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PREVENT UNEXPECTED MAGNET TRIGGER CLAMSHELL SENSOR TO ENHANCE USER EXPERIENCE

HP INC

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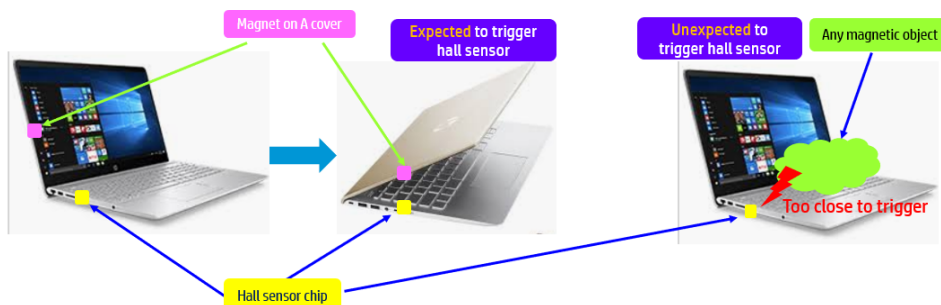
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Invention Title:

Prevent unexpected Magnet trigger clamshell hall sensor to enhance user experience

Abstract:

In general laptop design, it has hall sensor chip to make system enter sleep mode to turn-off internal display once the angle is under 15~20 degree in general between Cover and Base. Based on the design perspective, hall sensor is triggering by magnetic object. Laptop will design a magnet on cover side to do such kind event. In fact, which means that we don't have any prevention solution to end user move magnetic something to close this hall sensor chip. So, the laptop will enter sleep mode, turn-off back light or something else in their setup once this unexpected magnetic object to close hall sensor chip location.



Problem Solved:

There is an idea/concept solution based on x360 platform. X360 notebook has capability to monitor hinge angle (the angle between Cover and Base). So that we can design a simple circuit to block clamshell hall sensor and release it when needs. For example, notebook active pen usually had magnet to attach on side location. It is easier to trigger hall sensor IC as unexpected behavior.

Prior Solutions:

It is expected behavior if end user place magnetic object close hall sensor chip.

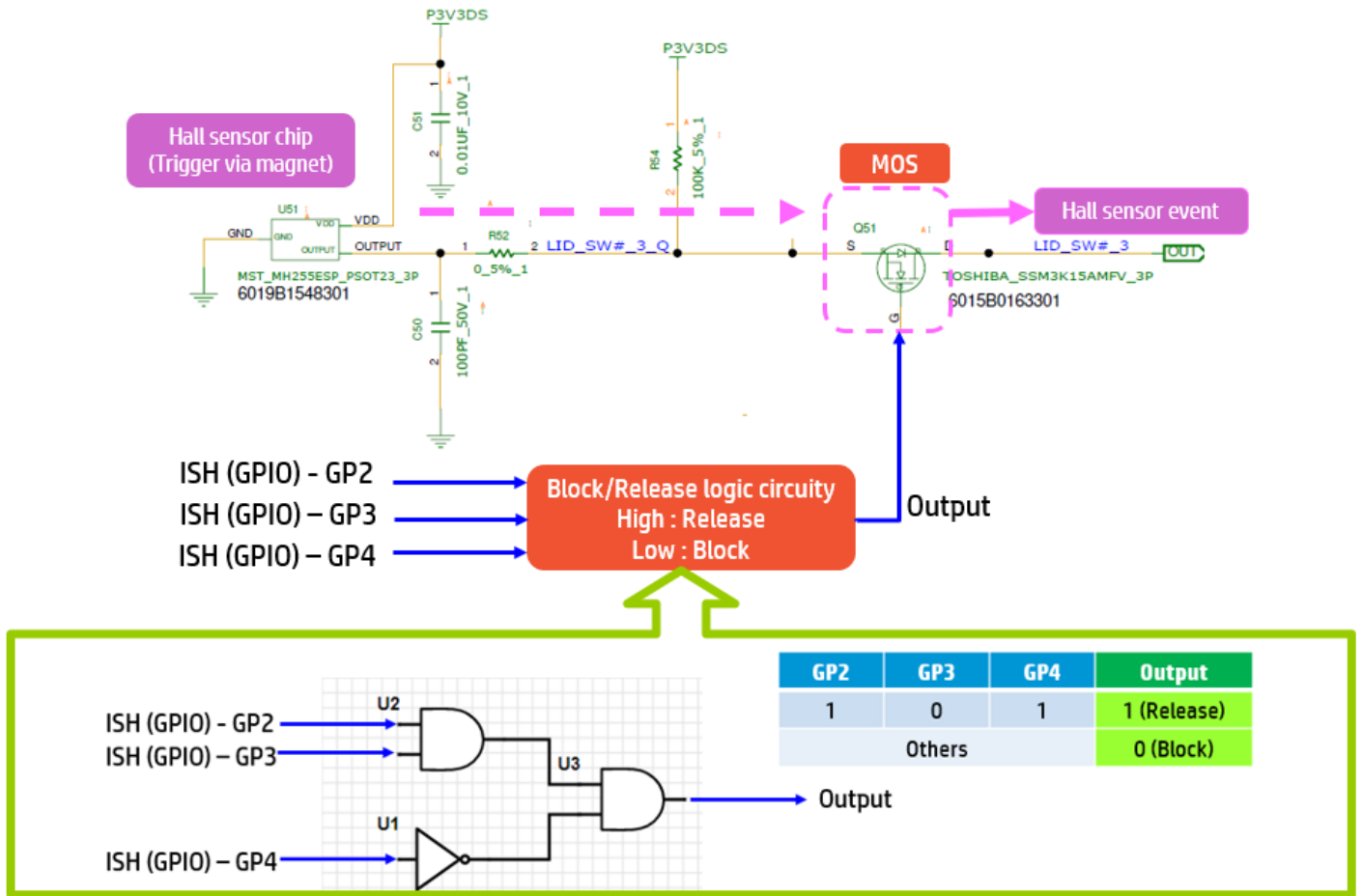
Descriptions:

To prevent unexpected trigger Hall sensor, it needs both SW and HW support.

- SW perspective – Based on ISH (Intel Sensor Hub) report mode (ISH_GP2/3/4) which is HP definition, we can add one mode (as below table most left column) to indicate not trigger hall sensor angle
- HW perspective – Based on SW mode, using GP2,3,4 GPIO to design logic circuitry to block/release hall sensor trigger event as definition angle
- The new mode angle could be discussed more detail by user behavior.

Implementation

- Circuitry: Add MOS and Block/Release logic circuitry as following



Advantages:

It could enhance laptop user experience to prevent unexpected scenarios.

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