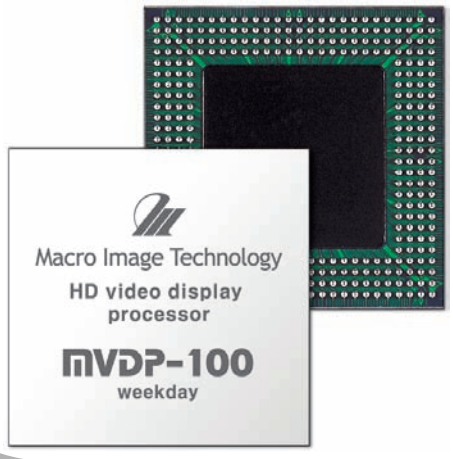
HD Video Display Processor

MVDP-100



- **MVDP-100 is a highly integrated single chip implementation for deinterlacing, format conversion, graphics processing and various display functions.**
- **MVDP-100 provides two input ports for both progressive and interlaced scan video, one digital output port for progressive scan type of digital video stream and one analog video output.**
- **MVDP-100 receives digital video stream and converts it into progressive scan video with motion adaptive 3-D deinterlacing algorithm when the input source is interlaced video. MVDP-100 scales up or down the input video with an arbitrary scaling ratio.**
- **MVDP-100 also provides PIP(Picture-In-Picture), POP(Picture-Out of-Picture), double-window, pan-and-scan, and high quality graphics capabilities.**
- **MVDP-100's dual input, high performance video processing and high resolution output capability is suitable for high quality display format conversion applications such as FPD(Flat Panel Display) monitors, equipments for studio quality image processing capability, display multiplexing systems for handling multiple video streams, and so on.**

Macro Image Technology

Main Features

- Dual independent RGB and YCbCr input ports.
- Supports both interlaced and progressive digital inputs with an arbitrary video format up to 1920x1080i and 1280x1024p.
- Generates progressive format of digital and analog video output up to 1920x1080p.
- High quality motion adaptive 3D deinterlacing with film mode and fast motion support.
- Horizontal & vertical anti-aliasing filters for down conversion.
- Advanced signal enhancement algorithm for crisper picture quality.
- Powerful display functions including PIP, POP, double-window, Zoom, and OSD.
- Seamless interface to 8MB or 16MB SDRAM widely available in the market.
- Host processor interface with DMA capability.

Application

- FPD(Flat Panel Display) monitor
- High-end HDTV set or professional set-top-box
- Systems for handling simultaneously TV and PC video signals
- Equipments requiring studio quality image processing capability
- Display multiplexer for handling multiple video streams
- Main station of digital home theater system

Specifications

Input Format

Dual input ports : 24-bit and 16-bit digital video input port
Video Source : 24-bit RGB, 24-bit YCbCr 4:4:4,
16-bit YCbCr 4:2:2 , 8/16-bit digital format
Maximum Pixel Rate : 108Mpixel/sec
Interlaced Input : standard or non-standard video format
up to 1920x1080i
Progressive Input : standard or non-standard video format
up to 1280x1024P

Output Format

Progressive digital RGB or YCbCr with 10-bit for each color component
Programmable output mode : 30-bit single width or
60-bit double width output
Maximum Pixel Rate : 150Mpixel/sec
Programmable display format with standard or non-standard video format up to 1920x1080P
Progressive analog RGB or YPbPr

Deinterlacing

Deinterlacing for any interlaced input video up to 1080i
Motion adaptive 3-D deinterlacing on a per-pixel basis
Programmable motion detection and adaptation control
Adaptive motion weighted interpolation for eliminating non-motion artifacts
Regionally adaptive motion detection with motion history
Multi-directional edge preserving deinterlacing
Film mode support
Fast motion support

Format Conversion

Independent two scalers for both Main and PIP display
Independent horizontal and vertical scaling
Format conversion from one format to another format at an arbitrary scaling ratio
Horizontal and vertical anti-aliasing filters for graceful down conversion
Scaling ratio for Main display : x1/15 ~ unlimited
Scaling ratio for PIP display : unlimited ~ Max.960x540

Frame Rate Conversion

Frame rate conversion from 3~250Hz to 3~250Hz
Conversion Ratio : x1/31 ~ x31

Display Functions

Programmable size & position zoom in/out
Programmable size & position PIP, POP
Double-window
Signal enhancement with 2D non-linear filter
CSC & LUT for brightness, contrast, hue, saturation and gamma control
Programmable output sync generation

High Quality Graphics

4 graphic layers with full screen overlay capability
2/4/8-bit palette mode and 16/24-bit true color mode
64 level alpha blending
Animation effects with hierarchical linked-list architecture

Frame Buffer Memory

8MB or 16MB external SDRAM
32-bit or 64-bit data width interface
Also used for graphics bitmap storage
Seamless interface to widely available x16 or x32-bit SDRAM

Host Interface

32-bit or 16-bit data bus
Glueless interface to Motorola processors
DMA slave capability for fast download of graphics bitmap data

Miscellaneous

Auto detection of input video/sync
Input sync lock mode or free-run mode operation
Internal programmable PLLs
Built-in test pattern generation logic

Electrical and Mechanical Characteristics

3.3V supply voltage, 5V tolerant I/O
352-pin SBGA package

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