

4K60Hz Dual Input PiP De-Interlacer/ Scaler/Warping/Edge-blending LSI

Product Description

The IP00C341 is an enhanced multi-functional image processing LSI with de-interlacer, scaler, warping and edge-blending circuitry. Up to 4K60Hz dual input images are fully independently enlarged, shrunk and de-interlaced with PiP/PoP output images. It features an embedded warp table generator that implements real-time image processing for H and V keystone correction and pin-cushion correction. In addition, high-performance functions such as PQ and HLG HDR systems (10-bit) and 3DLUT for color management are also integrated. The IP00C341 is an ideal device for a wide range of high performance video applications like projectors, laser TVs, and monitors.

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 input up to 2-port

Output (4K60Hz, 1-port)

- RGB 30bit/YUV4:4:4 30bit/YUV4:2:2 20bit/YUV4:2:2 10bit(BT656)
@V-by-One® 4Gbps, 8-lane

External Memory

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

Input/Output Sync/Asynchronous Behavior

- Frame rate conversion
- Tearing protection
- External force synchronization
- Genlock

De-Interlacer

- Motion adaptive filter based on Y, U, V, YUV 4:2:2
- All major cadences supported
- Low latency processing

Scaler

- Zoom/shrink 6-symbol programmable FIR filter (10bit/pixel)
- Embedded ROM (64set)

Noise Reduction

- 3DNR (H, V, Temporal)
- MPEG-NR (Mosquito/Block)
- Chroma error filter

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

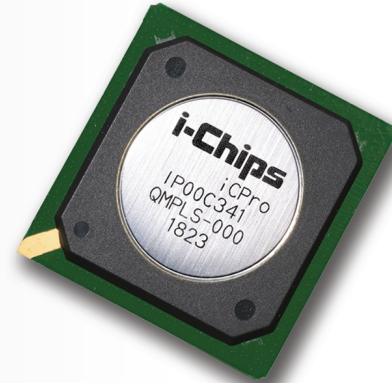


Image Quality Control

- Color management (full color gamma)
- 3DLUT (4K60Hz 2-input supported)
- Uniformity correction
- Bias/Gain/Gamma correction
- H edge enhancement (9symbol), V edge enhancement (5 to 9symbol)
- Dithering for 10 or 8bit output

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)

Image Correction

- Edge-blending
- Mirror/flip image
- 90 degree rotation
- Overlay, alpha blending, color key blending

CPU Interface

8-bit parallel/4-wire serial

xVCC/Bt.2020

Fully supported

HDR Standard

SMPTE ST2084(PQ) and HLG both methods supported (RGB 10-bit each)

Power Supply

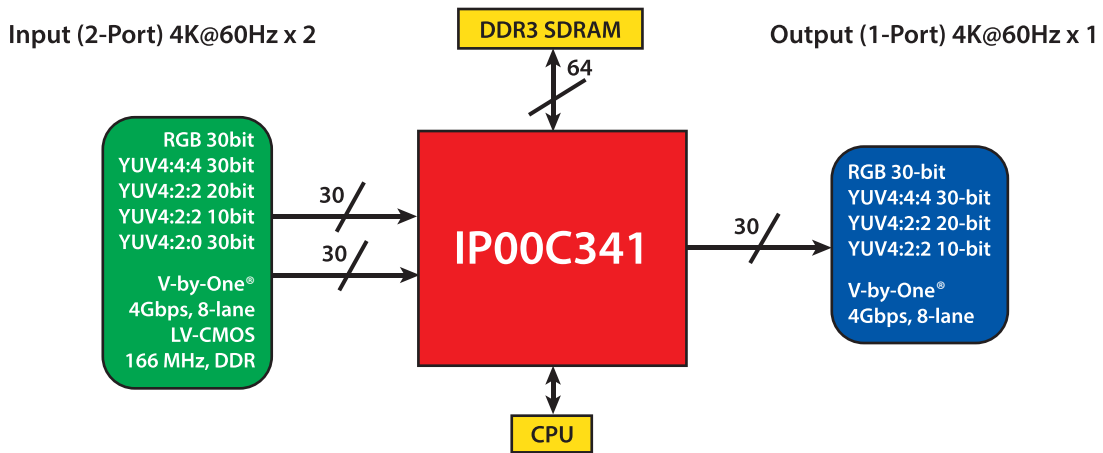
3.3V/1.5V/1.1V

Package

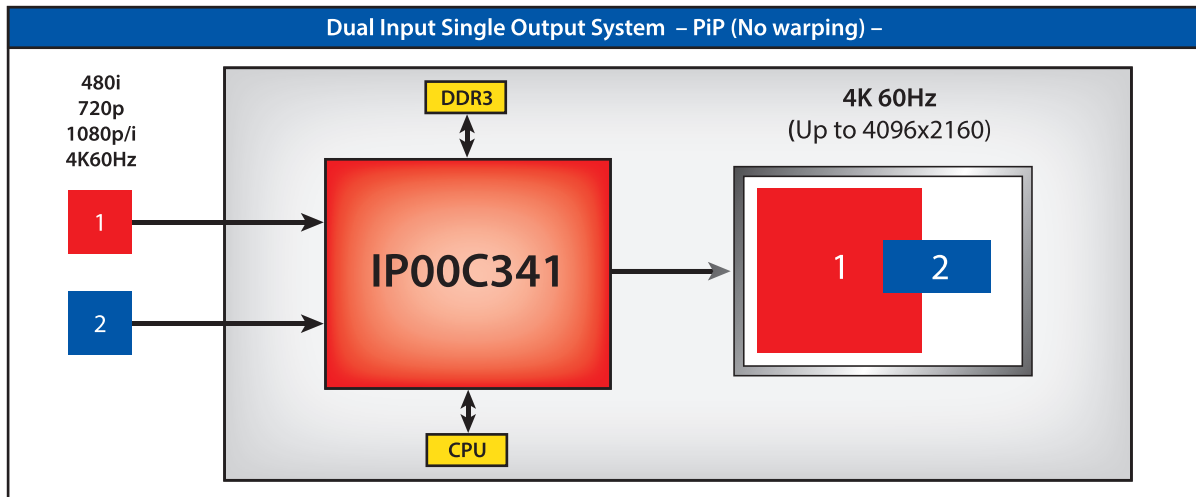
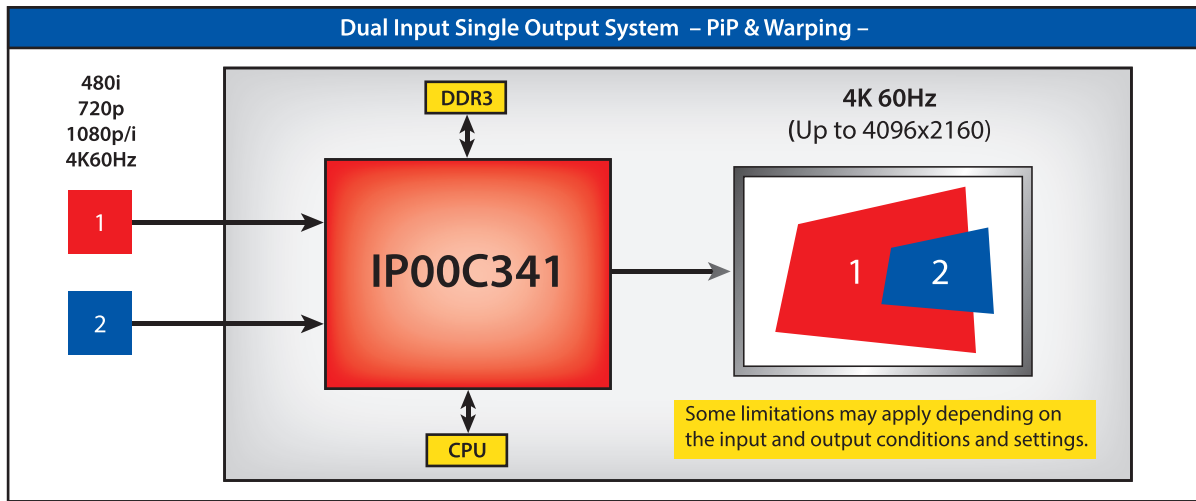
684-pin BGA (0.8mm pitch), 27mm x 27mm

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IP00C341 Block Diagram



Application Diagrams



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i-Chips Technology, Inc.

i-Chips Technology, Inc. • 1-2-6, Shioe Amagasaki Hyogo, 661-0976 Japan • Tel: 81-6-6492-7277 • Fax: 81-6-6492-7388

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