GENESIS MICROCHIP

Product Brief gm3020

C3020-PBR-01E

Ultra-Reliable DVI Digital Display Controller

DESCRIPTION

The Genesis Microchip gm3020 with **the Ultra-Reliable DVI** Receiver is a high performance all-in-one display controller for monitors with digital interfaces, supporting resolutions up to XGA. The features of the gm3020 make it **an optimal, low cost solution for digital desktop and multi-media LCD monitors.** These features include interoperability to all DVI transmitters with **High-bandwidth Digital Copy Protection (HDCP)** technology, built-in gamma correction, brightness, contrast, hue, saturation and flesh tone adjustment, as well as a versatile On Screen Display (OSD) controller.

FEATURES

- Scaling up to XGA
- Integrated Ultra-Reliable DVI™ receiver (DVI 1.0)
- High-bandwidth Digital Content Protection (HDCP 1.0)
- On-chip versatile OSD engine
- All system clocks synthesized from a single external crystal
- Programmable gamma correction (CLUT)
- RealColor™ technology provides flesh tone adjustment
- Panel power sequencing and back-light control (PWM)

♦ High-quality advanced scaling engine

- Fully programmable zoom ratios
- Independent horizontal and vertical zoom
- Advanced zoom algorithm provides improved performance for better image quality

♦ Ultra-Reliable DVI Input Port with HDCP

- Single link on-chip DVI receiver
- High-bandwidth Digital Content Protection (HDCP)
- Supports pixel clock rates of 20MHz to 110MHz
- Direct connect to all DVI compliant TMDS transmitters

♦ Auto-Configuration / Auto-Detection

- Auto image positioning
- Input format detection
- Compatibility with all DVI-compliant signal sources

♦ RealColor™ Technology

- Color filtering in YUV domain
- Digital brightness, contrast, hue and saturation control
- Proprietary flesh tone adjustment

♦ Built-in display timing generator

- Can be used to drive AMLCD panels
- Programmable timing parameters with display pixel clock synthesized & synchronized to input pixel clock
- One and two pixels-per-clock panel support
- Up to 24-bits per pixel

♦ Output Modes

- Up to XGA 75Hz resolution
  - Single and double pixel (24/48-bit RGB)
- Support for 8 or 6-bit panels with high-quality dithering
- Flexible output timing to support a wide range of available panels

♦ On Screen Display Controller

- Programmable OSD window size
- Multi-language font table with 256 characters
- Font storage in on-chip ROM
- Optional external OSD support for greater flexibility

♦ Simplicity of design speeds time to market

- Single chip zoom-only scaling system solution
- No external memory required
- 4-wire interface for easy connection to external micro-controllers
- Stand-alone mode – Internal test pattern can be displayed to the panel for monitor burn-in and testing

♦ Highly Integrated Solution Provides Lowest System Cost

♦ Complete reference design kit available (software and hardware)

PACKAGE

- 128-pin LQFP package

APPLICATIONS

- Satisfies entertainment industry need for digital content protection
- Stand-alone and Bundled Digital LCD Monitors
- Multimedia LCD Monitors with Digital Interface
- Projection Systems with Digital Interface
- Any fixed-resolution pixilated display devices

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Figure 1: gm3020 Functional Block Diagram

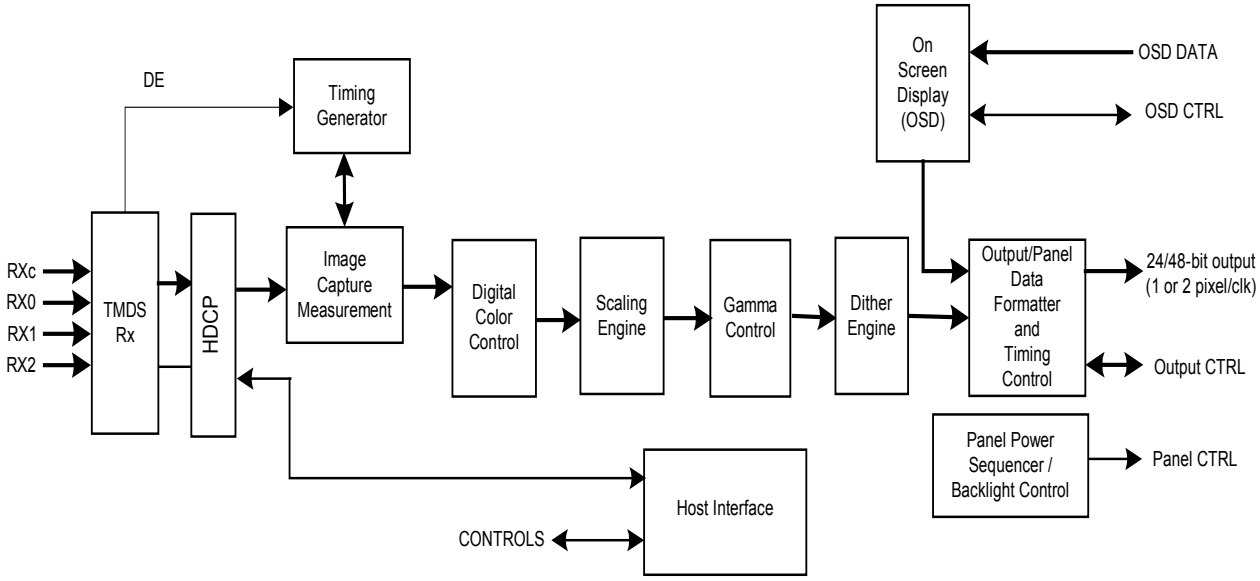

Figure 2: gm3020-Based System Design Example