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DVI Interface with TCON Display Processor

DESCRIPTION

The Genesis s9255 is a highly integrated, feature-rich digital input LCD monitor controller targeted at SXGA resolution monitors. It inputs DVI-compliant signals and will perform advanced image processing to ensure the best display on a TFT LCD Monitor. It features an advanced scaling architecture with five zone variable scaling and edge enhancement capabilities in the native resolution modes. A programmable poly phase filter ensures smooth natural images and enhanced sharper text to provide excellent image quality.

A proprietary video window detection algorithm detects coordinates of any video data overlayed on the image. The flexible scaling architecture also allows programmable scaling coefficients in either a defined region or on the entire screen. A state of the art and industry-first Adaptive Color and Contrast (ACC) along with the Auto Backlight Level Control (ABL) ensure excellent viewing quality for both static and dynamic images. s9255 has second generation Active Color Management™. This technology provides accurate flesh tone compensation, color space conversion and hue / saturation control over either a programmable window or the entire screen. Dual 10 - bit color look up tables allow independent gamma control for a programmable window and the background image.

Integration of a state of the art 135 MHz DVI receiver, industry's best scalar and a host of other advanced features for video and color control make the s9255 an excellent solution for DVI monitors.

PRODUCT HIGHLIGHTS

- DVI-compliant 135 MHz receiver
- High bandwidth digital content protection
- CCIR 656 compatible 8 bit video port
- Intelligent Picture Processing™
- Video window detection
- SureSync™ and AutoAdjust™
- Stand-alone test pattern generator
- Supports input & panel resolutions up to SXGA
- Integrated Microcontroller
- Programmable multi tap poly phase advanced scaling engine
- Five zone variable scaling – Ideal for WXGA panels
- Programmable regional scaling coefficients
- Edge enhancement in 1:1 mode
- Supports zoom and shrink scaling
- ACM II™ (Second Generation Active Color Management™)
- Dual Gamma Table Correction
- Back light intensity control through PWM
- Adaptive Backlight Control™
- Adaptive Contrast control™
- Flexible OSD Engine with 8 Kbytes of OSD Memory
- Adaptive flicker Rate Control
- Fail-safe display mode for high refresh inputs

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s9255 Feature Details

Scaling Technology

- Programmable Scaling Coefficients
- Five zone variable scaling
- Supports WXGA panels
- Non-linear independent X/Y scaling
- Advanced Scaling with variable sharpness control
- Edge enhancement in native mode resolution
- Supports image expansion and reduction
- Zoom or shrink from any industry standard input resolutions
- Conversion between 4:3 and 16:9 aspect ratio

Video and Color Control Features

- Intelligent Picture Processing™
- Adaptive Color and Contrast
- Adaptive Backlight Level
- ACM II (Advanced Active Color Management)
- Video Window Detection

Input Ports

- **DVI Receiver**
 - Single link integrated DVI-compliant receiver up to 135MHz operation
 - Support for DE-only mode
 - Direct connect to all DVI-compliant transmitters
 - High-bandwidth Digital Content Protection (HDCP)
- **Video Port**
 - CCIR 656 PAL / NTSC Input Capability
 - Video Window Detection
 - On-chip deinterlacing (bobbing)
 - Integrated YUV to RGB Converter
 - Glue-less interface to video digitizers

SureSync™ and AutoAdjust™

- Automatically detects and syncs to changes in incoming resolution and refresh rate
- Fast, automatic optimization of Phase, Hsize, Vertical and Horizontal position
- Continuous monitoring of Input ports

On Screen Display

- Character-based OSD with support for 16 foreground and 8 background colors.
- Support for up to sixteen colors for characters and display of logos and icons
- Supports transparency and blending.
- Independent X and Y overlay/menu zoom by a factor of (1 to 8).
- Flexible character generator for variable sizes up to 16x32.
- Character attributes for 1, 2, 4 bits/pixel.
- Fully programmable OSD memory of 4k x 16bits
- Multiple language support.

Panel Interface

- Support for one pixel/clock (18 and 24 bit), 2 pixel/clock (36 and 48 bit) TFT TTL panels
- Support for eight-bit or six-bit panels with high quality dithering
- Second Generation flicker free Timing Controller (TCON)

Supported Panel Resolutions

- SXGA (1280x1024 @ 75Hz) resolution
- XGA (1024 x 768 @ 85 Hz) resolution

Color Look up Table

- 24 bit/pixel (8 bit each for R, G, B).
- 10-bit Gamma correction for true color display.
- Dual Gamma Tables
- Optional 24-bit to 18-bit high quality dither support
- High fidelity Color Mapping – up to 16M colors.

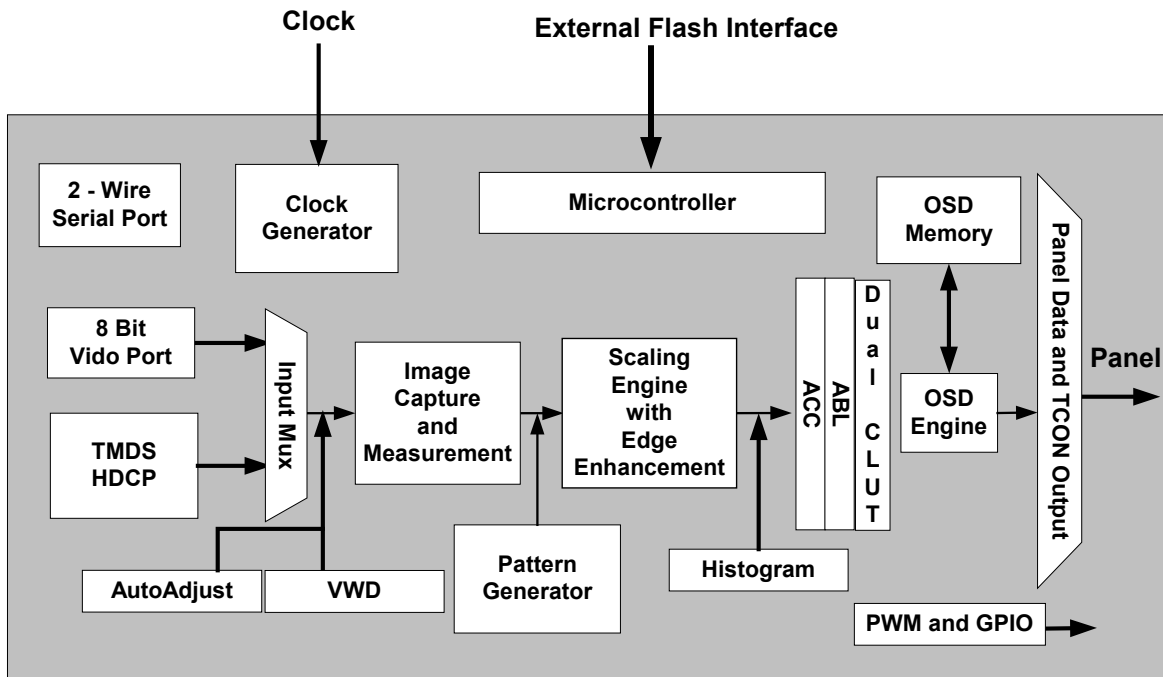
System Interface Support

- 4 PWM channels can be programmed as Panel On /Off, Backlight On /Off etc.,
- 24 GPIO pins
- Industry standard 2 wire serial host interface for HDCP communication

3.3V Operation

208-pin LQFP Package

s9255 Functional Block Diagram



s9255 System Design Example

