

## A B S T R A C T

The present disclosure relates to a multi-mode sensor based on wafer-level packaging and its manufacturing method. The sensor comprises a base for 3D packaging, a multi-mode sensor body, a cap layer, and multiple packaging structures. The base consists of a first substrate, a dielectric layer, a first insulating layer, and multiple through silicon vias (TSVs).

- 5 The cap layer comprises a second substrate and a bonding ring, where the first surface of the second substrate is provided with a cavity for housing at least part of the multi-mode sensor body. This disclosure has the advantages of high integration, high performance, low cost, miniaturization, high reliability, process feasibility and compatibility, as well as high wafer-level uniformity, making it suitable for a wide range of applications.