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A Method to Allow Software Detection of Multiple Different Chassis Types That Use a Common PCA

Travis D. Bishop
Hewlett Packard Enterprise

Vincent W. Michna
Hewlett Packard Enterprise

Tom Rhodes
Hewlett Packard Enterprise

Kevin G. Depew
Hewlett Packard Enterprise

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A Method to Allow Software Detection of Multiple Different Chassis Types That Use a Common PCA

Abstract

Many computer system designs today implement a common printed circuit board assembly that is used in more than one mechanical chassis. This invention describes a design method that allows software to identify in which chassis the PCA has been installed. The system software is able to determine the chassis type by detecting a set of mounting screw connections that are unique for each particular chassis.

Description

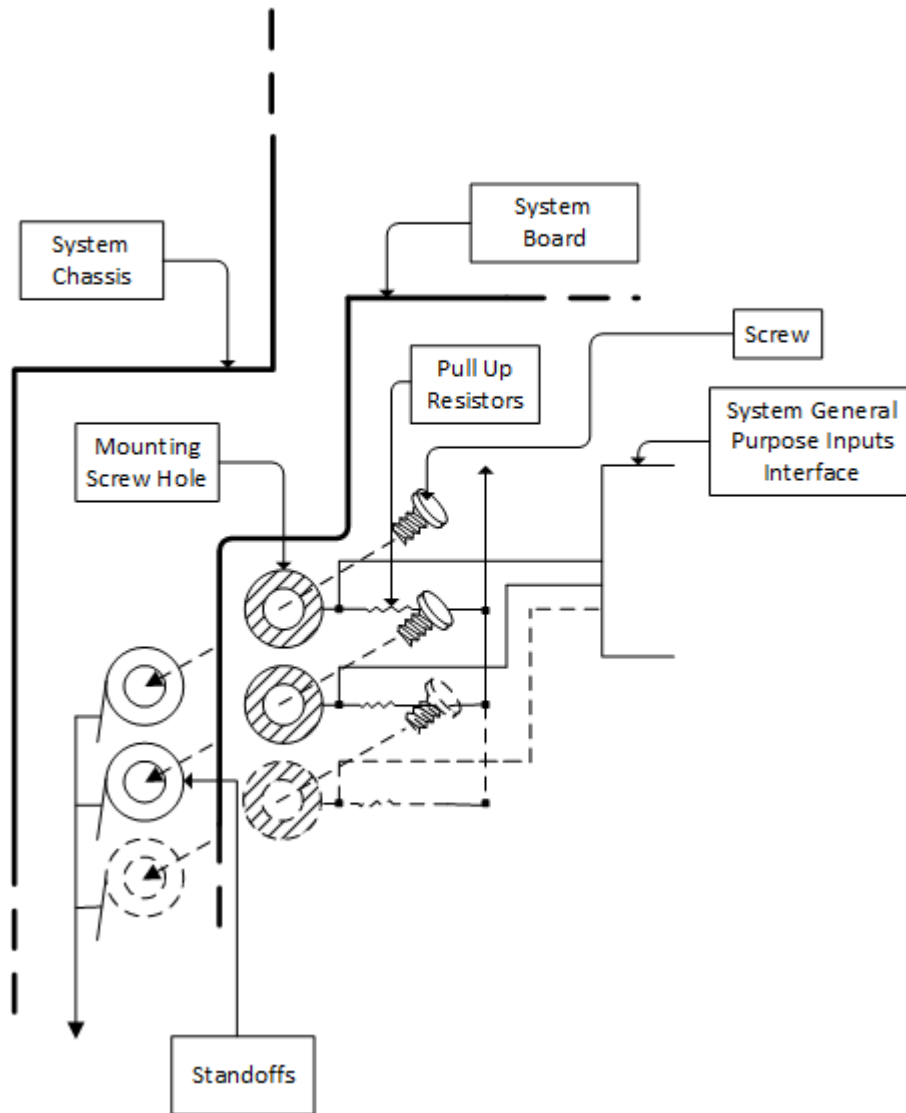
Computer manufacturers can save money by allowing a computer system board to be installed into more than one mechanical chassis to create new products. These computer system boards contain manufacturing data describing the type of system. This data is stored in a storage element on the board such as, but not limited to, an EEPROM. Since the manufacturing process to create a computer system board and the assembly of the computing system can occur at different sites these computer boards are stored for later assembly either locally or another site. Moreover these computing system boards are also stored at different sites for spare replacements for customers. Because it is not necessarily known which chassis a particular system board is going to be installed, the data stored in the storage element may not be correct. It is costly to reprogram the storage element before it is installed in the chassis.

One method to address this issue is to use DIP switches or jumpers on the system board which can be changed when the product is assembled. Some of the disadvantages of this are; the cost to manually set the switches in the production line and when the spare units are sent out for service. Also, there is the potential of the switches or jumpers being set incorrectly.

This solution would be to create a collection of grounding screw holes on the system board with a set of installed screws and standoffs on the system chassis could be read by the system initialization firmware to determine the chassis type. Chassis type would simply be encoded by the screws being installed for a particular chassis. These could be decoded by the system firmware and determine the chassis type.

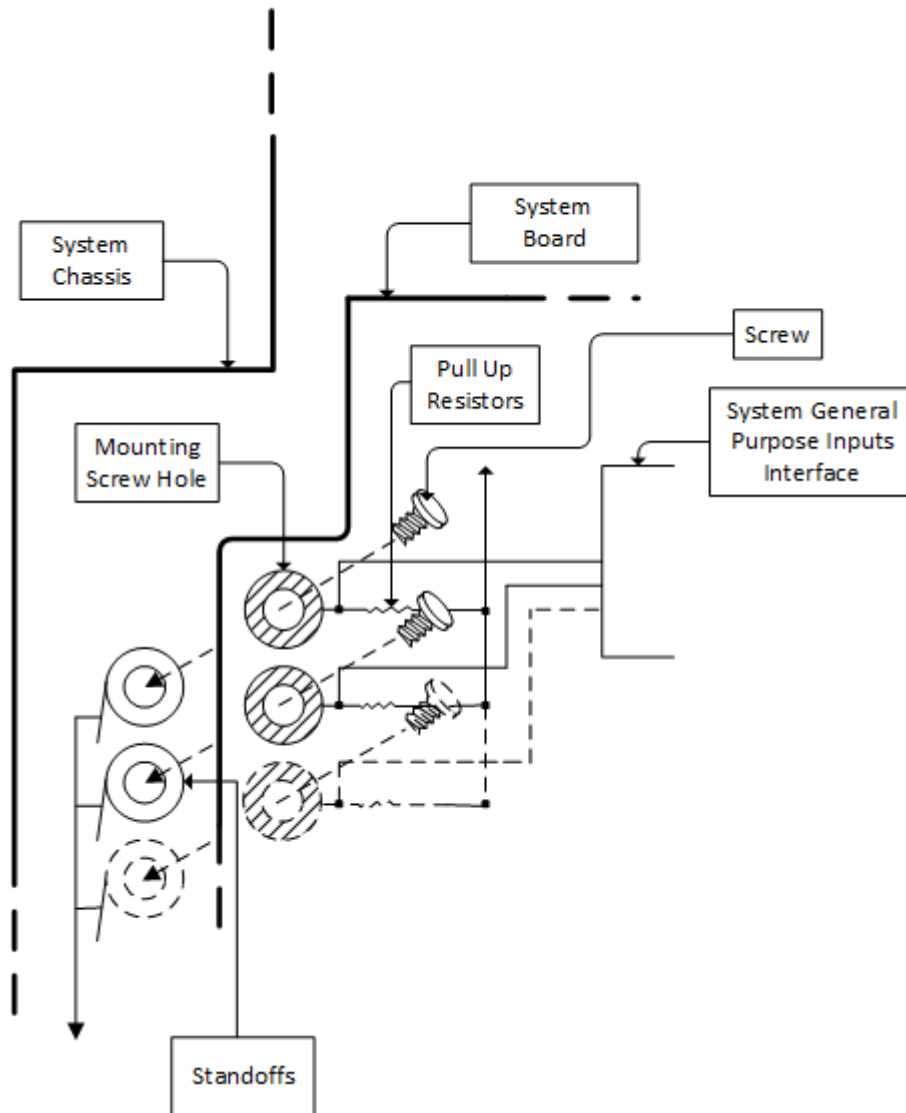
There are two construction items associated with this solution. First the system board would need to include a series of screw holes that are connected to the power rail through a pull up resistor. The screw holes would also have to be routed through the board to some general purpose input/output pins (or equivalent) so that system firmware could read the type of chassis the system board is installed. The value of the pull up resistors is outside of the scope of this patent as the values would greatly depend on the system architecture. Secondly the chassis would need to be modified such that (a) standoff(s)

would be in alignment with the corresponding screw hole on the system board, or set of screw holes. Thus when a particular chassis is chosen for a different board a screw (or set of screws) is (are) placed in the corresponding holes on the system board that corresponds to the chassis. When a screw(s) is installed in the system board to the chassis standoff it grounds the pin(s) and the value is able to be read by system FW/SW from the general purpose register enabling the FW/SW to determine the chassis.



The primary advantage of this design is cost. Other solutions require either FW updates, or additional steps to the factory process to set the chassis type. Additionally this solution is a very simple solution, and does not require any testing of Firmware or Software, it simple requires that enough holes are placed in the system board to account for all of the chassis types. It could be encoded in some format such as binary to minimize the number of holes

needed to describe all of the chassis'. For example up to 4 chassis could be described with two screw holes, and 8 could be described with 3.



Disclosed by:

Travis D Bishop – Hewlett Packard Enterprise
Vincent W Michna – Hewlett Packard Enterprise
Tom Rhodes Inventor – Hewlett Packard Enterprise
Kevin G Depew Inventor – Hewlett Packard Enterprise