CLAIMS

1. An electrical connector assembly for connecting an integrated circuit chip to a printed circuit board, the electrical connector assembly comprising:

a socket body being made of an insulating material, the socket body having a top surface, a bottom surface, and a first plurality of cavities including a first cavity and a second cavity that extend from the top surface through to the bottom surface, the first cavity and the second cavity each having an inner surface plated with a conductive material to form a metal grounding shell, the first cavity being a signal pin cavity hole and the second cavity being a ground spring probe cavity, the first plurality of cavities including one or more ground needle cavities that extend through a length of the socket body;

a plurality of probes including a first probe and a second probe, the first probe being configured to be positioned within the first cavity and the second probe being configured to be positioned within the second cavity, the first probe being a signal contact probe and the second probe being a ground contact probe, the ground contact probe contacts the ground spring probe cavity, the signal contact probe being separated from the metal grounding shell of the first cavity by an insulative layer;

one or more micro trace lines that electrically connect the metal grounding shells of the first cavity and the second cavity to form a coaxial structure; and

one or more ground needles configured to filter noise, improve radio frequency performance and minimize interference of signals within the signal contact probe, the one or more ground needles being positioned in the one or more ground needle cavities and adjacent or around the signal pin cavity hole.

2. The electrical connector assembly of claim 1, further comprising:

a socket retainer being made of the insulating material and having a top surface, a bottom surface and a second plurality of cavities including a first cavity and a second cavity, the second plurality of cavities being aligned with the first plurality of cavities.

3. The electrical connector assembly of claim 2, wherein when the first cavity and the second cavity of the first plurality of cavities are aligned with the first cavity and the second cavity of the second plurality of cavities.

4. The electrical connector assembly of claim 1, wherein the first plurality of cavities includes a third cavity, wherein the third cavity is a power contact cavity that is configured to encapsulate a power contact probe that provides power when inserted.

5. The electrical connector assembly of claim 1, wherein the one or more micro trace lines electrically connect the metal grounding shell of the ground spring probe cavity and the metal grounding shell of the signal pin cavity hole to form a coaxial structure to provide controlled impedance to improve signal integrity.

6. The electrical connector assembly of claim 1, wherein the first probe has a first plunger, a second plunger, a first end, a second end and a cylindrical shell in between the first end and the second end, wherein the first plunger is on the first end and the second plunger is on the second end.

7. The electrical connector assembly of claim 6, wherein the first probe is a spring probe and

has a spring within the cylindrical shell.

8. An electrical connector assembly for connecting an integrated circuit chip to a printed circuit board, the electrical connector assembly comprising:

an insulated body having a top surface, a bottom surface, a signal spring pin cavity hole, a ground spring probe cavity and one or more ground needle cavities that extend through a length of the insulated body, the signal spring pin cavity hole and the ground spring probe cavity each having an interior surface plated with a conductive material to form a metal grounding shell;

a plurality of probes including a signal contact probe and a ground contact probe;

one or more micro trace lines that electrically connect the metal grounding shell of the signal spring pin cavity hole and the ground spring probe cavity to form a coaxial structure; and

one or more ground needles configured to filter noise, improve radio frequency performance and minimize interference of signals within the signal contact probe, wherein the one or more ground needles are positioned in the one or more ground needle cavities and adjacent or around the signal pin cavity hole.

9. The electrical connector assembly of claim 8, wherein the insulated body has a power contact cavity and the plurality of probes includes a power contact probe, wherein the power contact cavity is configured to encapsulate the power contact probe to provide power when the power contact probe is inserted.

10. The electrical connector assembly of claim 9, wherein the power contact cavity has four power contact cavities each positioned in a corner of the insulated body and the ground spring probe

cavity includes a plurality of ground spring probe cavities positioned along edges of the insulated body, wherein the plurality of ground spring probe cavities and the four power contact cavities surround the signal spring pin cavity hole.

11. The electrical connector assembly of claim 8, wherein the signal contact probe has a first plunger, a second plunger, a first end, a second end, a spring and a cylindrical shell in between the first end and the second end, wherein the first plunger is on the first end and the second plunger is on the second end and the spring is within the cylindrical shell.

12. The electrical connector assembly of claim 11, wherein the first plunger is configured to electrically contact with a conductive pad of an integrated circuit through the top surface and the second plunger is configured to electrically contact with a conductive pad of a printed circuit board through the bottom surface.