A PHYSICAL CAMERA SWITCH DESIGN OF PRIVACY

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A Physical Camera Switch Design of Privacy

Abstract

The Privacy Camera has become an important feature in commercial notebook area. There are many physical shutter camera designs that can satisfy the need. However, those physical shutter designs are all built in hinge-up which will have several side effects or trade-offs. The pattern is to present a camera switch feature that is built on system, which will overcome the trade-offs and side-effects of previous ones.

Problem solved

System Camera Switch design solves following scenarios:

1. This feature could be leveraged between Touch and non-touch
2. No impact on hinge-up stack-up (No Z increased needed)
3. Easy for users to operate as feature is on system
4. Will Not compromise hinge-up ID intent

Prior solutions

In our previous platform, the camera shutter feature were built hinge up which needs additional Z direction stack-up and ID feature no matter touch or non-touch, but current improved solution is to build the physical switch in system side, which will need no Z-stack up and impact no ID feature.

Prior and Current Solutions

<table>
<thead>
<tr>
<th>Prior Camera Feature</th>
<th>External Shutter Camera Slider</th>
<th>Internal Shutter Camera Slider</th>
<th>System Camera Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Physical</td>
<td>Physical</td>
<td>Physical</td>
</tr>
<tr>
<td>Placement</td>
<td>Feature built in hinge-up</td>
<td>Feature built in hinge-up</td>
<td>Feature built in System</td>
</tr>
<tr>
<td>Platform</td>
<td>Optimized for Non-Touch</td>
<td>Optimized for Touch</td>
<td>Optimized both for Touch &amp; Non-Touch</td>
</tr>
<tr>
<td>Pros</td>
<td>Straightforward feature for user to tell</td>
<td>Obvious and Straightforward feature</td>
<td>Both for touch and Non-touch</td>
</tr>
<tr>
<td></td>
<td>- No software tuning needed</td>
<td>- Low Cost (No magnet needed)</td>
<td></td>
</tr>
<tr>
<td>Cons</td>
<td>Impact on stack-up</td>
<td>Impact on stack-up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Cost impact - Need Magnet to function</td>
<td>- User hard to switch as feature is small due to ID constraint</td>
<td></td>
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<tr>
<td></td>
<td>- End user might tamper with shutter</td>
<td>- Compromise ID (Parting line)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- For non-touch only</td>
<td>- For touch only</td>
<td></td>
</tr>
</tbody>
</table>

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**Description**

A pogo pin is to be used in side buttons linked to a cable connecting to camera module in hinge-up. When user slide up, the cable will disconnect from the camera connector on the motherboard, then the camera function is off and gone. On the other hand, when user slide down, the side button linked to the cable will re-connect to the connector and trigger the camera function back.

**PROCESS**

POGO male side along the camera switch is contacting the POGO female side, so the camera signal could successfully transmit to the main PCB.

POGO male side along the camera switch is not contacting the POGO female side by switching upwards, so the camera signal could NOT successfully transmit to the main PCB.
Advantages

1. Physical camera switch turning camera on and off could avoid hacker (Digital or electrical switch could NOT totally avoid hacker)
2. Easy scenario for end user to operate without needing end users adjusting their hand to hinge-up for turning off camera feature
3. Feature won't drop out as it is internal feature not liking camera shutter design (a patch that attach on the hinge-up in the camera lens area)

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