

The Genesis Microchip gm1601 display controller is a fully integrated single chip solution for Multi-media LCD monitors and LCD televisions supporting up to WUXGA resolution. It includes industry-leading motion adaptive deinterlacing and low angle directional interpolation for the highest possible quality of TV playback. The integrated Analog Digital Converter, Ultra-Reliable DVI® receivers, and frame rate conversion ensure proven PC graphics compatibility. Integrated picture-in-picture, HDTV input support, and RealColor® video-specific color controls enable HDTV-ready solutions. An embedded micro-controller and a versatile OSD in a single device will facilitate rapid development of a reliable and attractive product.

## FEATURES

### High-Quality Advanced Scaling

- Fully programmable zoom ratios
- High-quality shrink capability
- Moire cancellation
- Panoramic scaling for video input

### Industry Leading Video Deinterlacing

- Motion Adaptive deinterlacing up to 1080i input
- Superior film mode detection and 3:2 & 2:2 inverse pull down
- Motion adaptive noise reduction
- Low angle directional interpolation

### Analog RGB Input Port

- Supports up to WUXGA at 60Hz
- Optional support for analog component video input, YPbPr

### Ultra-Reliable DVI® Compliant Input Port

- Supports up to WUXGA at 60Hz
- Direct connect to all DVI compliant digital transmitters
- High-bandwidth Digital Content Protection (HDCP)

### Video Input Port

- Optional ITBU656 video input
- Optional 24/16-bit YUV input

### Picture-in-Picture (PIP)

- Arbitrary window size
- Video PIP over full screen graphics background
- Graphics PIP over full screen video background
- Side-by-side window support
- 4:3 to 16:10 aspect ratio support

### Frame Rate Conversion and Interface

- Full frame rate conversion
- 32-bit wide data path to support standard 2Mx32 and 4Mx32 DDR SDRAM

### RealColor® Technology

- Digital brightness, contrast, hue and saturation controls
- Separate full color controls allow end-users to experience the same colors as viewed on TVs for video and for graphics on LCD monitors
- Color correction for sRGB compliance
- Adaptive Fleshtone adjustments

### On-chip Micro-controller

- 16-bit micro-controller
- Parallel FLASH ROM interface
- In-system programming capable

### Advanced on-chip OSD controller

- Use the frame buffer to store Bit mapped OSD
- 1, 2, 4 and 8-bit per pixel
- Horizontal and vertical stretch and flip of OSD menus
- Blinking, transparency and blending

### Output Format

- Dual-channel TTL and Dual LVDS transmitters for direct connection to LCD modules

### Simplicity of Design

- Complete stand-alone system-on-chip design for LCD monitors and rear projection displays

## PACKAGE

- 416-pin PBGA

## APPLICATIONS

- Multi-media LCD monitors and televisions up to WUXGA

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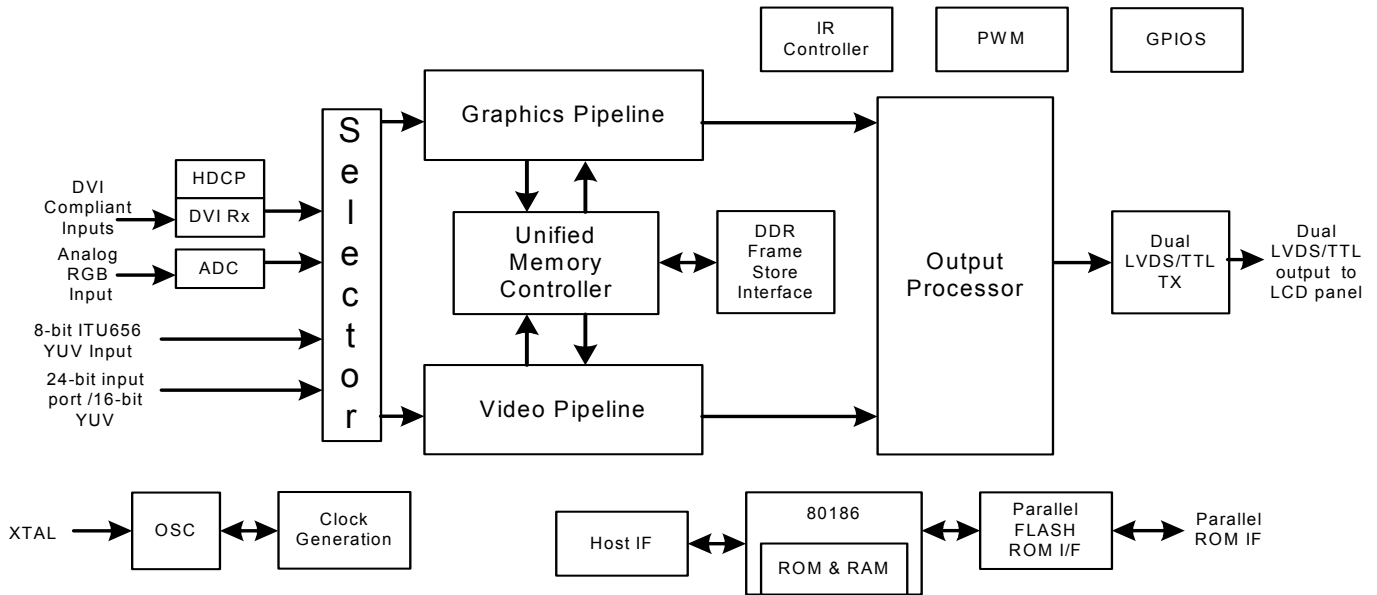
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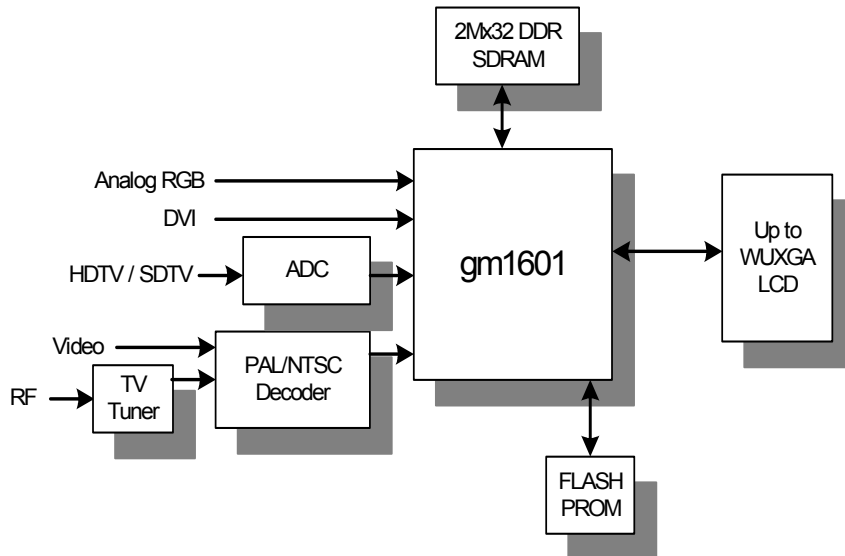
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## gm1601 Functional Block Diagram



## gm1601 System Design Example



**Note:** Ultra-Reliable DVI and RealColor are Registered Trademarks of Genesis Microchip Inc.

**Note:** High-bandwidth Digital Content Protection (HDCP) is a Trademark of Digital Content Protection, LLC.