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Patent Number(s): US2012153161-A1; KR2012067629-A

Title: Terahertz-wave generation/detection module for use in e.g. spectroscopy to detect harmful substance, has lower package surrounding bottom and side printed circuit board, to dissipate heat active layer

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Abstract: NOVELTY - The module (100) has a photomixer chip (10) comprising an active layer, an antenna, and a set electrode pads. A hyper-hemispherical lens (20) is placed on the photomixer chip. A printed circuit board (PCB) (30) comprises a set solder balls connected to the electrode pads, under the photomixer chip. A lower package (40) surrounds bottom and side the PCB, and dissipates heat the active layer that is transferred from the electrode pads the photomixer chip to the PCB to outside. A substrate body comprises a center hole and an outer hole at an edge the center hole.

USE - THz-wave generation/detection module for use in a THz-wave generation/detection device (claimed) utilized in spectroscopy to detect harmful substance and provide security and in basic science applications e.g. physics, chemistry, biology and medicine applications.

ADVANTAGE - The module comprises a trench that separates a package body from bias electrodes, so that the trench can prevent short between the package body and the bias electrodes, where the trench is formed in fan shape from the center hole to an edge and optimizes a contact area between the ground plate the PCB and the lower package, thus increasing/maximizing heat dissipation efficiency. The PCB enhances electrical and thermal characteristics between the electrode pads the photo-mixer chip and power service line, thus reducing the device size and dissipating heating the photomixer chip, and hence preventing characteristic the photomixer chip from being degraded.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a Terahertz (THz)-wave generation/detection device comprising an optical fiber.

DESCRIPTION DRAWING(S) - The drawing shows a cross sectional view a THz-wave generation/detection module.

Photomixer chip (10)

Hyper-hemispherical lens (20)

PCB (30)

Lower package (40)

THz-wave generation/detection module (100)

Drawing:

Derwent Class Code(s): J04 (Chemical/physical processes and apparatus including catalysis); L03 (Electro-(in)organic, chemical features electrical devices); S03 (Scientific Instrumentation, photometry, calorimetry); V04 (Printed Circuits and Connectors); V07 (Fibre-optics and Light Control)

Derwent Manual Code(s): J04-X; L03-G02; L03-H03; L03-H04E; L03-X; S03-E05; V04-Q02A7; V04-Q30Q; V04-T03A; V07-F02A

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