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CLAIMS

1. A resin sealing type semiconductor device, comprising:

an element mounting member having an element mounting surface for mounting a semiconductor element;

a semiconductor element bonded to said element mounting surface of said element mounting member;

a frame lead disposed around a periphery of said semiconductor element and separated from said semiconductor element and said element mounting surface, said frame lead being continuous around said periphery of said semiconductor element;

a plurality of leads disposed on and insulated from said element mounting member, said leads being separated from said semiconductor element;

a plurality of wires including at least wires electrically connecting said leads with the electrodes of said semiconductor element and wires electrically connecting said frame lead with the electrodes of said semiconductor element; and

a resin sealing portion for sealing said element mounting member, said semiconductor element, parts of said leads and said frame lead, and

wherein said plurality of leads comprises:

first leads disposed discontinuously with said frame lead; and

second leads disposed integrally with said frame lead.

2. The resin sealing type semiconductor device as

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defined in claim 1, wherein said frame lead and second leads are used as power supply leads.

3. The resin sealing type semiconductor device as defined in claim 1 or 2, wherein said first leads comprise an inner lead, an end of said inner lead overlapping said element mounting surface of said element mounting member.

4. The resin sealing type semiconductor device as defined in claim 3, wherein an insulating lead support is bonded to said element mounting member and said leads so that a portion of said insulating lead support is in-between said element mounting member and said leads, said insulating lead support allowing free ends of said inner lead of each of said first leads to contact said element mounting surface of said element mounting member within the limit of resilient deformation.

5. The resin sealing type semiconductor device as defined in claim 4, wherein said insulating lead support is continuously formed around an entire periphery of said element mounting surface.

6. The resin sealing type semiconductor device as defined in claim 4, wherein said insulating lead support is formed partially around the periphery of said element mounting surface.

7. The resin sealing type semiconductor device as

defined in claim 1, wherein said element mounting member comprises a substance having high thermal conductivity.

8. The resin sealing type semiconductor device as defined in claim 1, wherein said element mounting member comprises a conductive material.

9. The resin sealing type semiconductor device as defined in claim 8, wherein said element mounting member comprises at least one of copper, aluminum, silver, gold and an alloy having these metals as principal component.

10. The resin sealing type semiconductor device as defined in claim 1, wherein at least one of a first conducting layer and a second conducting layer is formed on said element mounting surface, said first conducting layer providing a ground for the electrodes of said semiconductor element and said second conducting layer providing a ground for said first leads.

11. The resin sealing type semiconductor device as defined in claim 10, wherein said first and second conducting layers comprise at least one of silver, gold, palladium and aluminum.

12. The resin sealing type semiconductor device as defined in claim 10 or 11, wherein said first and second conducting layers are formed in a mutually separated manner.

13. The resin sealing type semiconductor device as defined in claim 10 or 11, wherein said first and second conducting layers are formed in a continuous manner.

14. The resin sealing type semiconductor device as defined in claim 10 or 11, wherein an insulating layer is formed on the surface of said element mounting member, said insulating layer and said first and second conductive layers being mutually exclusive on the surface of said element mounting member.

15. The resin sealing type semiconductor device as defined in claim 14, wherein said insulating layer comprises a metal oxide film obtained by oxidizing the metal constituting said element mounting member.

16. The resin sealing type semiconductor device as defined in claim 1, wherein said element mounting member comprises a large portion and a small portion projecting from said large portion, a surface of said large portion being said element mounting surface, a cross-section of said large and small portions having an inverted T-shape.

17. The resin sealing type semiconductor device as defined in claim 16, wherein said resin seals said element mounting member except for a top surface of said small portion of said element mounting member.

18. The resin sealing type semiconductor device as

defined in claim 16 or 17, wherein said small portion has an undercut extending in the thickness direction.

19. The resin sealing type semiconductor device as defined in claim 16 or 17, wherein said large portion of said element mounting member has a resin penetration hole, said resin penetration hole being formed in said large portion extending in the thickness direction except said small portion.

20. The resin sealing type semiconductor device as defined in claim 17, wherein a solder layer is formed on said top surface of said small portion of said element mounting member.

21. The resin sealing type semiconductor device as defined in claim 1, wherein said element mounting member is substantially enclosed and sealed by said resin sealing portion.

22. The resin sealing type semiconductor device as defined in claim 1, wherein said frame lead has identifying projections or notches which provide a marking for wire bonding image recognition.

23. The resin sealing type semiconductor device as defined in claim 1, wherein said frame lead has substantially rectangular or square ring-shaped planar configuration, said frame lead being supported by support bars at four corners.

24. The resin sealing type semiconductor device as defined in claim 1, wherein the external diameter of the frame lead is in the range of 15% to 80% relative to the external diameter of the resin sealing portion.

25. A method of making a resin sealing type semiconductor device, comprising the steps of:

(a) bonding a semiconductor element to a fixed position of on an element mounting surface of an element mounting member using an adhesive;

(b) disposing an insulating lead support portion on said element mounting surface of said element mounting member, disposing a lead frame comprising integrally at least a frame lead, first leads discontinuous with said frame lead and second leads continuous with said frame lead, and bonding with adhesive said element mounting member and said lead frame with said lead support portion interposed therebetween;

(c) forming wires including wires electrically connecting said first leads and electrodes of the semiconductor element, and wires electrically connecting said frame lead and the electrodes of said semiconductor element, using a wire bonding means; and

(d) disposing the components formed in said steps (a) to (c) in a metal mold, and forming a resin sealing portion by a molding process.

26. The method as defined in claim 25, wherein an adhesive used in said step (a) is electrically conductive.

27. The method as defined in claim 25 or 26, wherein at said step (c), wires connecting said first leads and the electrodes of said semiconductor element are formed by depressing said first leads with lead pressers so that ends of said first leads are in contact with said element mounting surface of said element mounting member.