Claims

What is claimed:

1. A semiconductor device, comprising:

a first semiconductor die including a first conductive layer formed over a surface of the first semiconductor die;

a first insulating layer formed over the first conductive layer;

an encapsulant deposited around the first semiconductor die;

a second conductive layer formed over the first insulating layer and first conductive layer;

a second insulating layer formed over the first insulating layer and encapsulant; and

a third conductive layer formed over the encapsulant a predetermined distance away from a footprint of the first semiconductor die and first insulating layer.

2. The semiconductor device of claim 1, wherein the predetermined distance is at least 50 micrometers.

3. The semiconductor device of claim 1, further including a third insulating layer formed over the second insulating layer and third conductive layer.

4. The semiconductor device of claim 1, further including a resistive layer formed over the first conductive layer or the surface of the first semiconductor die.

5. The semiconductor device of claim 1, wherein the third conductive layer is wound to exhibit inductive properties.

6. The semiconductor device of claim 1, further including a second semiconductor die disposed disposed adjacent to the first semiconductor die.

7. A semiconductor device, comprising:

a first semiconductor die;

an insulating layer formed over the first semiconductor die;

an encapsulant deposited around the first semiconductor die and over a side surface of the insulating layer; and

a first integrated passive device (IPD) formed over the encapsulant a predetermined distance away from a footprint of the first semiconductor die.

8. The semiconductor device of claim 7, wherein the first IPD includes a conductive layer wound over the encapsulant to exhibit inductive properties.

9. The semiconductor device of claim 7, wherein the predetermined distance is at least 50 micrometers.

10. The semiconductor device of claim 7, further including a second IPD formed over the first semiconductor die.

11. The semiconductor device of claim 10, wherein the second IPD includes a capacitor.

12. The semiconductor device of claim 7, wherein the encapsulant is coplanar with the first semiconductor die.

13. The semiconductor device of claim 7, further including a second semiconductor die disposed adjacent to the first semiconductor die.

14. A semiconductor device, comprising:

a first semiconductor die;

~~a capacitor formed over the first semiconductor die;~~

a first insulating layer formed over the first semiconductor die;

an encapsulant deposited around the first semiconductor die and over a side surface of the first insulating layer; and

an interconnect structure formed over the encapsulant and first semiconductor die, the interconnect structure including an inductor disposed over the encapsulant a predetermined distance away from a footprint of the first semiconductor die.

15. The semiconductor device of claim 14, wherein the capacitor includes:

a first conductive layer formed over a surface of the first semiconductor die;

a ~~first~~ second insulating layer formed over the first conductive layer; and

a second conductive layer formed over the ~~first~~second insulating layer and first conductive layer.

16. The semiconductor device of claim 15, further including a resistive layer formed over the first conductive layer or the surface of the first semiconductor die.

17. The semiconductor device of claim 14, wherein the inductor includes a conductive layer wound over the encapsulant to exhibit inductive properties.

18. The semiconductor device of claim 14, wherein the predetermined distance is at least 50 micrometers.

19. The semiconductor device of claim 14, wherein the encapsulant is coplanar with the first semiconductor die.

20. The semiconductor device of claim 14, further including a second semiconductor die disposed adjacent to the first semiconductor die.

21. A semiconductor device, comprising:

a first semiconductor die;

an insulating layer formed over the first semiconductor die;

an encapsulant deposited around the first semiconductor die and over a side surface of the insulating layer; and

an interconnect structure formed over the encapsulant and first semiconductor die, the interconnect structure including a first integrated passive device (IPD) disposed over the encapsulant a predetermined distance away from a footprint of the first semiconductor die.

22. The semiconductor device of claim 21, wherein the predetermined distance is at least 50 micrometers.

23. The semiconductor device of claim 21, further including a second IPD formed over the first semiconductor die.

24. The semiconductor device of claim 23, wherein the second IPD includes a capacitor.

25. The semiconductor device of claim 21, further including a second semiconductor die disposed adjacent to the first semiconductor die.