Silicon Image™

DRIVING STANDARDS: IP CORES FROM SILICON IMAGE

Silicon Image, Inc. is a leading provider of semiconductor and intellectual property products for the secure storage, distribution and presentation of high-definition content in the consumer electronics and personal computing markets. Silicon Image creates and drives industry standards for digital content delivery such as Digital Video Interface (DVI), High-Definition Multimedia Interface® (HDMI®), Serial ATA, and Serial Port Memory Technology (SPMT™). By leveraging partnerships with global leaders in the consumer electronics industry, Silicon Image creates solutions to meet the growing digital content needs of consumers worldwide. Silicon Image has shipped more than 200 million semiconductor solutions and has a proven track record of improving cross-product interoperability.

Company Overview

- **Founded 1995**
- **Headquarters Sunnyvale, California, USA**
- **450+ Employees**
- **Publicly traded, Ticker Symbol SIMG**
- **2009 Revenue $150.6 Million**

IP Markets

- **Consumer Electronics**
- **Mobile**
- **Storage**

dvi digital visual interface

HDMI® HIGH-DEFINITION MULTIMEDIA INTERFACE

SERIAL ATA

SPMT™ Serial Port Memory Technology

Silicon Image's goal is to speed the adoption of industry standards such as SATA (Serial ATA), HDMI® (High-Definition Multimedia Interface®), DVI (Digital Visual Interface) and Serial Port Memory Technology (SPMT™) by licensing its market-leading and silicon-proven IP cores. Silicon Image builds market momentum and leadership through its standards-based IC products and broadens market adoption by licensing these cores to enable companies to integrate these standards into their system-on-a-chip (SoC) designs. All cores are fully documented and supported by a dedicated engineering team to assure a smooth integration process. As an author and creator of standards, Silicon Image has invested many years and resources testing these designs at industry plugfests and compliance testing centers to assure interoperability among standards-based systems. Silicon Image IP cores greatly simplify the integration of high-speed serial communications standards such as HDMI, DVI and SATA.

Silicon Image is an expert in areas of video and image processing for use in set-top boxeses, DVDs and Blu-ray Disc™ players and recorders, as well as DTV and mobile applicatons. The Company offers numerous solutions such as MPEG/H.264/VC-1 codecs up to 4K resolution and camera processor IP cores targeted for integration into digital still cameras and video SoC application processsors for mobile devices such as cell phones, portable multimedia players and netbooks.

Silicon Image offers one of the most robust and comprehensively tested technology platforms in the consumer electronics industry through the Simplay HD™ testing program of Simplay Labs. Simplay Labs, LLC, a wholly-owned subsidiary of Silicon Image, is a leading provider of testing technologies, tools and services for high-definition consumer electronics devices.

Silicon Image is the leading provider of semiconductor intellectual property solutions for high-definition multimedia and data storage applications. For more information, please visit www.siliconimage.com.

Why License IP Cores from Silicon Image?

In addition to being a leading semiconductor provider, Silicon Image has been in the top ten of IP core suppliers to the semiconductor industry since 2004. The company's broad product line includes DVI, HDMI, Mobile HD technology, SATA, MPEG, H.264, VC-1, image signal processing for cameras and set-top-box IP cores. Since the company also develops and manufactures semiconductors, most of its IP cores are silicon proven. Silicon Image is also very active in establishing and enhancing standards. The Company is a founding member of the Serial Port Memory Technology Consortium. Silicon Image is particularly active in the SATA and HDMI standards organizations. Silicon Image IP cores provide key advantages for SoC semiconductor providers by:

- Reduced time-to market
- Reliable transmitter/receiver market compatibility
- Silicon proven IP cores
- Strong HDMI & SATA intellectual property position
- Broad array of semiconductor & IP core options
- Long term roadmaps
- Dedicated IP licensing & engineering support team

HDMI IP Cores

Silicon Image pioneered the HDMI specification to enable the transmission of premium digital content over an uncompressed, secure digital video and audio interface for consumer electronics products. Silicon Image was a founding member of the HDMI standards committee along with Hitachi Ltd., Panasonic Corporation, Philips Consumer Electronics International B.V., Sony Corporation, Thomson, Inc. and Toshiba Corporation. HDMI has also been endorsed by studios and broadcasters for premium high-definition program delivery. Today, over 800 HDMI product adopters are providing thousands of products supporting the HDMI standard.

Silicon Image is the leader in facilitating the implementation of new features including Deep Color™, lossless audio, CEC and HDMI Specification 1.4 features such as 3D video formats, HDMI Ethernet Channel and Audio Return Channel. In addition, Silicon Image is an author of the HDMI Compliance Test Specification and operates HDMI Authorized Testing Centers around the world, promoting compatibility among HDMI products. The Simplay HD™ testing organization promotes "rock solid" interoperability between devices, providing confidence to consumers, retailers, OEMs and content providers.

HIGH-DEFINITION MULTIMEDIA INTERFACE

Silicon Image offers technology that enables mobile phones, digital cameras, media players and other mobile devices to link directly to HDTVs, providing digital premium content in its natural high-definition resolution. Silicon Image developed Mobile HD technology, a low pin-count link for low-power and ultra low-power mobile devices.

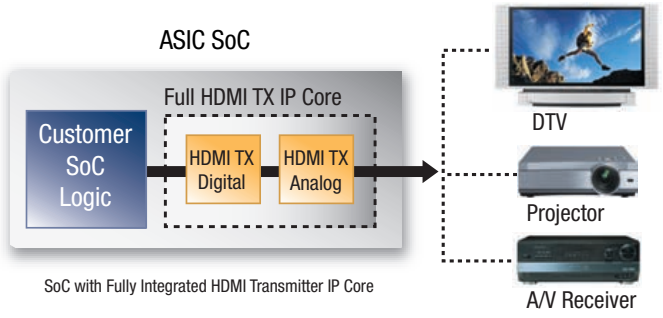
Silicon Image's HDMI products and technologies include support for High-bandwidth Digital Content Protection (HDCP) and their IP cores are configurable to support Consumer Electronic Control (CEC).

HDMI Transmitter and Receiver Cores with Integrated PHY or External PHY Chip

Silicon Image offers HDMI transmitter and receiver IP cores in numerous configurations, supporting HDMI Specification Versions 1.1, 1.2, 1.3 and 1.4.

Silicon Image is a leading provider of low-cost HDMI digital link only IP cores for use with an external PHY semiconductor provided by Silicon Image. This configuration offers both a lower licensing cost and faster time-to-market with reduced technical risk.

For those SoC planners and designers requiring the highest level of integration and the lowest manufacturing cost, Silicon Image provides full HDMI transmitter and receiver IP cores for integration into SoCs.



SoC with Fully Integrated HDMI Transmitter IP Core

These cores include the complete digital logic as RTL source code and the analog PHY as a GDSII hard macro, customized for the particular foundry process.

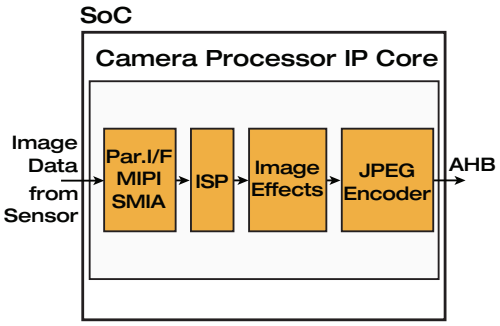
Silicon Image also offers HDMI transmitter IP cores designed specifically for low-power and ultra-low power mobile applications.

Camera Processor IP Cores

Silicon Image's camera processor IP core family named "camerIC" is optimized for lower-cost digital imaging used in mobile phones, without compromising picture quality. The low gate-count and low-power core provides a MIPI, SMIA or parallel interface to the image sensor and supports sensor sizes from 1.9 to 18 megapixel.

The IP core contains a complete video and still-picture input unit for image processing, scaling and compression of image data. Low-cost image sensors that deliver RGB Bayer pattern data are supported as well as image sensors with integrated integrated YCbCr processing.

To effectively deliver resolutions up to 18 megapixel, the IP core features sophisticated bad bixel detection/correction and noise reduction techniques to ensure image quality even when paired with low-cost, high-resolution CMOS sensors commonly found in mobile devices. The IP core also supports wide dynamic range processing, digital image stabalization, along with an extensive set of standard featurs such as digital image effects and JPEG encoding.



The camerIC camera processor IP cores can be integrated into any SoC that requires image signal processing functionality. Integration of the core into an SoC leads to a reduction of BOM costs compared to a solution with a dedicated on-board ISP chip or CMOS sensor with integrated ISP.

camerIC-18 IP core is Silicon Image's fifth generation family of camera processor IP cores. Since 2002, over 20 camera designs have been delivered for use in SoC application processors for digital still cameras, mobile phones and netbooks.

Video Decoder and Set-Top-Box IP Cores

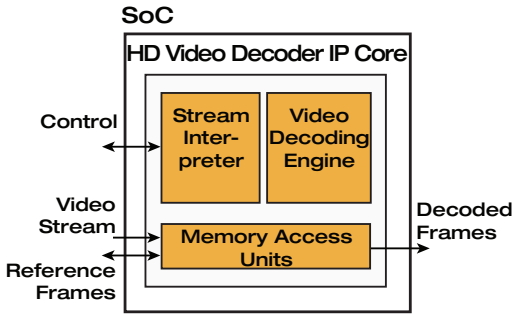
Silicon Image has developed a family of high-definition, 4Kx2K and 3D resolution as well as standard-definition video decoders supporting H.264, MPEG-2, and VC-1 including Multiview Video Coding (MVC) and JPEG standards for still picture applications. While set-top box applications require MPEG-2 and H.264 format, additional VC-1 support is mandatory for decoding of video streams from Blu-ray Discs.

This family includes an optimized high-definition and multi-standard video decoder which supports all three major video compression standards, decoding single or multiple streams at resolutions up to 4Kx2Kp@30fps and 3D 1080p@60fps.

Silicon Image's "cineramIC" video decoder IP core is targeted at the most challenging applications such as Blu-ray Disc players, high-definition and ultra high-definition digital TVs and set-top-box applications.

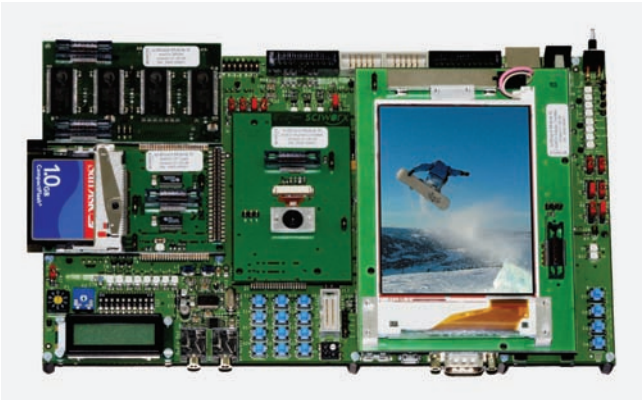
The IP cores are optimized hardware designs, not software based solutions. These architectures have created some of the world's smallest synthesizable IP cores running at lower clock speeds with lower power consumption than competing hardware or software solutions. Implementations for SoC and FPGA are available.

Silicon Image offers IP cores implementing advanced MPEG-2 Transport Stream De-multiplexing to support multiple simultaneous transport streams. This core is a major IP building block for set-top box and PVR SoCs. In addition, Silicon Image provides a multi-stream video display IP core which is designed to combine multiple decoded video streams, on-screen-display data and ancillary data into a single video output for display. With these IP cores, Silicon Image is able to present a bundle of three functional modules for SoC development of standard-definition and high-definition set-top-boxes and digital TVs with integrated set-top-box functionality.



Silicon Image's video decoder and set-top box IP cores are based on over 16 years of experience in developing SoCs for video/audio decoding and processing. These IP cores are shipping in production SoCs worldwide.

camerIC Demonstration Board



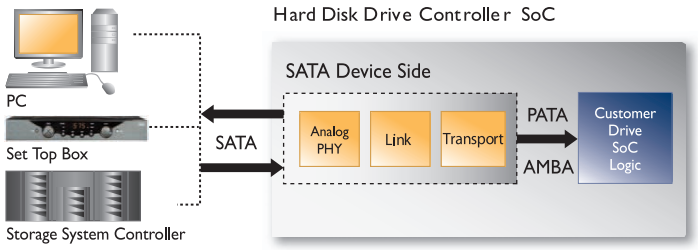
Serial ATA IP Cores

Silicon Image is a leading supplier of discrete SATA modules and IP cores, having been shipped in over 100 million semiconductors in over 300 designs. Both SATA host and SATA device configurations are available to support various interfaces including AMBA AHB. As a key sponsor of SATA plugfests, Silicon Image has tested interoperability and compliance against the major SATA drives and motherboards in the industry.

Silicon Image offers SATA host and device IP cores which include the digital logic and analog PHY. The SATA host and device IP cores are ideal for set-top boxes, personal video recorders, PCs, storage systems, RAID, flash memory and network attached storage.

SATA Host Cores

For those SoC planners and designers requiring a high level of integration and a lower bill-of-material cost, Silicon Image offers full SATA host cores. The cores are available for SATA I with 1.5 Gbps and for SATA II (SATA 2.6 compliant) with 3.0 Gbps data rate, supporting internal PCI, PCI-X, PCI-Express or ARM AMBA bus interfaces for ASIC data transfers. The cores support single-, dual- and quad-channel transfers and are targeted to SoCs for SATA as well as eSATA.



While SATA host link and transport layer is delivered as RTL (digital logic), the analog SATA PHY will be provided as a GDSII hard macro, customized for the particular foundry process. Silicon Image's SATA PHY is silicon proven in many processes.

SATA Device Hard Disk Drive and Flash Cores

For increasing integration density and reducing bill-of-material cost, Silicon Image offers full SATA device IP cores, available for SATA I with 1.5 Gbps and for SATA II (SATA 2.6 compliant) with 3.0 Gbps data rate. These cores support Parallel ATA (PATA) and ARM AMBA internal interfaces, targeted to SoCs for SATA as well as to eSATA. While SATA device link and transport layer is delivered as RTL (digital logic), the analog SATA PHY will be provided as a GDSII hard macro, customized for the particular foundry process.

SATA PHY Cores

Silicon Image offers standalone analog PHY IP cores for SATA I and II (SATA 2.6 compliant), supporting 1.5, and 3.0 Gbps data transfer rates. Cores are available also for ultra-low power mobile applications. A SATA III PHY IP core supporting 6.0 Gbps has already been demonstrated and will be available soon.

Silicon Image's SATA PHY IP core supports single-, dual- and quad-channel configurations. The PHY will be provided as a GDSII hard macro, customized for the particular foundry process. The core has been silicon proven in many processes.

Visit www.siliconimage.com for more information about Silicon Image's IP products or contact IP_licensing@siliconimage.com.

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