



## News Release / Presseinformation

### **Infineon Technologies to Show Industry's First System-on-a-Chip Solution for Multibeam DVD/CD-ROM Drives at CeBIT; SOC Leader Teams With Sanyo and Zen Research to Develop High Performance Optical Storage System**

Munich, Germany – March 19, 2001 - Infineon Technologies (DAX/NYSE: IFX) today announced the first complete, single chip, system-on-chip solution for advanced, TRUEX® MULTIBEAM®, DVD drives at the CeBIT Conference in Hanover, Germany March 22-28. The 0.18 micron CMOS single-chip DVD-ROM controller will be shown at the Afreedy, Inc. booth in hall 9 stand D12. Afreedy, an optical drive manufacturer, is one of the first customers of Infineon and its development partners, Sanyo and Zen Research. Infineon will formally introduce the chip later this year.

The single chip includes analog front end, digital read channels, error correction code, servo, host interface and high performance DSP/microcontroller. This chip is focused on high-performance in a small form-factor with low power dissipation and offers dual-layer data read functionality in DVD. Infineon's future products to provide super high integration solutions for the optical storage industry will support write-once and fully re-writable functionality in both CD and DVD formats.

The high performance of the drive solution is based on state-of-the-art, Multibeam optical storage technology, which is delivered through a collaboration between three companies: Infineon Technologies, Inc. (Munich), Sanyo Electric Company, Ltd. (Osaka) (NASDAQ:SANY), and Zen Research, plc. When compared to currently available single beam drives, this multiple-beam optical storage system boasts greater than 200 percent higher than average throughput. DVD-ROM performance and sustained data rates of 25X DVD (over 34 MBytes/sec) and 100X CD (over 15 MBytes/sec) are expected.

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## **Optical Drive Market Explodes**

"With combined shipments of DVD-ROM and Combo drives expected to approach 250 million units by 2004 with CAGRs in excess of 70 percent and 155 percent respectively, solutions that increase performance of these drives have the potential to garner serious consideration by most of the major drive manufacturers," said Mary Craig, Principal Analyst at Gartner Dataquest. "OEMs should be especially attracted to technologies that can enable substantial power savings in portable applications."

## **Combining Expertise to Deliver Industry-leading Performance**

Each company contributed state-of-the-art components and intellectual property to create this breakthrough optical storage system. Sanyo Electric delivered the complete Zen MULTIBEAM™ optical pick-up assembly. "We believe that the DVD Multibeam system is the next step in the development of a new generation of high performance pick-ups from Sanyo" said Ryoichi Kawasaki, Sanyo, General Manager, Pickup Engineering, "Infineon, Sanyo and Zen are working closely together to break through the barriers of conventional optical drive design."

Zen Research, the pioneer in multiple beam technologies and architectures, delivered the key intellectual property required to control and process the multiple beams and the resulting data. Zen silicon designs are centered on a series of parallel processors that implement Zen's unique parallel approach to optical signal processing. A Zen enabled processor design accepts input from a Zen Multibeam optical system to simultaneously process and serialize data read from several tracks of standard CD or DVD media. "DVD is a major convergence medium and provides an impressive capacity increase over CD," said Emil Jachmann, President and CEO of Zen Research. "But DVD brought no advance in performance; the optical drive remains one of the slowest parts of a PC. Infineon's announcement changes that forever."

Infineon executed the integration of all required drive control and data processing functions into the chip. This super-high-integration solution, boasting 42 million transistors, performs the Multiple beam data processing, advanced error detection and correction, servo motor control and host interface functions.

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The chip integrates seven individual read channel processors to perform the Multibeam signal processing. Also featuring the 100 MHz, 32-bit TriCore™ Unified Processor core architecture, this chip performs all bus and memory management functions and controls the ATAPI interface to the host. 192kB of configurable memory supports storage of the read data and operating code and provides on-chip cache. Additionally, the chip supports up to 2MB of external flash and 8MB of external SDRAM for serial data management .

Afreedy, Inc., a leading CD and DVD drive manufacturer, is the first company to combine all these elements into the world's highest performance optical storage system. The company's state-of-the-art engineering and manufacturing capabilities are critical in meeting the strict performance requirements for such a design.

### **Multibeam Technology**

The multiple beam approach to illuminating and detecting multiple tracks uses a diffracted laser beam in conjunction with a multiple beam detector array. Light from a conventional laser diode is sent through a diffraction grating that splits the beam into seven discrete beams, spaced evenly to illuminate seven tracks. The seven beams pass through a beam splitting mirror to the objective lens and onto the surface of the disc. Focus and tracking are accomplished with the central beam. Three beams on either side of the center are readable by a detector array as long as the center is on track and in focus.

The reflected beams return via the same path and are directed to the multiple beam detector array by the beam splitter mirror. The detector contains seven discrete detectors spaced to align with seven reflected tracks. Conventional detectors are also provided for focus and tracking.

This design uses a conventional approach for tracking and seeks. Performance is far greater than that of conventional drives while supporting lower, more disc tolerant rotational speeds. This technology is fully compatible with CD and DVD disks designed to be read in single beam storage systems, resulting in higher data read performance.

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## High-performance and Low-Power

DVD drives have now reached data transfer rates as high as 16X data, and many in the industry predict that this will be the maximum for single-beam systems, citing rotational instability at high speed as the primary reason for this limit. This first implementation of Multibeam for DVD-ROM is expected to provide 25X data transfer rates.

Thus, performance-sensitive applications such as video games can directly benefit from this level of performance. However, the beauty of the Multibeam solution is that 'present industry standard' levels of performance can be achieved at substantially lower power dissipation, due to power savings in the highly integrated electronics and the lower rotation speed of the disk. Portable products can now deliver 16X DVD-ROM performance at substantially lower power dissipation than any existing solution. The obvious result of increased battery-life is a key benefit for these portable systems.

A beneficial by-product of the reduced rotational speed is a drive that has less vibration and inherently quieter operation. These are key benefits to a variety of consumer and computing product concepts now finding their way to market. One clear application of this reduced-vibration drive is in LCD and Plasma Thin Panel computers where all electronics and peripherals are integrated onto the back of the display. The reduced vibration is paramount to ensuring a stable display and positive user experience when accessing the drive.

## About Infineon

Infineon Technologies AG, Munich, Germany, offers semiconductor and system solutions for applications in the wired and wireless communications markets, for security systems and smartcards, for the automotive and industrial sectors, as well as memory products. With a global presence, Infineon operates in the US from San Jose, CA, in the Asia-Pacific region from Singapore and in Japan from Tokyo. In the fiscal year 2000 (ending September), the company achieved sales of Euro 7.28 billion with about 29,000 employees worldwide. Infineon is listed on the DAX index of the Frankfurt Stock Exchange and on the New York Stock Exchange (ticker symbol: IFX). Further information is available at [www.infineon.com](http://www.infineon.com).

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## About Sanyo

Sanyo Electric Company, Ltd., Osaka Japan, is a global leader in a broad range of electronics, communications and appliances. Sanyo also maintains a leading market share in information systems and components, including optical drive pickups in both read only and read/write configurations. For additional information, see [www.sanyo.co.jp](http://www.sanyo.co.jp).

## About Zen Research

Zen Research plc, an international company traded on the London Stock Exchange, develops high-performance optical drive technologies. The company's marketing affiliate is located at 20400 Stevens Creek Blvd., Cupertino CA. Zen has been issued 23 patents in relation to its core technologies. Additional information about Zen Research is available at [www.zenresearch.com](http://www.zenresearch.com).

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