CLAIMS

1. A method for manufacturing a semiconductor device, in which a resin is molded on a semiconductor device having a cavity (109) inside a seal glass (108) while protecting the seal glass (108) of the semiconductor device with a release film (110), the method comprising:

molding a resin on the semiconductor device in such a state that the release film (110) escapes in a film escape area (104a; 104b; 104c) formed at a mold die (100) or the seal glass (108) above the cavity when the semiconductor device is clamped by the mold die (100).

2. The method for manufacturing a semiconductor device according to claim 1, wherein the film escape area corresponds to an area occupied by the cavity (109).

3. The method for manufacturing a semiconductor device according to claim 1, wherein a depth of the film escape area is equal to or greater than a compression allowance by which the release film (110) is compressed at a portion of the release film other than the cavity (109) when the semiconductor device is clamped by the mold die (100).

4. The method for manufacturing a semiconductor device according to claim 1, wherein the film escape area comprises a film escape recess (104a) formed at the mold die (100).

5. The method for manufacturing a semiconductor device according to claim 1, wherein the film escape area comprises a film escape recess (104b) formed on a surface of the seal glass (108) closer to the release film (110).

6. The method for manufacturing a semiconductor device according to claim 1, wherein a member (111) having a predetermined thickness is disposed on a surface of the seal glass (108) closer to the release film (110) so as to surround at least a part of the area corresponding to the cavity (109), and a portion (104c) surrounded by the member (111) is used as the film escape area.

7. The method for manufacturing a semiconductor device according to claim 6, wherein the member (111) having the predetermined thickness is a more rigid film than the releaser film (110).

8. The method for manufacturing a semiconductor device according to claim 1, wherein the seal glass (108) is disposed on a semiconductor chip (106) via a rib member or spacer (107), by which the cavity (109) is defined.

9. The method for manufacturing a semiconductor device according to claim 1, wherein the semiconductor device comprises an image sensor such as a CCD image sensor or a CMOS image sensor.

10. A resin sealing apparatus for molding a resin on a semiconductor device having a cavity (109) inside a seal glass (108) while protecting the seal glass (108) of the semiconductor device with a release film (110), the resin sealing apparatus comprising:

a film escape recess (104a) allowing an escape of the release film (110) when the semiconductor device is clamped by a mold die (100), the film escape recess being formed at the mold die (100) so as to at least partially overlap an area

occupied by the cavity (109).

11. The resin sealing apparatus according to claim 10, wherein an area occupied by the film escape recess (104a) corresponds to an area occupied by the cavity (109).

12. The resin sealing apparatus according to claim 10, wherein a depth of the film escape recess (104a) is equal to or greater than a compression allowance by which the release film (110) is compressed at a portion of the release film other than the cavity (109) when the semiconductor device is clamped by the mold die (100).

13. A semiconductor device having a cavity (109) inside a seal glass (108), the semiconductor device being manufactured by molding a resin on the semiconductor device while protecting the seal glass (108) of the semiconductor device with a release film (110), the semiconductor device comprising:

a film escape area (104b; 104c) allowing an escape of the release film (110) when the semiconductor device is clamped by a mold die (100), the film escape area being formed at the seal glass (108) so as to at least partially overlap an area occupied by the cavity (109).

14. The semiconductor device according to claim 13, wherein an area occupied by the film escape area (104b; 140c) corresponds to an area occupied by the cavity (109).

15. The semiconductor device according to claim 13, wherein a depth of the film escape area (104b; 104c) is equal to or greater than a compression allowance by which the release film (110) is compressed at a portion of the release film other

than the cavity (109) when the semiconductor device is clamped by the mold die (100).

16. The semiconductor device according to claim 13, wherein the film escape area comprises a film escape recess (104b) formed on a surface of the seal glass (108) closer to the release film (110).

17. The semiconductor device according to claim 13, wherein a member (111) having a predetermined thickness is disposed on a surface of the seal glass (108) closer to the release film (110) so as to surround at least a part of the area corresponding to the cavity (109), and a portion (104c) surrounded by the member (111) is used as the film escape area.

18. The semiconductor device according to claim 17, wherein the member (111) having the predetermined thickness is a more rigid film than the releaser film (110).

19. The semiconductor device according to claim 13, wherein the seal glass (108) is disposed on a semiconductor chip (106) via a rib member or spacer (107), by which the cavity (109) is defined.

20. The semiconductor device according to claim 13, further comprising an image sensor such as a CCD image sensor or a CMOS image sensor.

CLAIMS

1. A method for manufacturing a semiconductor device, in which a resin is molded on a semiconductor device having a cavity (109) inside a seal glass (108) while protecting the seal glass (108) of the semiconductor device with a release film (110), the method comprising:

molding a resin on the semiconductor device in such a state that the release film (110) escapes in a film escape area (104a; 104b; 104c) formed at a mold die (100) or the seal glass (108) above the cavity when the semiconductor device is clamped by the mold die (100).

2. The method for manufacturing a semiconductor device according to claim 1, wherein the film escape area corresponds to an area occupied by the cavity (109).

3. The method for manufacturing a semiconductor device according to claim 1 or 2, wherein a depth of the film escape area is equal to or greater than a compression allowance by which the release film (110) is compressed at a portion of the release film other than the cavity (109) when the semiconductor device is clamped by the mold die (100).

4. The method for manufacturing a semiconductor device according to any of claims 1 to 3, wherein the film escape area comprises a film escape recess (104a) formed at the mold die (100).

5. The method for manufacturing a semiconductor device according to any of claims 1 to 3, wherein the film escape area comprises a film escape recess (104b) formed on a surface

of the seal glass (108) closer to the release film (110).

6. The method for manufacturing a semiconductor device according to any of claims 1 to 3, wherein a member (111) having a predetermined thickness is disposed on a surface of the seal glass (108) closer to the release film (110) so as to surround at least a part of the area corresponding to the cavity (109), and a portion (104c) surrounded by the member (111) is used as the film escape area.

7. The method for manufacturing a semiconductor device according to claim 6, wherein the member (111) having the predetermined thickness is a more rigid film than the releaser film (110).

8. The method for manufacturing a semiconductor device according to any of claims 1 to 7, wherein the seal glass (108) is disposed on a semiconductor chip (106) via a rib member or spacer (107), by which the cavity (109) is defined.

9. The method for manufacturing a semiconductor device according to any of claims 1 to 8, wherein the semiconductor device comprises an image sensor such as a CCD image sensor or a CMOS image sensor.

10. A resin sealing apparatus for molding a resin on a semiconductor device having a cavity (109) inside a seal glass (108) while protecting the seal glass (108) of the semiconductor device with a release film (110), the resin sealing apparatus comprising:

a film escape recess (104a) allowing an escape of the release film (110) when the semiconductor device is clamped by a mold die (100), the film escape recess being formed at the

mold die (100) so as to at least partially overlap an area occupied by the cavity (109).

11. The resin sealing apparatus according to claim 10, wherein an area occupied by the film escape recess (104a) corresponds to an area occupied by the cavity (109).

12. The resin sealing apparatus according to claim 10 or 11, wherein a depth of the film escape recess (104a) is equal to or greater than a compression allowance by which the release film (110) is compressed at a portion of the release film other than the cavity (109) when the semiconductor device is clamped by the mold die (100).

13. A semiconductor device having a cavity (109) inside a seal glass (108), the semiconductor device being manufactured by molding a resin on the semiconductor device while protecting the seal glass (108) of the semiconductor device with a release film (110), the semiconductor device comprising:

a film escape area (104b; 104c) allowing an escape of the release film (110) when the semiconductor device is clamped by a mold die (100), the film escape area being formed at the seal glass (108) so as to at least partially overlap an area occupied by the cavity (109).

14. The semiconductor device according to claim 13, wherein an area occupied by the film escape area (104b; 140c) corresponds to an area occupied by the cavity (109).

15. The semiconductor device according to claim 13 or 14, wherein a depth of the film escape area (104b; 104c) is equal to or greater than a compression allowance by which the

release film (110) is compressed at a portion of the release film other than the cavity (109) when the semiconductor device is clamped by the mold die (100).

16. The semiconductor device according to any of claims 13 to 15, wherein the film escape area comprises a film escape recess (104b) formed on a surface of the seal glass (108) closer to the release film (110).

17. The semiconductor device according to any of claims 13 to 15, wherein a member (111) having a predetermined thickness is disposed on a surface of the seal glass (108) closer to the release film (110) so as to surround at least a part of the area corresponding to the cavity (109), and a portion (104c) surrounded by the member (111) is used as the film escape area.

18. The semiconductor device according to claim 17, wherein the member (111) having the predetermined thickness is a more rigid film than the releaser film (110).

19. The semiconductor device according to any of claims 13 to 18, wherein the seal glass (108) is disposed on a semiconductor chip (106) via a rib member or spacer (107), by which the cavity (109) is defined.

20. The semiconductor device according to any of claims 13 to 19, further comprising an image sensor such as a CCD image sensor or a CMOS image sensor.