

## IMAGE PROCESSORS

## 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®HS 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®HS 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

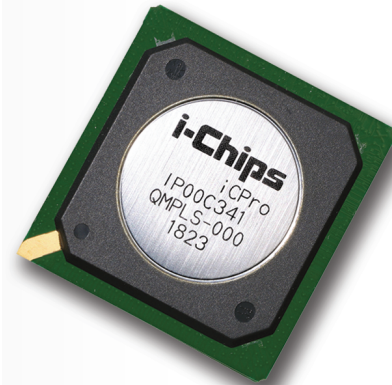
- Zoom/shrink 6-symbol programmable FIR filter (10bit/pixel)
- Embedded ROM (64set)

#### 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

### xvYCC/Bt.2020

Fully supported

### HDR Standard

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

### Power Supply

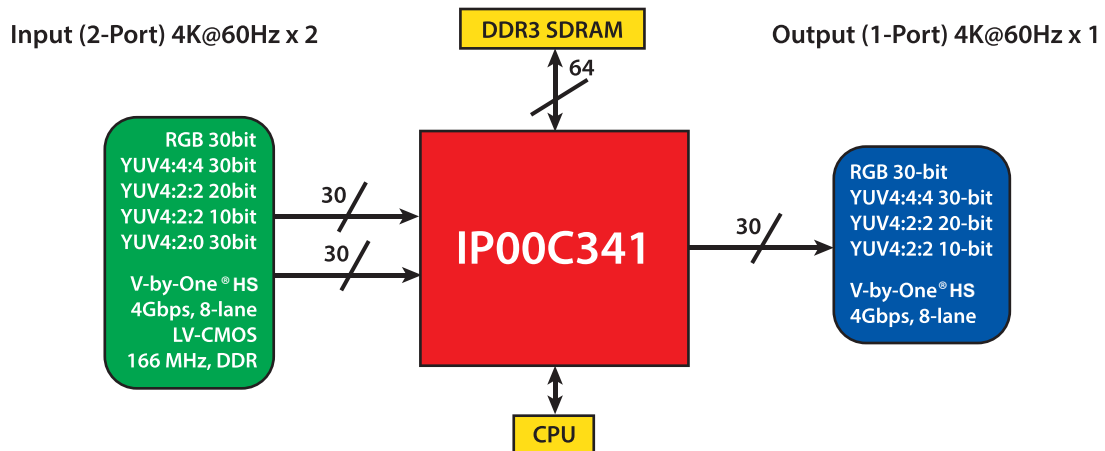
3.3V/1.5V/1.1V

### Package

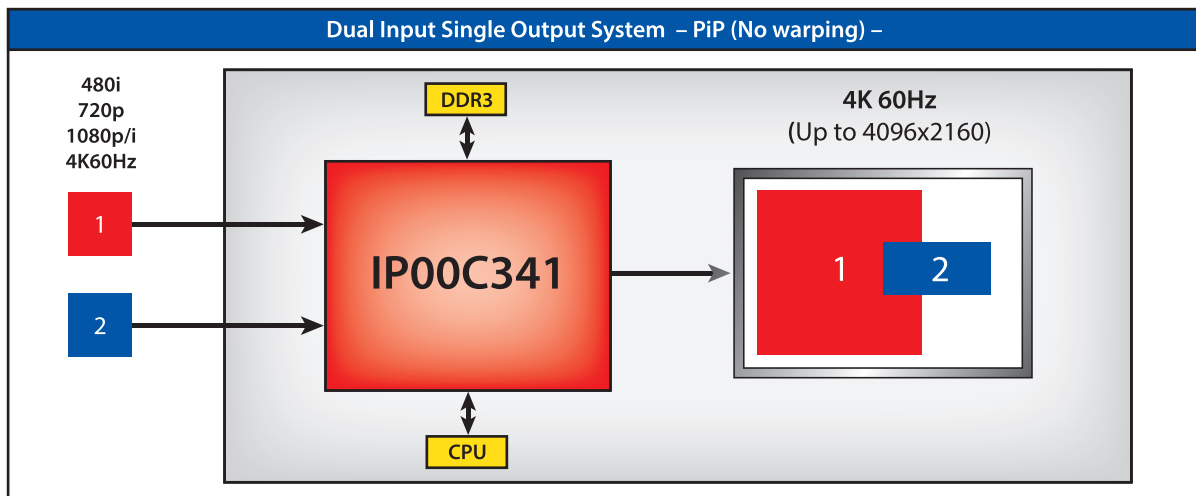
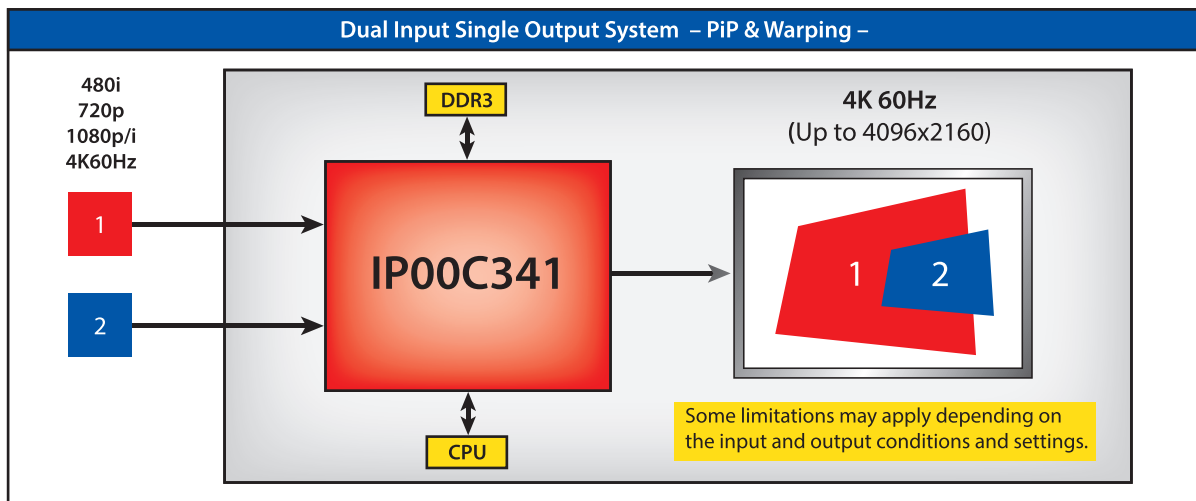
684-pin BGA (0.8mm pitch), 27mm x 27mm

# IP00C341 4K60Hz Dual Input PiP De-Interlacer/Scaler/Warping/Edge-blending LSI

## IP00C341 Block Diagram



## Application Diagrams



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For more information please visit: [www.i-chips.co.jp](http://www.i-chips.co.jp) or [info@i-chips.co.jp](mailto:info@i-chips.co.jp)

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