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cea leti

Chip-in-Flex

PATENTS 2 PATENTS

Making chips and sensors flexible

What is Chip-in-Flex?

Today, electronic systems are becoming smaller, thinner and, above all, flexible. CEA-Leti's Chip-in-Flex solution enables the integration of ultra-thin, bare silicon chips within a flexible film. Chip-in-Flex embedds any traditional microelectronics chips into a flexible label, using a generic silicon-based wafer.

Applications

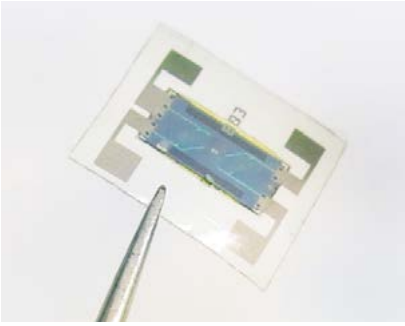
- In-vehicle infotainment
- Appliance infotainment
- Smart textile
- Healthcare patches

Demonstration

CEA-Leti developed, validated and fabricated two demonstrators

Flexible RFID chip

The first demo leverages an RFID chip featuring temperature and stress sensors, integrated into an ultra-thin, flexible label. The UHF RFID chip is commercialized by the company Asygn under the name AS3213.
The latter is applied to a flexible substrate featuring an antenna leveraging low-cost printing technologies developed by CEA-Liten. An RFID testing system enabled successful validation of the demo's functionality.



Flexible strain sensor

The second demo includes a strain sensor based on doped crystalline (100) silicon piezoresistive effect. The sensor is integrated within a small flexible label. When stress is applied on the die, resistances change due to piezoresistive effects. By calibration of the sensor, it is possible to extract strain value from output voltage measured on a Wheatstone bridge.

Publications

- J.-C. Souriau et al., 69th Electronic Components and Technology Conference (ECTC), 2019
- J-C. Souriau et al. ChipScaleReview, sept./oct. 2019 ; volume 23, #5

Interested in this technology?

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