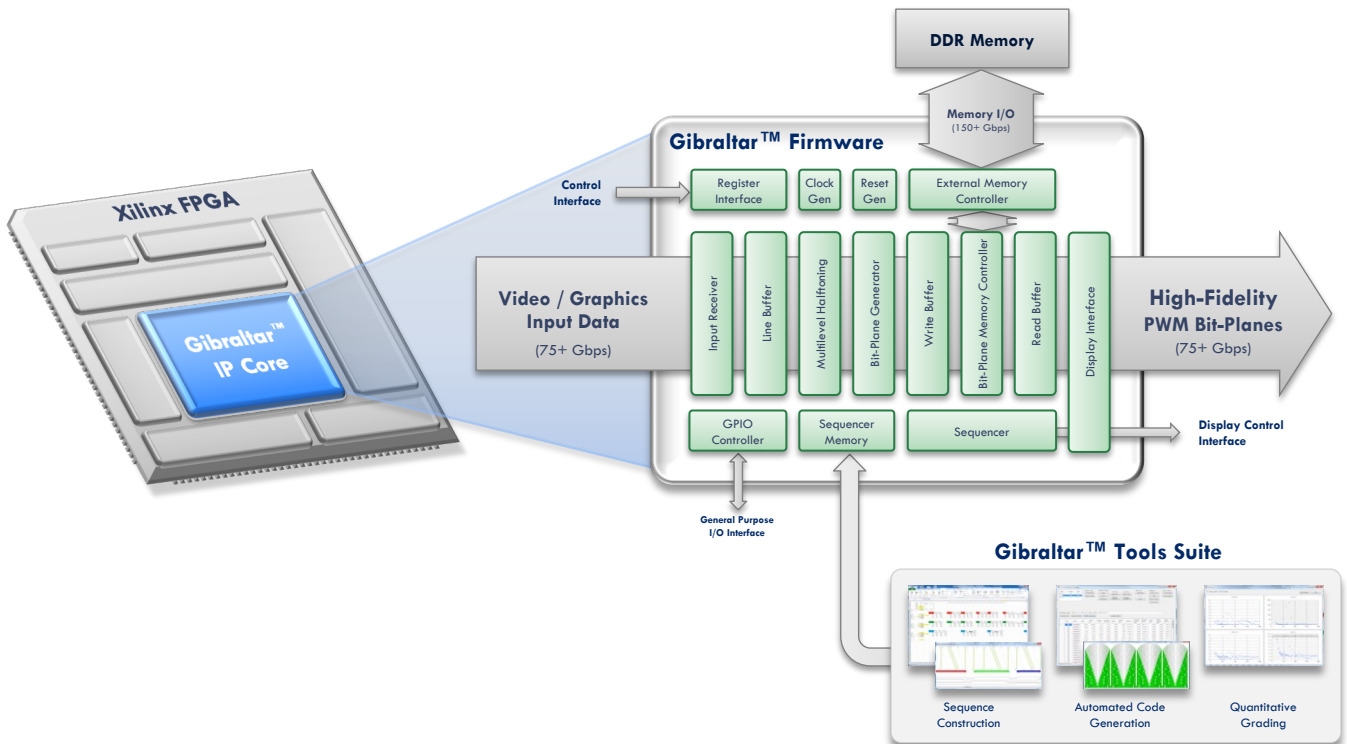


Gibraltar™ Processing

Advanced Video to PWM Processing Architecture



Description:

Gibraltar™ Processing is a high-bandwidth firmware-based architecture that performs real-time conversion of video data into digitally accurate, gray-scale weighted and multi-toned bit-planes for PWM-based display technologies. Custom sequences with remarkable fidelity and accuracy are exclusively developed using the companion Gibraltar™ Tools Suite.

Top Features:

- Firmware-based Video to PWM processing
- Supports all PWM display technologies
- Bottleneck-free real-time processing at ultra-high bandwidth (75 Gbps+ sustained)
- Optimized for modern FPGA fabrics
- Flexible Input interface and data format
- High-bandwidth DDR memory interface
- Floating-point multi-toned PWM bit-planes

General Specifications

- **High-performance Processing Architecture**
 - Optimized for modern FPGAs, such as Xilinx™ Kintex®-7, Kintex-Ultrascale/Ultrascale+
 - Compatible with all PWM display technologies (DMD, dvLED, Micro-LED, etc.)
 - Supports any DLP projection architecture (1-chip color sequential, 3-chip, multi-stage HDR, etc.)
 - Outputs to any display resolution (XGA, 1080p/2K, WQXGA, UHD/4K, etc.)
- **Video/Graphics Input Interface**
 - Flexible data format
 - Typically configured as multiple SerDes channels
- **Pixel Processing Pipeline**
 - 300 MHz pixel clock
 - Pipeline typically configured as 32-bit bus x 4 pixels per clock or 128-bit bus width x 2 ppc
- **DDR Memory Interface**
 - Typically 64-bit bus @ 1,200 MHz DDR (153 Gbps)
- **Multilevel Halftoning**
 - Real-time PWM bit-plane generation
 - Bit-planes flexibly allocated across multiple inputs or component channels
 - Fine-grained, anisotropic shaped noise mask (typ 64 x 64 or larger) tuned for minimum visibility
- **Precision Sequencer**
 - Precision timing: 50 ns resolution
 - Continuously variable frame stretching (up to 2x)
 - Variable dark-time insertion
 - Integrated memory for stroing multiple sequences
 - Artifact-free switching between sequences
 - Strokes for external system control
- **Control Interface**
 - Register-based control (or embedded processor)

Applications

Gibraltar™ Processing is ideal for high-performance and specialized display and imaging applications:

- Ultra-High Frame Rate (360/480 fps)
- Ultra-High Definition (4K/8K)
- High Dynamic Range (>1M:1)
- Multi-Viewer Auto-Stereo 3D
- Interactive Environments
- Virtual / Augmented Reality
- Structured Lighting
- UV Lithography
- 3D UV Printing
- Enhanced Motion Rendition
- Pulsed LED and Laser Illumination
- Premium Direct View LED Walls
- Micro-LED (DV and micro-display)

Availability

Gibraltar™ Processing is available to OEMs and Product Developers as a Custom IP Core implementation and Sequences under commercial license.

Gibraltar™ Processing is tailored to each application by Brass Roots Technologies and provided as an encrypted VHDL firmware block for FPGA integration. Custom sequences are also developed for each licensee upon request.

Please **Contact Us** for more information.