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**May et al.**

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(54) **METHOD AND APPARATUS FOR ENABLING  
A STAND ALONE INTEGRATED CIRCUIT**

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(58) **Field of Search** ..... 327/142, 143,  
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(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,073,874 A \* 12/1991 Yamada et al. .... 365/226  
5,483,187 A \* 1/1996 Jang ..... 327/143  
5,696,461 A \* 12/1997 Germini ..... 327/143  
5,917,255 A \* 6/1999 Ciccone ..... 307/130

5,991,887 A \* 11/1999 Ezell ..... 713/340

\* cited by examiner

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(57) **ABSTRACT**

A method and apparatus for enabling a stand-alone integrated circuit (IC) includes processing that begins by establishing an idle state that holds at least a portion of the stand-alone integrated circuit in a reset condition when a power source is operably coupled to the stand-alone integrated circuit. A stand-alone integrated circuit includes generally an on-chip power converter, a reset circuit and some functional circuitry, which may be a microprocessor, digital signal processor digital circuitry, state machine, logic circuitry, analog circuitry, and/or any type of components and/or circuits that perform a desired electrical function. When a power enable signal is received, the on-chip power converter is enabled to generate at least 1 supply from the power source. The processing continues by enabling functionality of the stand-alone integrated circuit when the at least one supply has substantially reached a steady state condition.

**20 Claims, 4 Drawing Sheets**

