

Genum NAB Booth: South Hall 4, Las Vegas Convention Center, #SU9114

Genum Delivers Low Power, PCI Express® 2.0, Infiniband Repeater for System Interconnects

Industry's First Re-timed Solution Guarantees Low Jitter in Backplane and Cable Applications

LAS VEGAS, April 14, 2008 – Genum Corporation (TSX: GND) introduces the industry's first re-timed repeater solution that integrates a clock and data recovery (CDR). The low power, four-channel GN1406 device supports PCI Express (PCIe) 2.0 and Infiniband and combines the Genum ClearEdge™ CDR and high-gain equalization technologies. Through this innovative architecture, the Genum solution is able to achieve superior jitter performance at the same power consumption as traditional re-driver products.

Leveraging Genum's low-cost, low-power CMOS capability, the GN1406 is a highly integrated 90nm solution capable of propagating error-free PCIe 2.0 signals at speeds of 5 gigatransfers per second (GT/s) at distances of 30 meters in copper cable chassis-to-chassis interconnect applications, and over 60 inches of standard FR-4 in backplane applications. The GN1406 is being showcased in a demonstration this week at the National Association of Broadcasters (NAB) conference.

“With increasing data rates and cabling methods being introduced for interconnect capability within PC and enterprise applications, a dedicated solution that can ensure error-free, high-speed data transmission at the lowest power possible is a critical industry requirement,” said Bharat Tailor, Marketing Director for Analog & Mixed Signal Products at Genum. “However, these increased data rates require a dedicated solution that can ensure error-free 5GT/s transmission. By combining our innovative CDR and equalization technologies with our cost-effective, low-power CMOS capability, we enable OEMs to realize the highest signal integrity performance with headroom to spare so they can address in-system, as well as longer distance interconnect applications for card-to-card backplane and chassis-to-chassis connectivity.”

Current solutions rely only on equalizers to compensate for the extreme channel losses, signal degradation, and the resulting jitter that can occur at high data rates and longer distances. The CDR-based solution from Genum resets the jitter budget after equalization and greatly increases the robustness of the link, ensuring that downstream devices receive a low-jitter signal, independent of the amount of skew or other jitter contributors such as cross-talk. As the leading supplier of 10Gb/s CDR technology to the optical communications market, Genum has applied its innovative ClearEdge technology to develop the GN1406, enabling enhanced performance and reduced power consumption in PCIe 2.0, Infiniband and other high-speed interconnect applications.

The Rapidly Expanding High-Speed Interconnects Market

According to a November 2007 report published by Electronic Trends Publications and titled “Advanced Bus and Interface Markets and Trends,” semiconductor revenue from advanced, high-speed interconnects was \$5.5 billion in 2006 and is forecast to grow to

\$7.2 billion in 2008 with PCIe accounting for 60 percent of the revenue. The report also projects that PCIe 2.0 end points will grow to 800 million by the year 2011.

The PCIe specification was originally developed for chip-to-chip and short backplane distances where channel losses are minimal. However, the recent move to higher speed 5GT/s rates, and in the near future 8GT/s (PCIe 3.0), as well as the desire to extend the use of PCIe to applications requiring longer distance transmission, has dramatically increased the difficulty of ensuring error-free propagation in PCB backplanes and over copper cables.

“We see jitter as a key barrier to deployment of PCIe 2.0 in applications requiring longer distance connectivity,” said Steve Berry, President, Electronic Trends Publications. “Many companies have the desire to deploy PCIe 2.0 solutions in emerging applications like advanced graphics visualization and scientific research environments, where workstations access additional graphics power and memory from servers located in a separate room. Semiconductor solutions that combine high data rates with error-free, long-distance transmission will be positioned for broad deployment in the expanding high-speed interconnects market.”

GN1406 Resolves Input Jitter, Delivers Long Reach Performance

In order to overcome the challenges associated with longer distance transmission, each independent, digitally-controlled channel of the GN1406 features an input equalizer, capable of compensating for transmission losses of up to 24dB, followed by a CDR that, in turn, feeds a large output voltage swing driver with up to 20dB of de-emphasis. The GN1406 is typically incorporated into the signal path between upstream and downstream ASICs, ASSPs or field programmable gate arrays (FPGAs). As a result, the device removes the input jitter tolerance burden from the ASIC receiver and allows ASIC designers to focus on the core function of the ASIC rather than the analog performance of its I/O. Similarly, system board designers can also benefit from the GN1406 since board-level performance can be guaranteed at the compliance point.

Designed for High-Speed

The PCI Express Cable specification released in February 2007 extends the application of PCIe beyond PC systems. As a result, new system architectures and applications for PCIe are possible such as outboard PCIe-based storage subsystems and I/O expansion chassis for data acquisition.

For video-intensive applications, such as graphics workstations and high-performance gaming machines, where multiple graphics cards may be utilized, power consumption and thermal issues in small MicroATX platforms may become problematic. Having the ability to remotely locate the graphic cards in a separate chassis interconnected by cable would help resolve these limitations.

The GN1406 was designed for PCI Express Gen 1/Gen 2 applications and transparently supports PCIe specific features, such as electrical idle preservation and auto-rate negotiation. An on-chip reference clock repeater further differentiates it from more generalized repeater solutions. To ensure interoperability, the GN1406 has been tested with PCIe Gen 1 and Gen 2 host/endpoint combinations from multiple vendors to validate compatibility.

With typical power consumption of 100 milliwatts/channel, designers can upgrade to Gen 2 and add a re-timer function to their PCIe system designs without incurring a power or cost penalty to deliver a faster, more robust system. For less demanding applications where only the equalization function is required, the GN1406 provides user flexibility to independently turn off the re-timer function in each channel, reducing power consumption to less than 70mW/channel. Four channels of repeater function are packed into a small 8x8mm 56-pin QFN package to minimize board space while support for polarity inversion eases board layout. Latency of the repeater is a mere 600 picoseconds (ps) so that system performance will not be noticeably impacted.

GN1406 Availability

The GN1406 is priced at \$9.50 in 10K quantity volumes and is currently sampling with full production slated for Q3 2008. A complete reference design for PCIe over Cable is also available.

About Genum

Genum Corporation (TSX: GND) designs innovative semiconductor solutions and intellectual property (IP) cores for the world's most advanced consumer connectivity, enterprise, video broadcast and data communications products. Leveraging the company's proven optical, analog and mixed-signal products and IP, Genum enables multimedia and data communications products to send and receive information without compromising the signal integrity. A recognized award-winner for advances in high definition (HD) broadcasting, Genum is headquartered in Burlington, Canada, and has global design, research and development and sales offices in Canada, Mexico, Japan, Korea, Germany, United States, Taiwan and the United Kingdom. www.genum.com

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