![Silicon Image™]

HDMI® Transmitter

HD solution for mobile phones, cameras, portable media players, portable internet devices and mobile electronics

Silicon Image brings another exciting high-definition interface to the mobile electronics market. Building on the industry leading SiI9022 discrete HDMI transmitter, the SiI9022A is an ultra low-power HDMI transmitter with greater integration and improved power characteristics for handheld and portable consumer electronics devices such as mobile phones, cameras, portable media players, personal internet devices and netbooks.
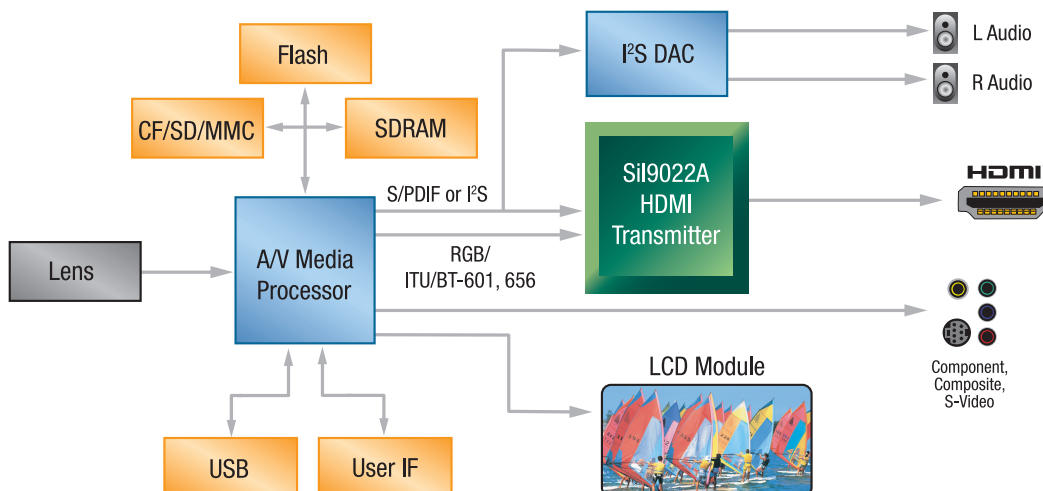
The HDMI standard is the established digital interface that brought the highest quality digital audio and video experience to millions of consumer home entertainment systems. Mobile devices have become the primary store of captured, downloaded, and purchased content. The SiI9022A enables consumers to share their user-generated and premium content securely in high-definition format and quality on an HDTV.

The SiI9022A is designed to address the power constraints and small form factor requirements of the mobile market. A QFN package option offers ease of layout to address the power constraints and low cost requirement of the netbook market. In order to fit the slim profile of today's highly integrated mobile electronics, the SiI9022A is available in 81-ball (0.4mm ball pitch), 49-ball (0.5mm ball pitch) 4mm x 4mm chip scale BGA and 72-pin QFN packages. The SiI9022A maintains software compatibility with the SiI9022. It supports resolutions from standard definition 480i/p and 576i/p all the way to high-definition 720p, 1080i, and 1080p, the highest resolution supported by HDTVs today. It also supports all PC resolutions up to UXGA for netbooks.

Silicon Image HDMI products are designed according to the requirements of the market segments and are compliant with the latest version of the industry leading HDMI standard for those market segments. The SiI9022A transmitter is no exception—it is fully compliant with the HDMI 1.3 standard including HDMI 1.3 x.v.Color metadata packets. OEMs can design in Silicon Image HDMI hardware and software solutions with the confidence that they are developed and verified according to the latest HDMI Compliance Test Specification (CTS) and SimplayHD interoperability compliance requirements.

SiI9022A

Applications

- **Mobile Phones**
- **Cameras**
- **Portable Media Players**
- **Personal Internet Devices**
- **Netbooks**

Key Features

- **HDMI 1.3 and DVI 1.0 compliant**
- **Supports up to 1080p & UXGA**
- **Ultra low-power 35mW @ 720p/1080i**
- **Integrated CEC functions**
- **HDMI 1.3 x.v.YCC metadata packet support**

![HDMI® HIGH-DEFINITION MULTIMEDIA INTERFACE]

SiI9022A Typical Application

SiI9022A Features

SiI9022A Software & Documentation

Software
- SiI9022A firmware
- PC based diagnostic tool

Documentation
- Programmer's Reference
- Application Notes
- Datasheet

Compliance
- HDMI 1.3
- Simplay HD
- DVI 1.0

Digital Video
- Integrated TMDS core
- DTV resolution support - 480i/576i/480p/576p/720p/1080i/1080p
- PC resolution support - VGA/XGA/SXGA/WSXGA/UXGA
- Double data rate up to 165 MHz
- Flexible interface to HD MPEG decoders:
  - 12/24-bit RGB YCbCr 4:4:4
  - 16/20/24-bit YCbCr 4:2:2
  - 8/10/12-bit YCbCr 4:2:2 (ITU-R BT.601 & BT.656)
- Integrated YCbCr —> RGB conversion
- 4:2:2 —> 4:4:4 up-converter
- Programmable Data Enable (DE) generator
- HDMI 1.3 x.v.YCC metadata packet support

Consumer Electronic Control (CEC)
- Dedicated CEC signals
- Integrated hardware arbitration logic reduces local CPU overhead

Digital Audio
- DVD-Audio support via 1xI^{2}S input (49-ball)
- DVD-Audio support via 4xI^{2}S inputs (81-ball, 72 pin)
- Supports 2-channel 192kHz or 8-channel 96kHz
- Supports IEC60958 2-ch PCM or IEC61937 compressed audio (Dolby Digital, DTS, etc.)
- Industry-standard S/PDIF input
- MCLK not required for I^{2}S and S/PDIF

System Operation
- Simplified API programming through Transmitter Programming Interface (TPI) and CEC Programming Interface (CPI)
- Programmable DDC controller simplifies system design
- Flexible interrupt registers with interrupt pin
- Monitor detection supported through hot plug and receiver sense

Power Management
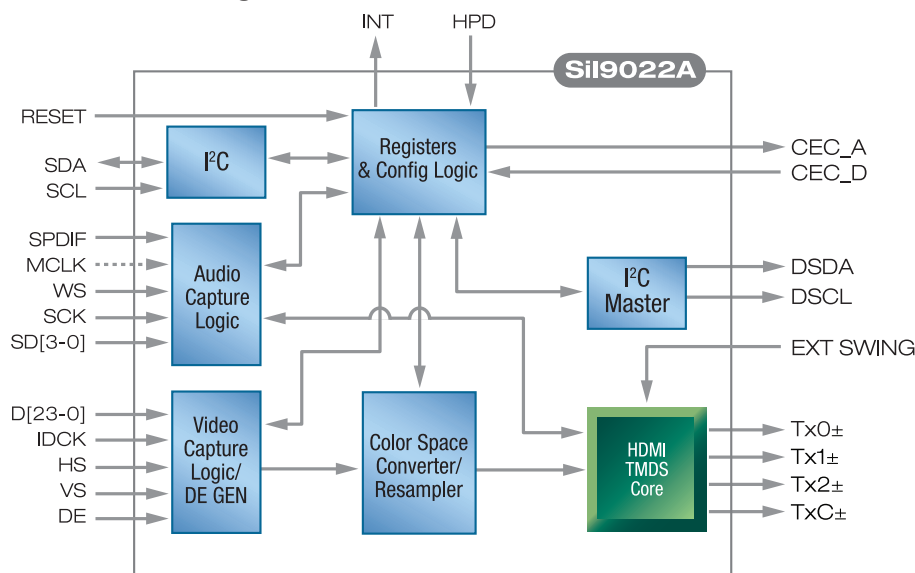- D3, D2, D0 ACPI power states supported

Available Packages
- 81-ball BGA (4mm x 4mm, 0.4mm ball pitch)
- 49-ball BGA (4mm x 4mm, 0.5mm ball pitch)
- 72-pin QFN (10mm x 10mm)
- Pin and software compatible with SiI9022*
  * 81-ball BGA version

Operating Range
- -20C° to +85C° extended temperature support

SiI9022A Circuit Diagram

Silicon Image, Inc.

Simply Stored. Connected. Beautiful.