

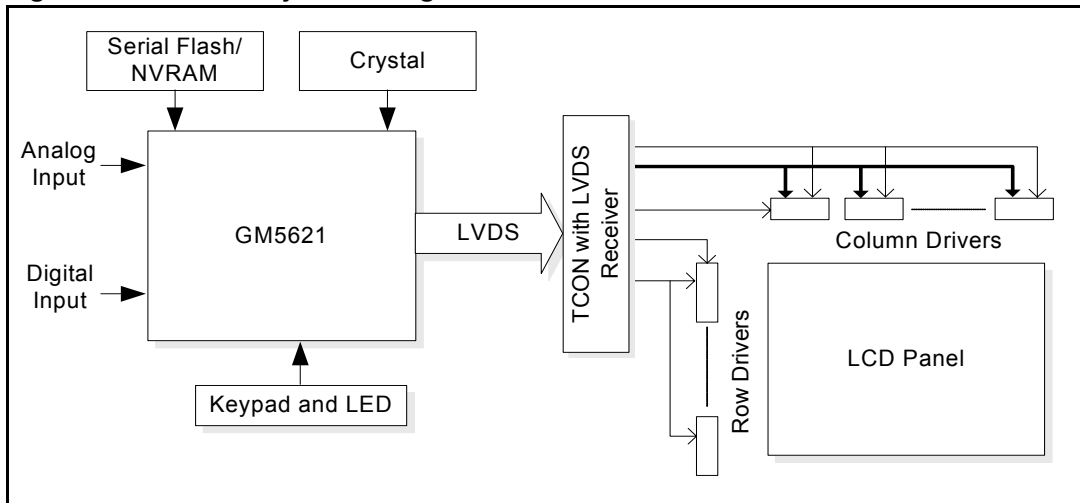
# 1 Description

Genesis GM5621 and GM5626 are all-in-one dual input LCD monitor controllers supporting resolutions up to SXGA/WXGA, available in a very low pin count package. GM5621/5626 leverage Genesis patented advanced image-processing technology, as well as a proven integrated ADC/PLL and an Ultra-Reliable DVI compliant digital receiver to deliver a high-quality solution for mainstream analog and dual input monitors. GM5621/5626 offer new Instant Auto technology, which provides fast and accurate image alignment for both static and moving images of the analog input signal. GM5621 includes an on-chip, industry standard, dual channel LVDS transmitter and a TCON, and GM5626 includes a dual channel RSDS transmitter for direct interfacing of commercially available LVDS/RSDS LCD panel modules.

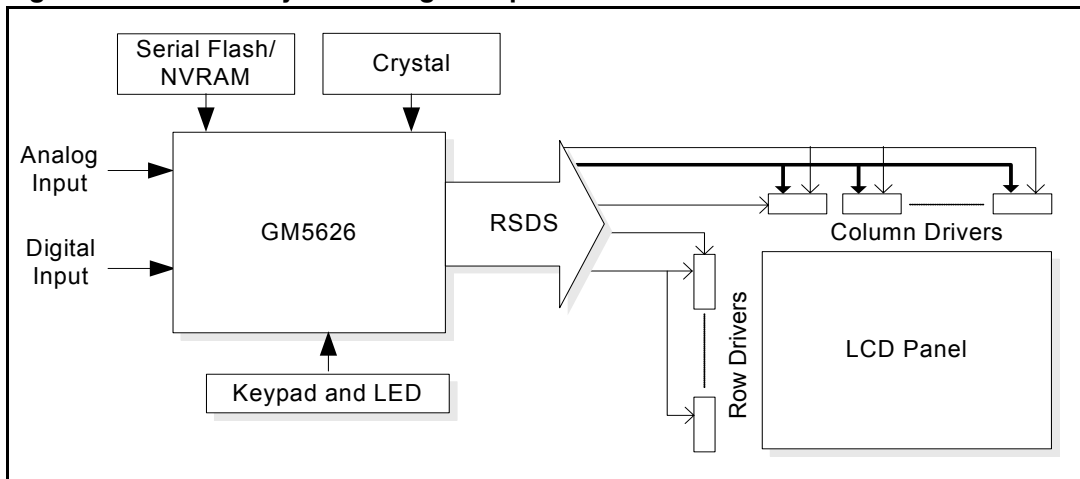
In addition, GM5621/5626 include an integrated x86 OCM with SPI compatible interface, a multicolor proportional font OSD engine, a programmable coefficient scaling engine, dual channel Schmitt and Reset circuitry. Along with high quality and reliability, GM5621/5626 also provide a very low cost system design by reducing the number of components and the reduction in the board size.

GM2621 is a pin-compatible analog derivative product with integrated ADC/PLL, but no DVI receiver.

**Figure 1. GM5621 system design: conventional interface**



**Figure 2. GM5626 system design: on-panel interface**



## 2 Feature attributes

- Analog RGB input
  - Supports up to SXGA/WXGA 75 Hz/UXGA 60 Hz
  - Composite-sync and Sync-on-Green (SOG) support
  - Input format detection and auto-alignment
  - Phase clock and image positioning
- Instant Auto image adjustment
  - Faster and more accurate than current conventional methods
  - Auto-adjusts full width and partial width images
  - Auto-adjusts DOS screens and moving images, such as screen savers and motion pictures
- Ultra-reliable DVI input (GM5621/5626)
  - Operating speed 165 MHz (up to UXGA 60 Hz)
  - Direct connect to all DVI-compliant digital transmitters
  - High-bandwidth Digital Content Protection (HDCP)
- Intelligent Image Processing™
  - Programmable coefficients for user sharpness control
  - Real Recovery™ function provides full color recovery image for refresh rates higher than those supported by the LCD panel
- On-chip microcontroller
  - High-performance x86 MCU with on-chip RAM and ROM
  - Unified memory architecture simplifies chip programming
  - Five general-purpose outputs (GPO)
  - UART link for ISP and factory setting purpose
  - Two DDC2Bi with DMA buffer to internal RAM
  - Slow clock mode for 50mW sleep mode power consumption
  - JTAG support for firmware debugging
- On-chip OSD controller
  - On-chip RAM for high-quality programmable menus
  - 1, 2, and 4-bit per pixel character cells
  - Horizontal and vertical stretch of OSD menus
  - Blinking, transparency and blending
  - Supports two independent OSD menu rectangles
  - Proportional fonts
- LVDS transmitters
  - Double pixel up to SXGA/WXGA 75 Hz output
  - Support for 8/6-bit panels (with high-quality dithering)
  - Pin swap, odd or even swap and red or blue group swap of RGB outputs for flexibility in board layout
  - Programmable signal amplitude

- RSDS transmitters and TCON (GM5626)
  - Dual channel 6-bit RSDS compliant serial interface with direct connect to RSDS compliant column drivers
  - Support for type 1, type 2, and type 3 bus configuration
  - Pin swap, odd or even swap and red or blue group swap of RGB outputs for flexibility in board layout
  - Low EMI and power save feature include frame, line and in-line inversion and blanking
- Highly integrated system-on-a-chip
  - 50mW power saving mode
  - 5-volt tolerant inputs
  - Two layer PCB support
  - On-chip reset circuit to eliminate external reset IC
  - Integrated Schmitt trigger for HSYNC and VSYNC
  - General purpose low bandwidth ADC

### 3 Ordering information

**Table 1. Order codes**

Part number	Description
GM2621-LF-AA	128-pin PQFP
GM2621-LF-BC	128-pin PQFP
GM2621-LF-CD	128-pin PQFP
GM5621-LF-AA	128-pin PQFP
GM5621-LF-CD	128-pin PQFP
GM5626-LF-AA	128-pin PQFP
GM5626H-LF-AA	128-pin PQFP

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at [www.st.com](http://www.st.com).

## 4 Revision history

**Table 2. Document revision history**

Date	Revision	Changes
09-Oct-2008	1	Initial release.

**Please Read Carefully:**

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

**UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.**

**UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.**

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2008 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)