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(54) **LED PACKAGE STRUCTURE**

(75) Inventors: **Chao-Chin Wu**, Taipei (TW); **Shen-Ta Yang**, Taipei (TW)

(73) Assignee: **Paragon Semiconductor Lighting Technology Co., Ltd.**, Taoyuan County (TW)

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(51) **Int. Cl.**
H01L 29/18 (2006.01)

(52) **U.S. Cl.**
USPC **257/88**; 257/98; 257/99; 257/E27.12

(58) **Field of Classification Search**
USPC 257/79, 98, 99, 100, 793, 88, 678, 690, 257/734, 784, 788, E27.12, E33.059, 257/E33.061, E33.067, 91, E21.001, 257/E21.088, E33.055, E33.056
See application file for complete search history.

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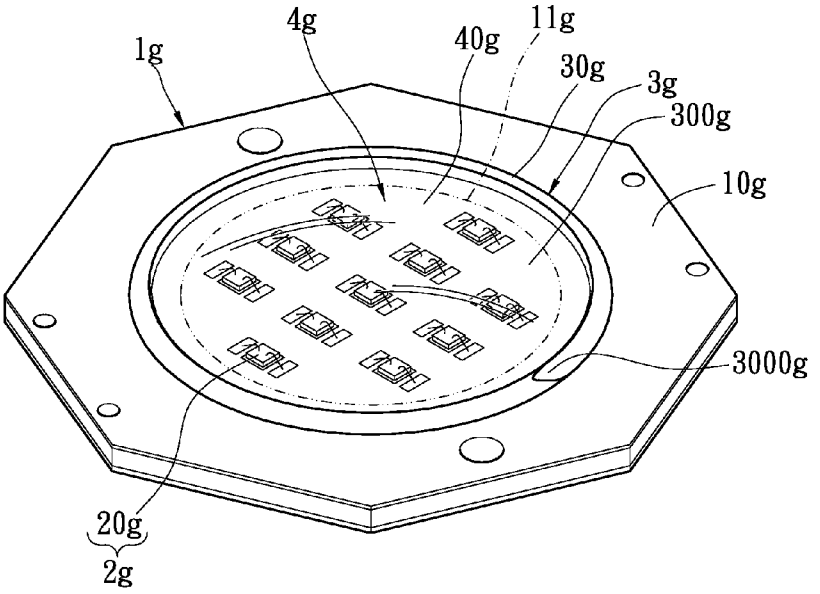
* cited by examiner

Primary Examiner — Selim Ahmed
(74) *Attorney, Agent, or Firm* — Li & Cai Intellectual Property (USA) Office

(57) **ABSTRACT**

An LED package structure with standby bonding pads for increasing wire-bonding yield includes a substrate unit, a light-emitting unit, a conductive wire unit and a package unit. The substrate unit has a substrate body and a plurality of positive pads and negative pads. The light-emitting unit has a plurality of LED bare chips. The positive electrode of each LED bare chip corresponds to at least two of the positive pads, and the negative electrode of each LED bare chip corresponds to at least two of the negative pads. Each wire is electrically connected between the positive electrode of the LED bare chip and one of the at least two positive pads or between the negative electrode of the LED bare chip and one of the at least two negative pads. The package unit has a light-permitting package resin body on the substrate body to cover the LED bare chips.

6 Claims, 6 Drawing Sheets



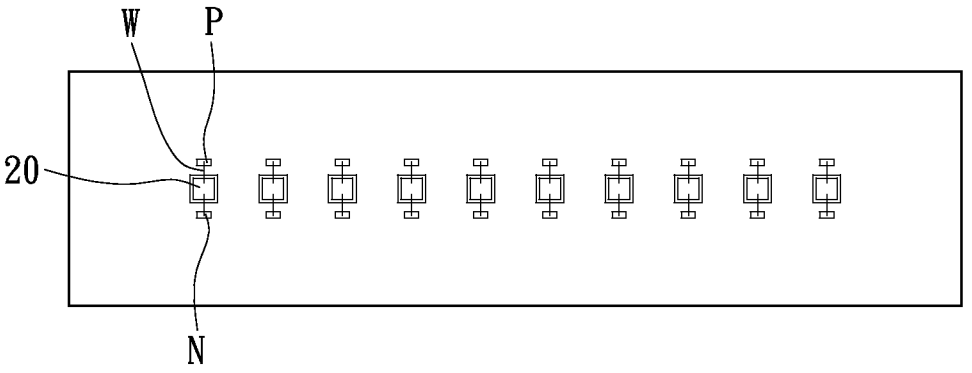


FIG. 1
PRIOR ART

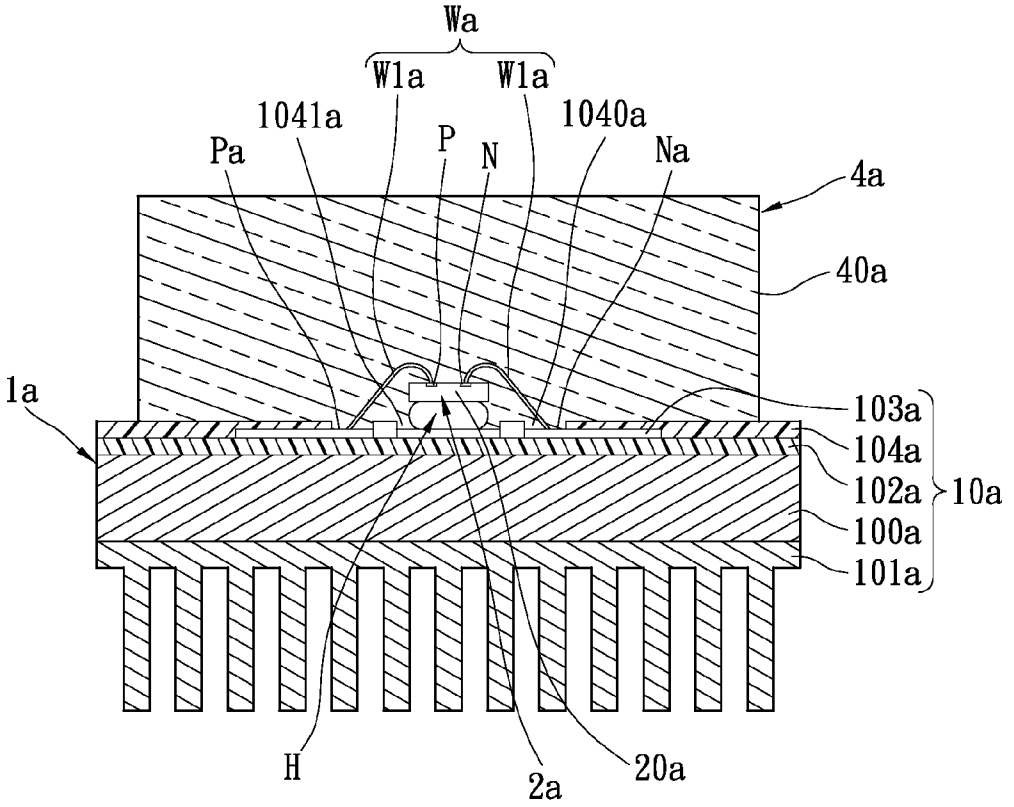

Wa
W1a
W1a
1041a
1040a
Pa
P
N
Na
4a
40a
1a
103a
104a
102a
10a
100a
101a
H
2a
20a

FIG. 2A

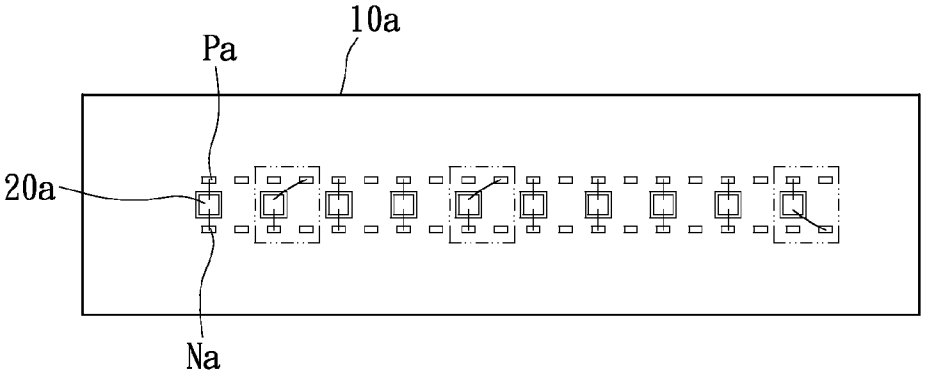

10a
Pa
20a
Na

FIG. 2B

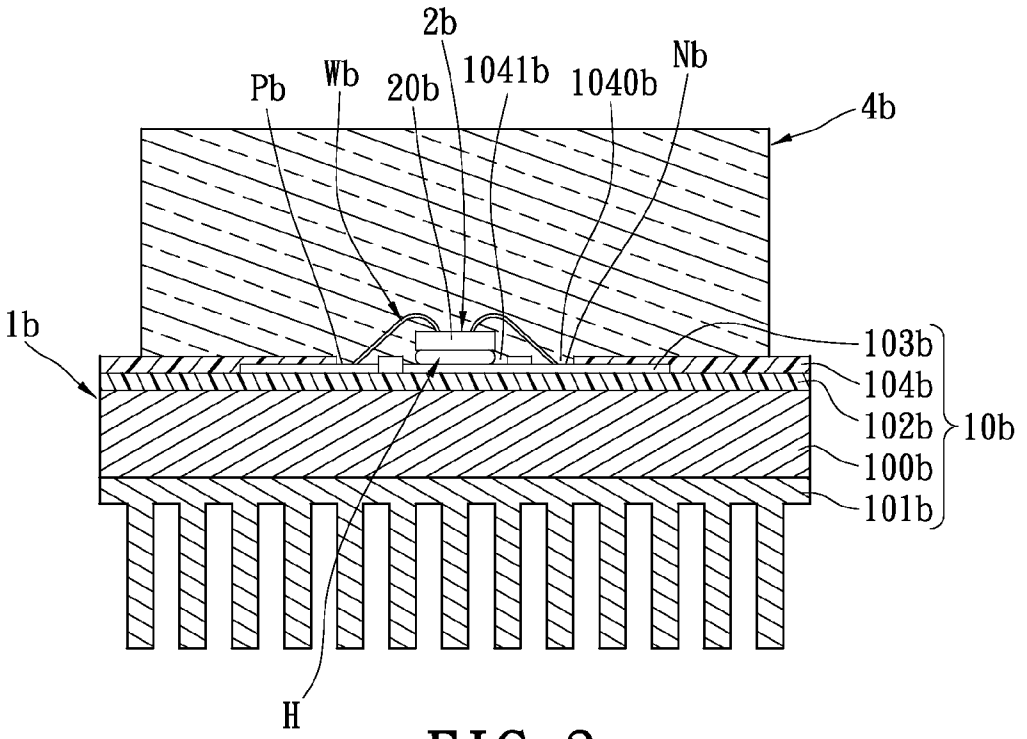

2b
Pb
Wb
20b
1041b
1040b
Nb
4b
1b
103b
104b
102b
10b
100b
101b
H

FIG. 3

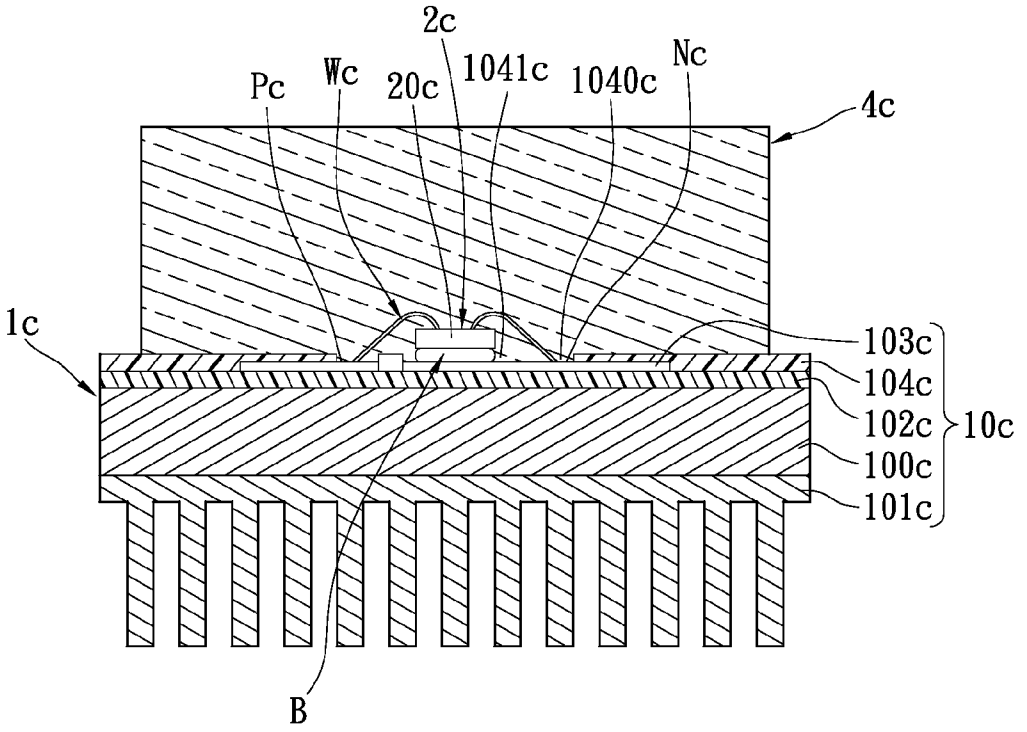

2c
Pc
Wc
20c
1041c
1040c
Nc
4c
1c
103c
104c
102c
10c
100c
101c
B

FIG. 4

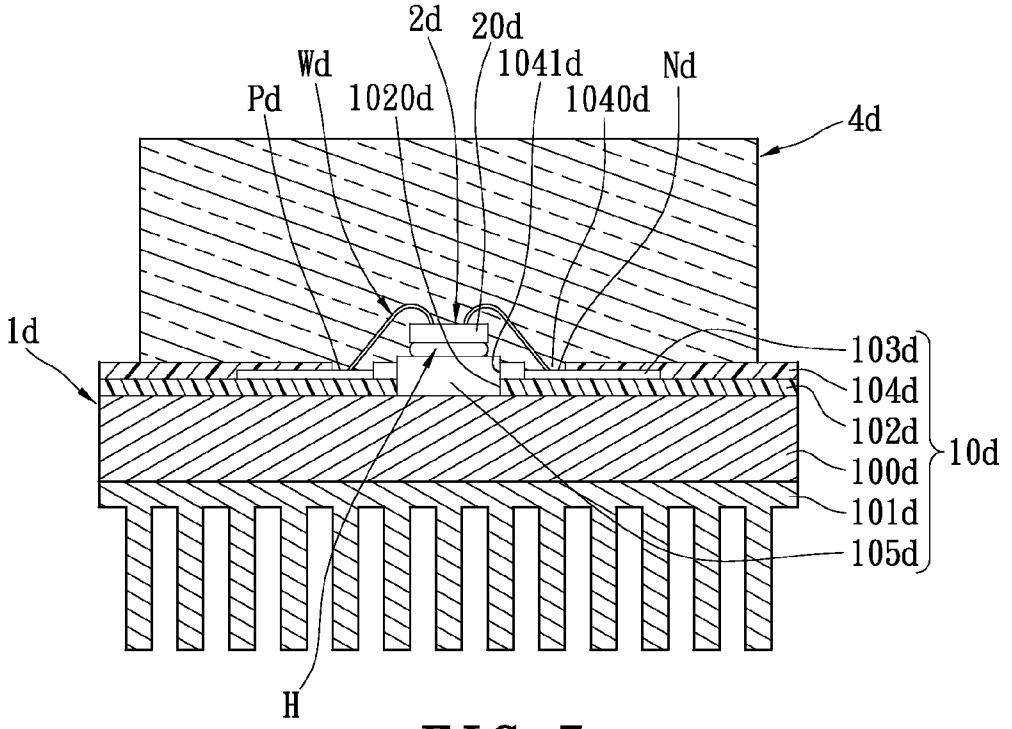

2d
20d
Wd
1041d
Nd
Pd
1020d
1040d
4d
1d
103d
104d
102d
10d
100d
101d
105d
H

FIG. 5

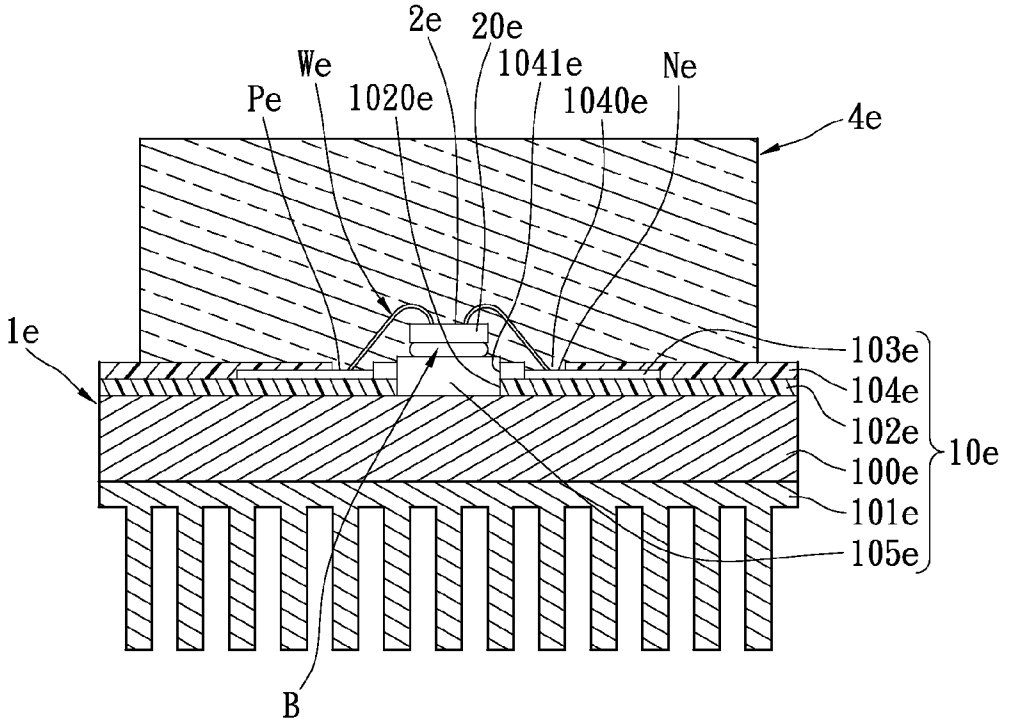

2e
20e
We
1041e
Ne
Pe
1020e
1040e
4e
1e
103e
104e
102e
10e
100e
101e
105e
B

FIG. 6

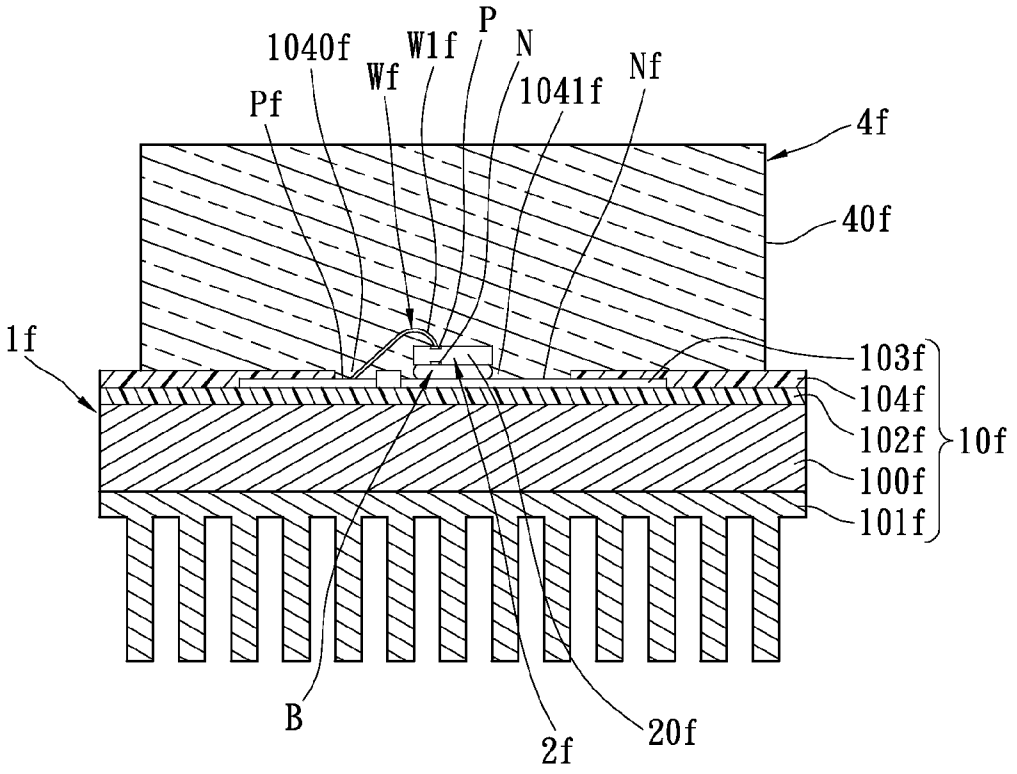

1040f
W1f
P
N
Nf
Wf
Pf
1041f
4f
40f
1f
103f
104f
102f
10f
100f
101f
B
2f
20f

FIG. 7

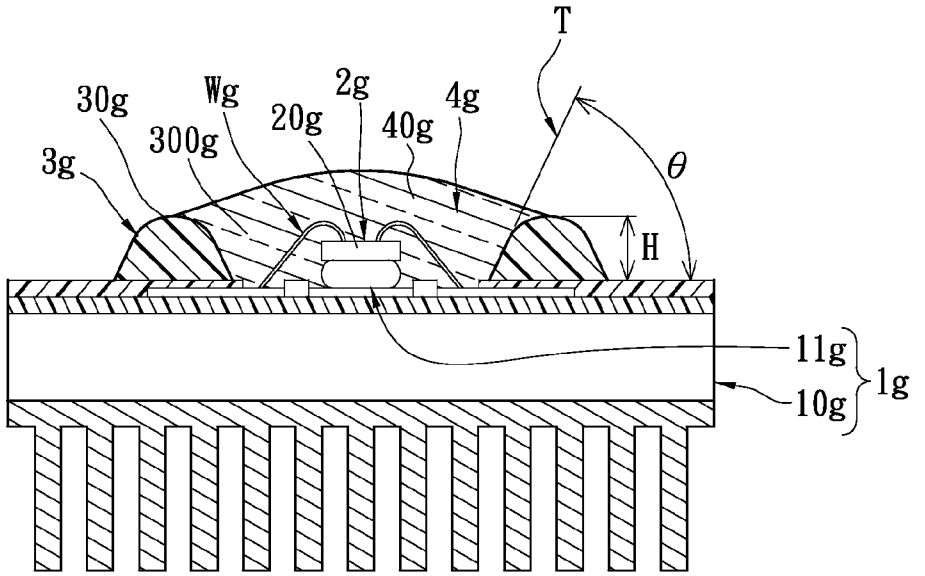

T
30g
Wg
2g
4g
20g
40g
300g
3g
θ
H
11g
10g
1g

FIG. 8

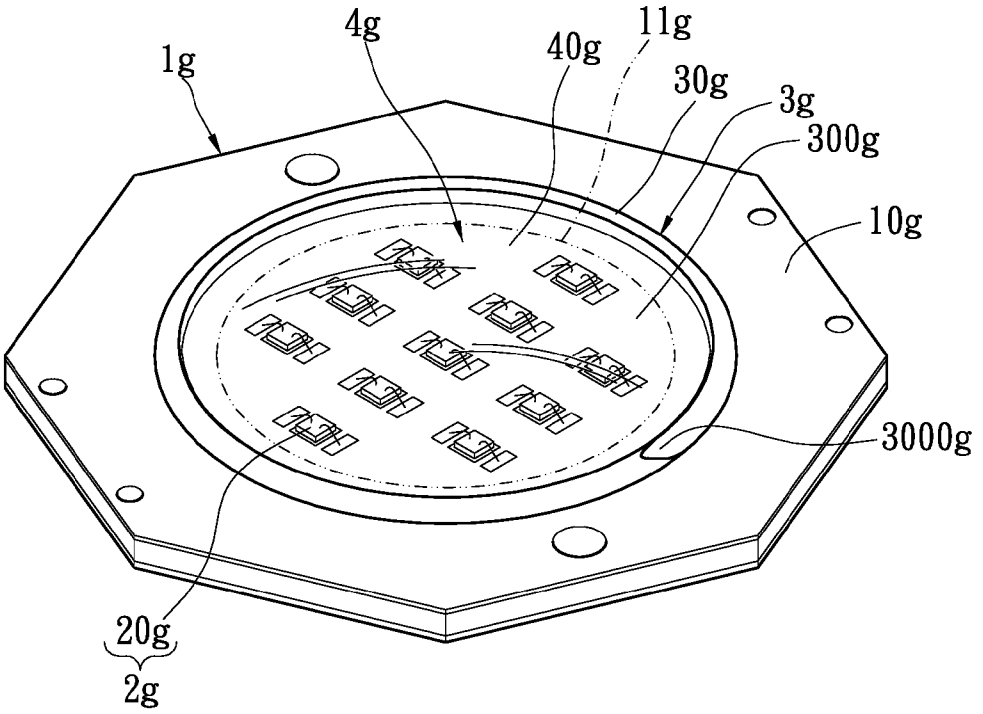


FIG. 9

LED PACKAGE STRUCTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The instant disclosure relates to an LED package structure, and more particularly, to an LED package structure having a plurality of standby bonding pads for increasing wire-bonding yield.

2. Description of Related Art

Referring to FIG. **1**, the LED package structure of the related art includes a plurality of LED bare chips **20**. The positive electrode (not shown) and the negative electrode (not shown) of each LED bare chip **20** respectively correspond to one positive pad P and one negative pad N. Hence, when one end of a wire W does not correctly connect with the positive pad P or the negative pad N (it means that the wire W does not electrically connect with the positive pad P or the negative pad N (such as floating solder)), the manufacturer firstly needs to clean solder splash on the surface of the positive pad P or the negative pad N, and then making the same end of the wire W bond on the clean surface of the positive pad P or the negative pad N again. Therefore, the related art increases wire-bonding time (decreases wire-bonding efficiency) and decreases wire-bonding yield.

SUMMARY OF THE INVENTION

One particular aspect of the instant disclosure is to provide an LED package structure with standby bonding pads for increasing wire-bonding yield. The positive electrode and the negative electrode of each LED bare chip respectively correspond to at least two of the positive pads and at least two of the negative pads, so that the positive electrode of each LED bare chip has at least one standby positive pad and the negative electrode of each LED bare chip has at least one standby negative pad, in order to decrease wire-bonding time (increase wire-bonding efficiency) and increase wire-bonding yield.

One of the embodiments of the instant disclosure provides an LED package structure, including: a substrate unit, a light-emitting unit, a conductive wire unit and a package unit. The substrate unit has a substrate body and a plurality of positive pads and negative pads disposed on the top surface of the substrate body. The light-emitting unit has a plurality of LED bare chips electrically disposed on the top surface of the substrate body. Each LED bare chip has a positive electrode and a negative electrode, the positive electrode of each LED bare chip corresponds to at least two of the positive pads, and the negative electrode of each LED bare chip corresponds to at least two of the negative pads. The conductive wire unit has a plurality of wires. Every two wires are respectively electrically connected between the positive electrode of each LED bare chip and one of the at least two positive pads and between the negative electrode of each LED bare chip and one of the at least two negative pads. The package unit has a light-permitting package resin body disposed on the top surface of the substrate body to cover the LED bare chips.

One of the embodiments of the instant disclosure provides an LED package structure, including: a substrate unit, a light-emitting unit, a conductive wire unit and a package unit. The substrate unit has a substrate body and a plurality of first pads and second pads disposed on the top surface of the substrate body. The light-emitting unit has a plurality of LED bare chips electrically disposed on the top surface of the substrate body. Each LED bare chip has two electrodes, one of the two electrodes of each LED bare chip corresponds to at least two

of the first pads, and another one of the two electrodes of each LED bare chip is electrically contacted with each second pad. The conductive wire unit has a plurality of wires. Each wire is electrically connected between one of the two electrodes of each LED bare chip and one of the two first pads. The package unit has a light-permitting package resin body disposed on the top surface of the substrate body to cover the LED bare chips.

Therefore, when a first end of the wire does not correctly connect with first one of the at least two positive pads or the at least two negative pads (it means that the wire does not electrically connect with the first one of the at least two positive pads or the at least two negative pads (such as floating solder)), the manufacturer can make the same first end of the wire connect to another one of the at least two positive pads or the at least two negative pads without cleaning solder splash on the surface of the first one of the at least two positive pads or the at least two negative pads, in order to decrease wire-bonding time (increase wire-bonding efficiency) and increase wire-bonding yield.

To further understand the techniques, means and effects the instant disclosure takes for achieving the prescribed objectives, the following detailed descriptions and appended drawings are hereby referred, such that, through which, the purposes, features and aspects of the instant disclosure can be thoroughly and concretely appreciated. However, the appended drawings are provided solely for reference and illustration, without any intention that they be used for limiting the instant disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a top, schematic view of the LED package structure according to the related art;

FIG. **2**A is a cross-sectional, schematic view of the LED package structure according to the first embodiment of the instant disclosure;

FIG. **2**B is a top, schematic view of the LED package structure according to the first embodiment of the instant disclosure (the package unit has been removed);

FIG. **3** is a cross-sectional, schematic view of the LED package structure according to the second embodiment of the instant disclosure;

FIG. **4** is a cross-sectional, schematic view of the LED package structure according to the third embodiment of the instant disclosure;

FIG. **5** is a cross-sectional, schematic view of the LED package structure according to the fourth embodiment of the instant disclosure;

FIG. **6** is a cross-sectional, schematic view of the LED package structure according to the fifth embodiment of the instant disclosure;

FIG. **7** is a cross-sectional, schematic view of the LED package structure according to the sixth embodiment of the instant disclosure;

FIG. **8** is a cross-sectional, schematic view of the LED package structure according to the seventh embodiment of the instant disclosure; and

FIG. **9** is a perspective, schematic view of the LED package structure according to the seventh embodiment of the instant disclosure.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

First Embodiment

Referring to FIGS. **2**A and **2**B, the first embodiment of the instant disclosure provides an LED package structure with

standby bonding pads for increasing wire-bonding yield, including: a substrate unit **1***a*, a light-emitting unit **2***a*, a conductive wire unit Wa and a package unit **4***a*.

The substrate unit **1***a* has a substrate body **10***a* and a plurality of positive pads Pa and negative pads Na disposed on the top surface of the substrate body **10***a*. Furthermore, the substrate body **10***a* has a heat-dissipating substrate **100***a*, a heat sink **101***a* disposed on a bottom surface of the heat-dissipating substrate **100***a* (the heat sink **101***a* is composed of a plurality of heat-dissipating fins), a first insulating layer **102***a* disposed on the top surface of the heat-dissipating substrate **100***a*, at least two conductive layers **103***a* separated from each other and disposed on the first insulating layer **102***a*, and a second insulating layer **104***a* with a plurality of pad openings **1040***a* and bare chip openings **1041***a* for covering the at least two conductive layers **103***a*. The positive pads Pa disposed on one of the conductive layers **103***a* and the negative pads Na disposed on the other conductive layer **103***a* are respectively exposed by the pad openings **1040***a* of the second insulating layer **104***a*.

Moreover, the light-emitting unit **2***a* has a plurality of LED bare chips **20***a* electrically disposed on the top surface of the substrate body **10***a*. Each LED bare chip **20***a* has a positive electrode P and a negative electrode N. The positive electrode P of each LED bare chip **20***a* corresponds to at least two of the positive pads Pa, and the negative electrode N of each LED bare chip **20***a* corresponds to at least two of the negative pads Na (as shown in the phantom lines of FIG. **2**B). In other words, the positive electrode P of each LED bare chip **20***a* can selectively electrically connected to one of the at least two positive pads Pa (as shown in the first and the second phantom lines of FIG. **2**B), and the negative electrode N of each LED bare chip **20***a* can selectively electrically connected to one of the at least two negative pads Na (as shown in the third phantom lines of FIG. **2**B). In addition, each LED bare chip **20***a* is disposed in or above each bare chip opening **1041***a* and on the first insulating layer **102***a* by an adhesive layer H.

Furthermore, the conductive wire unit Wa has a plurality of wires W**1***a*. Every two wires W**1***a* are respectively electrically connected between the positive electrode P of each LED bare chip **20***a* and one of the at least two positive pads Pa (another positive pad Pa as a standby bonding pad that does not be touched by the wire W**1***a*) and between the negative electrode N of each LED bare chip **20***a* and one of the at least two negative pads Na (another negative pad Na as a standby bonding pad that does not be touched by the wire W**1***a*). In other words, one end of each wire W**1***a* is electrically connected to the positive electrode P or the negative electrode N of each LED bare chip **20***a*, and another end of each wire W**1***a* is electrically connected to one of the at least two positive pads Pa or one of the at least two negative pads Na.

Hence, when a first end of the wire W**1***a* does not correctly connect with first one of the at least two positive pads Pa or the at least two negative pads Na (it means that the wire W**1***a* does not electrically connect with the first one of the at least two positive pads Pa or the at least two negative pads Na (such as floating solder)), the manufacturer can make the same first end of the wire W**1***a* connect to another one of the at least two positive pads Pa or the at least two negative pads Na without cleaning solder splash on the surface of the first one of the at least two positive pads Pa or the at least two negative pads Na, in order to decrease wire-bonding time (increase wire-bonding efficiency) and increase wire-bonding yield.

Furthermore, the package unit **4***a* has a light-permitting package resin body **40***a* disposed on the top surface of the substrate body **10***a* to cover the LED bare chips **20***a*. The light-permitting package resin body **40***a* can be a transparent resin or a resin mixed with phosphor powders.

Second Embodiment

Referring to FIG. **3**, the second embodiment of the instant disclosure provides an LED package structure with standby bonding pads for increasing wire-bonding yield, including: a substrate unit **1***b*, a light-emitting unit **2***b*, a conductive wire unit Wb and a package unit **4***b*. Moreover, the substrate body **10***b* has a heat-dissipating substrate **100***b*, a heat sink **101***b* disposed on a bottom surface of the heat-dissipating substrate **100***b*, a first insulating layer **102***b* disposed on the top surface of the heat-dissipating substrate **100***b*, at least two conductive layers **103***b* separated from each other and disposed on the first insulating layer **102***b*, and a second insulating layer **104***b* with a plurality of pad openings **1040***b* and bare chip openings **1041***b* for covering the at least two conductive layers **103***b*. The positive pads Pb disposed on one of the conductive layers **103***b* and the negative pads Nb disposed on the other conductive layer **103***b* are respectively exposed by the pad openings **1040***b* of the second insulating layer **104***b*. In addition, each LED bare chip **20***b* is disposed in or above each bare chip opening **1041***b* and on one of the conductive layers **103***b* by an adhesive layer H.

Hence, the difference between the second embodiment and the first embodiment is that: in the second embodiment, each LED bare chip **20***b* is disposed on one of the conductive layers **103***b* by the adhesive layer H.

Third Embodiment

Referring to FIG. **4**, the third embodiment of the instant disclosure provides an LED package structure with standby bonding pads for increasing wire-bonding yield, including: a substrate unit **1***c*, a light-emitting unit **2***c*, a conductive wire unit Wc and a package unit **4***c*. Moreover, the substrate body **10***c* has a heat-dissipating substrate **100***c*, a heat sink **101***c* disposed on a bottom surface of the heat-dissipating substrate **100***c*, a first insulating layer **102***c* disposed on the top surface of the heat-dissipating substrate **100***c*, at least two conductive layers **103***c* separated from each other and disposed on the first insulating layer **102***c*, and a second insulating layer **104***c* with a plurality of pad openings **1040***c* and bare chip openings **1041***c* for covering the at least two conductive layers **103***c*. The positive pads Pc disposed on one of the conductive layers **103***c* and the negative pads Nc disposed on the other conductive layer **103***c* are respectively exposed by the pad openings **1040***c* of the second insulating layer **104***c*. In addition, each LED bare chip **20***c* is disposed in or above each bare chip opening **1041***c* and on one of the conductive layers **103***c* by solder balls B (or solder paste).

Hence, the difference between the third embodiment and the second embodiment is that: in the third embodiment, each LED bare chip **20***c* is disposed on one of the conductive layers **103***c* by the solder balls B (or solder paste).

Fifth Embodiment

Referring to FIG. **5**, the fourth embodiment of the instant disclosure provides an LED package structure with standby bonding pads for increasing wire-bonding yield, including: a substrate unit **1***d*, a light-emitting unit **2***d*, a conductive wire unit Wd and a package unit **4***d*. Moreover, the substrate body **10***d* has a heat-dissipating substrate **100***d*, a heat sink **101***d* disposed on a bottom surface of the heat-dissipating substrate **100***d*, a first insulating layer **102***d* with a plurality of openings

1020*d* disposed on the top surface of the heat-dissipating substrate **100***d*, a plurality of heat-conducting blocks **105***d* respectively filled into the openings **1020***d* of the first insulating layer **102***d* and contacted with the heat-dissipating substrate **100***d*, at least two conductive layers **103***d* separated from each other and disposed on the first insulating layer **102***d*, and a second insulating layer **104***d* with a plurality of pad openings **1040***d* and bare chip openings **1041***d* for covering the at least two conductive layers **103***d*. The positive pads Pd disposed on one of the conductive layers **103***d* and the negative pads Nd disposed on the other conductive layer **103***d* are respectively exposed by the pad openings **1040***d* of the second insulating layer **104***d*, and each LED bare chip **20***d* is disposed in or above each bare chip opening **1041***d* and on each heat-conducting block **105***d* by an adhesive layer H.

Hence, the difference between the fourth embodiment and the above-mentioned embodiments is that: in the fourth embodiment, the first insulating layer **102***d* with the openings **1020***d* is disposed on the top surface of the heat-dissipating substrate **100***d*, the heat-conducting blocks **105***d* are respectively filled into the openings **1020***d* of the first insulating layer **102***d* and contacted with the heat-dissipating substrate **100***d*, and each LED bare chip **20***d* is disposed on each heat-conducting block **105***d* by the adhesive layer H.

Fifth Embodiment

Referring to FIG. **6**, the fifth embodiment of the instant disclosure provides an LED package structure with standby bonding pads for increasing wire-bonding yield, including: a substrate unit **1***e*, a light-emitting unit **2***e*, a conductive wire unit We and a package unit **4***e*. Moreover, the substrate body **10***e* has a heat-dissipating substrate **100***e*, a heat sink **101***e* disposed on a bottom surface of the heat-dissipating substrate **100***e*, a first insulating layer **102***e* with a plurality of openings **1020***e* disposed on the top surface of the heat-dissipating substrate **100***e*, a plurality of heat-conducting blocks **105***e* respectively filled into the openings **1020***e* of the first insulating layer **102***e* and contacted with the heat-dissipating substrate **100***e*, at least two conductive layers **103***e* separated from each other and disposed on the first insulating layer **102***e*, and a second insulating layer **104***e* with a plurality of pad openings **1040***e* and bare chip openings **1041***e* for covering the at least two conductive layers **103***e*. The positive pads Pe disposed on one of the conductive layers **103***e* and the negative pads Ne disposed on the other conductive layer **103***e* are respectively exposed by the pad openings **1040***e* of the second insulating layer **104***e*, and each LED bare chip **20***e* is disposed in or above each bare chip opening **1041***e* and on each heat-conducting block **105***e* by solder balls B (or solder paste).

Hence, the difference between the fifth embodiment and the fourth embodiments is that: in the fifth embodiment, each LED bare chip **20***e* is disposed on each heat-conducting block **105***e* by the solder balls B (or solder paste).

Sixth Embodiment

Referring to FIG. **7**, the sixth embodiment of the instant disclosure provides an LED package structure with standby bonding pads for increasing wire-bonding yield, including: a substrate unit **1***f*, a light-emitting unit **2***f*, a conductive wire unit Wf and a package unit **4***f*.

The substrate unit **1***f* has a substrate body **10***f* and a plurality of first pads Pf and second pads Nf disposed on the top surface of the substrate body **10***f*. The light-emitting unit **2***f* has a plurality of LED bare chips **20***f* electrically disposed on the top surface of the substrate body **10***f*. In addition, each LED bare chip **20***f* has two electrodes (P and N), one of the two electrodes (such as the electrode P) of each LED bare chip **20***f* corresponds to at least two of the first pads Pf, and another one of the two electrodes (such as the electrode N) of each LED bare chip **20***f* is electrically contacted with each second pad Nf.

Furthermore, the conductive wire unit Wf has a plurality of wires W1*f* Each wire W1*f* is electrically connected between one of the two electrodes (such as the electrode P) of each LED bare chip **20***a* and one of the two first pads Pf. In addition, the package unit **4***f* has a light-permitting package resin body **40***f* disposed on the top surface of the substrate body **10***f* to cover the LED bare chips **20***f*.

Moreover, the substrate body **10***f* has a heat-dissipating substrate **100***f*, a heat sink **101***f* disposed on a bottom surface of the heat-dissipating substrate **100***f*, a first insulating layer **102***f* disposed on the top surface of the heat-dissipating substrate **100***f*, at least two conductive layers **103***f* separated from each other and disposed on the first insulating layer **102***f*, and a second insulating layer **104***f* with a plurality of pad openings **1040***f* and bare chip openings **1041***f* for covering the at least two conductive layers **103***f*. In addition, the first pads Pf disposed on one of the conductive layers **103***f* and the second pads Nf disposed on the other conductive layer **103***f* are respectively exposed by the pad openings **1040***f* of the second insulating layer **104***f*. Each LED bare chip **20***f* is disposed in or above each bare chip opening **1041***f*, and the LED bare chips **20***f* and the second pads Nf are disposed on the same conductive layer **103***f* by solder balls B (or solder paste).

Seventh Embodiment

Referring to FIGS. **8** and **9**, the seventh embodiment of the instant disclosure provides an LED package structure with standby bonding pads for increasing wire-bonding yield, including: a substrate unit **1***g*, a light-emitting unit **2***g*, a conductive wire unit Wg, a frame unit **3***g* and a package unit **4***g*.

The frame unit **3***g* has a continuous colloid frame **30***g* surroundingly formed on the top surface of the substrate body **10***g* by coating. The continuous colloid frame **30***g* surrounds the LED bare chips **20***g* to form a resin position limiting space **300***g* on the substrate body **10***g*. The substrate unit **1***g* has a bare chip-placing area **11***g* disposed on the top surface of the substrate body **10***g*, the LED bare chips **20***g* are disposed on the bare chip-placing area **11***g*, and the position of the light-permitting package resin body **40***g* is limited in the resin position limiting space **300***g*.

Moreover, the continuous colloid frame **30***g* has an arc shape formed on the top surface thereof. The continuous colloid frame **30***g* has a radius tangent T and the angle θ of the radius tangent T relative to the top surface of the substrate body **10***g* is between 40° C. and 50° C. The maximum height H of the continuous colloid frame **30***g* relative to the top surface of the substrate body **10***g* is between 0.3 mm and 0.7 mm. The width of a bottom side of the continuous colloid frame **30***g* is between 1.5 mm and 3 mm. The thixotropic index of the continuous colloid frame **30***g* is between 4 and 6, and the continuous colloid frame **30***g* can be a white thermo-hardening reflecting body mixed with inorganic additive.

Furthermore, the continuous colloid frame **30***g* has a convex or concave junction portion **3000***g* as shown in HU **9**. In other words, when the continuous colloid frame **30***g* is going to finish by surroundingly coating, the convex or concave junction portion **3000***g* is formed naturally on the continuous colloid frame **30***g*. Hence, the convex or concave junction

portion **3000***g* is created during surroundingly coating process. In general, the convex or concave junction portion **3000***g* may be formed at an intersection point of the start point and the terminal point of the continuous colloid frame **30***g*.

In conclusion, the positive electrode and the negative electrode of each LED bare chip respectively correspond to at least two of the positive pads and at least two of the negative pads, so that the positive electrode of each LED bare chip has at least one standby positive pad and the negative electrode of each LED bare chip has at least one standby negative pad.

Hence, when a first end of the wire does not correctly connect with first one of the at least two positive pads or the at least two negative pads (it means that the wire does not electrically connect with the first one of the at least two positive pads or the at least two negative pads (such as floating solder)), the manufacturer can make the same first end of the wire connect to another one of the at least two positive pads or the at least two negative pads without cleaning solder splash on the surface of the first one of the at least two positive pads or the at least two negative pads, in order to decrease wire-bonding time (increase wire-bonding efficiency) and increase wire-bonding yield.

The above-mentioned descriptions merely represent the preferred embodiments of the instant disclosure, without any intention or ability to limit the scope of the instant disclosure which is fully described only within the following claims. Various equivalent changes, alterations or modifications based on the claims of instant disclosure are all, consequently, viewed as being embraced by the scope of the instant disclosure.

What is claimed is:

1. An LED package structure, comprising:

a substrate unit having a substrate body and a plurality of positive pads and negative pads disposed on the top surface of the substrate body;

a light-emitting unit having a plurality of LED bare chips electrically disposed on the top surface of the substrate body, wherein each LED bare chip has a positive electrode and a negative electrode, the positive electrode of each LED bare chip corresponds to at least two of the positive pads, and the negative electrode of each LED bare chip corresponds to at least two of the negative pads;

a conductive wire unit having a plurality of wires, wherein each wire is electrically connected between the positive electrode of the LED bare chip and one of the at least two positive pads or between the negative electrode of the LED bare chip and one of the at least two negative pads;

a package unit having a light-permitting package resin body disposed on the top surface of the substrate body to cover the LED bare chips; and

a frame unit having a continuous colloid frame surroundingly formed on the top surface of the substrate body by coating, wherein the continuous colloid frame surrounds the LED bare chips to form a resin position limiting space on the substrate body;

wherein the continuous colloid frame is extended from an initial point to a terminal point, both the initial point and the terminal point are substantially the same position, thus two end portions of the continuous colloid frame are substantially overlapping to form a convex dot on the terminal point.

2. The LED package structure according to claim **1**, wherein the substrate unit has a bare chip-placing area disposed on the top surface of the substrate body, the LED bare chips are disposed on the bare chip-placing area, and the position of the light-permitting package resin body is limited in the resin position limiting space.

3. The LED package structure according to claim **1**, wherein the continuous colloid frame has an arc shape formed on the top surface thereof, the continuous colloid frame has a radius tangent and the angle of the radius tangent relative to the top surface of the substrate body is between 40° and 50°, the maximum height of the continuous colloid frame relative to the top surface of the substrate body is between 0.3 mm and 0.7 mm, and the width of a bottom side of the continuous colloid frame is between 1.5 mm and 3 mm.

4. The LED package structure according to claim **1**, wherein the thixotropic index of the continuous colloid frame is between 4 and 6, and the continuous colloid frame is a white thermohardening reflecting body mixed with inorganic additive.

5. An LED package structure, comprising:

a substrate unit having a substrate body and a plurality of first pads and second pads disposed on the top surface of the substrate body;

a light-emitting unit having a plurality of LED bare chips electrically disposed on the top surface of the substrate body, wherein each LED bare chip has two electrodes, one of the two electrodes of each LED bare chip corresponds to at least two of the first pads, and the other electrode of each LED bare chip electrically contacts each second pad;

a conductive wire unit having a plurality of wires, wherein each wire is electrically connected between one of the two electrodes of the LED bare chip and one of the two first pads;

a package unit having a light-permitting package resin body disposed on the top surface of the substrate body to cover the LED bare chips; and

a frame unit having a continuous colloid frame surroundingly formed on the top surface of the substrate body by coating, wherein the continuous colloid frame surrounds the LED bare chips to form a resin position limiting space on the substrate body;

wherein the continuous colloid frame is extended from an initial point to a terminal point, both the initial point and the terminal point are substantially the same position, thus two end portions of the continuous colloid frame are substantially overlapping to form a convex dot on the terminal point.

6. An LED package structure, comprising:

a substrate unit having a substrate body and a plurality of first pads and second pads disposed on the top surface of the substrate body;

a light-emitting unit having a plurality of LED bare chips electrically disposed on the top surface of the substrate body, wherein each LED bare chip has two electrodes, one of the two electrodes of each LED bare chip corresponds to at least two of the first pads, and the other electrode of each LED bare chip electrically contacts each second pad;

a conductive wire unit having a plurality of wires, wherein each wire is electrically connected between one of the two electrodes of the LED bare chip and one of the two first pads;

a package unit having a light-permitting package resin body disposed on the top surface of the substrate body to cover the LED bare chips; and

a frame unit having a continuous colloid frame surroundingly formed on the top surface of the substrate body by coating, wherein the continuous colloid frame surrounds

the LED bare chips to form a resin position limiting space on the substrate body;

wherein the continuous colloid frame is extended from an initial point to a terminal point to form a concave junction portion between the initial point and the terminal point.

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