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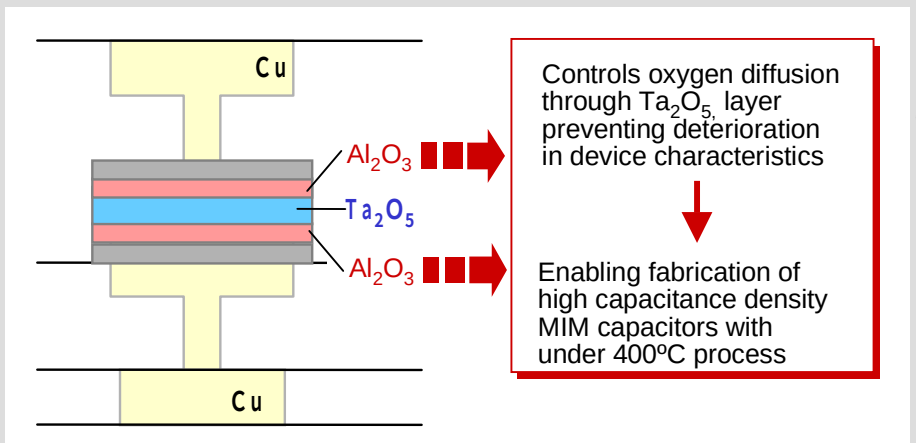
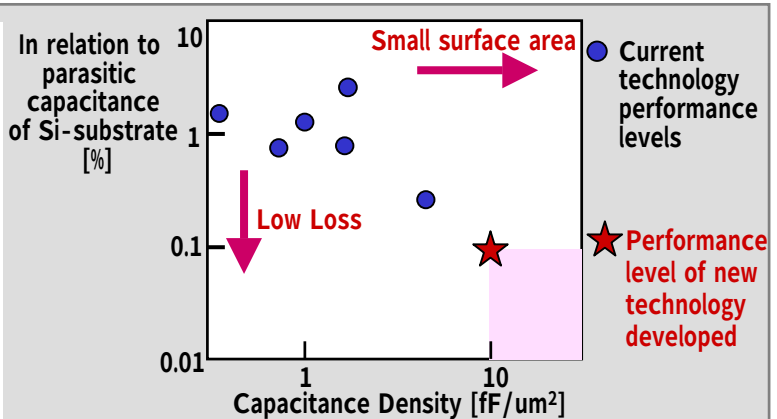
MIM capacitor technology for wireless communication LSIs
- achieving a three-fold enhancement of capacitance density -



Cross-section of new MIM capacitor with Al_2O_3 (alumina) barrier inserted



Comparison of the technology developed with current technology in relation to capacitance density and parasitic capacitance of Si-substrate

Capacitor fabrication technology was developed for wireless communication LSIs, achieving a three-fold increase in capacitance density. This technology was achieved by inserting an ultrathin layer of alumina (Al_2O_3) in a “Copper (Cu)-Tantalum Pentoxide (Ta_2O_5) - Cu” structure MIM(*) capacitor, thus significantly improving the film quality of the Ta_2O_5 insulator and reducing the the surface area in the LSI required for the capacitor. This technology will contribute to the advanced integration and functionality of wireless communication LSIs.

(*MIM: Metal-Insulator-Metal)

Contact: Dr. Fumihiko UCHIDA or Ms. Tomiko KINOSHITA
Planning Office, Hitachi Central Research Laboratory,
1-280 Higashi-Koigakubo, Kokubunji-shi, Tokyo 185-8601, JAPAN
Email: hcrlplan@crl.hitachi.co.jp