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Wafer Level Lateral Bonding Scheme with LEGO-Like Structure

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A wafer level lateral bonding scheme is presented as an alternative to MEMS packaging applications. The proof-of-concept structure is fabricated and evaluated to confirm the feasibility of the new scheme. The most distinct difference between this new scheme and conventional ones is that wafers are laterally bonded by solder reflow with a new apparatus. This lateral bonding scheme has merits in that it is morphologically insensitive and enables not only hermetic sealing but also electrical via-interconnection. Bonding strength is evaluated under shear and the hermeticity of encapsulation is examined using the pressurized helium leak rate based on MIL-STD 883E. Results show that the new scheme is feasible as an alternative method for high-yield wafer level packaging.

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