

## Abstract

### Novel Backend Singulation Techniques to Enable Commercialization of Optical MEMS

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MEMS chips that are to be implemented into higher-level functional modules are typically composed of exposed structures that may be vulnerable to conventional wafer and die handling. Thus, successful commercialization of such components requires special and low-cost approaches to separate individual die from wafers and to handle them. In this paper, a dedicated snapping process is described and used for MEMS wafer dicing as a replacement for standard sawing strategies, which are unsuitable for this category of non-encapsulated Optical MEMS devices. The developed process allows successful low-cost, high-yield singulation of on-wafer tested chips in a simple, harmless and clean manner with standard pick-and-place semiconductor equipment.

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