MEMS Foundry Service Provided by Oki Electric Industry Co., Ltd.

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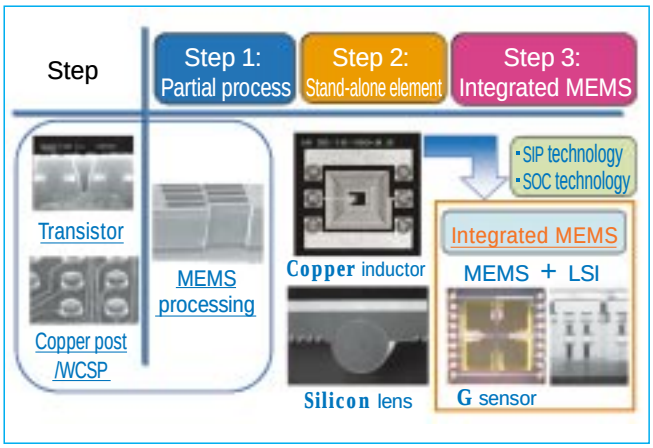
1. Overview

The MEMS Foundry Service at Oki Electric originated as a foundry service for silicon LSI. While the LSI foundry service was limited to wafer processing methods of the 1980s in the beginning, this service has now expanded to include mask production, wafer processing, testing, assembly, and LSI testing. Based on the development of these semiconductor devices and processing and production techniques accumulated during manufacturing, beginning in the 1990s Oki Electric began offering its customers MEMS manufacturing technology through silicon processing as a part of its silicon foundry service. Some of the processes for the MEMS foundry were developed as user-specific processes during the 1990s, but were limited to processes that could be supported on a silicon LSI production line at that time. Beginning from the late 1990s, the range of supported processes gradually expanded.

We are not preparing to offer any packaging services at this time. However, Oki Electric possesses technologies that are applicable to MEMS packaging, such as wafer-level chip size package (W-CSP) and multi-chip package (MCP). Hence, there is potential for developing a foundry service that encompasses packaging.

MEMS-specific processing techniques are being incorporated into silicon semiconductor processing to develop MEMS at the single-element level. Oki Electric is also conducting R&D on integrated MEMS that combine LSI and MEMS to produce systematic devices possessing signal processing and communication functions.

By effectively employing the processing and manufacturing techniques obtained through MEMS development in the MEMS foundry, we hope to provide customers with a higher quality of service.



2. Features of the foundry service

Oki Electric is applying its twenty years of experience in the silicon foundry and its experience in LSI processes from development to mass production to the MEMS foundry. We are pursuing a wide range of foundry services from development and trial production to mass production.

Since development and trial production are primarily conducted at Miyazaki Oki Electric (located in Kiyotake-cho, Miyazaki Prefecture), which has a mass production line, the transition from the trial production stage to mass production is extremely smooth. Further, by a special control division supervises the production facilities, enabling us to provide trial production and mass production results with high reproducibility.

Including processing of partially contracted alliance products, the MEMS foundry has manufactured capacitive pressure sensors, piezoresistive pressure sensors, accelerometers, and silicon microlenses in trial production and mass production.

3. Conclusion

The MEMS Foundry Service at Oki Electric works closely with its customers while producing MEMS products. The Service develops optimal processes suited to the user's concept of the product and the device design, based on silicon processing and analysis techniques, as well as process control and quality control techniques, cultivated over many years of LSI development and manufacturing.

By applying its MEMS manufacturing technology and know-how not only to its own products, but also to a wide range of foundry projects, Oki Electric hopes to provide an environment that fosters the production and development of MEMS products.

For further information, send e-mail to:
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Outline of the Oki Electric MEMS Foundry Service

Scope of service	From small-lot trial production to mass-production
Cleanliness	10-1000 class
Wafer diameter	4 and 6 inch
ISO and other certification	ISO9001, ISO14000
Process technologies	Silicon wafer processes -Bulk micromachining -SOI micromachining
Record of mass / trial production (including in-house products)	Accelerometers, pressure sensors, microlenses, various film deposition, etching, etc.