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November 20, 2018

SMART POWER MANAGEMENT FOR OPEN SLOT APPLICATION

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Recommended Citation

INC, HP, "SMART POWER MANAGEMENT FOR OPEN SLOT APPLICATION", Technical Disclosure Commons, (November 20, 2018)

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Smart Power Management for Open Slot Application

In current PC systems, there are a lot of open slots which allow an end-user to extend the system features, for example, graphics cards, SATA/USB storage cards, NIC cards, Type-C cards, etc. Most of the add-on cards are not required to work during sleep, hibernate, or shutdown states, but they will still consume the system power in those system states.

This invention is to provide a comprehensive solution, including hardware (HW) and software (SW), to identify the device type (installed in an open-slot), monitor power, and cut OFF the unnecessary standby power to reduce the system power consumption.

The challenges and advantages are listed as below:

1. Energy certification issue.

Desktop systems can have various third-party open slot devices be installed, and it may be difficult to control or manage the power consumption of such devices for each system state. Some devices will still contribute to power consumption, which can easily exceed energy regulatory specifications, especially during sleep mode and off mode.

2. Comprehensive solution, including HW and SW

Implement the HW power monitor, switch circuit and I2C interface, and SW configuration control, to disable the non-used device and reduce power.

3. Easy for R&D debugging and break down power distribution.

Design with a switch circuit on each open slot, which may be helpful for R&D debugging for the power budget and power consumption issue.

This invention is a system solution to solve the sleep, hibernate, or shutdown state power consumption issue. Those states' power consumption is a key for energy related certification, e.g., ErP lot 3, Energy star, and so on.

DESCRIPTION OF THE DRAWINGS

Fig. 1 illustrates a block diagram of a control flow chart of the present invention.

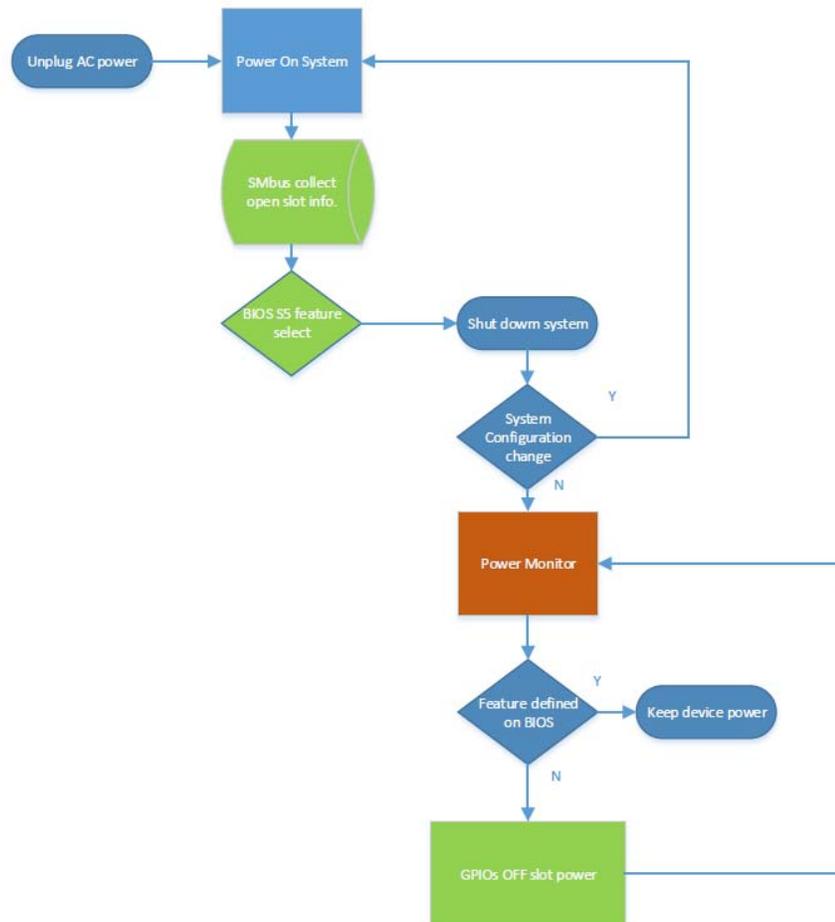
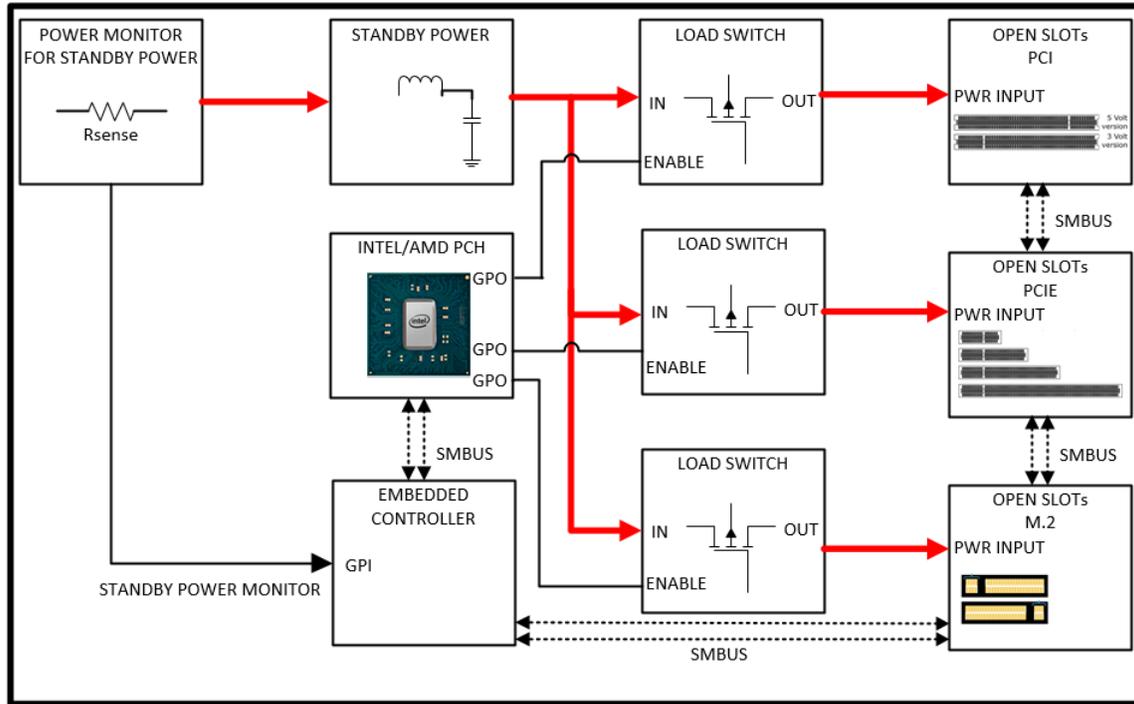


Fig. 2 illustrates a block diagram of a demo board of the present invention.



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