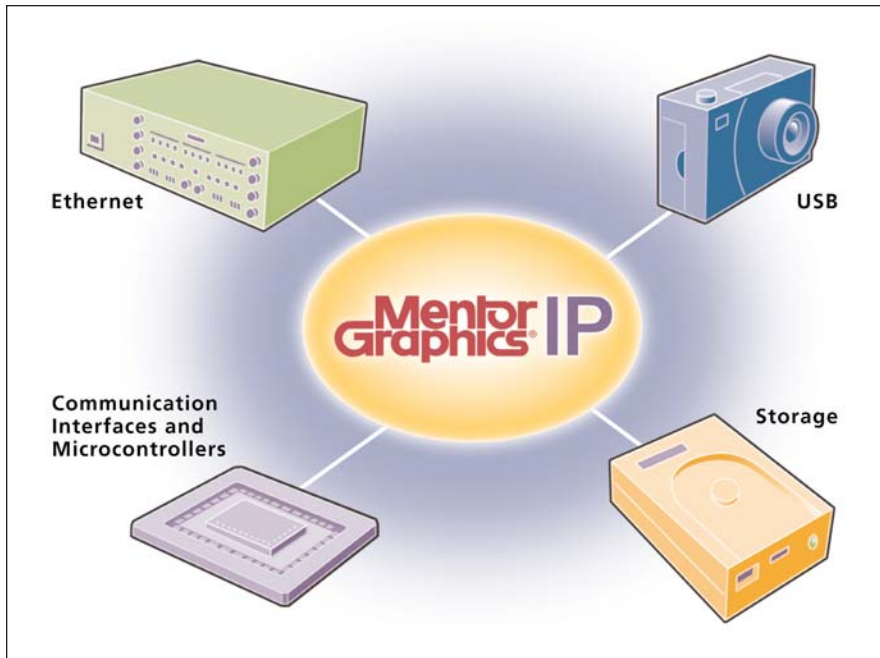


Mentor Graphics Intellectual Property (IP)

D A T A S H E E T



Today's marketplace requires the quick development of differentiated products. License-proven, ready-to-use IP from Mentor Graphics allows project teams to concentrate on unique functionality and helps get the finished product to market sooner.

System Complexity Is Driving the Need for High Quality IP

As system-on-chip (SoC) designs evolve, system complexity drives the need for proven and reliable IP. With bigger and more complex systems, engineers are challenged with more design tasks per chip. Often, teams do not have the time to create every component within a system, or possess the design expertise necessary to address all the domains found in today's complex designs. Adding to this complexity, design teams must now push beyond the block level – and verify and validate that the entire system performs to specification.

Further, the arrival of platform-based design and widespread acceptance of embedded processors only increases the demand for standards-based IP.

For these reasons, using externally developed, pre-verified, and validated IP is becoming a viable alternative to IP developed in-house. Third party IP not only shortens design time – *getting your product to market sooner* – but also reduces risk during development, lowers the overall system development costs, and achieves a higher level of design productivity by allowing engineers to focus on the more application-intensive and differentiating aspects of the design.

Standards-based IP From Mentor Graphics

Mentor Graphics offers a variety of industry-leading, standards-based IP cores that are rigorously tested and validated to provide design teams with the most reliable cores in the industry. Mentor's IP portfolio ranges from simple SoC building blocks, such as communication interfaces and microcontrollers, to an expansive offering of Ethernet, USB, and Storage products.

Key features:

- Ethernet, USB, and Storage interface standards
- Large portfolio of RTL IP cores available in Verilog
- High emphasis on quality, certification, and standards
- Single IP license agreement covers all IP cores
- Robust deliverables to facilitate ease of use
- Comprehensive documentation
- Extensive worldwide support network

Business models and support:

Fee per use – no royalty: license is granted to create a single production design. A new fee is payable for reuse of IP according to a sliding scale.

Term unlimited use - no royalty: IP is licensed for a one-time fee, which grants unlimited use of the IP core for a predetermined time, usually three years.

Support: One year of hotline support and product updates are included in the price of the first use of each IP core.

Ethernet

The Ethernet standard is utilized from home and office connectivity, to high-speed networking system applications such as routers, switches, and broadband gateways. Mentor has been at the forefront of Ethernet standards since 1995, and offers the most widely licensed and most extensive selection of Ethernet IP cores today. Mentor Graphics is the industry leader with almost 70 percent* market share in IP Ethernet Media Access Controller (MAC).

- Ethernet products:
 - **10-Gigabit Platform:** Ultra-high 10 Gb/s transport suitable for back-bone and Metropolitan Area Network (MAN) needs with support for XGMII, XAUI, and 10-GBase-R PCS
 - **10/100/1000 Platform:** Provides integrated 10/100/1G MAC support with optional RMII, SMII, RGMII, and SGMII
 - **10/100 Platform:** Typical data transport required for home and office for 10 Mb/s and 100 Mb/s support with optional RMII and SMII
- Managed under IEEE 802.3 standard
- Optimized for switches, multi-port bridges, routers, and embedded applications

Universal Serial Bus (USB)

USB is a commonly deployed digital wired interface on PCs, printers, digital cameras, PDAs, and other digital consumer electronic products. Mentor offers a fully functional USB platform and is the leading provider of USB On-The-Go (OTG) technology.

- USB products:
 - **USB 2.0 OTG:** Extends the USB 2.0 standard for portable devices
 - **USB 2.0 High/Full Speed:** Function and controllers for USB and Hosts and Devices
 - **USB 1.1 Low/Full Speed:** Supports data transfer speeds up to 12 Mb/s
- Compliance built and certified by the USB Implementers Forum
- Silicon-proven USB 2.0 systems are backward compatible with USB 1.1

Storage

The storage market has extended into promising new areas beyond traditional storage drives to include popular devices such as MP3 players and portable video devices. The Serial ATA market is expanding to accommodate high bandwidth functionality needed to transfer large files quickly. Mentor Graphics is the early leader in storage IP and offers more products than any other IP provider.

- Storage products for both Host and Devices:
 - **Serial ATA:** Next-generation, high-speed storage connectivity technology
 - **Parallel ATA:** Lower speed storage connectivity technology for cost-sensitive applications
 - **PCMCIA:** Standard interface for small form factor peripherals
- Facilitates innovation of next-generation storage products such as high-capacity, low-cost networked attached storage devices for the home, set-top boxes, personal video recorders, and game consoles

with internal storage for both Host and Devices

- Performance ranges from 33 to 300 Mb/s for both Host and Devices

Compliance and Interoperability

Mentor Graphics actively supports key industry standards and protocols for successful IP integration. In fact, Mentor has significant involvement in the following standards bodies: IEEE-Ethernet 802.3; USB-IF; ASI SIG; and SATA International Organization.

Silicon-Proven IP – with a Rich Set of Deliverables

Mentor Graphics offers a variety of simple and accommodating business models for IP licensing. Mentor IP cores include a complete range of deliverables:

- RTL source code in Verilog
- Stand-alone testbench
- Synthesis and test scripts
- Documentation: specification, user manual, application notes, and release notes (when applicable)

To assist engineers, Mentor's 5 STAR award-winning customer support division, comprised of dedicated technical support professionals, will work closely with customers throughout the entire design cycle.

*2004. Reported by the Electronic Design Automation Consortium.

Visit our web site at www.mentor.com/ip for the latest product news.

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