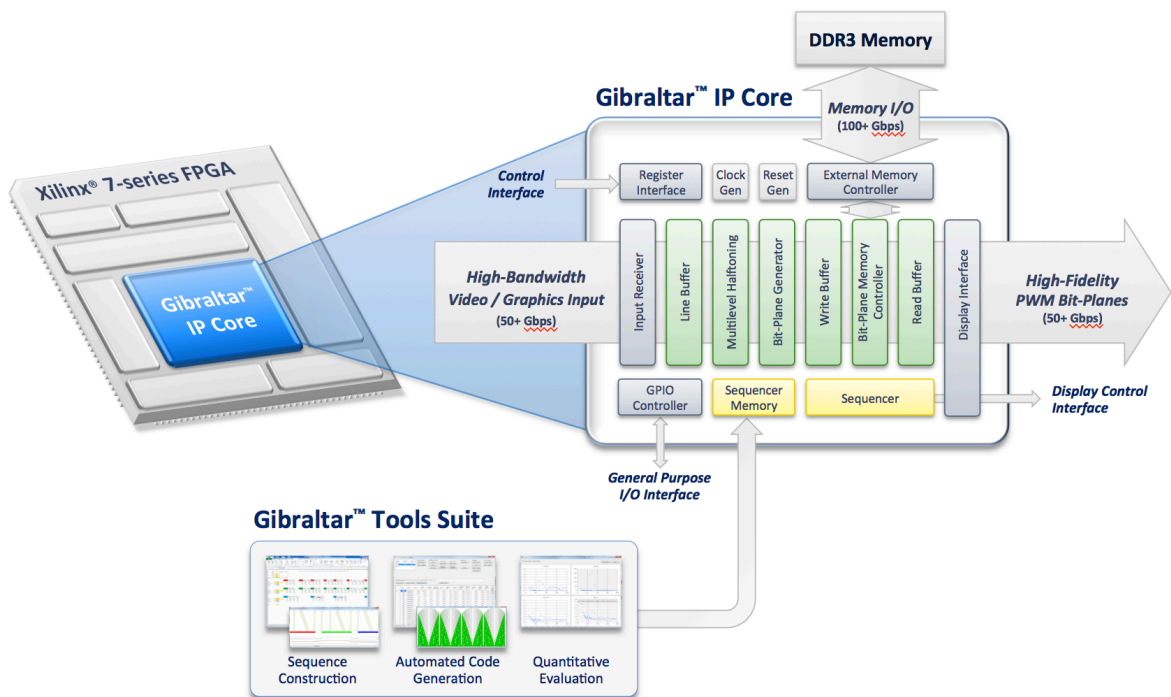


Gibraltar™ IP Core

Advanced Video to PWM Processing Architecture



Description:

Gibraltar™ is a high-bandwidth firmware-based processing 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 (50 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 Xilinx™ Kintex®-7 FPGAs
 - Compatible with all PWM-based display technologies (DMD, Direct-view LED, etc.)
 - Supports any DLP projection architecture (sequential color, single color per channel, and multi-stage HDR, etc.)
 - Outputs to any display resolution (XGA, 1080p, WQXGA, 4K, etc.)
- **Video/Graphics Input Interface:**
 - Typically configured as multiple SerDes channels (12.5 Gbps each)
 - Flexible data format
- **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:**
 - 64-bit bus @ 933 MHz DDR (119+ Gbps)
- **Multilevel Halftoning:**
 - Real-time PWM bit-plane generation
 - Bit-planes flexibly allocated across multiple inputs or component channels
 - Fine-grained, anisotropic 64 x 64 shaped noise mask 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 multiple sequences
 - Artifact-free switching between sequences
 - Strobes for external system control
- **Register-based Control Interface**
 - Consistent, deterministic behavior

Applications

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

- High Frame Rate (HFR)
- Ultra-High Definition (4K+)
- High Dynamic Range (HDR)
- Auto-Stereo 3D
- Interactive Environments
- Augmented Reality
- Structured Lighting
- UV Lithography
- 3D UV Printing
- Enhanced Motion Rendition
- Pulsed LED and Laser Illumination
- Premium LED Walls

Availability

The Gibraltar™ IP Core is available to OEMs and Product Developers under commercial license.

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

Please **Contact Us** for more information.