



US 20050269587A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2005/0269587 A1**

Loh et al.

(43) **Pub. Date: Dec. 8, 2005**

(54) **POWER LIGHT EMITTING DIE PACKAGE WITH REFLECTING LENS AND THE METHOD OF MAKING THE SAME**

(52) **U.S. Cl. 257/99; 257/433; 257/676; 438/27; 438/123**

(76) **Inventors: Ban P. Loh, Durham, NC (US); Gerald H. Negley, Carrboro, NC (US)**

(57) **ABSTRACT**

Correspondence Address:
D. James Chung
Suite 245
6601 Koll Center Parkway
Pleasanton, CA 94566 (US)

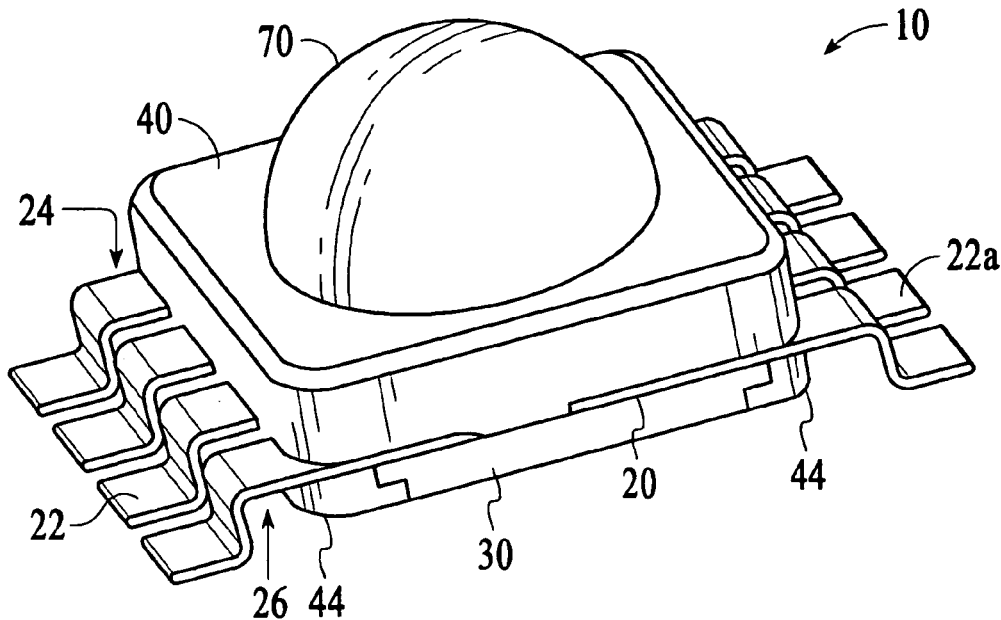
A light emitting die package and a method of manufacturing the die package are disclosed. The die package includes a leadframe, at least one light emitting device (LED), a molded body, and a lens. The leadframe includes a plurality of leads and has a top side and a bottom side. A portion of the leadframe defines a mounting pad. The LED device is mounted on the mounting pad. The molded body is integrated with portions of the leadframe and defines an opening on the top side of the leadframe, the opening surrounding the mounting pad. The molded body further includes latches on the bottom side of the leadframe. The lens is coupled to the molded body. A composite lens is used as both reflector and imaging tool to collect and direct light emitted by LED(s) for desired spectral and luminous performance.

(21) **Appl. No.: 10/861,929**

(22) **Filed: Jun. 4, 2004**

Publication Classification

(51) **Int. Cl.⁷ H01L 33/00; H01L 21/00**



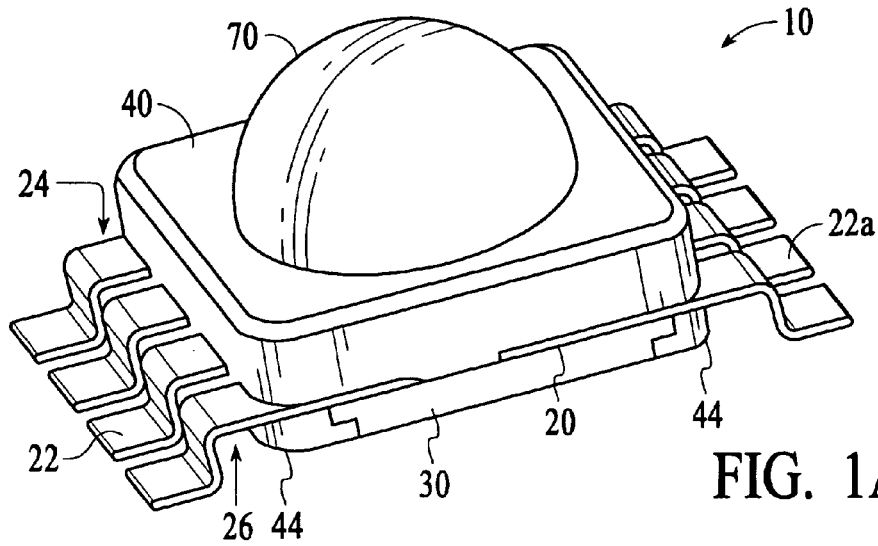


FIG. 1A

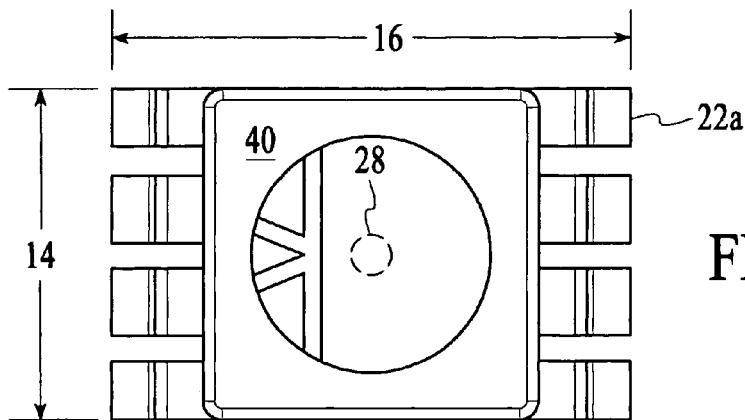


FIG. 1B

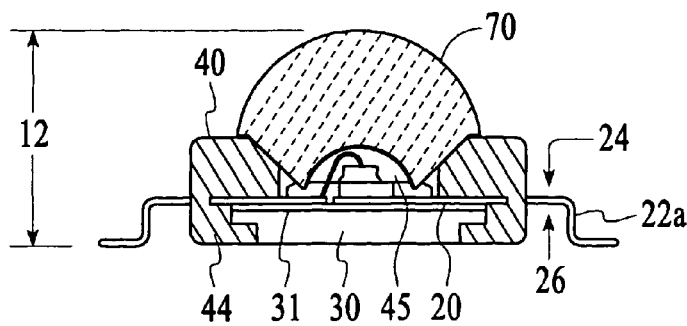


FIG. 1C

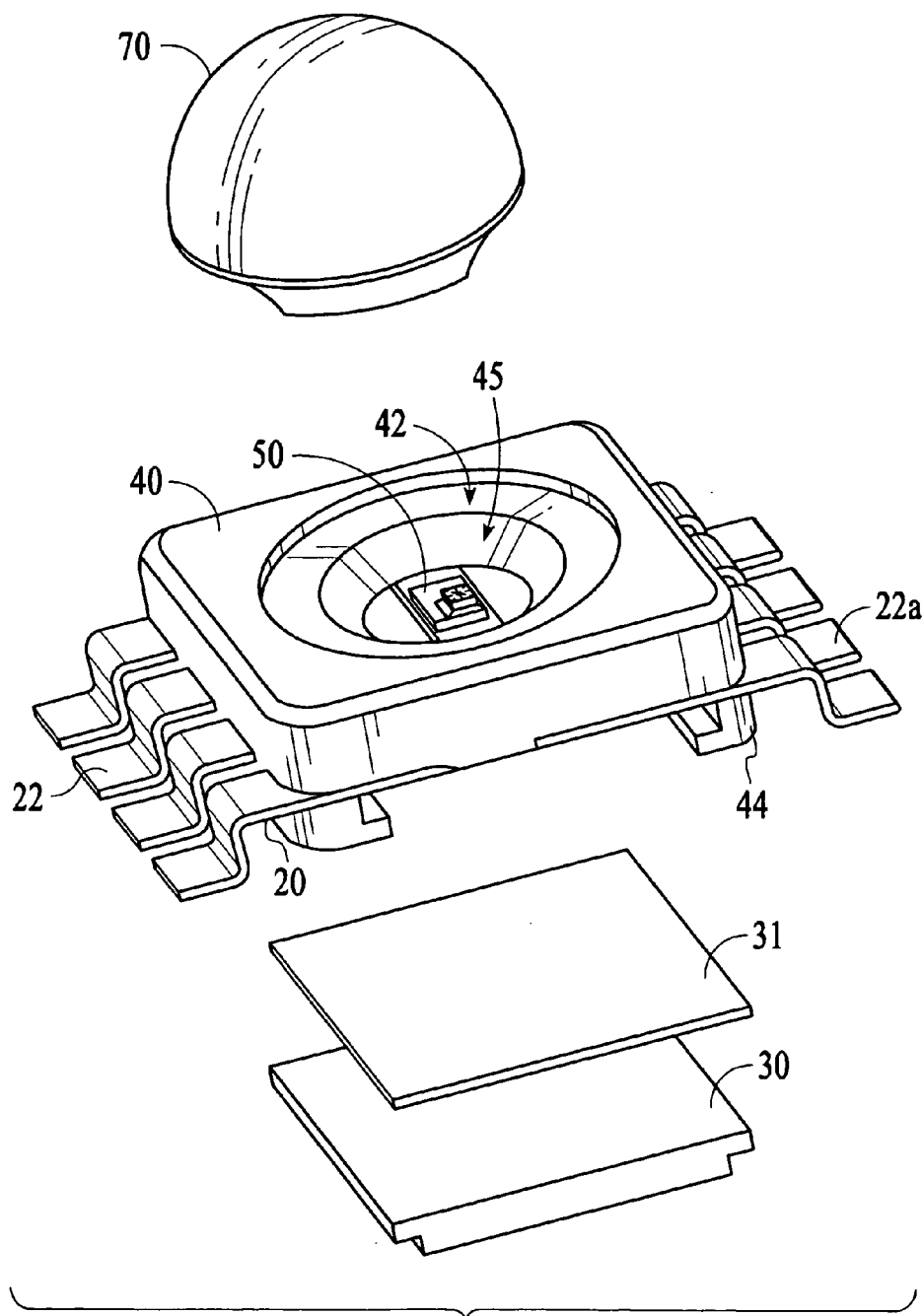


FIG. 2A

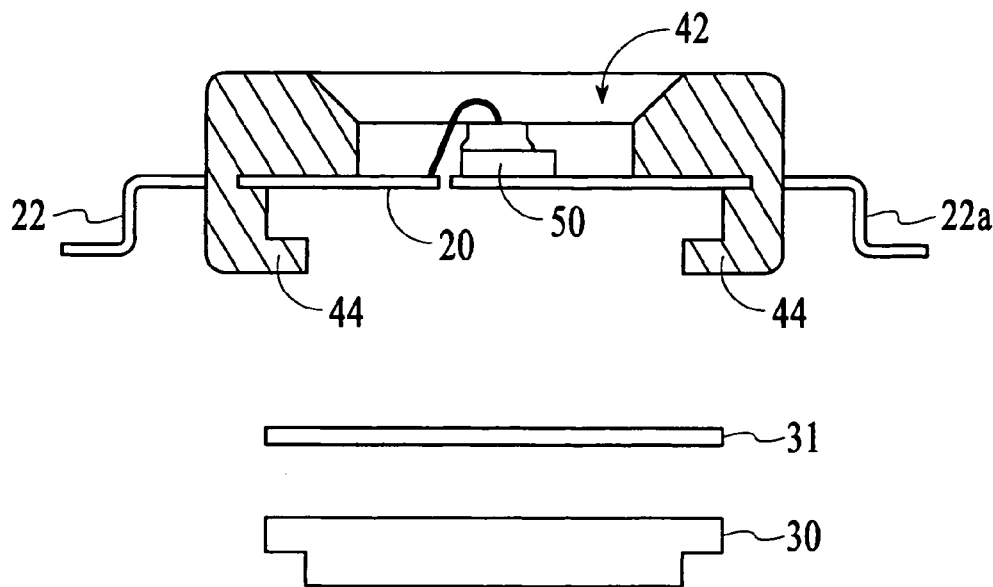
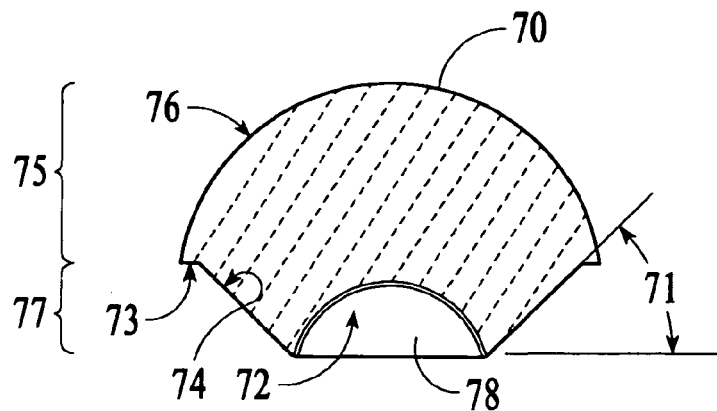


FIG. 2B

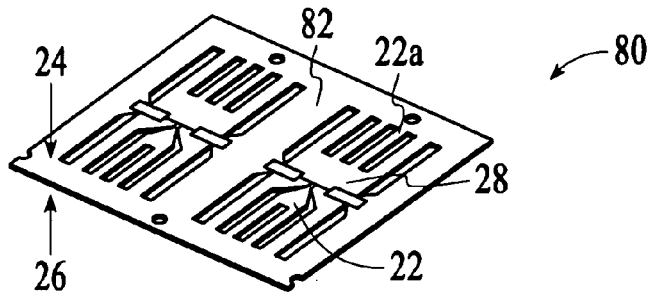


FIG. 3A

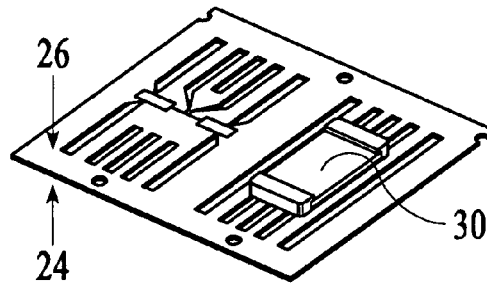


FIG. 3B

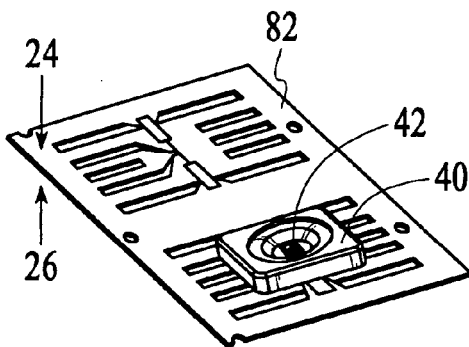


FIG. 3C

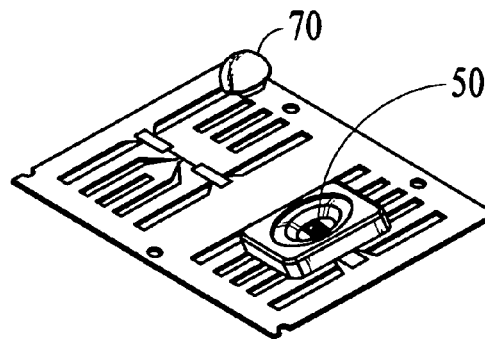


FIG. 3D

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.