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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))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

— *of inventorship (Rule 4.17(iv))*

[Continued on next page]

(54) Title: DIRECTLY HEATED RF PHASE CHANGE SWITCH

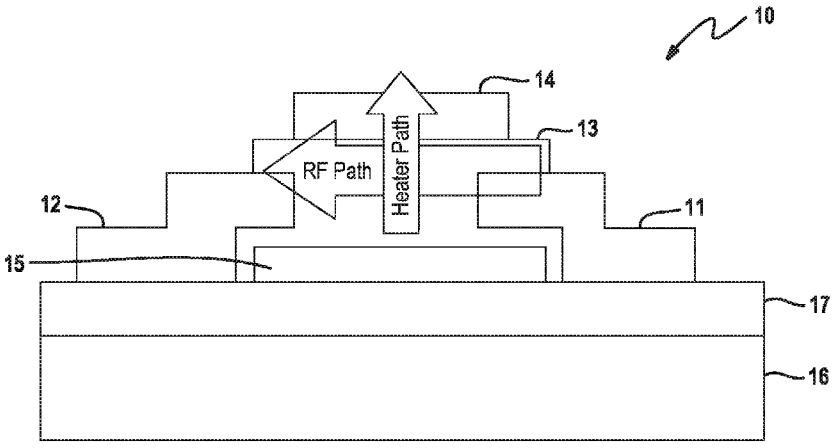

FIG. 1B

(57) Abstract: An RF switch is provided with a direct heating method. The RF switch is comprised of two RF electrodes disposed on opposing sides of a phase change element. Depending on the state of the phase change material, the RF electrodes form a conductive path through the phase change material for an RF signal. To control the state of the phase change material, the RF switch further includes a heater formed from two heater electrodes. The two heater electrodes are configured to draw a current through the phase change element in a direction transverse to the conductive path.

WO 2016/028362 A3

WO 2016/028362 A3

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

H01L 27/24(2006.01)i, H01L 27/02(2006.01)i

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)
H01L 27/24; H01L 21/768; H01L 29/74; H01L 45/00; G11C 11/00; H01L 27/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: RF switch, phase change, heater electrode

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MUZHI WANG et al. A Low-Loss Directly Heated Two-Port RF Phase Change Switch . Electron Device Letters, IEEE. April 2014, Vol 35, Issue 4, pages 491-493, ISSN 0741-3106. See pages 1-2 and figures 1-2.	1-19
A	YONGHYUN SHIM et al. Non-Linearity Analysis of RF Ohmic Switches Based on Phase Change Materials. Electron Device Letters, IEEE. March 2014, Vol 35, Issue 3, pages 405-407, ISSN 0741-3106. See pages 1-3 and figure 5.	1-19
A	US 2006-0102927 A1 (SHINOBU FUJITA et al.) 18 May 2006 See claim 1 and figures 2-4.	1-19
A	US 2010-0238720 A1 (DAVID TIO CASTRO et al.) 23 September 2010 See claim 1 and figures 8-27.	1-19
A	US 2010-0108977 A1 (SUNG MIN YOON et al.) 06 May 2010 See claim 1 and figures 1A-1B.	1-19

☐ 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 application or patent but published on or after the international filing date
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"T" 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 invention
"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
"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 documents,such combination being obvious to a person skilled 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
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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