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BEYOND DISPLAY CONTROLLER

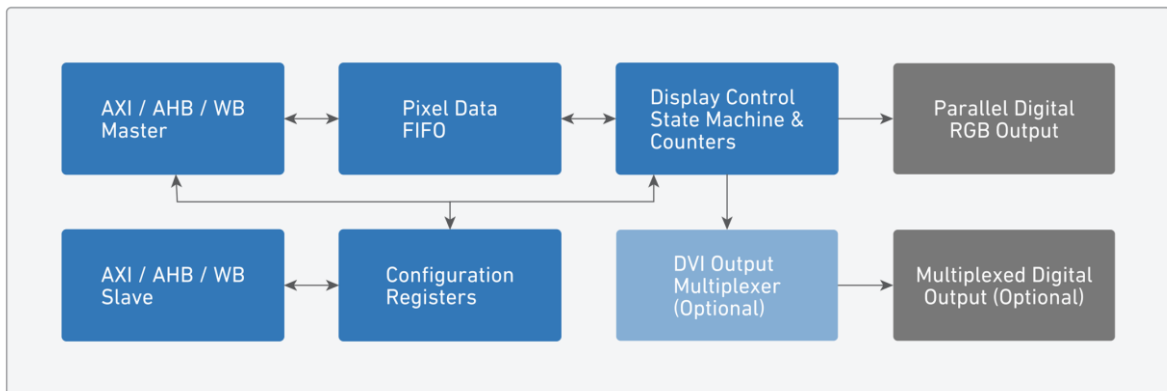## Digital RGB Output Display Controller

OVERVIEW

The Beyond VGA Display Controller IP Core provides VGA capabilities for embedded systems. It supports both CRT and LCD displays with user programmable resolutions, video timings and color depth, thus providing compatibility with large set of standard displays. Core architecture allows flexible video memory implementation. Automatic data fetching makes it ideal "program-and-forget" video solution.

KEY BENEFITS

- A large set of compile and run time parameters offers wide array of supported devices and display configurations
- Seamless integration with external or on-chip video DACs and/or DVI controllers
- Fully automatic operation after configuration - "program-and-forget" video solution
- Flexible video memory architecture

BLOCK DIAGRAM

FEATURES

Internal Bus Interfaces

- AXI / AHB / WB configuration slave interface used to configure and control the core
- AXI / AHB / WB video memory master interface. Utilizes burst accesses to increase video memory performance
- Configurable burst length for performance optimization
- Double buffering support – switch between two video memory buffers on each vertical retrace – prevents flicker and cluttered images

Video Interface

- Full parallel digital RGB with [HVC] SYNC, blank, signals
- Optional, compile time selectable 12 bit mux-ed data with [HV]SYNC and data valid signals – used by external or on-chip DVI output device(s)
- Configurable active level of control signals

Display Control

- Compile time configurable data FIFO supports flexible external video memory solution
- Run-time configurable color depth (32bpp, 24bpp, 16bpp, 8bpp gray-scale and 8bpp-pseudo color)
- Vertical and horizontal image scaling (integer factors) – enables automatic native image size into display image size transform
- Data FIFO under-run blanking, vertical re-trace and reporting via IRQ
- Configurable display geometry:
  - Horizontal full and visible sizes
  - Vertical full and visible sizes

RELATED PRODUCTS

- **Beyond AC97 Audio Controller** is fully run-time configurable IP core, enabling nimble audio channel and slot setup, and can be optimized for specific application. Implemented to minimize audio data handling by System on Chip's processor the controller requires only setup of AC97 DMA engine, no external device is needed for AC97 to operate afterwards.

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Beyond Semiconductor is addressing challenges of systemic complexity in today's electronic devices, empowering its customers to create new experiences for end users.

Initially known for its processor expertise, Beyond quickly gained acceptance among top semiconductor companies and evolved into global company leveraging processing, software and system-wide view competence to provide its customers with effectively designed IP and ASICs.

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