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Reduced Stub DIMM Pin Design

John Norton
Hewlett Packard Enterprise

Reza Bacchus
Hewlett Packard Enterprise

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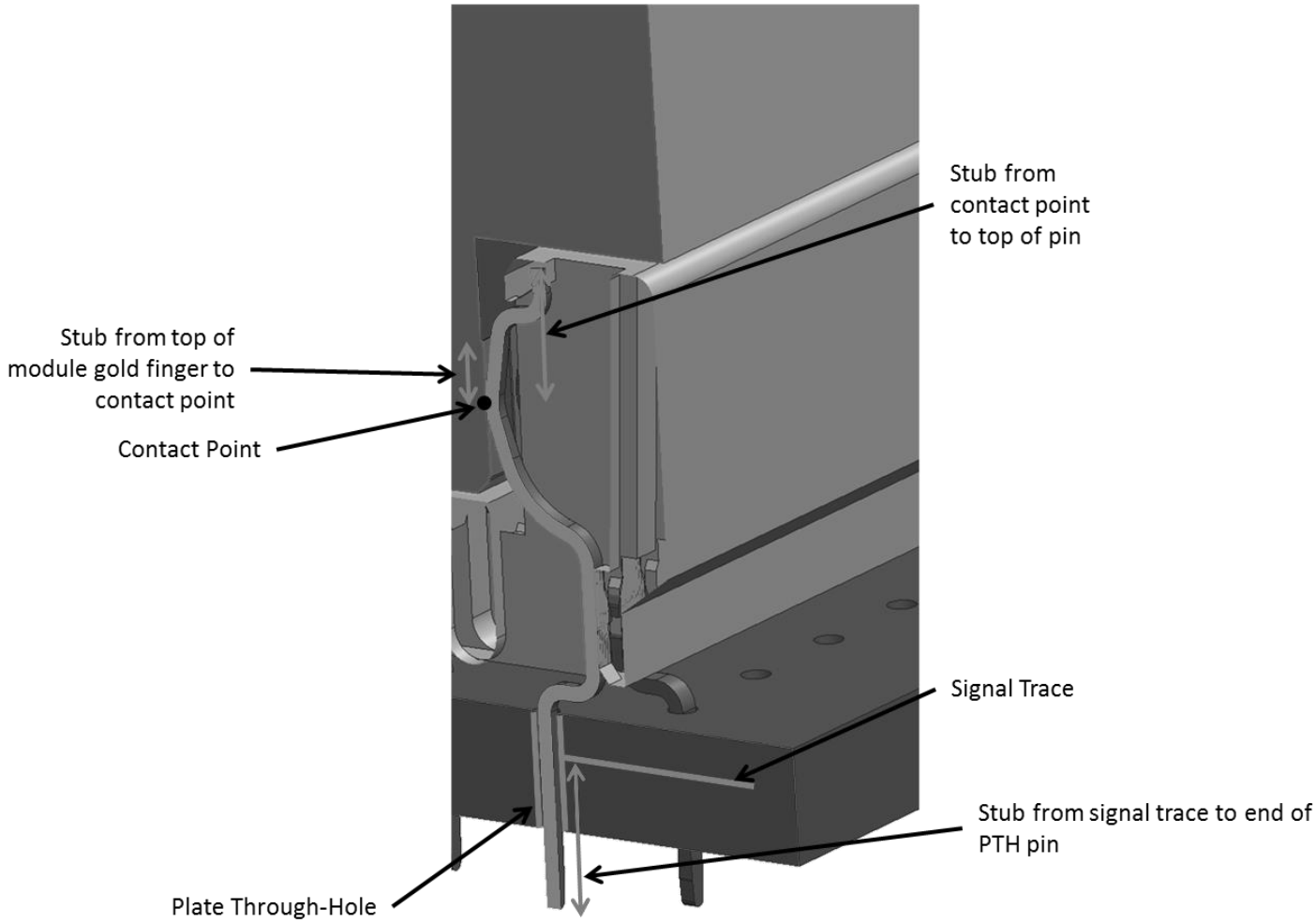
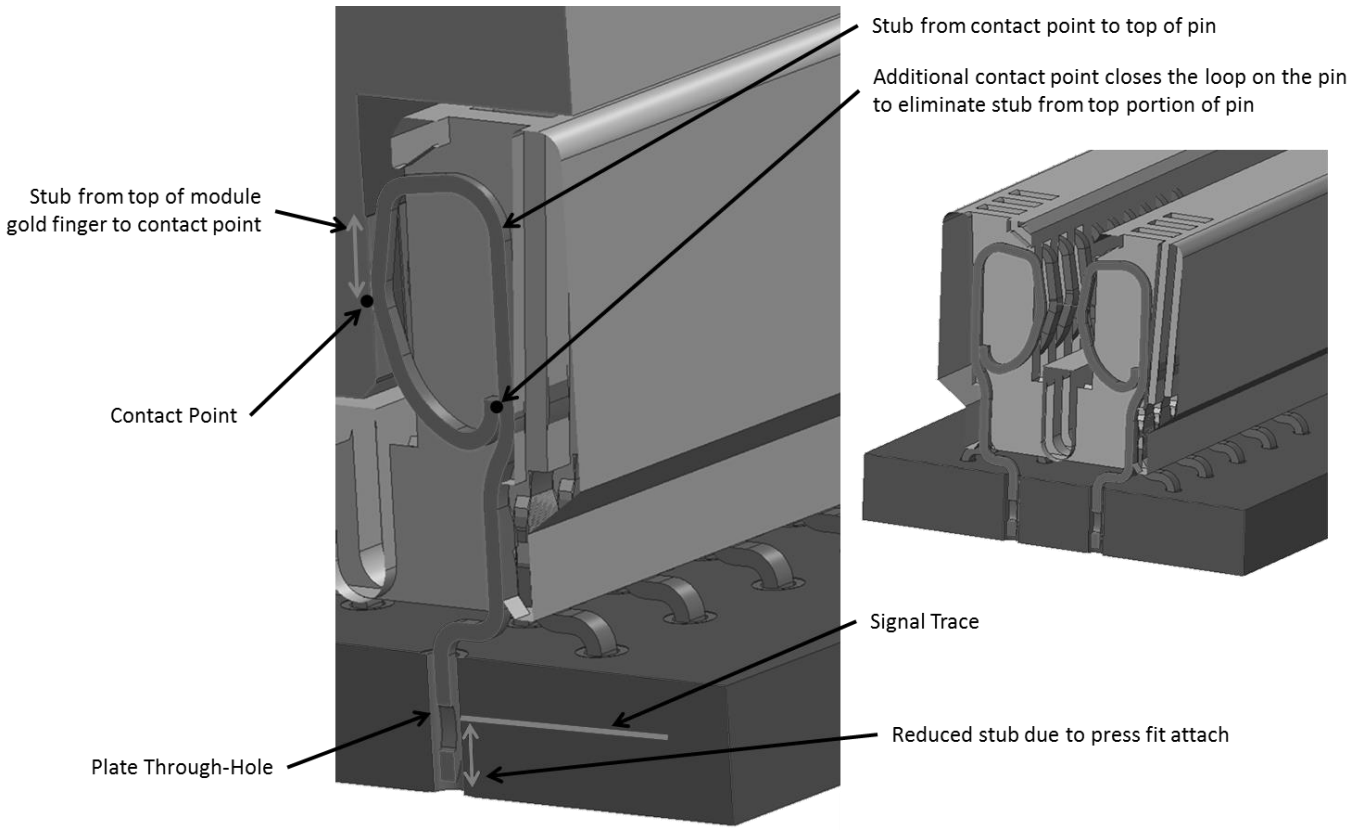
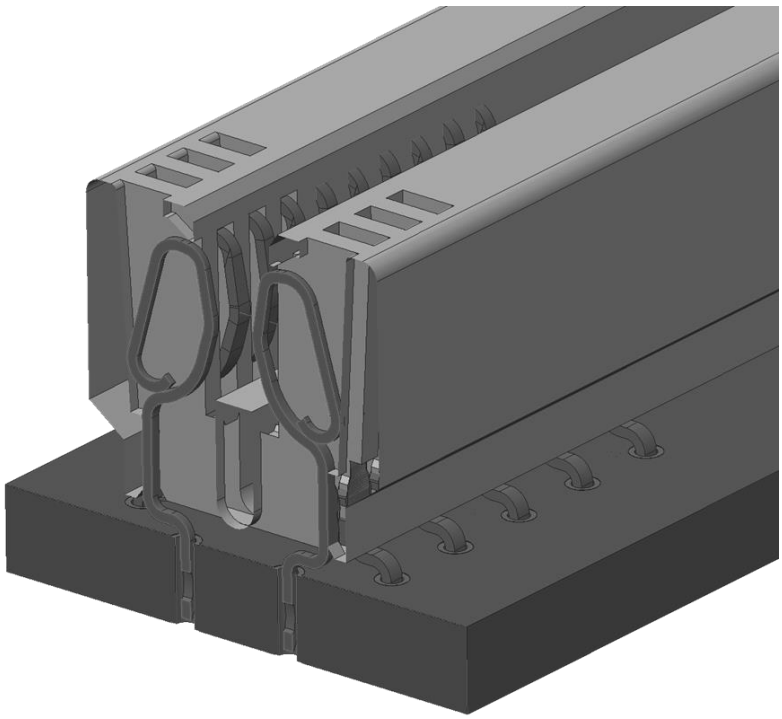
As the demand for memory bandwidth increase, so does the speed at which the standard memory Double Data Rate (DDR) interface must achieve. Future Dual In-line Memory Module (DIMM) connectors will be required to achieve higher speeds but current plated through-hole and press fit designs are unable to meet these requirements, due to the stub present in the termination at the board. Below is a high level diagram of the sources of stub in a standard DIMM connector.



The current state of the art in the industry is to use surface mount technology (SMT) connectors to achieve higher data rates by eliminating the stub from the signal trace to the end of the connector pin. However, this comes with an increase in manufacturing cost and reduction in printed circuit board assembly yields. The pin design shown below uses a closed loop on the top of the pin, creating a "P" shaped contact, in which the pin makes electrical contact at the intersection point. The top portion of the pin length that extends past the contact point is eliminated as a contributor to system stub.



The image below shows an alternate design in which the pin closes the loop in an alternative direction. The specific implementation can vary based on the manufacturing preferences of the connector manufacturer.



By eliminating this main contributor to system stub, this pin design allows for press fit or plated through hole (PTH) designs to be used for future DDR designs. This enables low cost PTH or press fit DIMM connectors at higher DDR speeds, lowers system manufacturing cost and increases adoption.

Disclosed by:
John Norton – Hewlett Packard Enterprise
Reza Bacchus – Hewlett Packard Enterprise