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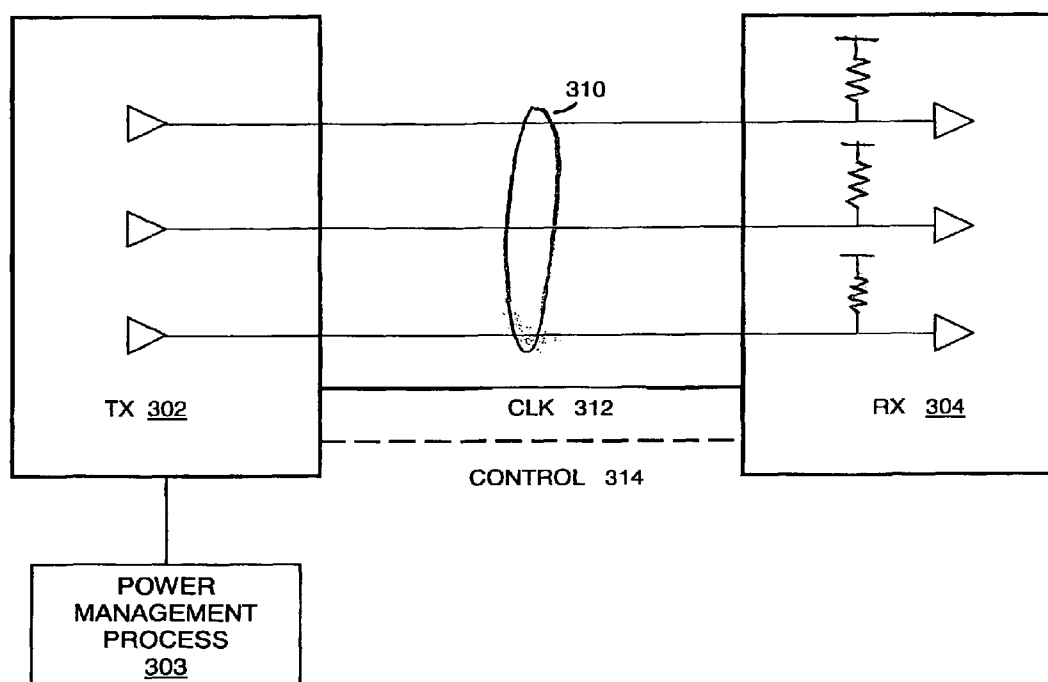
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[Continued on next page]

(54) Title: LOW POWER MODE UNIPOLAR CURRENT/VOLTAGE MODE INTERFACE



(57) Abstract: Embodiments of a power consumption reduction process for memory interfaces are described. A power management process reduces the amount of time that current flows in a high or low terminated, current or voltage mode unipolar bus interface by reducing the amount of time the bus remains in a logic state that requires current flow.

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PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F1/26 G06F1/04

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)
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	KONRAD ETSCHBERGER: "CONTROLLER-AREA-NETWORK" 2002, CARL HANSER VERLAG MÜNCHEN , MÜNCHEN , XP002455831	1,3
Y	page 59 - page 63 page 110 - page 118 page 131 - page 134	2
Y	US 6 029 216 A (HOGLUND TIMOTHY E [US] ET AL) 22 February 2000 (2000-02-22) column 2, line 4 - line 19 figure 4	2,5
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☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
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- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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- *&* document member of the same patent family

Date of the actual completion of the international search

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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.
X	PHILIPS SEMICONDUCTORS: "The I2C-bus specification, version 2.1" 2000, PHILIPS SEMICONDUCTORS , XP002464622	4,6
Y	page 5 – page 12 page 23 page 32	5
X	----- US 2005/216607 A1 (MUNGUIA PETER R [US]) 29 September 2005 (2005-09-29) abstract page 1, paragraphs 3,7-13 figure 2	7-18
A	----- US 6 370 630 B1 (MIZUYABU CARL K [CA] ET AL) 9 April 2002 (2002-04-09) the whole document	7-18
A	----- US 6 848 058 B1 (SINCLAIR DAVID E [CA] ET AL) 25 January 2005 (2005-01-25) the whole document	7-18
A	----- US 6 079 022 A (YOUNG BRUCE [US]) 20 June 2000 (2000-06-20) abstract column 1, line 44 – column 3, line 20	19-21
A	----- US 6 438 159 B1 (UBER RICHARD [US] ET AL) 20 August 2002 (2002-08-20) the whole document	19-21
A	----- US 6 185 692 B1 (WOLFORD ROBERT RUSSELL [US]) 6 February 2001 (2001-02-06) the whole document	19-21
A	----- US 2004/205370 A1 (MCDEVITT HUGH W [US] ET AL) 14 October 2004 (2004-10-14) the whole document	19-21
A	----- WO 2005/052820 A (IBM [US]; HILGENDORF ROLF [DE]; LICHTENAU CEDRIC; PFLUEGER THOMAS [DE]) 9 June 2005 (2005-06-09) the whole document	19-21

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/008438

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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 No. III Observations where unity of invention is lacking (Continuation of item 3 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 allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers 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 and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-3

Terminating an interface to high.

2. claims: 4-6

Transmitting a data burst wherein each bit of the data burst is synchronized to a designated edge of a full speed clock signal.

3. claims: 7-18

Transferring data at different clock speeds.

4. claims: 19-21

Determining a minimum pulse width for transmission of a valid data bit, wherein the minimum pulse width is a fraction of a first frequency.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/008438

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
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US 2005216607	A1	29-09-2005	NONE		
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