## Claims

What is claimed:

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

providing a temporary carrier ~~covered by~~ including an interface layer;

~~mounting a plurality of~~ disposing a first semiconductor die over the interface layer with an active surface of the first semiconductor die oriented toward the interface layer;

depositing an encapsulant over the first semiconductor die ~~and temporary carrier~~;

forming a flat shielding layer over the encapsulant and a back surface opposite the active surface of the first semiconductor die;

forming a channel ~~through the flat shielding layer and encapsulant down to the interface layer~~ completely around the semiconductor die, through the flat shielding layer and encapsulant, and partially through the interface layer wherein a portion of the interface layer remains under the channel;

depositing conductive material in the channel ~~electrically connected to the flat shielding layer~~ completely around the semiconductor die and electrically connected to the flat shielding layer, the conductive material contacting a sidewall of the interface layer;

removing the ~~interface layer and~~ temporary carrier and the interface layer to expose the active surface of the first semiconductor die and the conductive material including a sidewall of the conductive material; and

forming ~~an~~ a build-up interconnect structure ~~over~~ contacting the conductive material, encapsulant, and ~~first~~

~~semiconductor die, the conductive material being electrically connected to the interconnect structure~~ the active surface of the first semiconductor die by~~; and~~

~~singulating the conductive material to separate the first semiconductor die.~~,

(a) forming a redistribution layer (RDL) over the encapsulant and contacting both the exposed conductive material and the active surface of the first semiconductor die, and

(b) forming an insulating layer over the RDL and contacting the exposed sidewall of the conductive material.

~~2. The method of claim 1, wherein the conductive material extends into the interconnect structure.~~

~~3. The method of claim 1, wherein the conductive material terminates at a boundary between the encapsulant and interconnect structure.~~

~~4~~2. The method of claim 1, further including electrically connecting the conductive material through the build-up interconnect structure to a ground point.

~~5~~3. The method of claim 1, further including providing side-by-side ~~first~~ semiconductor die each covered by the flat shielding layer and surrounded by the conductive material.

~~6~~4. The method of claim 1, further including ~~mounting~~disposing a second semiconductor die over the first semiconductor die, wherein the flat shielding layer covers the second semiconductor die~~ and the conductive material surrounds the first and second semiconductor die~~.

~~7~~5. The method of claim ~~1~~4, ~~further including mounting a second semiconductor die over the first semiconductor die,~~ wherein the ~~shielding layer covers the second semiconductor die and the~~ conductive material surrounds ~~only~~ the second semiconductor die.

~~8. A method of making a semiconductor device, comprising:~~

~~providing a carrier;~~

~~mounting a first semiconductor die over the carrier;~~

~~depositing a first encapsulant over the first semiconductor die and carrier;~~

~~forming a shielding layer over the first encapsulant;~~

~~forming a channel through the shielding layer and first encapsulant down to the carrier;~~

~~depositing conductive material in the channel electrically connected to the shielding layer;~~

~~removing the carrier; and~~

forming a first interconnect structure over conductive material, first encapsulant, and first semiconductor die, the conductive material being electrically connected to the first interconnect structure.

9. The method of claim 8, wherein the conductive material extends into the first interconnect structure.

10. The method of claim 8, wherein the conductive material terminates at a boundary between the first encapsulant and first interconnect structure.

11. The method of claim 8, further including electrically connecting the conductive material through the first interconnect structure to a ground point.

12. The method of claim 8, further including:
forming a plurality of conductive vias through the first encapsulant;
forming a second interconnect structure over the first encapsulant;
mounting a second semiconductor die over the second interconnect structure;
depositing a second encapsulant over the second semiconductor die; and
forming the shielding layer over the second encapsulant, wherein the conductive material surrounds the first and second semiconductor die.

13. The method of claim 8, further including

forming a plurality of conductive vias through the first encapsulant;

forming a second interconnect structure over the first encapsulant;

mounting a second semiconductor die over the first semiconductor die;

depositing a second encapsulant over the second semiconductor die; and

forming the shielding layer over the second encapsulant, wherein the conductive material surrounds only the second semiconductor die.

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

providing a first semiconductor die;

depositing a first encapsulant over the first semiconductor die;

forming a shielding layer over the first encapsulant;

forming a channel through the shielding layer and first encapsulant;

depositing conductive material in the channel electrically connected to the shielding layer; and

forming a first interconnect structure over conductive material, first encapsulant, and first semiconductor die.

15. The method of claim 14, wherein the conductive material is electrically connected to the first interconnect structure.

16. The method of claim 14, wherein the conductive material extends into the first interconnect structure.

~~17. The method of claim 14, wherein the conductive material terminates at a boundary between the first encapsulant and first interconnect structure.~~

~~18. The method of claim 14, further including electrically connecting the conductive material through the first interconnect structure to a ground point.~~

~~19. The method of claim 14, further including:~~

~~forming a plurality of conductive vias through the first encapsulant;~~

~~forming a second interconnect structure over the first encapsulant;~~

~~mounting a second semiconductor die over the second interconnect structure;~~

~~depositing a second encapsulant over the second semiconductor die; and~~

~~forming the shielding layer over the second encapsulant, wherein the conductive material surrounds the first and second semiconductor die.~~

~~20. The method of claim 14, further including~~

~~forming a plurality of conductive vias through the first encapsulant;~~

~~forming a second interconnect structure over the first encapsulant;~~

~~mounting a second semiconductor die over the first semiconductor die;~~

~~depositing a second encapsulant over the second semiconductor die; and~~

forming the shielding layer over the second encapsulant, wherein the conductive material surrounds only the second semiconductor die.

21. A semiconductor device, comprising:

a first semiconductor die;

a first encapsulant deposited over the first semiconductor die;

a shielding layer formed over the first encapsulant;

a channel formed through the shielding layer and first encapsulant;

a conductive material deposited in the channel electrically connected to the shielding layer; and

a first interconnect structure formed over conductive material, first encapsulant, and first semiconductor die.

22. The semiconductor device of claim 21, wherein the conductive material is electrically connected to the first interconnect structure.

23. The semiconductor device of claim 21, wherein the conductive material is electrically connected through the first interconnect structure to a ground point.

24. The semiconductor device of claim 21, further including:

a plurality of conductive vias formed through the first encapsulant;

a second interconnect structure formed over the first encapsulant;

a second semiconductor die mounted over the second interconnect structure; and

~~a second encapsulant deposited over the second semiconductor die, wherein the shielding layer is formed over the second encapsulant and the conductive material surrounds the first and second semiconductor die.~~

~~25. The semiconductor device of claim 21, further including~~

~~a plurality of conductive vias formed through the first encapsulant;~~

~~a second interconnect structure formed over the first encapsulant;~~

~~a second semiconductor die mounted over the first semiconductor die; and~~

~~a second encapsulant deposited over the second semiconductor die, wherein the shielding layer is formed over the second encapsulant and the conductive material surrounds only the second semiconductor die.~~