GM5862, GM5862H, GM5822H, GM5868H, GM5828H

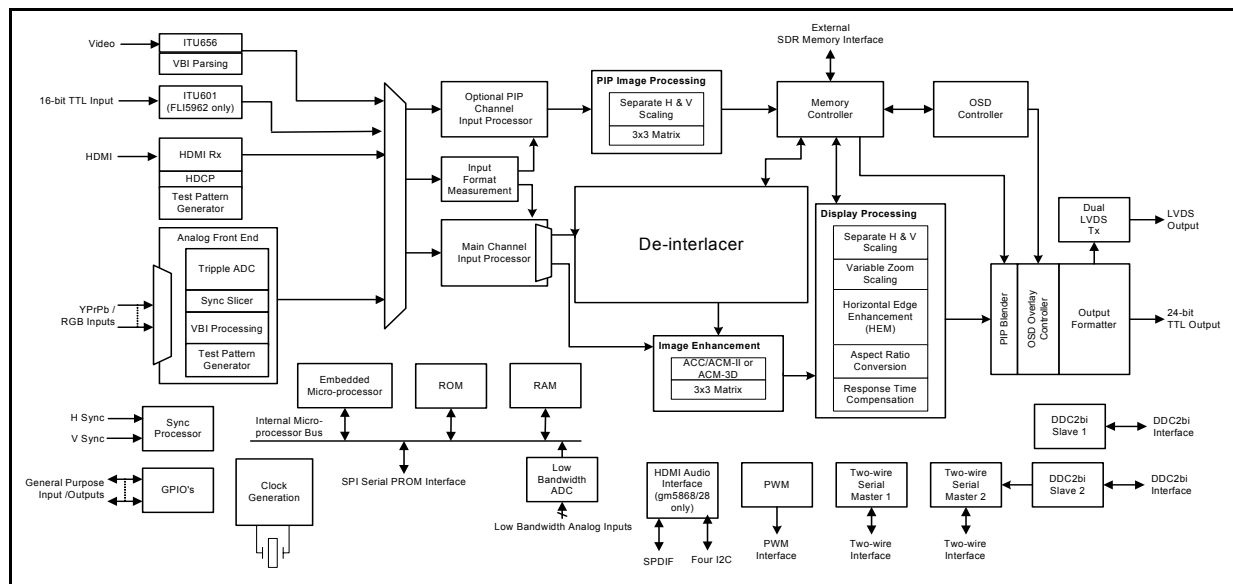## LCD monitor controllers with RTC up to WUXGA

Data brief

Features

- Triple ADC and PLL up to 205 MHz
- Integrated Ultra-Reliable DVI® receiver up to 165 MHz (GM5862, GM5862H, and GM5822H)
- Integrated HDMI 1.1 receiver up to 165 MHz (GM5868H and GM5828H)
- HDCP supported with GM58xxH versions
- ITU656 video input
- ITU601 (16-bit) video input
- Response Time Compensation (RTC) with single 1Mx16 SDR SDRAM up to UXGA panels
- Optional Frame Rate Conversion (FRC) using two 1Mx16 SDR SDRAM up to SXGA 75 Hz
- Panoramic scaling for wide output resolutions
- TV color controls using ACC and ACM-3D
- Versatile OSD controller for high quality bitmap-like TV OSD
- Embedded x86 microprocessor with external SPI Flash ROM
- Dual LVDS transmitter for direct interconnect to LCD panels up to WUXGA 60 Hz
- Package: 256-pin PQFP

Applications

- LCD monitors with RTC up to WUXGA resolutions

For further information contact your local STMicroelectronics sales office.

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1 Description

The GM58xx family of controllers are highly integrated mixed signal LCD controllers with built-in panel RTC for LCD panels with slow grey-to-grey response time up to WUXGA resolutions.

The integrated RTC only requires a single 1Mx16 SDR SDRAM to support a UXGA panel. In most cases, the grey-to-grey response time can be reduced as much as half of the native grey-to-grey response time. This depends on the characteristics of the target LCD panel.

The GM58xx monitor controller family has integrated proven ADC/PLLs and an Ultra-Reliable DVI or HDMI 1.1 compatible digital receiver with optional FRC to ensure proven PC graphics compatibility. The optional FRC function may need more external memory to support up to SXGA 75 Hz.

The GM58xx family includes the following products:

● GM5862 supports up to 1920 x 1200 resolutions with DVI

● GM5862H supports up to 1920 x 1200 resolutions with DVI and HDCP

● GM5822H supports up to 1680 x 1050 resolutions with DVI and HDCP

● GM5868H supports up to 1920 x 1200 resolutions with HDMI and HDCP

● GM5828H supports up to 1680 x 1050 resolutions with HDMI and HDCP

Figure 1.   System diagram
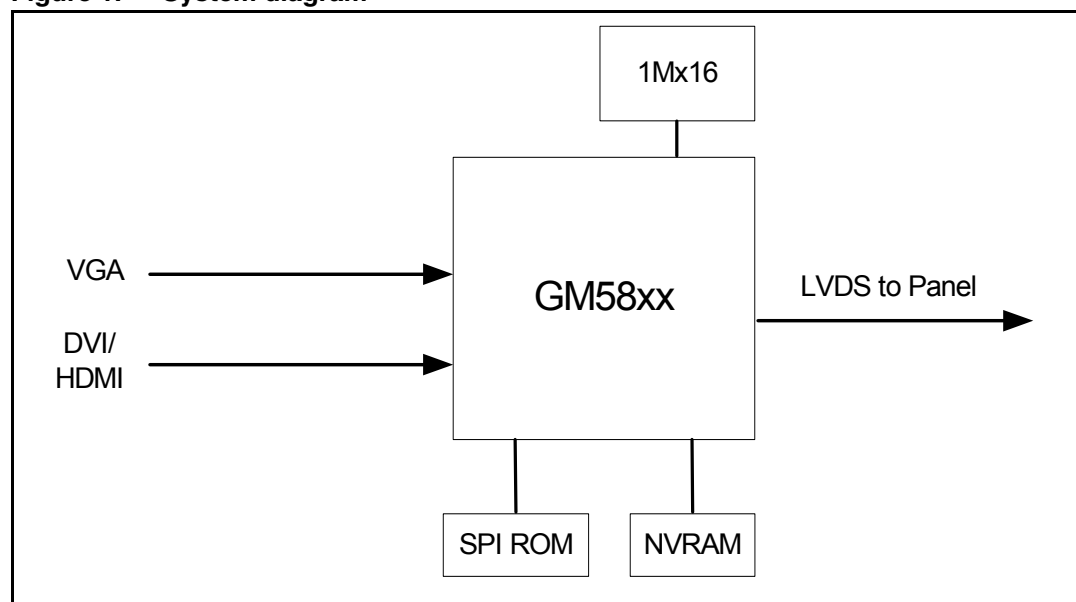
2   Feature attributes

- Dual analog input
    - Operation up to 205 MHz
    - Dual RGB inputs
    - Single RGB and single YPbPr up to 1080i inputs
    - Bi-level and tri-level analog sync support and Macrovision™ support
    - Dual HSYNC, VSYNC, and SOG inputs
- Ultra-Reliable DVI/HDMI 1.1 input
    - HDMI 1.1, DVI 1.0, and HDCP 1.1—operates up to 165 MHz
    - Receives and outputs 2 to 8 channels of digital audio up to 192 KHz. Four programmable I2S and one SPDIF output
- Digital video input
    - ITU656 video input support for commercially available video decoder
    - ITU601 (16-bit) video input support for external MPEG2 decoder, DVI Rx, and ADC
- High quality advanced scaling engine
    - Independent and programmable horizontal and vertical scaling factors
    - Panoramic scaling (non-linear)
    - Variable sharpness settings
- Optional Picture-in-Picture (PIP)
    - Variable PIP window size up to 640 x 480
    - Video PIP on Graphics or Graphics PIP on Video
    - Independent PIP window color controls
    - Requires two 1Mx16 SDR SDRAM
- Optional frame rate conversion
    - 16-bit/32-bit data path to support single or dual 1Mx16 SDR SDRAM
    - Full frame rate conversion up to SXGA 75 Hz
- Response time compensation
    - Compensates motion blur that results from slow response time of LCD panels resulting in motion image that is clean and crisp
- OSD controller
    - Up to 4 windows
    - 1, 2, or 4-bits per pixel color
    - Blinking, transparency, blending, and proportional fonts support
- Output support up to WUXGA 60 Hz
    - Dual-channel LVDS transmitters with pin swap for flexibility in PCB layout
    - Optional 24-bit TTL output

- System-on-chip integration for lower BOM
  - On-chip reset circuit with integrated Schmitt trigger for HSYNC and VSYNC
  - Embedded x86 MCU with serial interface
  - General-purpose low-bandwidth ADC
  - Integrated gamma and 3x3 LUT for sRGB compliance
  - ESM® and boundary scan support

3 Ordering information

Table 1. Order codes

Part number	Description
GM5862-LF-AA	256-pin PQFP
GM5862H-LF-AA	256-pin PQFP
GM5822H-LF-AA	256-pin PQFP
GM5868H-LF-AA	256-pin PQFP
GM5828H-LF-AA	256-pin PQFP

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: *www.st.com*.
ECOPACK® is an ST trademark.

4   Revision history

Table 2.   Document revision history

Date	Revision	Changes
25-Sep-2008	1	Initial release.
18-May-2010	2	Updated template and ECOPACK statement. Updated Figure 1. System diagram. Added all RPNs to title. Added Doc ID. Minor wording corrections to Description and Feature attributes sections.

Please Read Carefully:

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