Product Brief

Sil9222

Applications

- Mobile Phones
- Digital Still Cameras
- Portable Media Players
- HD Camcorders

Key Features

- Provides HD video with only three pins
- RGB MPEG decoder interface
- Ultra low active and standby power
- Integrated HDCP engine and key for maximum security

Mobile High-Definition Link (MHL™) Technology Transmitter

Low pin-count, HD video solution for mobile phones, digital still cameras, portable media players & camcorders

The Sil9222 is an ultra low-power Mobile High-Definition Link (MHL™) technology transmitter designed for power-sensitive consumer electronics devices such as mobile phones, digital cameras, portable media players, HD camcorders and other portable devices. Together with the companion MHL HDMI bridge, the Sil9222 delivers low-cost, low-pin count, HDMI-interoperable HDTV connectivity for mobile electronics.

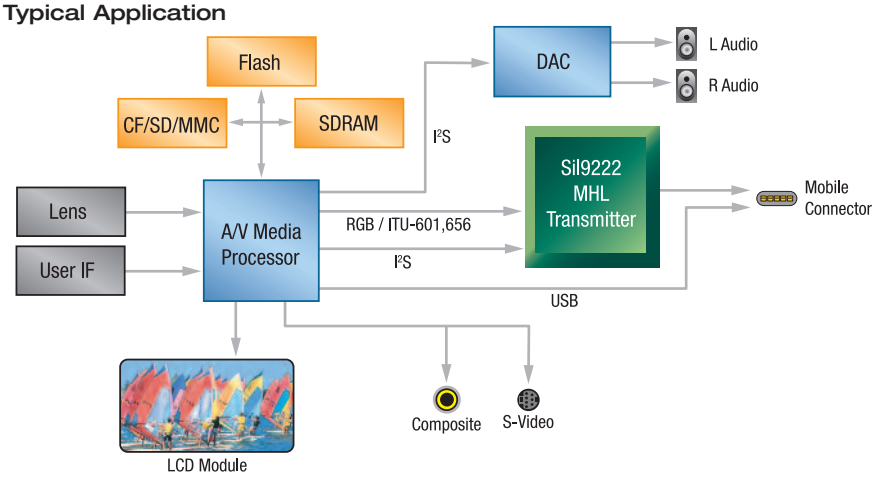
The SiI9222 transmitter is the world's first low-pin-count digital media transmitter featuring single data lane Transition Minimized Differential Signaling (TMDS), which reduces pin-count for small devices. The SiI9222 transmitter delivers full high-definition video and digital audio through three pins on most mobile connectors. The MHL chipset, consisting of an MHL transmitter plus the SiI9290 MHL bridge chip, provides a High-Bandwidth Digital Content Protection (HDCP) engine and keys to securely distribute content between HDMI-enabled devices.

Utilizing only two differential TMDS pairs for audio/video packets and a single-wire control bus, MHL technology delivers the necessary video bandwidth and replicates all the required control signals that comes with the traditional 19-pin HDMI interface. A low-cost companion MHL bridge chip converts the MHL signaling to HDMI compliant signals for connectivity to HDMI enabled DTVs.

In order to fit into the tight constraints of today's highly integrated mobile electronics, the SiI9222 transmitter is housed in a tiny 5mm x 5mm, 64-ball chip scale BGA package. Even in this diminutive package, the MHL transmitters do not scrimp on performance, supporting resolutions from standard definition 480i/p all the way to high-definition 720p and 1080i.

Silicon Image's MHL technology products are designed according to the requirements of the market segments. Together with its MHL-to-HDMI bridge, SiI9222 is compliant with the latest version of the industry leading HDMI standard for those market segments. The SiI9222 carries audio/ video packets and control signals that are fully interoperable with the HDMI interface. In addition, all Silicon Image hardware and software solutions are developed and verified according to the latest HDMI Compliant Test Specification and Simplay HD™ HDCP interoperability compliance requirements.

Sil9222 Typical Application



Sil9222 Features

Sil9222 Software & Documentation

Software
- Sil9222 Firmware

Documentation
- Programmer's Reference

Compliance
- HDMI*
- HDCP 1.2*
- Simplay HD
- DVI 1.0*

*With companion MHL to HDMI Bridge

Digital Video Output
- Integrated TMDS core
  - Two differential pairs, 1 clock and 1 data
- DTV resolution support - 480i/576i/480p/576p/720p/1080i
- PC resolution support - VGA/XGA/SXGA
- Parallel 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

Digital Audio Output
- Supports IEC60958 2-ch PCM or IEC61937 compressed audio (Dolby Digital, DTS, etc.)
- Industry-standard S/PDIF input
- Integrated MCLK generator

Single-Wire Control Bus
- High speed single wire bus carrying control commands

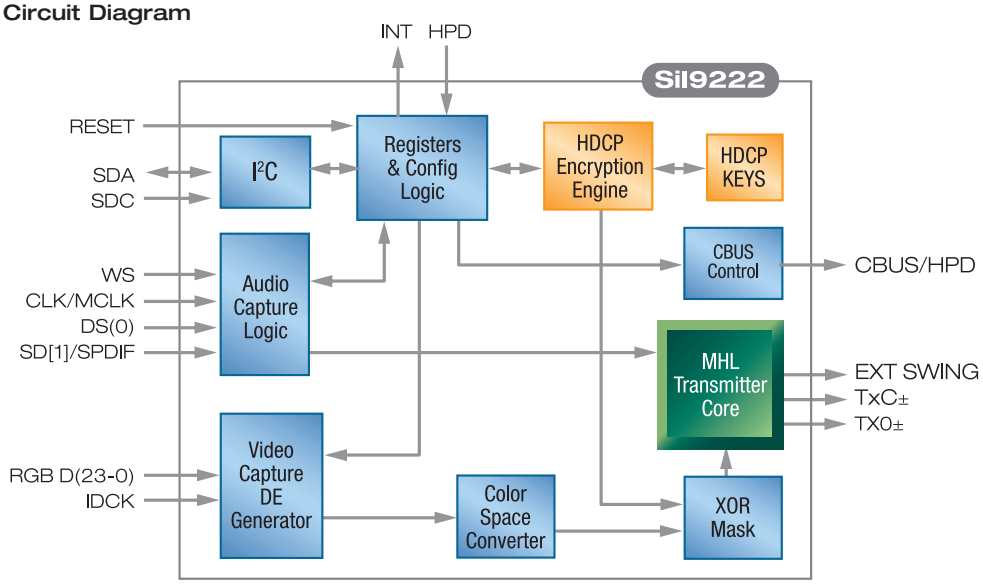
System Operation
- Simplified API programming through Transmitter Programming Interface (TPI)
- Flexible interrupt registers with interrupt pin
- Monitor detection supported through hot plug and receiver sense

Power Management
- Low-power 1.2V and 1.8V cores
- Flexible power-down modes

Package
- 64-ball BGA (5mm x 5mm footprint)

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

Sil9222 Circuit Diagram



Silicon Image, Inc.
1060 E. Arques Avenue
Sunnyvale, CA 94085
T 408.616.4000
F 408.830.9530
www.siliconimage.com

Simply Stored. Connected. Beautiful.

© 2009 Silicon Image, Inc. All rights reserved. Silicon Image, the Silicon Image logo, MHL, Mobile High-Definition Link, and TMDS are trademarks or registered trademarks of Silicon Image, Inc. in the United States and other countries. HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of, and are used under license from, HDMI Licensing, LLC. Other trademarks are property of their respective holders. Product specifications are subject to change without notice.

Part Number: Sil9222EBU

SiI-PB-1036 rev3 09/09