GENESIS MICROCHIP

Preliminary Product Brief gm5126

C5126-PBR-01A

Dual-Interface OnPanel SXGA LCD Controller with RSDS Transmitter

The gm5126 device is an all-in-one image processor targeted on the OnPanel LCD monitor market with resolutions up to SXGA. The gm5126 leverages Genesis patented advanced image-processing technology as well as a proven integrated ADC/PLL and an Ultra-Reliable DVI compliant digital receiver to provide excellent image quality in simple and cost-effective solution. The integrated OnPanel timing controller (TCON) is fully programmable to interface to a wide range of commercially available LCD panels. A dual channel RSDS (reduced swing differential signaling) 6 or 8 bit transmitter is provided for direct connect to column drivers with RSDS inputs. This high level of integration reduces the number of components, which eliminates a PCB along with its associated connectors and cables. This reduces system cost, improves reliability and simplifies monitor design.

FEATURES

- Zoom (from VGA) and shrink (from UXGA) scaling
- Integrated 8-bit triple-channel ADC / PLL
- Integrated Ultra-Reliable DVI 1.0-compliant receiver
- On-chip programmable OnPanel timing controller
- Embedded microcontroller with parallel ROM interface
- On-chip versatile OSD engine
- All system clocks synthesized from a single external crystal
- Programmable gamma correction (CLUT)
- RealColor controls provide sRGB compliance
- PWM back light intensity control
- 5 Volt tolerant inputs
- Energy Spectrum Management (ESM™) for low EMI

High-Quality Advanced Scaling

- Fully programmable zoom ratios
- High-quality shrink capability from UXGA resolution
- RealRecovery function provides full color recovery image for refresh rates higher than those supported by the LCD panel ("out of range" signals)
- Moire cancellation

Analog RGB Input Port

- Supports up to 162 MHz (SXGA 85Hz / UXGA 60Hz) Note: resolutions and refresh rates higher than those supported by the panel are supported as recovery modes.
- On-chip high-performance PLLs (only a single reference crystal required)
- Automatic input format detection
- Robust phase and image positioning

Ultra-Reliable DVI Compliant Input Port

- Operating up to 165 MHz (up to UXGA 60Hz)
- Direct connect to all DVI compliant digital transmitters
- HDCP and non HDCP capable versions

RealColor Technology

- Digital brightness and contrast controls
- TV color controls including hue and saturation controls
- Flesh-tone adjustment
- Full color matrix allows end-users to experience the same colors as viewed on CRTs and other displays (e.g. sRGB compliance)

On-chip OSD Controller

- On-chip RAM for downloadable menus
- 1, 2 and 4-bit per pixel character cells
- Horizontal and vertical stretch of OSD menus
- Blinking, transparency and blending
- Embedded language independent designer OSD

Built in Test Pattern Generator

On-chip Microcontroller

- Requires no external microcontroller
- External parallel ROM interface
- 21 general-purpose inputs/outputs (GPIOs) available for managing system devices (keypad, back light, NVRAM, etc)
- Industry-standard firmware embedded on-chip, requires no external ROM (configuration settings stored in NVRAM)
- Low-power mode (< 0.15W) when no inputs are active
- Support for DDC2Bi based In-System-Programming of Flash ROM

Built-in OnPanel Timing Controller

- Dual channel 6/8 bit RSDS compliant serial interface with direct connect to RSDS compliant column drivers.
- Low EMI and power saving features include frame, line and in-line inversion, blanking and programmable output amplitudes and proprietary ESM™ techniques

Output Format

- Programmable pin swapping, odd / even data swapping and red / blue group channel swapping for flexibility in board layout
- Support for 8 or 6-bit panels (with high-quality dithering)

Stand-alone operation requires No external ROM and No firmware development for *Fast Time to Market*

Pin and FW Compatible with Genesis OnPanel RSDS Family

PACKAGE

- 208-pin PQFP

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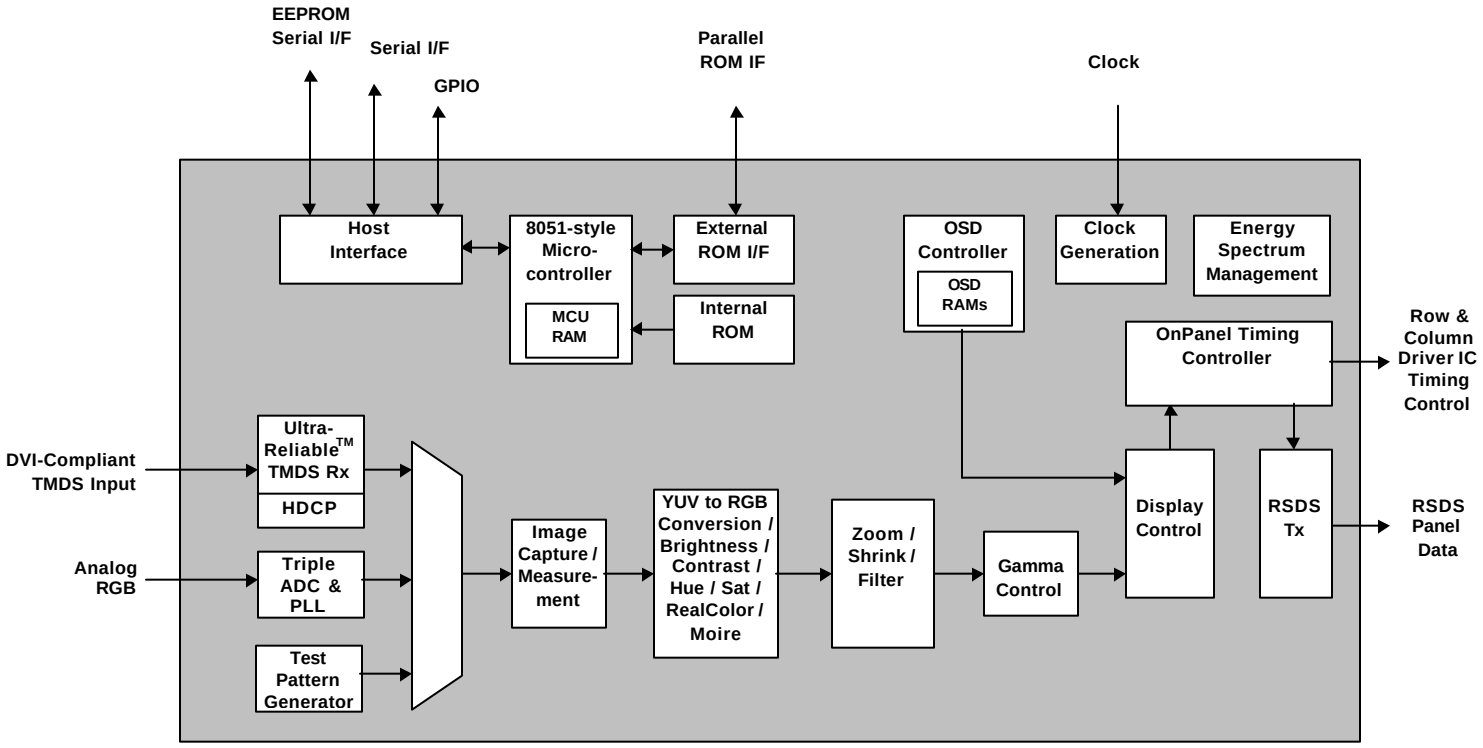
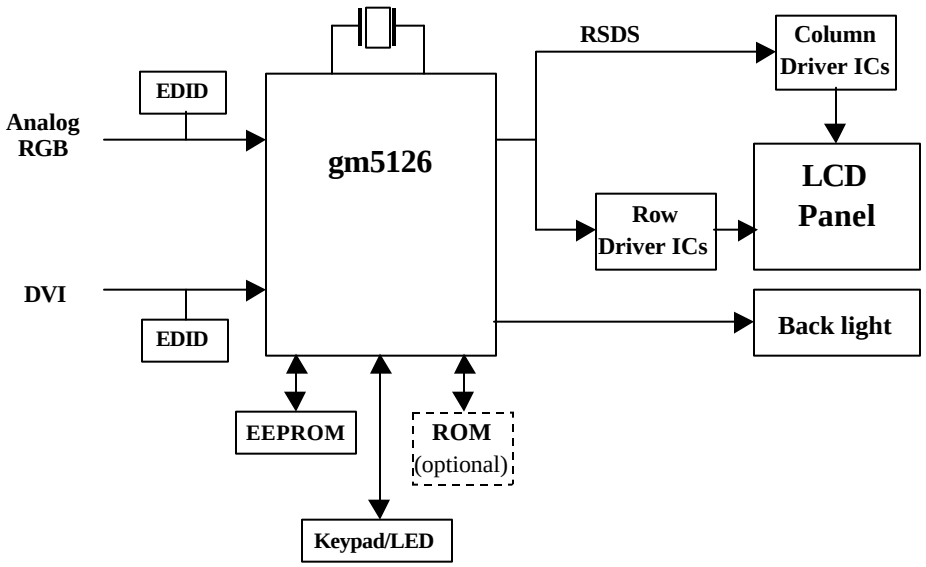
gm5126 Functional Block Diagram



gm5126 OnPanel Design Example



Note: ESM, RealColor, Real Recovery and Ultra-Reliable DVI are trademarks of Genesis Microchip Inc.
Note: RSDS is a trademark of National Semiconductor Corporation