ELECTRICAL CONNECTOR HAVING CONTACT MODULES

[0001] The invention relates to an electrical connector having contact modules.

[0002] Some electrical systems utilize an electrical connector, such as a receptacle or header connector, to interconnect a circuit board and at least one pluggable module. The electrical connector is mounted to the circuit board. For example, the electrical connector includes electrical terminals with tails that terminate to conductive vias on the circuit board. The circuit board has signal traces routed from the conductive vias. An opposite end of the electrical terminals may extend into a mating interface of the electrical connector for electrical connection to a circuit card or electrical contacts of a corresponding pluggable module mated to the electrical connector. A conductive signal pathway is formed that includes the circuit card or an electrical contact of the pluggable module, the electrical terminal of the electrical connector that engages the circuit card or electrical contact, and the signal trace routed from the conductive via that engages the electrical terminal.

[0003] Due to size constraints of electrical connectors, increasing density of electrical terminals in electrical connectors, and the desire for smaller connector footprints, the signal traces on the circuit board are routed away from the footprint of the electrical connector in close proximity to one another and often in multiple layers of the circuit board. As the density of electrical terminals in the electrical connector increases, there is less space between corresponding vias of the circuit board to route the signal traces away from the connector footprint. Signal trace routing is further complicated when the electrical terminal tails at the connector footprint are arranged in various groupings or arrays that do not provide designated routes for signal traces between the corresponding vias that engage the electrical terminal tails. One known way to accommodate additional electrical terminal tails is to increase the number of layers of the circuit board that are used to route the signal traces away from the connector footprint. However, thick circuit boards are undesirable and more expensive to manufacture than thinner boards having fewer layers.

[0004] A need remains for an electrical connector that can facilitate routing of signal traces in a circuit board on which the connector is mounted.

[0005] Embodiments of the present invention seek to solve this problem by providing an electrical connector according to claim 1.

[0006] According to an aspect of the invention, an electrical connector comprises a housing having a mounting face and a mating face. A plurality of contact modules are held by the housing. Each of the contact modules includes a left signal wafer and a right signal wafer stacked next to each other along a stack axis. Each of the left and right signal wafers extends parallel to a contact module plane. Each of the left and right signal wafers includes electrical terminals held by a dielectric body. The electrical terminals have mounting contacts protruding from the dielectric body at the mounting face of the housing. The electrical terminals of at least one of the left and right signal wafers in each contact module are jogged toward the other of the left and right signal wafers in the same contact module such that the mounting contacts of each contact module are aligned in a column that extends parallel to the contact module plane. A plurality of ground plates are held by the housing. Each of the ground plates is disposed along an outer side of a respective contact module and extends parallel to the respective contact module plane.

[0007] The invention will now be described by way of example with reference to the accompanying drawings wherein:

[0008] Figure 1 is a perspective view of an electrical system in accordance with an exemplary embodiment.

[0009] Figure 2 is a perspective view of a module stack of an electrical connector according to an exemplary embodiment.

[0010] Figure 3 is a front exploded view of a contact module of the electrical connector according to an embodiment.

[0011] Figure 4 is a front assembled view of the contact module of Figure 3.

[0012] Figure 5 is a bottom perspective view of a portion of the module stack of Figure 2 according to an exemplary embodiment.

[0013] Figure 6 illustrates a footprint of the electrical connector in accordance with an exemplary embodiment.