

Claims

What is claimed:

1. A method of making a semiconductor device, comprising:
providing a plurality of semiconductor die;
providing a substrate including a planar die placement area;
disposing the semiconductor die over the planar die placement area of the substrate while leaving a portion of the planar die placement area in a central area of the substrate that could accommodate additional semiconductor die absent the semiconductor die; and
depositing an encapsulant over the semiconductor die and substrate and further in contact with the portion of the planar die placement area of the substrate that could accommodate additional semiconductor die.
2. The method of claim 1, wherein the portion of the planar die placement area of the substrate that could accommodate additional semiconductor die extends radially from the central area of the substrate.
3. The method of claim 1, wherein the portion of the planar die placement area of the substrate that could accommodate additional semiconductor die includes interstitial locations among the semiconductor die.

4. The method of claim 1, wherein the portion of the planar die placement area of the substrate that could accommodate additional semiconductor die extends along a linear path.
5. The method of claim 1, wherein the substrate includes a circular shape or rectangular shape.
6. The method of claim 1, further including:
removing the substrate; and
forming an interconnect structure over the semiconductor die.
7. A method of making a semiconductor device, comprising:
disposing a plurality of semiconductor die of a uniform size over a planar surface of a die placement area of a reconstituted wafer while leaving a portion of the die placement area of the reconstituted wafer capable of accommodating additional semiconductor die of the uniform size absent the semiconductor die; and
depositing an encapsulant over the semiconductor die and in contact with the portion of the die placement area capable of accommodating additional semiconductor die.
8. The method of claim 7, wherein the portion of the die placement area capable of accommodating additional semiconductor die includes a central area of the reconstituted wafer.
9. The method of claim 7, wherein the portion of the die placement area capable of accommodating additional semiconductor die includes interstitial locations among the semiconductor die.

10. The method of claim 7, wherein the portion of the die placement area capable of accommodating additional semiconductor die extends along a linear path.

11. The method of claim 7, wherein the reconstituted wafer includes a circular shape or rectangular shape.

12. The method of claim 7, further including disposing a plurality of dummy die around a perimeter of the reconstituted wafer.

13. The method of claim 7, further including:
removing a substrate of the reconstituted wafer; and
forming an interconnect structure over the semiconductor die.

14. A semiconductor device, comprising:
a substrate including a die placement area of the substrate;
a plurality of semiconductor structures disposed over the die placement area of the substrate while leaving a portion of the die placement area in a central area of the substrate capable of accommodating the semiconductor structures absent the semiconductor structures; and
an encapsulant deposited over the semiconductor structures and substrate and further deposited in contact with the portion of the die placement area of the substrate capable of accommodating the semiconductor structures, wherein an active

surface of each semiconductor structure is coplanar with a surface of the encapsulant outside the semiconductor structures.

15. The semiconductor device of claim 14, wherein the portion of the die placement area of the substrate capable of accommodating the semiconductor structures extends radially from the central area of the substrate.

16. The semiconductor device of claim 14, wherein the semiconductor structures are disposed in rows and columns over the substrate and the portion of the die placement area of the substrate capable of accommodating the semiconductor structures includes interstitial locations within the rows and columns of the semiconductor structures.

17. The semiconductor device of claim 14, wherein the portion of the die placement area of the substrate capable of accommodating the semiconductor structures extends along a linear path.

18. The semiconductor device of claim 14, wherein the substrate includes a circular shape or rectangular shape.

19. The semiconductor device of claim 14, further including an interconnect structure formed over the semiconductor structures.

20. A semiconductor device, comprising:
a substrate including a planar die placement area of the substrate;

a plurality of semiconductor die disposed over the planar die placement area of the substrate while leaving a portion of the planar die placement area in a central area of the substrate that could accommodate additional semiconductor die absent the semiconductor die; and

an encapsulant deposited over the semiconductor die and substrate and further deposited in contact with the portion of the planar die placement area of the substrate that could accommodate additional semiconductor die.

21. The semiconductor device of claim 20, wherein the portion of the planar die placement area of the substrate that could accommodate additional semiconductor die extends in a linear path from the central area of the substrate.

22. The semiconductor device of claim 20, wherein the portion of the planar die placement area of the substrate that could accommodate additional semiconductor die includes interstitial locations among the semiconductor die.

23. The semiconductor device of claim 20, wherein the portion of the planar die placement area of the substrate that could accommodate additional semiconductor die extends along a linear path.

24. The semiconductor device of claim 20, wherein the substrate includes a circular shape or rectangular shape.

25. The semiconductor device of claim 20, further including an interconnect structure formed over the semiconductor die.

26. A semiconductor device, comprising a reconstituted wafer including:

a plurality of semiconductor structures of a uniform size disposed over a planar surface of a die placement area of the reconstituted wafer with a portion of the die placement area capable of accommodating additional semiconductor structures of the uniform size absent the semiconductor structures; and

an encapsulant deposited over the semiconductor structures and in contact with the portion of the die placement area capable of accommodating additional semiconductor structures.

27. The semiconductor device of claim 26, wherein the portion of the die placement area capable of accommodating additional semiconductor structures is disposed in a central area of the reconstituted wafer.

28. The semiconductor device of claim 27, wherein the portion of the die placement area capable of accommodating additional semiconductor structures extends radially from the central area of the substrate.

29. The semiconductor device of claim 26, wherein the portion of the die placement area capable of accommodating additional semiconductor structures includes interstitial locations among the semiconductor structures.

30. The semiconductor device of claim 26, further including a dummy die disposed within the reconstituted wafer.

31. The semiconductor device of claim 26, wherein the reconstituted wafer includes a circular shape or rectangular shape.

32. The semiconductor device of claim 26, wherein the portion of the die placement area of the substrate capable of accommodating additional semiconductor structures extends toward a perimeter of the substrate.

33. The semiconductor device of claim 26, wherein the portion of the die placement area of the substrate capable of accommodating additional semiconductor structures extends along a linear path.