



The gm5020 device is an all-in-one image processor for displays with a dual (analog and digital) interface supporting resolutions up to SXGA. The gm5020 leverages Genesis patented third-generation scaling technology as well as a proven integrated ADC/PLL and an Ultra-Reliable DVI™ receiver to provide excellent image quality in simple and cost-effective system solutions. Flexibility, performance and a high level of integration make the gm5020 an optimal solution for **LCD monitors with dual (analog & digital) interface**.

FEATURES

- Zoom and shrink scaling (all resolutions from VGA to SXGA)
- Frame rate conversion
- Integrated 8-bit triple-channel ADC / PLL
- Integrated Ultra-Reliable DVI™ receiver
- Integrated High-bandwidth Digital Content Protection (HDCP)
- Embedded microcontroller simplifies OSD creation
- On-chip versatile OSD engine
- All system clocks synthesized from a single external crystal
- Programmable gamma correction (CLUT)
- RealColor™ technology provides flesh tone adjustment
- PWM backlight intensity control
- 5 Volt tolerant inputs
- **High-Quality Advanced Scaling**
 - Fully programmable zoom/shrink ratios
 - Independent horizontal / vertical zoom and shrink
 - Variable sharpness control
 - Moire cancellation
 - Adjustable scaling algorithms
- **Analog RGB Input Port**
 - Supports up to SXGA at 85Hz
 - Support for Sync-on-Green (SOG) and Composite Sync modes
- **Ultra-Reliable DVI™ Receiver**
 - Single link on-chip TMDS Rx up to 160 MHz operation
 - Direct connect to all DVI compliant TMDS transmitters
 - High-bandwidth Digital Content Protection (HDCP)
- **RealColor™ Technology**
 - Color filtering in YUV domain
 - Digital brightness, contrast, hue and saturation control for analog, digital and video inputs
 - Proprietary flesh tone adjustment
- **Digital Video Port**
 - 8-bit ITU-R BT656 input video
 - Seamless connection to commercially available video capture devices
- **Auto-Configuration / Auto-Detection**
 - Phase and image positioning
 - Input format detection
 - Compatibility with all graphic cards and standard VESA modes
- **Frame Store Interface**
 - Fully-programmable 48 / 32-bit wide data path
 - Optional use of data compression for more flexibility and lower system solution cost
 - Support for up to 143MHz SDRAM or SGRAM
- **On-chip OSD Controller**
 - Bit-mapped OSD capability - 256 24-bit colors
 - Horizontal and vertical stretch of OSD images
 - Blinking, transparency and blending
 - On-chip RAM for downloadable fonts
- **Output Format**
 - Single wide up to SXGA 60Hz output
 - Double wide up to SXGA 75Hz output
 - Support for 8 or 6-bit panels (with high-quality dithering)
- **Operating Modes**
 - Frame rate conversion and scaling of images
 - Bypass mode with no filtering and/or frame buffering
 - 1:1 centering
 - De-interlaced zoom
 - Frame Sync and Free Run display synchronization modes
- **Highly Integrated Solution Provides Lowest System Cost**
- **Simplicity of Design Speeds Time to Market**
- **Complete reference design kit available (software and hardware)**

PACKAGE

- 292-pin PBGA

APPLICATIONS

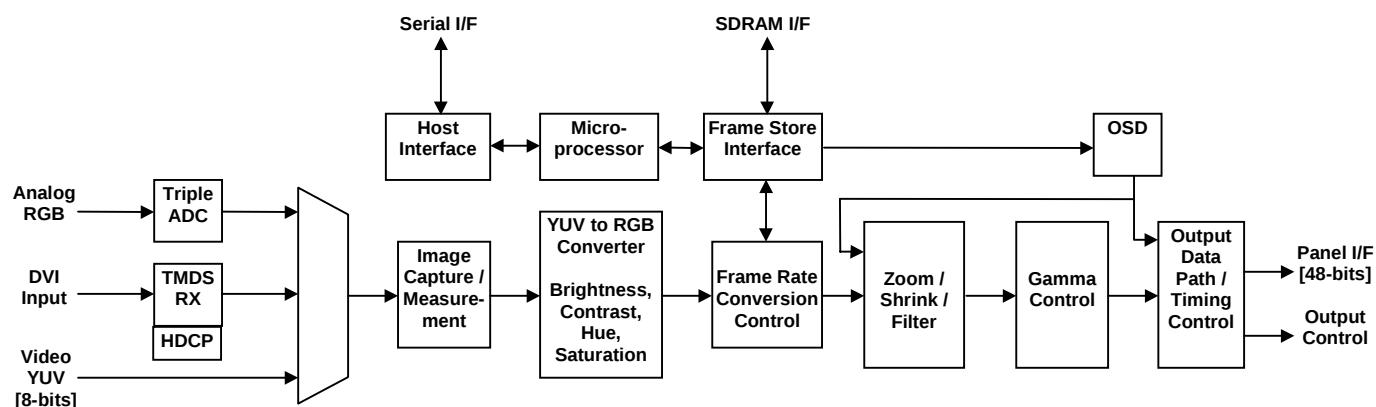
- Multi-synchronous XGA or SXGA LCD monitors with dual analog/digital interface

Genesis Microchip Inc.

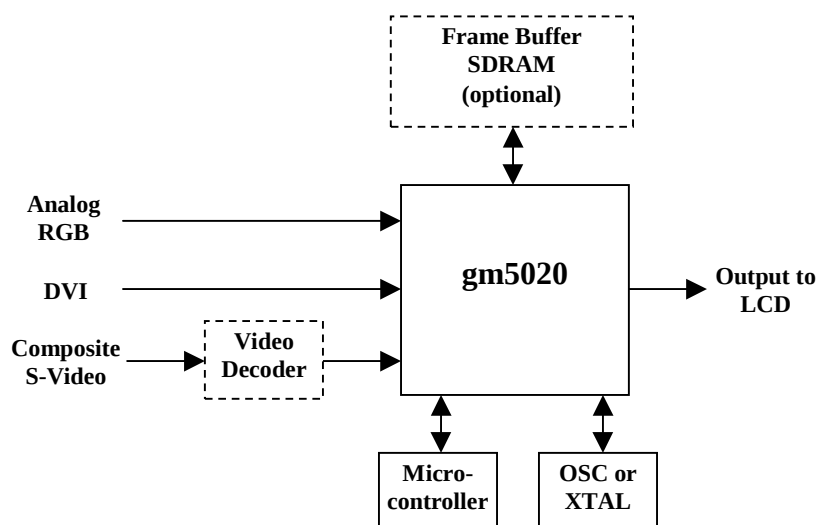
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gm5020 Functional Block Diagram



gm5020 System Design Example



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