GENESIS MICROCHIP

Preliminary Product Brief gm2126

C2126-PBR-01A

Analog-Interface OnPanel SXGA LCD Controller with RSDS Transmitter

The gm2126 device is an all-in-one image processor targeted for the OnPanel LCD monitor market with resolutions up to SXGA. The gm2126 leverages Genesis patented advanced image-processing technology and a proven integrated ADC/PLL to provide excellent image quality in a simple and cost-effective solution. The integrated OnPanel timing controller (TCON) is fully programmable to interface with 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 connection 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
- 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
  - Real Recovery 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

- **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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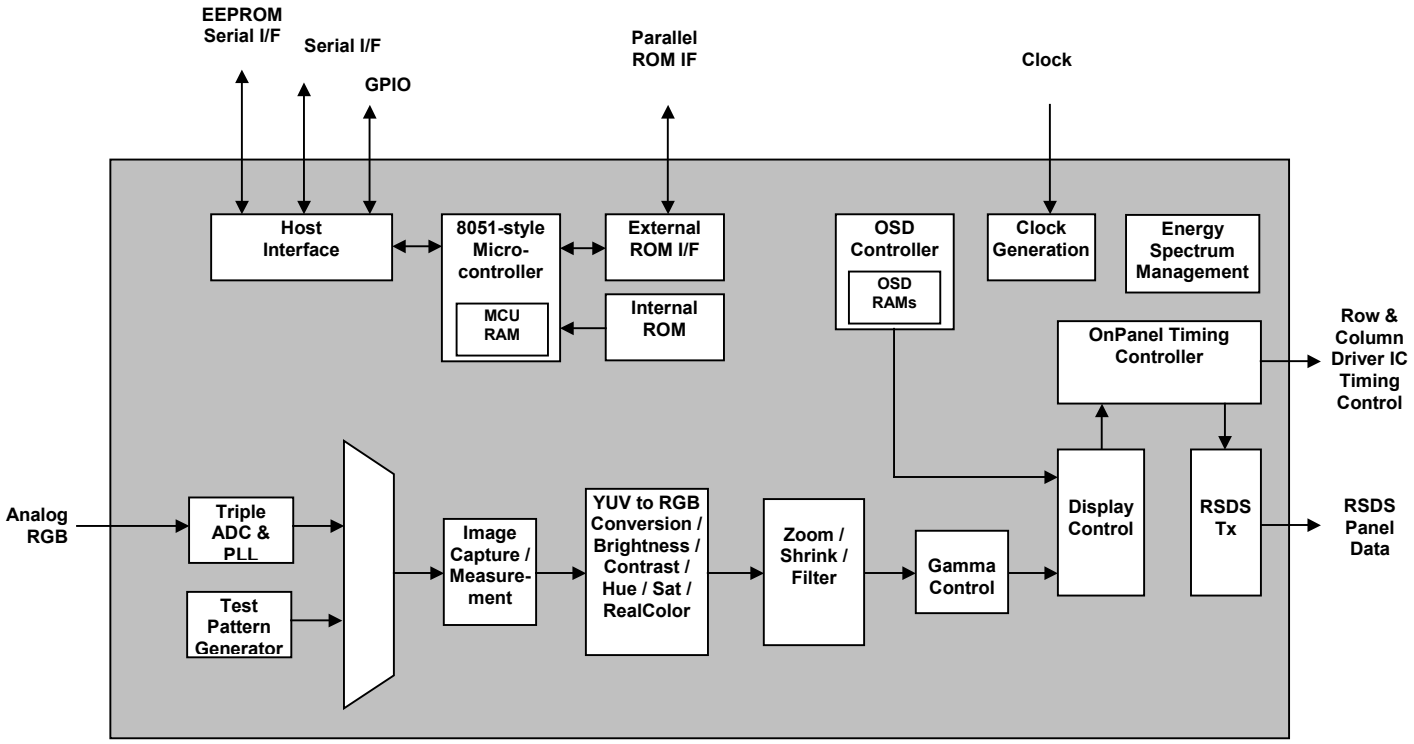
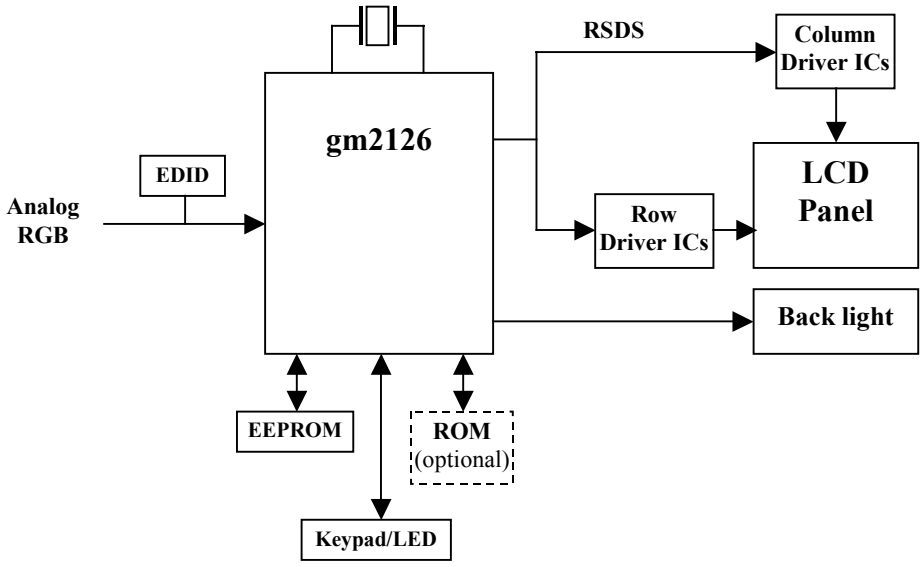
gm2126 Functional Block Diagram



gm2126 OnPanel Design Example



Note: ESM, Real Color and Real Recovery are trademarks of Genesis Microchip Inc.
Note: RSDS is a trademark of National Semiconductor Corporation