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IMPROVED SUPER I/O CONTROLLER

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Improved Super I/O Controller

Abstract: An improved Super I/O chip supports a USB keyboard in legacy mode while utilizing the PS/2 pins of the chip for an additional function.

This disclosure relates to the field of computers.

A technique is disclosed for a Super I/O chip that keep the PS/2 controller active to support USB keyboard in legacy mode while sharing the silicon and pinouts of the chip to provide an additional function.

The traditional PS2 keyboard controller of the Super I/O controller chip can't share the chip pinouts even when the system only supports an USB keyboard without the PS/2 interface, but still need to support legacy mode. The pins need to be reserved in order to use the PS2 keyboard controller to support the USB keyboard in legacy mode. The PS/2 controller needs to have pull high resistors on signal lines (KBDAT, KBCLK, MSDAT, and MSCLK) in order to maintain the proper logic level even if no PS/2 mouse or keyboard is connected. However, since there is no PS/2 mouse or keyboard, it would be desirable to free up the external pins to be used by other functions, such as GPIO for example.

Prior solutions to sharing the chip pinouts disadvantageously add more controller registers and gating counts to the silicon, which in turn adds to the cost.

According to the present disclosure, and as understood with reference to the Figure, a multiplexer feature allows the PS/2 signal lines of the Super I/O chip to be used for another function such as GPIO, while the PS/2 controller in the chip remains functional to support operation of the USB keyboard in legacy mode.

Multiplexors 20, 30 and pull-up resistor 40 are disposed in the Super I/O chip 10. When the PS2 controller 50 is active to support the USB keyboard/mouse in legacy mode, and it is desired to use the external pin 60 to provide another function 80 on the pin 60, a control signal 90 enables the multiplexor 20 and pullup path through resistor 40 inside the chip 10 to keep the signals of the PS/2 controller 50 at a static level without floating. Then the control signal 70 is applied to the multiplexor 30 to provide the function 80 on the pin 60.

This circuit is replicated for additional pins as desired.

The disclosed technique advantageously allows the pins of PS/2 signals of a Super I/O controller to be used for other functions while still supporting the USB keyboard in legacy mode. Thus, it provides more functionality in a single Super I/O chip at an equivalent or lower cost.

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