SD1010A - Analog-Interface XGA TFT LCD Display Controller

The SmartASIC **SD1010A** is a highly integrated TFT LCD controller chip with the third generation SmartASIC advanced image-processing technology. The SD1010A has advanced scaling engine with proprietary sharpness adjustment and text mode enhancement. The SD1010A supports analog interfaced input with an external ADC chip. The SD1010A has robust handling of a wide variety of TFT LCD panels and strong support of standard or non-standard input timings. The SD1010A is the lowest cost solution for high-end main stream XGA TFT LCD display systems.

FEATURES

- Advanced image processing with proprietary sharpness adjustment and text mode enhancement
- Robust auto configuration for input mode detection and clock frequency and phase recovery for standard or non-standard input timing
- Up and down scaling for all resolutions from VGA to SXGA
- Dynamic phase tracking for optimal sampling phase
- Supports analog and video inputs
- Programmable Gamma Correction
- Digital output brightness and contrast adjustments
- Digital input gain and offset control
- Low cost 128 pin PQFP packaging with 3.3V power and 5V tolerant I/O

RGB input support

- Support up to SXGA resolution for both single pixel (24-bit) or dual pixel input (48-bit), up to XGA 85Hz and SXGA 60Hz
- Seamless interface to industry standard ADC chips and TMDS receivers

Video input support

- YUV 4:2:2 or RGB input format
- Build in color space converter
- De-interlace to compensate ODD/EVEN field shifting

Auto Configuration

- Robust mode detection for standard or non-standard input timing
- Accurate clock frequency and phase recovery
- Auto input contrast adjustment
- programmable phase tracking to compensate phase drifting
- Analog interface use input DATA and SYNC

Proprietary scaling engine

- programmable horizontal and vertical expansion ratio
- Arbitrary down sampling factors

Advanced image enhancement processor

- User programmable sharpness adjustment
- Content adaptive text enhancement
- Output digital contrast adjustment
- Programmable gamma correction

True color support for 6 bit panel

- Proprietary spatial based dithering
- Optional temporal based dithering

Support multiple TFT LCD panels

- Programmable output timing parameters to match specifications of various TFT LCD panels
- Single or dual pixel output (24/48 bit RGB)
- Support power On/Off sequence

Robust handling of invalid input conditions

- Detect no input signal
- Detect input signal beyond specified acceptable range
- Output status indicators
- Generate output signal even when no input signal
- Support of non-full screen expansion to avoid exceeding panel specification

Low-cost system solution

- No external frame buffer required
- 2-wire serial interface for EEPROM and CPU
- programmable OSD mixer
- 128 pin PQFP Package
- 3.3V power with 5V tolerant I/O

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