US 20230231083A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2023/0231083 A1**

YUN et al. (43) **Pub. Date: Jul. 20, 2023**

(54) **LIGHT EMITTING DIODE MODULE**

(71) Applicant: **SAMSUNG ELECTRONICS CO., LTD.**, Suwon-si (KR)

(72) Inventors: **Kwangseok YUN**, Suwon-si (KR); **Sunki KIM**, Suwon-si (KR); **Geunho LIM**, Seoul (KR); **Hyungchan HWANG**, Hwaseong-si (KR)

(21) Appl. No.: **18/092,480**

(22) Filed: **Jan. 3, 2023**

(30) **Foreign Application Priority Data**

Jan. 19, 2022 (KR) 10-2022-0007797

Publication Classification

(51) **Int. Cl.**

H01L 33/48	(2006.01)
H01L 33/62	(2006.01)
H01L 33/64	(2006.01)
H01L 33/10	(2006.01)
H01L 25/075	(2006.01)

(52) **U.S. Cl.**

CPC ***H01L 33/486*** (2013.01); ***H01L 33/62*** (2013.01); ***H01L 33/642*** (2013.01); ***H01L 33/10*** (2013.01); ***H01L 25/0753*** (2013.01)

(57) **ABSTRACT**

A LED module includes a support including a heat dissipation pad; a circuit board on the support and including contact pads and an electrical connection terminal electrically connected to the contact pads; an LED device including a wiring board having lower and upper surfaces, a lower wiring on the lower surface and facing the heat dissipation pad, an upper wiring on the upper surface and electrically insulated from the lower wiring, contact structures at one side of the upper wiring, an LED chip mounted on another side of the upper wiring, a wavelength conversion film on the LED chip, and a reflective structure covering the upper surface such that a portion of the contact structures and the wavelength conversion film is exposed; a bonding wire electrically connecting the contact pads and the contact structures; and a conductive bump between the heat dissipation pad and the lower wiring.