

4K60Hz Dual/4K120Hz Supported Warping/Edge-Blending LSI

Product Description

The IP00C381 is an all-in-one warping and edge-blending solution with a maximum 1,333Mpixel/sec signal processing capability. Thanks to dual, 4K (up to 4096x2400) 60Hz input and output capability, 4K120Hz image processing and additional formats such as WQXGA (2560x1600) 120Hz are supported. It features an embedded warp table generator that implements real-time image processing for H and V keystone correction and pin-cushion correction. Edge-blending for white peaking and per pixel correction of edge-blending, results in higher performance image quality and products. Any angle rotation of a full 4K60Hz image is a feature that can be used in a wide range of applications.

Features

Input (4K60Hz, 2 out of 4-port)

- RGB 30bit/YUV4:4:4 30bit/YUV4:2:0 30bit/YUV4:2:2 20bit/YUV4:2:2 10bit(BT656)
@V-by-One® 4Gbps, 8-lane 2-port
@LV-CMOS 166MHz supporting dual (EVEN/ODD) and DDR inputs 4-port
- 4K60Hz dual input
- 4K120Hz input supported

Output (4K60Hz, 2-port)

- RGB 30bit/YUV4:4:4 30bit/YUV4:2:2 20bit/YUV4:2:2 10bit(BT656)
@V-by-One® 4Gbps, 8-lane 2-port
- 4K60Hz dual output
- 4K120Hz output supported

Input & Output Image Size

- Horizontal sync signal 16,384 pixels (max) @1ch
- Horizontal image active area 2,064 pixels (max) @1ch

External Memory

DDR3-SDRAM 64bit PC1600 (4G/2G/1G x16) x4

Serial Flash Interface

2G-bit x1 (max)

External/Internal Sync

- Output sync is compatible only with internal signal

Input/Output Sync/Asynchronous Behavior

- Frame rate conversion only when the output pixel clock is no smaller than input pixel clock.
- Tearing protection
- External force synchronization
- Genlock

Distortion Correction Mode

- RGB common distortion correction mode



Distortion Correction Method

- Coordinate correction look up table
- Embedded warp table generator (keystone correction and pin cushion correction)
- Load from external CPU or external serial flash

Distortion Correction Amount

- Up to 45 degrees (horizontal/vertical)
- Rotation Max. 45-degree including 4K120Hz (Max. 20 degrees: 4K60Hz x2, 1080p x4)
- Any angle rotation (4K60Hz x1)
- Vertical shrink ratio is about x0.3 (some cases such as 4K60Hz x2, 4K120Hz is about x0.6 to 0.7)

Image Correction

- Edge-blending (white peaking supported, by region and per pixel correction)
- Uniformity correction (by region and per pixel correction)
- Mirror/flip image
- 90 degree rotation

Image Quality Control

- 16-bit color gamma correction tables (7LUT available)
- Error diffusion, brightness and contrast adjustment

Bit Map OSD

- 256 colors/High color OSD (64K colors)
- Embedded font engine (65536 words)
- Blinking and semi-transparent (4 colors OSD)
- 90-degree rotation, OSD scroll
- Serial flash to bitmap

CPU Interface

8-bit parallel/4-wire serial

Power Supply

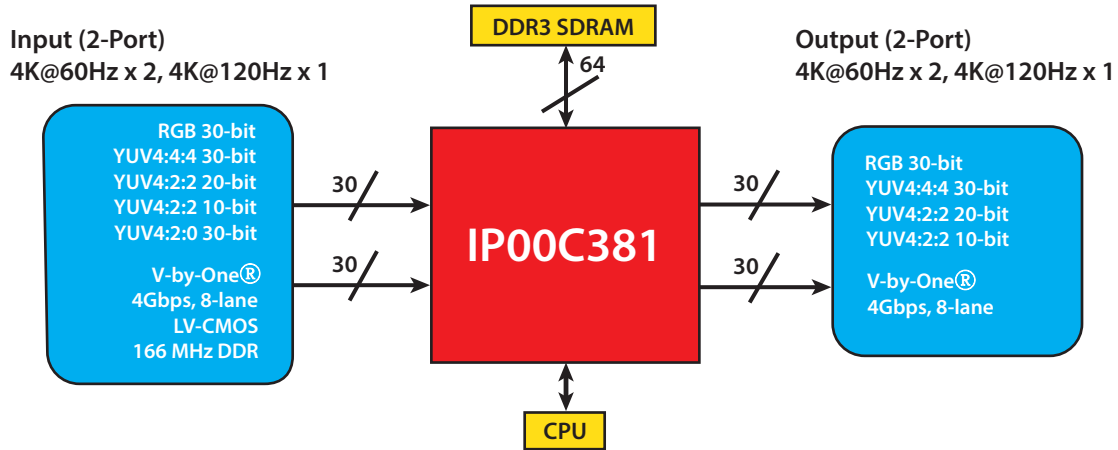
3.3V/1.5V/1.1V

Package

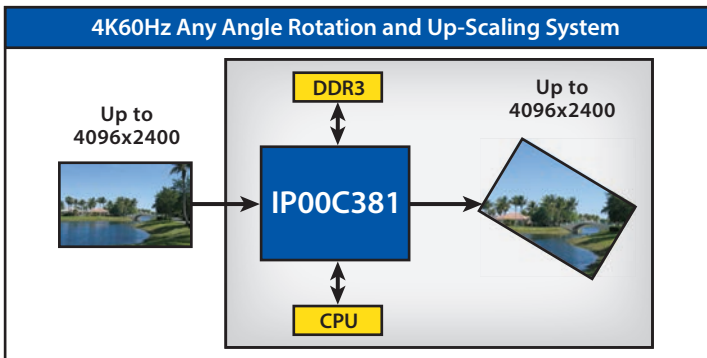
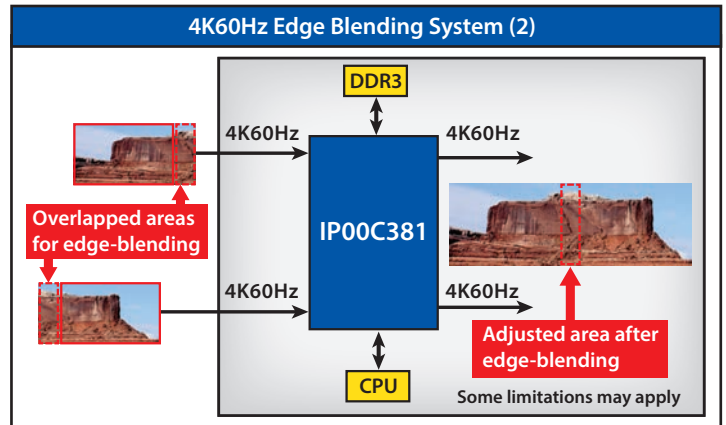
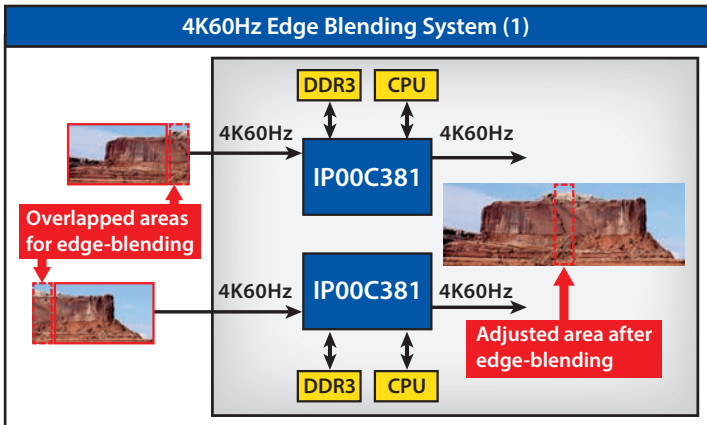
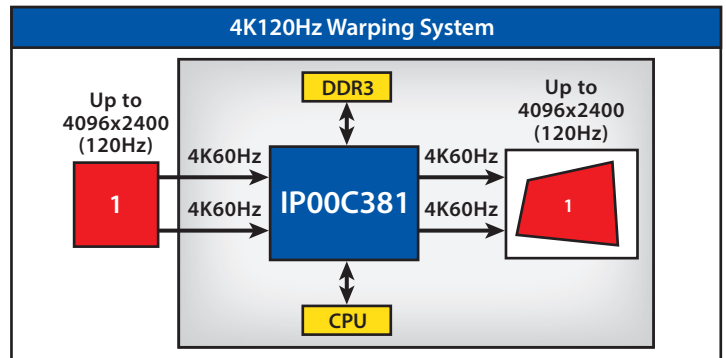
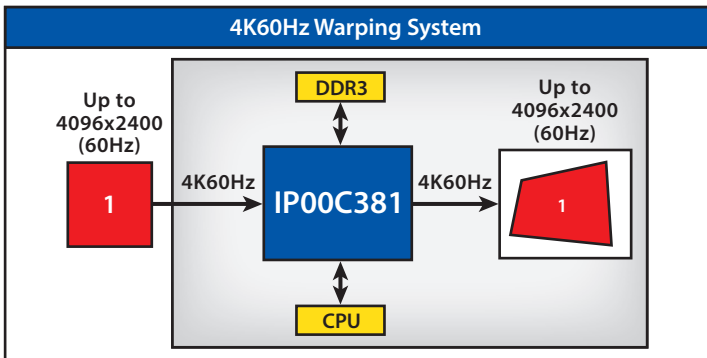
684-pin BGA (0.8mm pitch), 27mm x 27mm

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IP00C381 Block Diagram



Application Diagrams



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