The United States of America

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Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, or importing into the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

Michelle K. Lee

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(12) **United States Patent**
Chung

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(54) **LED PACKAGE STRUCTURE WITH CONCAVE AREA FOR POSITIONING HEAT-CONDUCTING SUBSTANCE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 922 days.

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CPC ***F21K 9/00*** (2013.01); *H01L 25/0753* (2013.01); *H01L 33/642* (2013.01); *H01L 2933/0075* (2013.01); *H01L 2224/48091* (2013.01); *H01L 2224/73265* (2013.01)

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See application file for complete search history.

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(57) **ABSTRACT**

An LED package structure with concave area for positioning heat-conducting substance includes a substrate unit, a heat-conducting adhesive unit, a light-emitting unit, a conductive unit and a package unit. The substrate unit has a substrate body, a concave space formed on the substrate body, and a plurality of positive and negative pads exposed on the substrate body. The heat-conducting adhesive unit has a heat-conducting adhesive layer positioned in the concave space. The light-emitting unit has a plurality of LED chips disposed on the heat-conducting adhesive layer and received in the concave space. The conductive unit has a plurality of wires. Each LED chip is electrically connected between each positive pad and each negative pad. The package unit has a translucent package resin body disposed on the substrate body in order to cover the LED chips and the wires.

12 Claims, 14 Drawing Sheets