Peregrine Semiconductor and Soitec Announce Bonded Silicon-on-Sapphire Substrate for RFIC Manufacturing

Peregrine Semiconductor Corporation and Soitec (Euronext Paris), recently announced the joint development and ramp in production of a new, bonded silicon-on-sapphire (SOS) substrate which has been qualified for use in manufacturing Peregrine's next-generation STeP5 UltraCMOS™ RF IC semiconductors.

This announcement marks an achievement for both companies in the evolution of bonded SOS wafers. Soitec's core direct wafer-bonding technologies and state-of-the art industrial know-how combined with Peregrine's legacy SOS process development and IC design expertise enabled the rapid development of a tuned substrate that delivers leading-edge RF performance required by the ever-advancing mobile wireless and industrial markets.

The new substrate is a bonded monocrystalline SOS substrate jointly engineered by the two companies. Soitec's process expertise and direct wafer-bonding technologies were utilized to transfer and bond a high-quality, monocrystalline thin silicon layer onto a sapphire substrate. The resulting bonded silicon layer offers impressive improvements in transistor mobility and silicon quality beyond conventional SOS wafers which utilize an epitaxially grown silicon layer.

The new substrate provides Peregrine an ideal design landscape for enhancements in RFIC performance, functionality, and form factor, enabling IC size reduction and performance increase by as much as 30 percent. It also enables Peregrine to continue its long-term strategy toward highly integrated RF Front-End (RFFE) IC solutions in a substrate technology that matches the yield and scalability qualities of bulk silicon technologies.

"Soitec's impressive substrate expertise and industrial capabilities enabled us to meet our vision for next-generation UltraCMOS processing," said Mark Miscione, vice-president, RF Technology Solutions for Peregrine Semiconductor. "This achievement has provided the opportunity to exploit even greater RF performance in our products. We look forward to continuing our collaboration and exploring new opportunities together with Soitec," he added.

"We are very pleased that our collaboration with Peregrine has delivered a new SOS substrate. In just two years we were able to move from the feasibility phase to a mature product ready for industrialization and production ramp," says Bernard Aspar, General Manager of Soitec's Tracit business unit. "This is an excellent example of how our core technologies can extend to new applications and markets, where there is always a need for more functionality at the substrate level."

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