIONAL SEARCH REPORT

PCT/US 03/06488

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 01 65344 A (INCEP TECHNOLOGIES INC) 7 September 2001 (2001-09-07) claim 1; figure 12 ----	1-22
A	WO 89 05570 A (ROGERS CORP) 15 June 1989 (1989-06-15) claim 1; figure 4 -----	1-18

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/06488

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/US 03 06488

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-18

Assembly with processor and voltage regulator mounted on opposite sides of a substrate

2. Claims: 19-22

Assembly with processor and voltage regulator mounted on the same side of a substrate

INTERNATIONAL SEARCH REPORT

information on patent family members

PCT/US 03/06488

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