GF9452
12-bit Dual Channel, Dual Output VXP® Video Processor

The GF9452 offers two complete, independent 12-bit channels of professional grade fully adaptive deinterlacing. In addition, it includes adaptive 3D noise reduction, mosquito noise reduction, block artifact reduction, adaptive detail enhancement featuring sharpness and texture enhancement with overshoot control, and adaptive contrast enhancement.

A powerful graphics engine with multiple layers, allows for sophisticated on-screen display generation that is ideal for electronic program guides (EPG) and set-up menus.

In addition, the GF9452 is backwards compatible with system software projects developed for previous generation VXP® video processors. This enables system designers already experienced with VXP® products to greatly reduce time-to-market by re-using existing software and interfaces.

Powering the new digital home

- Set-Top Boxes
- Consumer Electronics
- AV Networks
- Home Control
- Commercial Systems

Target Markets

- AV receivers
- Blu-ray players
- Commercial systems

Supported Technologies

- Supports all DTV video and PC graphics formats
- Supports active raster size up to 2048x2048
- High quality motion and speed adaptive deinterlacing
- Multi-tap scaling engine with panoramic scaling and aspect ratio conversion
- Multiple on-screen video display, including picture-in-picture (PIP), picture-on-picture (POP), picture-by-picture (PBP)
- Adaptive 3D noise reduction
- Mosquito noise reduction and block artifact reduction
- Adaptive detail enhancement featuring sharpness and texture enhancement with precise overshoot control
- Adaptive contrast enhancement
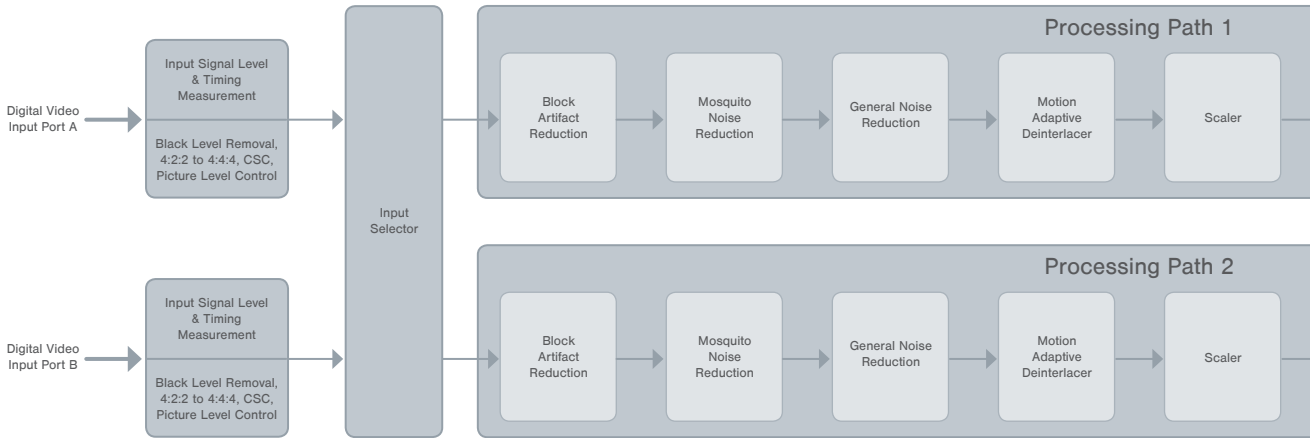- User programmable gamma correction

FEATURES

- Two independent channels of VXP® processing
- Support for 12-bit input and output on both channels
- Flexible output architecture to support single, dual, and twin channel outputs
- Advanced film mode detection and compensation for interlaced and progressive sources, including support for frame-locked 3:3 (72Hz) and 2:2 (48Hz) output cadence generation
- Frame rate conversion with full support for genlock and frame-lock operation
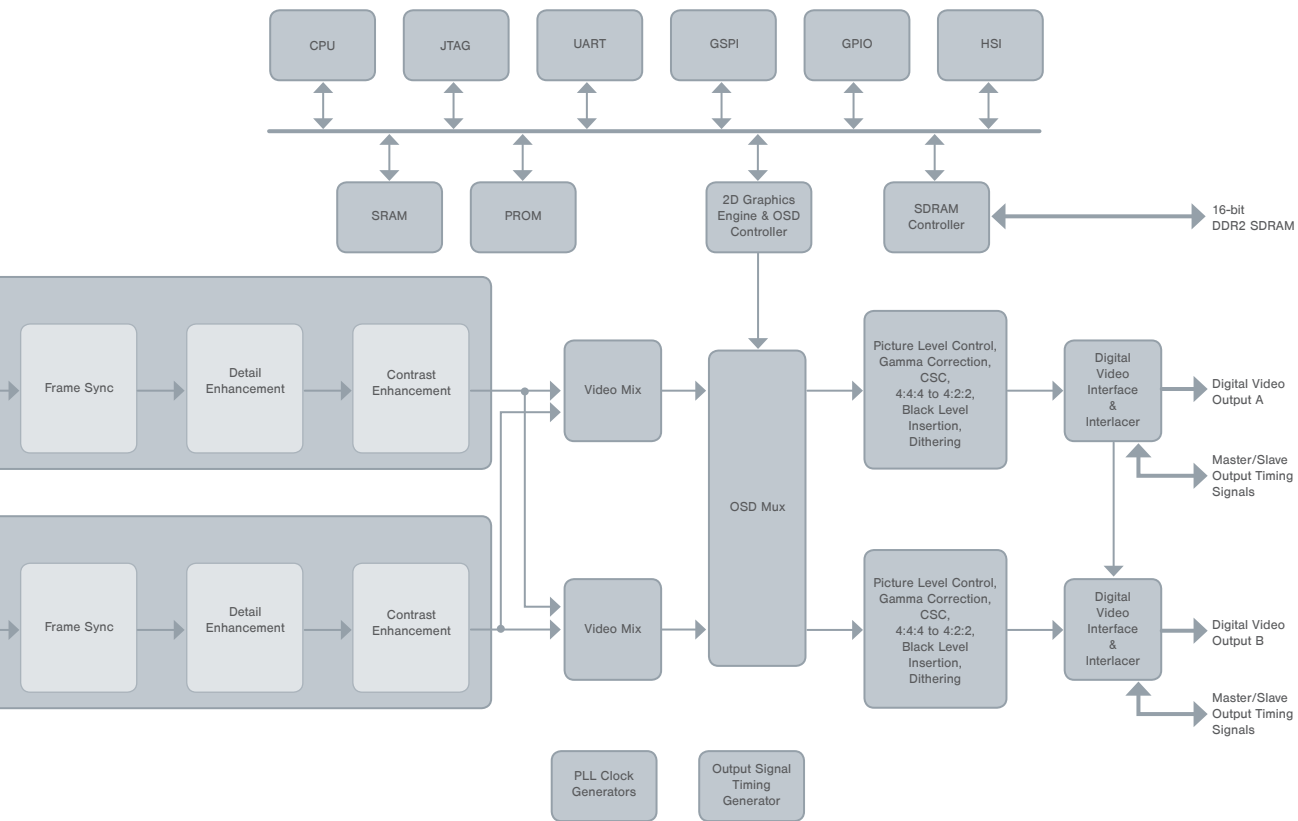
SIGMA DESIGNS

Processing Path 1

| Digital Video Input Port A | Input Signal Level & Timing Measurement / Black Level Removal, 4:2:2 to 4:4:4, CSC, Picture Level Control | Input Selector | Block Artifact Reduction | Mosquito Noise Reduction | General Noise Reduction | Motion Adaptive Deinterlacer | Scaler |

Processing Path 2

| Digital Video Input Port B | Input Signal Level & Timing Measurement / Black Level Removal, 4:2:2 to 4:4:4, CSC, Picture Level Control | Block Artifact Reduction | Mosquito Noise Reduction | General Noise Reduction | Motion Adaptive Deinterlacer | Scaler |

	GF9452
Video Input Formats	8-/10-/12-bit RGB or 4:2:2/4:4:4 YCbCr 16-/20-/24-bit RGB (G, BR) or 4:2:2/4:4:4 YCbCr (Y, CbCr) 24-/30-/36-bit 4:4:4 YCbCr (Y, Cb, Cr) 24-/30-/36-bit RGB
Video Output Formats	8-/10-/12-bit RGB or 4:2:2/4:4:4 YCbCr 16-/20-/24-bit RGB (G, BR) or 4:2:2/4:4:4 YCbCr (Y, CbCr) 24-/30-/36-bit 4:4:4 YCbCr (Y, Cb, Cr) 24-/30-/36-bit RGB
Host Interface	6-bit address, 16-bit data 4-wire serial
DDR-2 DRAM (DDR667) Support	4 x 512Mb (video + OSD)

CPU	JTAG	UART	GSPI	GPIO	HSI

SRAM

PROM

2D Graphics Engine & OSD Controller

SDRAM Controller

16-bit DDR2 SDRAM

Frame Sync

Detail Enhancement

Contrast Enhancement

Video Mix

Frame Sync

Detail Enhancement

Contrast Enhancement

Video Mix

OSD Mux

Picture Level Control, Gamma Correction, CSC, 4:4:4 to 4:2:2, Black Level Insertion, Dithering

Digital Video Interface & Interlacer

Digital Video Output A

Master/Slave Output Timing Signals

Picture Level Control, Gamma Correction, CSC, 4:4:4 to 4:2:2, Black Level Insertion, Dithering

Digital Video Interface & Interlacer

Digital Video Output B

Master/Slave Output Timing Signals

PLL Clock Generators
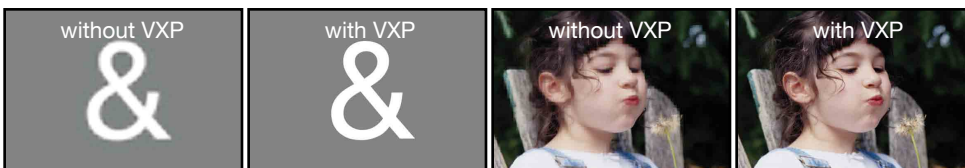
Output Signal Timing Generator

GF9452
12-bit Dual Channel, Dual Output VXP® Video Processor

VXP® brings video quality to a new level by offering a complete package of the world's highest quality video processing algorithms for deinterlacing, scaling, image enhancement, and frame rate conversion.

- Mosquito noise reduction recognizes object edges and removes mosquito noise to produce crisp, clear images
- Block artifact reduction identifies block artifacts introduced by source compression, adaptively smoothing the block boundaries
- 3D and 2D noise reduction which adaptively applies both temporal and spatial noise reduction, producing the clearest picture while maintaining fine image details
- Detail enhancement seeks out underlying image detail bringing unprecedented texture, sharpness, and clarity to images
- Motion and edge adaptive deinterlacing which includes directional interpolation to eliminate jaggy artifacts
- 12-bit processing offers superior image precision
- Robust film cadence detection for interlaced and progressive sources providing fast 3:2/2:2 lock time, bad edit recovery, and support for extended film cadences
- Adaptive contrast enhancement analyzes the brightness level of each frame, producing stunning images with optimal contrast

MOSQUITO NOISE REDUCTION

BLOCK ARTIFACT REDUCTION

3D NOISE REDUCTION

DETAIL ENHANCEMENT

DIRECTIONAL INTERPOLATION

12-BIT REAL TIME PROCESSING

FILM CADENCE RECOVERY

ADAPTIVE CONTRAST ENHANCEMENT

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