of an incision obtained directly on the layer of electrically conductive material (25).

Such an embodiment helps to compact the sizes.

Advantageously, the container (15) is made at least in part of thermally insulating materials, such as:

- Plastic;
- Teflon plastic;
- PEEK;
- Aerogel;
- Silicone foam.

Such materials are not to be considered limiting and other thermally insulating materials, also with different insulating degrees, can be equally used without going beyond the scope of the present invention.

Here it is also disclosed a printed circuit board (5) comprising an upper surface (5A) on which a socket (1) can be arranged, preferably a socket for testing a component (3) of BGA type, a lower surface (5B) and a plurality of electric contacts for transmitting the electric signal to said socket (1).

According to the invention, the printed circuit board (5) comprises a heating assembly (10, 15) as disclosed above, applied in fixed or removable manner.

Moreover, advantageously, said heating assembly is applied on the surface (5B), substantially inside the area delimiting the housing of said array of electrical connections, in such a manner as to be in axis below the socket.

Brief description of the drawings

Further features and advantages of the present heating assembly (10, 15), will become apparent from the following description of preferred embodiments thereof, given only by way of non-limiting, indicative, example, with reference to the accompanying drawings, wherein:

dispersion and therefore do not have significant openings or openings that imply a dispersion of heat.

In this manner, the housing formed by these walls does not dissipate heat.

The power supply for the heating device 10 occurs by connecting or welding the upper surface, that is the P.C.B. 5.

For example, the thermally insulating container can generally be box-shaped, of rectangular or quadrangular, in such a manner as to retrace the shape of the heating device 10 which is containing.

Obviously, other box-shaped containers, such as cylindrical, can be realized.

Preferably, the container 10 is equipped with some lateral flanges, which extend radially from the lateral walls 15L (see for example figure 6) and which are intended for the fastening to the surface 5B. Such flanges, two for example, lean against the surface 5B and they can have holes which are arranged in axis with the relative holes obtained on the printed circuit board 5 for inserting some fixing screws. In this manner, the application is firm and quick and the whole assembly (10, 15) can easily be applied and then removed.

Experimental evidence proves that a layer or a sheet of thermally conductive material can be interposed between the surface 5B and the heating device 10 in such a way that the heating device does not touch such a surface 5B directly.

Substantially, a thin layer of thermally conductive material can be interposed between the surface 5B and the surface of the device 10. It remarkably favours the heat diffusion upwards, that is towards the device to be tested, thus optimizing further the heat flow and thermal conditions for carrying out the test.

For example, a material that can be used for

realizing such a thermally conductive sheet can be a material with the trademark “Berquist Gap Pad 5000 s35”, brand name Henkel.

Even if the above-mentioned material proved to be suitable for the purposes, other thermally conductive material can be used without however moving away from the scope of the present invention.

The heating device 10 contained inside the container 15 is substantially those one described in the application EP3173798 and described below for clarity purposes.

Such a heating device is equipped with at least a resistance through which electric current passes, such that it is heated for Joule effect and therefore produces the heat necessary for heating the component to be tested.

By suitably adjusting the passage of current, the required temperature can be easily obtained and controlled.

In more details, as depicted in the section of figure 3, such a heating element 10 is realized through a plurality of overlapping layers (25, 30) (preferably six conductive layers).

Therefore, it is in the form of a multi-layer.

In particular, conductive layers 25 are provided, preferably of metallic material such as copper, interposed to insulating layers 30, preferably polyamide.

The purpose of the insulating layer is to prevent said conductive layers from short-circuiting each other, thus insulating from each other.

Therefore, each layer forms a surface of predetermined thickness and overlapped each other as per section of figure 3.

Any shape can be provided, such as square, rectangular or circular metal tablet.

The thicknesses are reduced, approximately a millimeter as a whole.

Moreover, in order to pass current through all the layers equipped with track, they are connected each other by means of one or more ducts 32, in which an electric cable passes and physically connects all the copper layers for injecting the voltage of the passage of current.

The advantage of realizing a multi-layer element is that it is possible to maintain extremely reduced sizes and obtain a high heat at the same time. In fact, a track for the passage of current can be obtained on each layer. Therefore, the more layers there are, the greater the heat produced, thus maintaining at the same time reduced encumbrances (the structure increases its height but not its width).

Therefore, such a device can be miniaturized at will.

Moreover, the realization of incised tracks further contributes to reduce thicknesses.

Moreover, it is possible to equip one of the conductive layers, preferably one of the two external ones, a contact with an electric wiring connectable to an external control device (for example a PC). In this manner, it is easy to monitor the reached temperature and adjust and vary it depending on needs, by increasing or reducing the passage of current.

Such an assembly (10, 15) can be an independent component, therefore produced and sold independently and easily applicable to any printed circuit board P.C.B. for testing components 3 by means of the above-mentioned rapid fastening means, such as for example screws or snap systems.

Alternatively, it can be already in-built in the P.C.B. or in a socket for carrying out such tests.

While in use, therefore, it is sufficient to apply such a heating assembly (10, 15) on the lower surface 5B of the circuit board P.C.B. 5, that is below the socket, and inject current to produce heat.

The thermally insulating box will manage the heat