GEO Semiconductor Inc.

GW3300

Programmable Geometric Processor

General Description

The GW3300 integrates GEO's patented eWARP® core with a Tensilica® Xtensa CPU and DDR3 interface, providing a powerful platform for addressing complex video applications.

The GW3300's fully programmable geometric processing engine provides the flexibility and performance to correct pincushion/barrel distortion and keystone artifacts for video projection systems such as Head-up Display, Pico Projector, home theater, and business projector applications or large area projector installations such as stadium and tradeshow installations. The processor also provides a solution for multi-projector systems providing 1/32nd pixel accuracy for precise convergence, alignment, and stitching to create a seamless unified video image.

Real-time programmability using the embedded eWARP® APIs enables designing simple efficient user interfaces for aligning and calibrating complex systems.

GW3300 System Block Diagram
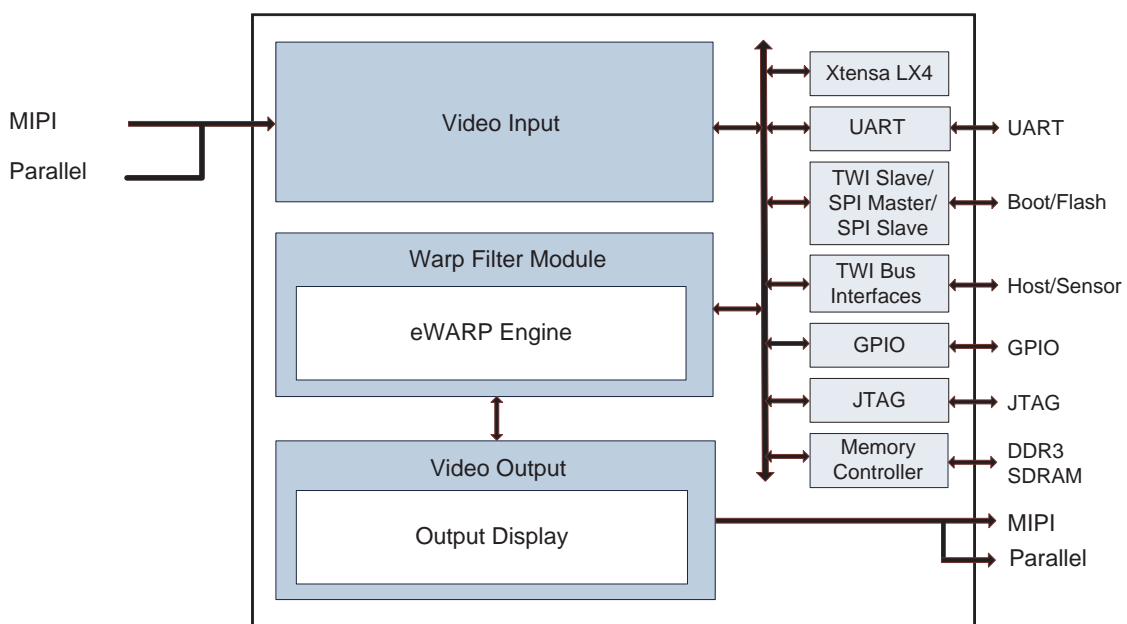
Features

Advanced Geometric Processing

- GEO's proprietary eWARP® processing engine
- Advanced edge blending
- Brightness non-uniformity correction
- Precise convergence, alignment, and stitching applications support
- Projection on curved surfaces
- Full warp capability

eWARP® Embedded Processing

- Highly flexible programmable warp maps
- Real-time on-the-fly generation of warp maps
- Frame by frame warp map updates
- Very low latency mode (typically $1/6^{th}$ of a frame)
- Multi-video stitching with edge blending, precise convergence, brightness and non-uniformity correction support
- Keystone correction
- Pincushion/barrel distortion correction
- Zoom/shrink scaling
- Selectable multiple views from a single video stream

Applications

- Head-Up Displays
- Pico Projectors
- Business Projectors
- Multi-projector stitching and alignment
- IP Surveillance cameras
- Multi-camera stitching and alignment
- Ultra wide angle cameras
- Video conferencing and telepresence
- Ultra short throw projectors

Inputs/Outputs, Video Formats

- Input Interfaces: 4-lane MIPI, Parallel
- Output Interfaces: 1-lane MIPI, Parallel
- Input Formats:
  - 8/10-bit YUV 4:2:2 over 8/10 or 16/20-bit interface
  - 16/24/30-bit RGB
  - 24/30-bit YUV 4:4:4
- Output Formats:
  - 8/10-bit YUV 4:2:2 over 8/10 or 16/20-bit interface
  - 24/30-bit RGB
- Pixel rates up to 200 MHz
  - 2560 x 1600 at 30 Hz
  - 1920 x 1080 at 60 Hz
  - 1280 x 720 at 120 Hz
  - 4k x 4k at 7.5 Hz

Memory Interface

- DDR3 SDRAM memory up to 600 MHz

System Connectivity

- TWI Slave/ SPI Master/ SPI Slave, TWI Bus Interfaces
- UART, JTAG, GPIO

Power and Voltage

- Power Supplies: 1.8 V ±5%, 1.5 V ±5%, 1.1 V ±5%,
- DDR3 SDRAM voltage: 1.5V ±5%
- Typical power consumption:
  - 573 mW for 1080p60, no ISP, with DDR
  - 175 mW for 720p60, no ISP, no DDR

Ordering Information

Part Number	Package: Type, Pins	RoHS/ Lead-Free
GW3300	361-pin TFBGA, 12 mm x 12 mm x 1.1 mm, 0.5 mm pitch	RoHS/ Lead-Free