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 programable 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)
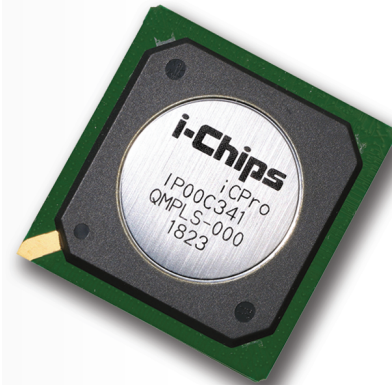- 90-degree rotation, OSD scroll
- Serial flash to bitmap

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

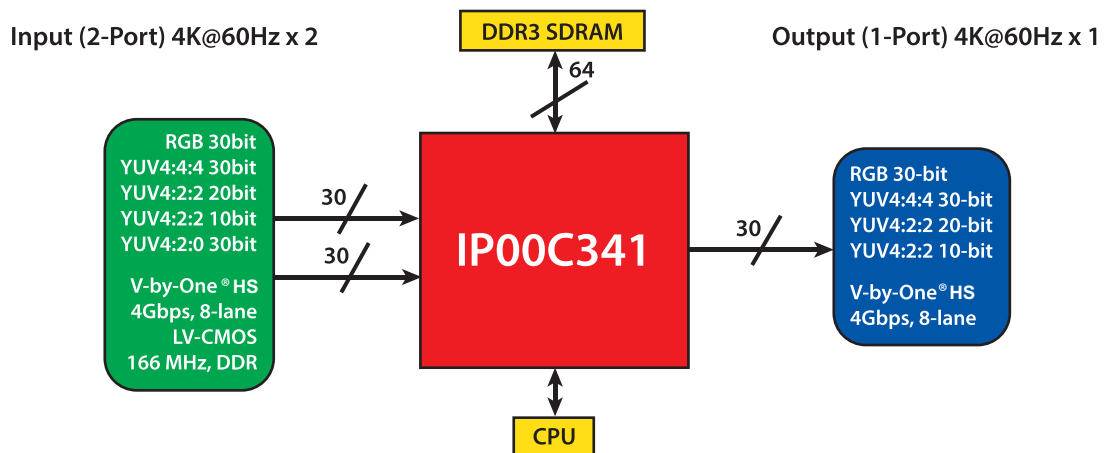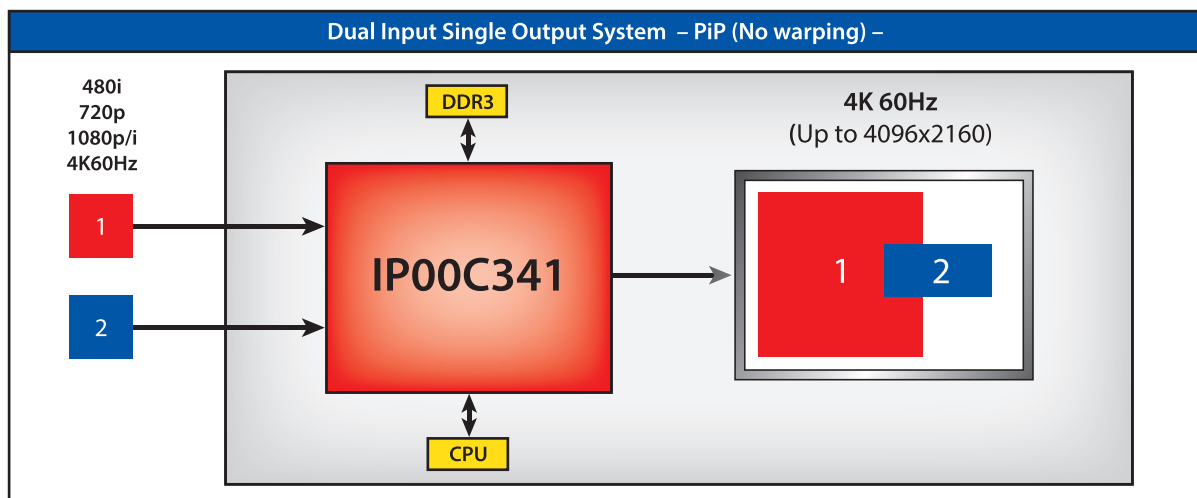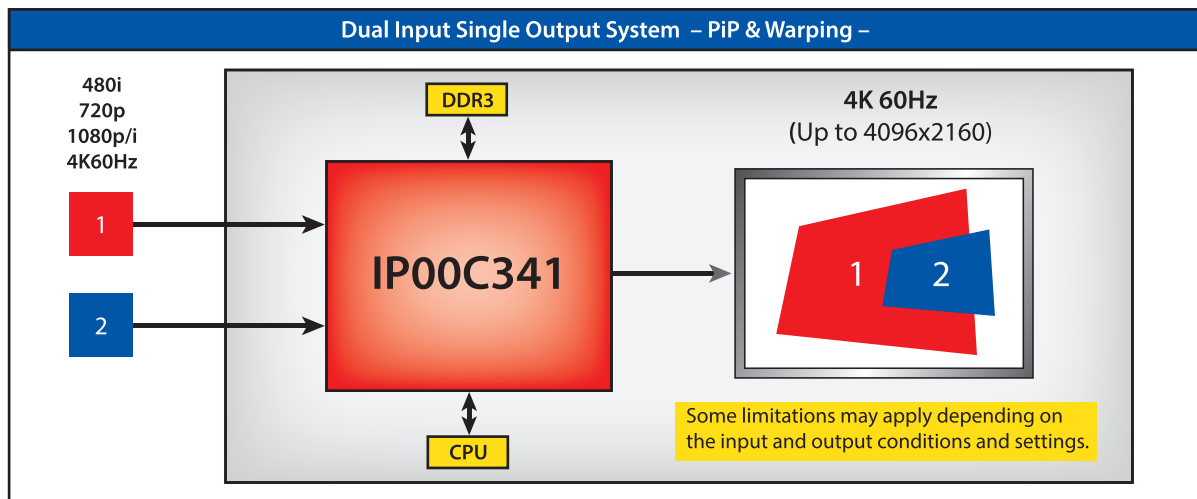3.3V/1.5V/1.1V

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

Input (2-Port) 4K@60Hz x 2

DDR3 SDRAM

Output (1-Port) 4K@60Hz x 1

64

RGB 30bit
YUV4:4:4 30bit
YUV4:2:2 20bit
YUV4:2:2 10bit
YUV4:2:0 30bit

V-by-One ® HS
4Gbps, 8-lane
LV-CMOS
166 MHz, DDR

30

30

IP00C341

30

RGB 30-bit
YUV4:4:4 30-bit
YUV4:2:2 20-bit
YUV4:2:2 10-bit

V-by-One® HS
4Gbps, 8-lane

CPU

Application Diagrams

Dual Input Single Output System – PiP & Warping –

480i
720p
1080p/i
4K60Hz

DDR3

4K 60Hz
(Up to 4096x2160)

1

2

IP00C341

1 2

CPU

Some limitations may apply depending on
the input and output conditions and settings.

Dual Input Single Output System – PiP (No warping) –

480i
720p
1080p/i
4K60Hz

DDR3

4K 60Hz
(Up to 4096x2160)

1

2

IP00C341

1 2

CPU

"V-by-One" is a trademark of Thine Electronics, Inc.

For more information please visit: **www.i-chips.co.jp** or **info@i-chips.co.jp**

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