

# Building Blocks

## MEDIA PLAYERS

### Multimedia chips tuned for China

By Mike Clendenin

Shanghai, China — Moving into personal media players, Vimicro Corp. is introducing a line of multimedia chips, with reference designs and software, to court manufacturers with designs for PMPs, which are rising in popularity in China.

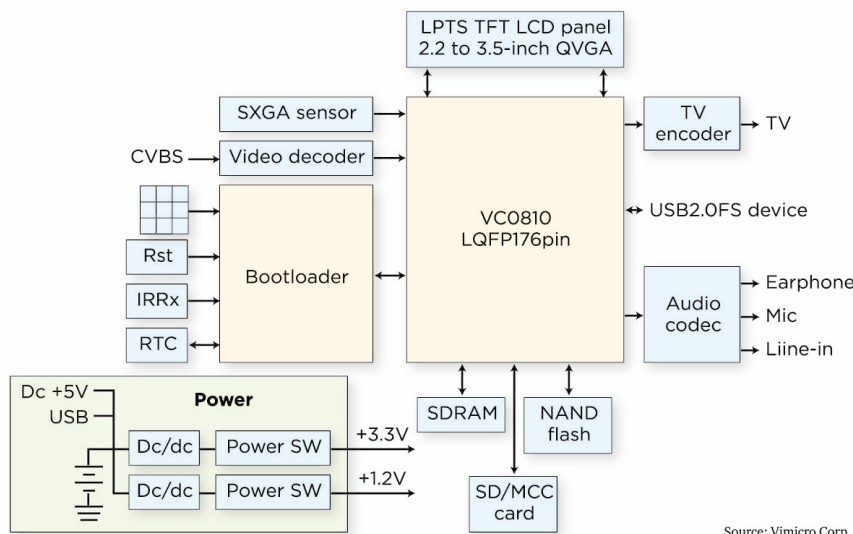
Vimicro's new series, the Cube family, includes three chips that are ready to go and a fourth that will be out next month or early next year. The chips are a natural extension of the multimedia IC design work the company has done in the PC camera and mobile-phone markets.

The first few chips in the Cube series will primarily target the PMP market in China, where dozens of designs are popping up on retail shelves. Although the market this year was small, at roughly 700,000 units, Vimicro believes it will take off next year.

When the market heats up, Vimicro hopes to snatch 20 percent to 30 percent of sales. To do so, it will need to square off with Actions Semiconductor Co. Ltd., another fast-growing Chinese design house that has also been successful at targeting local OEMs and ODMs that are primarily interested in China's market, as

#### ARM9-based x-Cube delivers MPEG-4 basics

Includes hardwired decode for 30-frame/second QVGA video



opposed to the United States or Europe. Actions recently released its Series 9 line of chips for PMPs.

Mike Yu, vice president and chief imaging architect at Vimicro, said the company has developed reference designs and application software to make it as easy as possible for local system makers

to adopt the chips. Inevitably, though, most system designers will still need lots of support for customization.

"They basically already have their own physical industrial design from their previous-generation PMP. We have to work with them and make sure that our design

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## DESIGN TOOLS

### Startup rolls reuse scheme for p-cells

By Richard Goering

Santa Cruz, Calif. — Claiming a significant advance in analog/mixed-signal design interoperability, EDA startup Ciranova Inc. this week will roll out a solution for the creation and reuse of parameterized IC layout cells (p-cells). As a result, both new and legacy p-cells can be read by any tool based on the Open-Access database.

Most analog-IC layouts are done using p-cells, but until now p-cells have been readable only by Cadence Design Systems Inc.'s market-leading Virtuoso layout editor. That's because p-cells have been written in Skill, a language proprietary to Cadence. Ciranova's products let users create p-cells using a Python-based application programming interface. They also let users apply legacy Skill p-cells in any OpenAccess offering.

Although it hasn't made any public product announcements until now, Ciranova has been offering free

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## SYSTEMS-ON-CHIP

### Freescall opens ColdFire core to OEM licensing

By Mark LaPedus

San Jose, Calif. — Expanding access to its 32-bit ColdFire microcontroller architecture, Freescale Semiconductor Inc. today will launch a major licensing program for the technology in the embedded space.

The Freescale licensing approach will differ from that of the leading MPU and MCU intellectual-property providers. ARM and MIPS Technologies license their IP to both chip makers and systems houses but do not sell chips. Freescale (Austin, Texas) will sell the ColdFire technology under its own brand and will license it to OEMs, but it will not license the IP to chip rivals, said Jeff Bock, global product-marketing manager for the Microcontroller Division.

"It's not a direct assault on ARM and MIPS, but we will be infringing on the edge of their territory," Bock said.

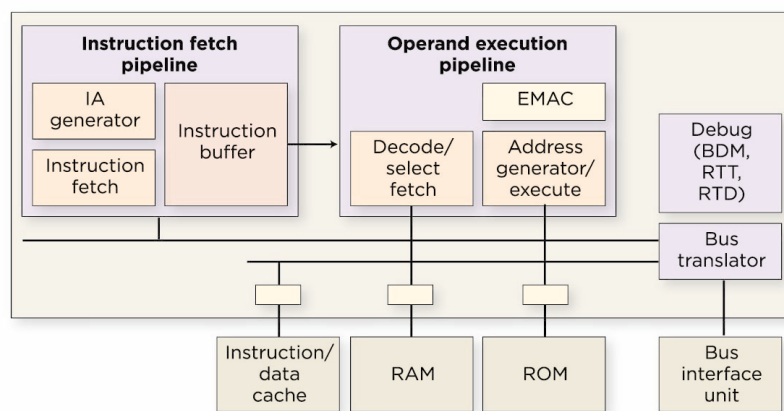
Freescale initially will license one MCU, its midrange V2 ColdFire, offering the core through third-party semiconductor IP specialist IPextreme Inc. (Campbell, Calif.). IPextreme plans to sell the V2 to ASIC and system-on-chip designers. With the core, designers will be able to configure the on-chip memory and select peripherals on the V2.

To help designers reduce costs and time-to-market, a standard-product platform that includes the V2 core is also available from IPextreme. The platform is based on Freescale's 5208 ColdFire device.

The V2 ColdFire core is built around a memory-configurable and synthesizable hierarchical architecture. When implemented on a 130-nanometer process, the core supports up to 166 MHz of performance using a variable-length RISC architecture that allows instructions to be 16, 32 or 48 bits long.

#### Standard product platform shows V2 deployment

Tested, verified subsystems serve as system foundation



Freescale plans to license additional ColdFire cores in 2007 and beyond.

The move to open up the ColdFire architecture for licensing represents a major departure for Freescale, said Bock. "Frankly, we're doing it based on customer demand," he said.

Freescale's move will also expand its

market opportunities. Automotive, consumer, industrial and communications are among the key markets for MCUs.

The global controller market is forecast to increase 1.9 percent, to \$12.3 billion, in 2006 and 6.3 percent, to \$15.4 billion, in 2009, according to the Semiconductor Industry Association. ■

## P-cell reuse

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downloads of its PyCell Studio tool since January (see Oct. 2, page 20). PyCell Studio lets users create p-cells. New this week is PCell Xtreme, a product that lets users migrate legacy p-cells.

"The real news is that we now have a complete solution, when you couple PyCell Studio with PCell Xtreme," said Dave Mill-

man, Ciranova's vice president of marketing. PyCell Studio alone, he noted, assumes that users are developing p-cells from scratch. While some are, nearly every analog IC designer has legacy p-cells, he said.

PyCell Studio includes a Python-based layout API with classes and methods; an interactive layout viewer for OpenAccess cells; a PyCell integrated development environment with debugging capabilities; an OpenAccess library generator; a PyCell developer kit; and PyCell Explorer, which

provides immediate visual feedback on new coding ideas.

PCell Xtreme, on the other hand, allows users to migrate legacy Skill p-cells through a caching scheme that pulls them directly into the OpenAccess database. According to Millman, it takes advantage of the fact that p-cells are programs that never have representations on disk. Virtuoso, he said, executes the p-cell code and creates a "submaster" that exists in virtual memory. The p-cell can then be displayed.

As Virtuoso executes p-cell code, Millman said, PCell Xtreme caches the p-cell layout directly to the OpenAccess database. That does two things, Millman said: It allows any OpenAccess-based tool to use the p-cell layout, and "because it's read from a disk, it's blazing fast."

When a company installs PCell Xtreme, Millman said, it will run in the background as engineers create IC layouts with Virtuoso. PCell Xtreme thus requires the use of Virtuoso. But that's not a problem, Millman said, since "there are zero users in the world who have Skill p-cells but do not have Virtuoso."

Millman noted that PCell Xtreme does not translate the Skill code, so "there's never a question about whether the Ciranova interpreter is creating the exact same results as the Cadence interpreter, because there is no Ciranova interpreter."

PCell Xtreme will be available at the end of December, priced at \$4,000 per seat. Enterprise licenses are available with 25 seats or more. PyCell Studio will remain a free product, available for download at [www.ciranova.com](http://www.ciranova.com). ■

## Multimedia ICs

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can fit into their case easily, so they can launch products quickly. It takes a lot of effort," Yu said. But that's the kind of attention that has helped some of the emerging, local design houses find their niche in China. A good platform, heaped high with support, wins design-ins here.

The first chip in the Vimicro line is the ARM9-based VC0810, also called the x-Cube. It is a basic MPEG-4 solution with hardwired decode for video that plays files at 30 frames/second at QVGA resolution. It supports most popular audio formats, including MP3, Real Audio, AAC and WMA, and is enabled for SanDisk's TFP player.

The follow-on to the x-Cube is the mini-Cube (VC0858), aimed at small-form-factor and slightly more-fashionable devices. It's similar in functionality, adding support for FM radio and a 1.3-megapixel sensor.

The x-Cube is packaged in a 176-pin LQFP, while the mini-Cube comes in a 160-ball-grid-array package.

The magic-Cube (VC0812) is billed as a gaming MPEG-4 platform. In addition to its predecessors' features, it has an 8-bit game emulator, a 2-D graphics accelerator, video output and support for a 2-Mpixel sensor.

All three chips are in production. The Cube line will continue to grow next year as Vimicro targets more-advanced applications and features. In mid-2007, Vimicro will selectively add support for multilevel flash, On-the-Go USB2.0, Microsoft's DRM and higher sensor densities. ■

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