CLAIMS

What is claimed is:

1. A method of forming a multiphase thermal interface component, wherein the method comprises following steps:

providing a thermal interface solid element, wherein the thermal interface solid element has at least one through hole, a first thermal conductive surface and a second thermal conductive surface, the at least one through hole defines through the first thermal conductive surface and the second thermal conductive surface, and at least one surface among the first thermal conductive surface and the second thermal conductive surface has at least one accommodation space; the first thermal conductive surface is configured to contact a thermal control device, and the second thermal conductive surface is configured to contact a temperature-controlled component; and

applying a thermal interface fluid material to at least one among on the thermal interface solid element, between the thermal control device and the first thermal conductive surface, and between the second thermal conductive surface and the temperature-controlled component, and filling the thermal interface fluid material in the at least one accommodation space; the thermal interface fluid material under ambient temperature is in liquid, gas, or gel state, or a combination of any two or three thereof.

2. The method of forming the multiphase thermal interface component according to claim 1, wherein the thermal interface fluid material is applied between the second thermal conductive surface of the thermal interface solid element and the temperature-controlled component, and the thermal interface fluid material is filled into the at least one accommodation space of the second thermal conductive surface.

3. The method of forming the multiphase thermal interface component according to claim 1, wherein the thermal control device comprises a fluid supply module configured to

apply the thermal interface fluid material to the first thermal conductive surface, and the thermal interface fluid material is filled into the at least one accommodation space of the first thermal conductive surface.

4. A multiphase thermal interface component, comprising:

a thermal interface solid element having at least one through hole, a first thermal conductive surface and a second thermal conductive surface, wherein the at least one through hole defines through the first thermal conductive surface and the second thermal conductive surface, at least one surface among the first thermal conductive surface and the second thermal conductive surface has at least one accommodation space; and

a thermal interface fluid material filled into the at least one accommodation space of the at least one surface;

wherein the thermal interface solid element under ambient temperature is in a solid state; the thermal interface fluid material under ambient temperature is in liquid, gas, or gel state, or a combination of any two or three thereof.

5. The multiphase thermal interface component according to claim 4, wherein the thermal interface solid element further comprises an outer peripheral frame integrally extending from the first thermal conductive surface to a direction away from the first thermal conductive surface.

6. An electronic device testing apparatus with multiphase thermal interface component, wherein the electronic device testing apparatus comprises:

a thermal control device;

a multiphase thermal interface component comprising a thermal interface solid element and a thermal interface fluid material, wherein the thermal interface solid element has at least one through hole, a first thermal conductive surface and a second thermal conductive surface, the at least one through hole defines through the first thermal conductive surface

and the second thermal conductive surface; at least one surface among the first thermal conductive surface and the second thermal conductive surface has at least one accommodation space; the thermal interface fluid material is filled into the at least one accommodation space of the at least one surface; and

a socket configured to accommodate an electronic device under test;

wherein the first thermal conductive surface of the thermal interface solid element is configured to contact the thermal control device, and the second thermal conductive surface of the thermal interface solid element is configured to contact the electronic device under test on the socket.

7. The electronic device testing apparatus with multiphase thermal interface component according to claim 6, further comprising a fluid application device configured to apply the thermal interface fluid material to at least one among the electronic device under test, the thermal interface solid element, and the thermal control device.

8. The electronic device testing apparatus with multiphase thermal interface component according to claim 6, wherein the thermal control device comprises a fluid channel and a fluid supply module, one of two ends of the fluid channel is in communication with the fluid supply module, and the other end of the fluid channel is in communication with the multiphase thermal interface component; the fluid supply module is configured to supply the thermal interface fluid material to the thermal interface solid element through the fluid channel.

9. The electronic device testing apparatus with multiphase thermal interface component according to claim 6, wherein the thermal interface solid element further comprises an outer peripheral frame integrally extending from the first thermal conductive surface to a direction away from the first thermal conductive surface; the multiphase thermal interface component is fitted over the thermal control device through the outer peripheral

frame, and the thermal interface fluid material is filled into the at least one accommodation space of the first thermal conductive surface.