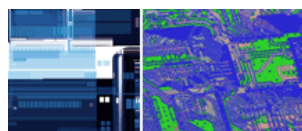




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MaxCaps research program to integrate capacitors on chips

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[EE Times](#)

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MUNICH, Germany — As a project within the European Medea+ research program, the MaxCaps project is getting granular on novel methods to integrate capacitors on chips. 17 research partners are participating across Europe.

By integrating capacitors onto the silicon die, designers can omit discrete capacitors, thus reducing the number of components and soldered connections. This could help them to shrink PCB sizes and improve the reliability — as is generally known, soldered connections are one of the most frequent causes of defects.

In order to be able to integrate the capacitors, the research group will look at alternatives to the silicon dioxide and silicon nitride materials currently used as dielectrics in semiconductor production. The project targets at the development of new isolating materials with a dielectric constant of 50 and higher. Also the production processes required to handle these materials are subject of the research.

A specific aspect of the project is improving the reliability of devices for automotive applications. In this context, a subgroup within the project plans to demonstrate a capacitor network for an automotive transmission control unit which has to work reliably under difficult environmental conditions such as vibrations, large temperature variations, and high rates of acceleration.

Beyond automotive applications, the project also aims at capacitors to be integrated in DRAM chips, MIM RF devices, and in back-end applications such as GST.

The list of the companies and institutions participating in the project reads like a who's who of the European semiconductor industry. Chip manufacturers Analog Devices, NXP and STMicroelectronics, equipment vendors such as Aixtron and ASMI are participating along with research institutes CEA-LETI, IMEC as well as several universities. Infineon has accepted the task of coordinating the activities of the German participants; the overall coordination is done by ASMI.

The project is partially funded with €2.75 million (about \$ 4 million). by the participating countries within the Medea+ program. Results are expected in the time frame from late 2010 through 2011.

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