



# SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application number:  
EP 18 78 38 74

Classification of the application (IPC):  
H03K 19/0956, H03K 19/017, H03K 19/177, H03K 19/0948

Technical fields searched (IPC):  
H03K

| DOCUMENTS CONSIDERED TO BE RELEVANT |                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Category                            | Citation of document with indication, where appropriate, of relevant passages                                                                                                                                                                                                                                                                                                                                                 | Relevant to claim |
| A                                   | US 4405870 A (EDEN RICHARD C [US]) 20 September 1983 (1983-09-20)<br>* column 5, line 39 - column 6, line 39; figure 2 *                                                                                                                                                                                                                                                                                                      | 1-12              |
| X                                   | US 2006044018 A1 (CHANG AUGUSTINE W [US])<br>02 March 2006 (2006-03-02)<br>* paragraph [0115] - paragraph [0125]; figure 23D *<br>* figure 23B *                                                                                                                                                                                                                                                                              | 1-12              |
| X                                   | <b>Kai Hwang</b> : "Integrated Circuits and Digital Devices - Computer Arithmetic, Principles, Architecture and Design, Chapter 2" In: "Integrated Circuits and Digital Devices - Computer Arithmetic, Principles, Architecture and Design, Chapter 2",<br>New York John Wiley & Sons, 01 January 1979 (1979-01-01)<br>pages 31-68, ISBN: 978-0-471-03496-4, XP055569640<br>* page 31 - page 32; figure 2.23 *<br>* page 60 * | 1-12              |
| X                                   | US 5451890 A (MARTIN ALAIN J [US] ET AL)<br>19 September 1995 (1995-09-19)<br>* column 4 - column 6; figures 5a, 11a *                                                                                                                                                                                                                                                                                                        | 13-15             |

The supplementary search report has been based on the last set of claims valid and available at the start of the search.

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|---------------------------|---------------------------------------------------|----------------------------|
| Place of search<br>Munich | Date of completion of the search<br>06 March 2021 | Examiner<br>Riccio, Ettore |
|---------------------------|---------------------------------------------------|----------------------------|

## CATEGORY OF CITED DOCUMENTS

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|---------------------------------------------------------------------------------|------------------------------------------------------------------------|
| X: particularly relevant if taken alone                                         | P: intermediate document                                               |
| Y: particularly relevant if combined with another document of the same category | T: theory or principle underlying the invention                        |
| A: technological background                                                     | E: earlier patent document, but published on, or after the filing date |
| O: non-written disclosure                                                       | D: document cited in the application                                   |
| & : member of the same patent family, corresponding document                    | L: document cited for other reasons                                    |

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### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

#### 1. claims: 1-12

An integrated circuit implementing a NAND gate system, the integrated circuit comprising: a first input coupled to a cathode of a first p-type Schottky diode; x additional inputs coupled to x respective cathodes of x additional p-type Schottky diodes; a first n-type transistor including a gate node that is coupled to an anode of the first p-type Schottky diode and x respective anodes of the x additional p-type Schottky diodes; and a p-type transistor including a gate node that is coupled to the anode of the first p-type Schottky diode and x respective anodes of the x additional p-type Schottky diodes; a second n-type transistor including a gate node that is coupled to the cathode of the first p-type Schottky diode; and x additional n-type transistors including x respective gate nodes that are coupled to the x respective cathodes of the x additional p-type Schottky diodes; wherein an output is coupled to a non-gate node of the first n-type transistor and a non-gate node of the p-type transistor

#### 2. claims: 13-15

An integrated circuit implementing an x-input logic gate, the integrated circuit comprising: a plurality of Schottky diodes that includes x Schottky diodes; and a plurality of source-follower transistors that includes x source-follower transistors, wherein: each respective source-follower transistor of the plurality of source-follower transistors includes a respective gate node that is coupled to a respective Schottky diode; and a first source-follower transistor of the plurality of source-follower transistors is connected serially to a second source-follower transistor of the plurality of source-follower transistors

All further search fees have been paid within the fixed time limit. The present (supplementary) European search report has been drawn up for all claims.

The supplementary search report has been based on the last set of claims valid and available at the start of the search.

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# ANNEX TO SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application number:  
EP 18 78 38 74

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on 06-03-2021.  
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| Patent document cited<br>in search report |    | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|-------------------------------------------|----|---------------------|----------------------------|---------------------|
| US 4405870                                | A  | 20-09-1983          | NONE                       |                     |
| US 2006044018                             | A1 | 02-03-2006          | US 2006044018 A1           | 02-03-2006          |
|                                           |    |                     | US 2008036503 A1           | 14-02-2008          |
|                                           |    |                     | US 2008061824 A1           | 13-03-2008          |
| US 5451890                                | A  | 19-09-1995          | NONE                       |                     |