What is claimed is:

1. A method of manufacture of an integrated circuit packaging system comprising:

providing an interconnect structure having a structure bottom side, a structure top side, and a cavity, the structure bottom side electrically connected to the structure top side;

mounting an integrated circuit entirely within the cavity, the integrated circuit having an active side coplanar with the structure top side;

forming an encapsulation partially covering the interconnect structure and the integrated circuit, the encapsulation having an encapsulation top side coplanar with the structure top side and the active side;

forming a top re-passivation layer over the structure top side and the encapsulation, the top re-passivation layer having a hole; and

mounting a heat sink over the top re-passivation layer for removing heat from the active side, the heat sink having a protrusion on the active side and within the hole.

2. The method as claimed in claim 1 wherein mounting the heat sink includes mounting the heat sink, the heat sink larger than the integrated circuit.

3. The method as claimed in claim 1 wherein:

mounting the heat sink includes mounting the heat sink connected to the structure top side; and

further comprising:

connecting an external connector to the structure bottom side, the heat sink grounded through the external connector.

4. The method as claimed in claim 1 wherein mounting the heat sink includes mounting the heat sink having a protrusion on the active side.

~~5. The method as claimed in claim 1 wherein:~~

~~forming the top re-passivation layer includes forming the top re-passivation layer having a hole; and~~

~~mounting the heat sink includes mounting the heat sink having a protrusion on the active side and within the hole.~~

~~6.~~5. A method of manufacture of an integrated circuit packaging system comprising:

providing an interconnect structure having a structure bottom side, a structure top side, and a cavity, the structure bottom side electrically connected to the structure top side;

mounting an integrated circuit entirely within the cavity, the integrated circuit having an active side coplanar with the structure top side;

forming an encapsulation partially covering the interconnect structure and the integrated circuit, the encapsulation having an encapsulation top side coplanar with the structure top side and the active side;

forming a top redistribution line electrically connected to the structure top side and the active side;

forming a top re-passivation layer over the structure top side and the encapsulation, the top re-passivation layer directly on the top redistribution line; and

mounting a heat sink over the top re-passivation layer for removing heat from the active side.

~~7.~~6. The method as claimed in claim ~~6~~5 further comprising:

forming a thermal interface directly on the active side; and

wherein:

mounting the heat sink includes mounting the heat sink directly on the thermal interface.

~~8.~~7. The method as claimed in claim ~~6~~5 further comprising:

forming a thermal interface directly on the top re-passivation layer; and

wherein:

mounting the heat sink includes mounting the heat sink directly on the thermal interface.

~~9.~~8. The method as claimed in claim ~~6~~5 further comprising:

attaching a conductive connector to the active side; and

wherein:

mounting the heat sink includes mounting the heat sink directly on the conductive connector.

~~10.~~9. The method as claimed in claim ~~6~~5 wherein providing the interconnect structure includes providing the interconnect structure having a vertical interconnect between the structure bottom side and the structure top side.

~~11.~~10. An integrated circuit packaging system comprising:

an interconnect structure having a structure bottom side, a structure top side, and a cavity, the structure bottom side electrically connected to the structure top side;

an integrated circuit entirely within the cavity, the integrated circuit having an active side coplanar with the structure top side;

an encapsulation partially covering the interconnect structure and the integrated circuit, the encapsulation having an encapsulation top side coplanar with the structure top side and the active side;

a top re-passivation layer over the structure top side and the encapsulation, the top re-passivation layer having a hole; and

a heat sink over the top re-passivation layer for removing heat from the active side, the heat sink having a protrusion on the active side and within the hole.

~~12.~~11. The system as claimed in claim 1~~1~~0 wherein the heat sink is larger than the integrated circuit.

~~13.~~12. The system as claimed in claim 1~~1~~0 wherein:

the heat sink is connected to the structure top side; and

further comprising:

an external connector connected to the structure bottom side, the heat sink grounded through the external connector.

~~14.~~13. The system as claimed in claim 1~~1~~0 wherein the heat sink has a protrusion on the active side.

~~15. The system as claimed in claim 11 wherein:~~

~~the top re-passivation layer has a hole; and~~

~~the heat sink has a protrusion on the active side and within the hole.~~

~~16.~~14. The system as claimed in claim 1~~1~~0 further comprising:

a top redistribution line electrically connected to the structure top side and the active side; and

wherein:

the top re-passivation layer is directly on the top redistribution line.

~~17.~~15. The system as claimed in claim 1~~6~~4 further comprising:

a thermal interface directly on the active side; and

wherein:

the heat sink is directly on the thermal interface.

~~18.~~16. The system as claimed in claim 1~~6~~4 further comprising:

a thermal interface directly on the top re-passivation layer; and

wherein:

the heat sink is directly on the thermal interface.

~~19.~~17. The system as claimed in claim 1~~6~~4 further comprising:

a conductive connector attached to the active side; and

wherein:

the heat sink is directly on the conductive connector.

~~20.~~18. The system as claimed in claim 1~~6~~4 wherein the interconnect structure has a vertical interconnect between the structure bottom side and the structure top side.