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[Continued on next page]

(54) Title: SEMICONDUCTOR DEVICE

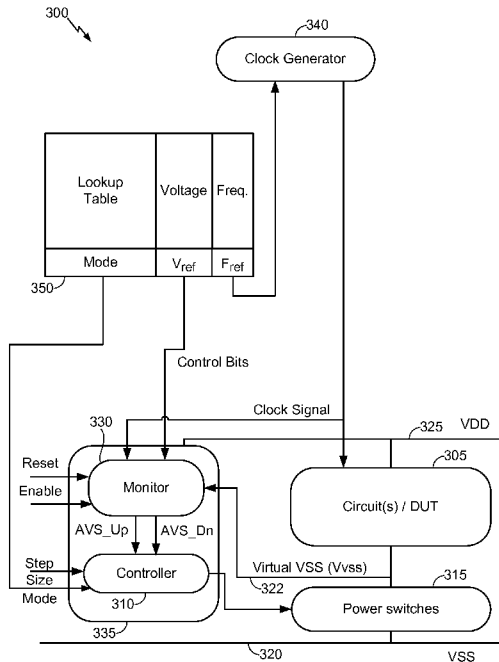


FIG. 3A

(57) Abstract: A semiconductor device having an on-chip voltage regulator to control on-chip voltage regulation and methods for on-chip voltage regulation are disclosed. A semiconductor device includes a circuit positioned between a ground bus and a power bus. A power switch array is positioned between the circuit and one of the ground bus or the power bus to generate a virtual voltage across the circuit. A monitor is positioned between the ground bus and the power bus. The monitor is configured to simulate a critical path of the circuit and to output a voltage adjust signal based on an output of the simulated critical path. A controller is configured to receive the voltage adjust signal and to output a control signal to the power switch array to control the virtual voltage.

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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))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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ADD.
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 H03K
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 practicable, 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	Relevant to claim No.
X	US 2009/115258 A1 (FLYNN DAVID WALTER [GB] ET AL) 7 May 2009 (2009-05-07)	1-3, 6-32, 35-52
Y	abstract; figure 1	4,5,33, 34
Y	----- US 7 417 482 B2 (ELGEBALY MOHAMED [US] ET AL) 26 August 2008 (2008-08-26) cited in the application abstract; figures 4a,4b	4,5,33, 34
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Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Arias Pérez, Jagoba

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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.
A	US 2005/218871 A1 (KANG INYUP [US] ET AL) 6 October 2005 (2005-10-06) abstract; figures 1-4 -----	1-52

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