

ABSTRACT

BIT STACK COMPATIBLE INPUT/OUTPUT CIRCUITS

In accordance with the teachings of this invention a method for positioning components of input/output circuits is provided. These components are positioned on a semiconductor substrate. The semiconductor substrate includes other than input/output circuits. Each input/output circuit is provided for processing a single bit of information within a data word containing multiple bits. The method includes the step of (1) dividing each input/output circuit into groups containing similar functional subcomponents; (2) forming a vertical column of subcomponents for each input/output circuit and connecting these subcomponents to perform the function; (3) placing said columns in adjacency to form a plurality of columns with like subcomponents immediately adjacent to each other forming row groups of said like subcomponents; and (4) forming guard rings around the subcomponent row groups if required.

Also in accordance with this invention, a group of input/output circuits is provided. The group is positioned on an integrated circuit substrate that contains other than input/output circuits. The input/output circuits group includes a plurality of columns of circuitry component where each column represents all of the input/output circuit components for processing a single bit of information in a group of bits, a plurality of rows positioned across the columns containing like devices among said input/output circuits, and at least one guard ring containing at least one of the plurality of rows.

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