Claims

What is claimed:

1. A semiconductor device, comprising:
a semiconductor die;
a plurality of bond pads formed over a surface of the semiconductor die;
an organic material d~~i~~e~~s~~posited around a peripheral region of the semiconductor die~~, wherein a top surface of the organic material is~~and substantially coplanar with ~~a top~~the surface of the semiconductor die;
a plurality of first under bump metallization (UBM) formed ~~over~~directly on the organic material;
a plurality of bumps formed over the bond pads and first UBM;
and
a conductive layer formed over the organic material and electrically connected ~~between~~to one of the first UBM and one of the bond pads.

~~2. The semiconductor device of claim 1, further including a bump formed over the first UBM.~~

~~3~~2. The semiconductor device of claim 1, wherein the organic material includes benzocyclobutene or polyimide.

~~4~~3. The semiconductor device of claim 1, further including a plurality of second UBM formed over the semiconductor die.

~~5~~4. The semiconductor device of claim 1, wherein the first UBM includes non-refractory metal and binary metal alloy.

~~6~~5. ~~The semiconductor device of claim 1~~ , ~~wherein the plurality of first UBM are formed on each side of the semiconductor die.~~ A semiconductor device, comprising:

a semiconductor die;

a plurality of bond pads formed over a surface of the semiconductor die;

an organic material deposited around a peripheral region of the semiconductor die and substantially coplanar with the surface of the semiconductor die;

a plurality of first under bump metallization (UBM) formed in contact with the organic material and on each side of the semiconductor die; and

a conductive layer formed over the organic material and electrically connected to one of the first UBM and one of the bond pads.

~~7~~6. A semiconductor device, comprising:

a semiconductor die;

a bond pad formed over a surface of the semiconductor die;

an insulating material d~~isposed~~eposited around a peripheral region of the semiconductor die and coplanar with the surface of the semiconductor die;

a first under bump metallization (UBM) formed ~~over~~contacting the insulating material; and

a conductive layer formed over the insulating material ~~and electrically connected between the first UBM and bond pad~~.

~~8. The semiconductor device of claim 7, wherein a top surface of the insulating material is substantially coplanar with a top surface of the semiconductor die.~~

~~9~~7. The semiconductor device of claim ~~7~~6, further including a bump formed over the first UBM.

~~10~~8. The semiconductor device of claim ~~7~~6, wherein the insulating material includes benzocyclobutene or polyimide.

~~11~~9. The semiconductor device of claim ~~7~~6, further including a second UBM formed over the semiconductor die.

~~12~~10. The semiconductor device of claim ~~7~~6, wherein the first UBM includes non-refractory metal and binary metal alloy.

~~13~~11. The semiconductor device of claim ~~7~~6, wherein the first UBM includes non-refractory metal and refractory metal.

~~14~~12. The semiconductor device of claim ~~7~~6, wherein the conductive layer is a redistribution layer.

~~15~~13. A semiconductor device, comprising:

a semiconductor die;

a bond pad formed over a surface of the semiconductor die;

an insulating material disposed around a peripheral region of the semiconductor die;

a redistribution layer formed over the insulating material and electrically connected to the bond pad;

a first under bump metallization (UBM) formed ~~over~~contacting the insulating material and electrically connected to the redistribution layer; and

a bump formed over the bond pad.

1~~4~~6. The semiconductor device of claim 1~~5~~3, wherein a ~~top~~ surface of the insulating material is substantially coplanar with ~~a top~~the surface of the semiconductor die.

1~~7~~5. The semiconductor device of claim 1~~5~~3, further including a bump formed over the first UBM.

1~~8~~6. The semiconductor device of claim 1~~5~~3, wherein the insulating material includes benzocyclobutene or polyimide.

1~~9~~7. The semiconductor device of claim 1~~5~~3, further including a second UBM formed over the semiconductor die.

~~20~~18. The semiconductor device of claim 1~~5~~3, wherein the first UBM includes non-refractory metal and refractory metal.

~~21~~19. A semiconductor device, comprising:

a semiconductor die;

~~a bond pad formed over a surface of the semiconductor die;~~

an insulating material d~~is~~eposited around a peripheral region of the semiconductor die; and

a first under bump metallization (UBM) formed ~~over~~contacting the insulating material.

2~~2~~0. The semiconductor device of claim ~~21~~19, further including a conductive layer formed over the insulating material and electrically connected ~~between~~to the first UBM and a bond pad formed over a surface of the semiconductor die.

2~~3~~1. The semiconductor device of claim ~~21~~19, further including ~~a bump~~ an interconnect structure formed over the first UBM.

2~~4~~2. The semiconductor device of claim ~~21~~19, wherein the insulating material includes benzocyclobutene or polyimide.

2~~5~~3. The semiconductor device of claim ~~21~~19, further including a second UBM formed over the semiconductor die.

24. The semiconductor device of claim 20, wherein the insulating material is substantially coplanar with the surface of the semiconductor die.

25. The semiconductor device of claim 5, further including an interconnect structure formed over the first UBM.

26. The semiconductor device of claim 5, further including a second UBM formed over the semiconductor die.

27. The semiconductor device of claim 5, wherein the first UBM includes non-refractory metal and binary metal alloy.

28. The semiconductor device of claim 5, wherein the first UBM includes non-refractory metal and refractory metal.