Claims

What is claimed:

1. A method of making a semiconductor device, comprising:

providing a reinforced insulating film;

disposing a conductive layer on a first surface of the reinforced insulating film;

disposing a semiconductor die in contact with a second surface of the reinforced insulating film;

disposing a prefabricated laminating layer over the semiconductor die, wherein the prefabricated laminating layer extends completely over the semiconductor die; and

laminating the prefabricated laminating layer over the reinforced insulating film by applying pressure to the prefabricated laminating layer against the semiconductor die to embed the semiconductor die in the prefabricated laminating layer and expose an active surface of the semiconductor die from the prefabricated laminating layer opposite the reinforced insulating film, wherein a thickness of the prefabricated laminating layer is approximately equal to a thickness of the semiconductor die across an entire width of the semiconductor device after laminating.

2. The method of claim 1, further including providing the reinforced insulating film to include glass cloth, glass fiber, or glass fillers.

3. The method of claim 1, further including laminating the prefabricated laminating layer over the reinforced insulating

film with the semiconductor die extending completely through the prefabricated laminating layer.

4. The method of claim 1, further including disposing an insulating layer on the semiconductor die and prefabricated laminating layer.

5. The method of claim 4, further including removing a portion of the insulating layer using laser direct ablation (LDA) to expose a portion of the semiconductor die through the insulating layer.

6. The method of claim 1, wherein the conductive layer is a copper foil.

7. A method of making a semiconductor device, comprising:

providing a semiconductor die including an active surface;

disposing the semiconductor die directly on a reinforced insulating film with the active surface of the semiconductor die oriented away from the reinforced insulating film;

disposing a prefabricated insulating film extending completely over the semiconductor die opposite the reinforced insulating film; and

laminating the prefabricated insulating film over the reinforced insulating film to embed the semiconductor die in the prefabricated insulating film with a thickness of the prefabricated insulating film approximately equal to a thickness of the semiconductor die across an entire width of the prefabricated insulating film after laminating.

8. The method of claim 7, wherein laminating the prefabricated insulating film over the reinforced insulating film includes providing a vacuum hot press over the semiconductor die.

9. The method of claim 7, further including laminating the prefabricated laminating layer over the reinforced insulating film with the semiconductor die extending completely through the prefabricated laminating layer.

10. The method of claim 7, further including:

disposing a conductive layer over the reinforced insulating film; and

disposing the semiconductor die over the reinforced insulating film opposite the conductive layer.

11. The method of claim 10, wherein the conductive layer is a copper foil.

12. The method of claim 7, wherein laminating the prefabricated insulating film over the reinforced insulating film exposes the semiconductor die from the prefabricated insulating film opposite the reinforced insulating film.

13. The method of claim 12, wherein a surface of the prefabricated insulating film is coplanar with an active surface of the semiconductor die.

14. A method of making a semiconductor device, comprising:

providing a reinforced insulating film;

disposing a semiconductor die on the reinforced insulating film;

disposing a prefabricated insulating film over the semiconductor die and reinforced insulating film; and

laminating the prefabricated insulating film to the reinforced insulating film to embed the semiconductor die within the prefabricated insulating film, wherein an active surface of the semiconductor die is coplanar with a first surface of the prefabricated insulating film opposite the reinforced insulating film.

15. The method of claim 14, wherein laminating the prefabricated insulating film over the semiconductor die includes providing a vacuum hot press over the semiconductor die.

16. The method of claim 14, further including forming an interconnect structure over the semiconductor die.

17. The method of claim 14, further including forming an under bump metallization layer over the semiconductor die.

18. The method of claim 14, further including forming a redistribution layer over the semiconductor die and prefabricated insulating film.

19. The method of claim 14, wherein, after laminating, a thickness of the prefabricated insulating film is approximately equal to a thickness of the semiconductor die across an entire width of the prefabricated insulating film.

20. The method of claim 14, further including disposing the prefabricated insulating film to extend completely over the semiconductor die.

21. The method of claim 14, wherein a second surface of the semiconductor die opposite the active surface is coplanar with a second surface of the prefabricated insulating film after laminating.

22. The method of claim 21, wherein the second surface of the semiconductor die and second surface of the prefabricated insulating film contact the reinforced insulating film.

23. The method of claim 21, further including singulating the semiconductor device through the first surface of the prefabricated insulating film and the second surface of the prefabricated insulating film.

24. The method of claim 14, further including:

depositing an insulating layer onto the semiconductor die and prefabricated insulating film; and

forming an opening through the insulating layer to expose the active surface of the semiconductor die.