

Product Description

The IP00C813A is a dual-input/dual-output de-interlacer and scaler on a single device. It features a built-in video decoder, ARM9 CPU, LVDS output, along with Ethernet and USB interfaces. Its inputs and outputs can be any interlaced format, SD or HD, or any progressive format, up to 1080P/WUXGA/2K1K.

The IP00C813A features 2 independent de-interlacer/scaler blocks, with full 10-bit internal processing. The IP00C813A can be configured in several ways. In the single-output mode, it can generate Picture-in-Picture, Picture-by-Picture output. In the dual-output mode, it can generate separate outputs at any resolution.

First, it can correct for geometry distortion based on a user-programmable "warp table" loaded in an external CPU or Flash memory. This geometry correction can be applied to the entire image with a resolution as small as 16x16 pixels. It supports image rotation up to +/- 25 degrees, as well as 90-degree rotation and mirror image.

Second, the IP00C813A can correct for color distortion in the image. This is accomplished by a powerful brightness and contrast adjustment system that is independently programmable for each 64x64 pixels region in the image.

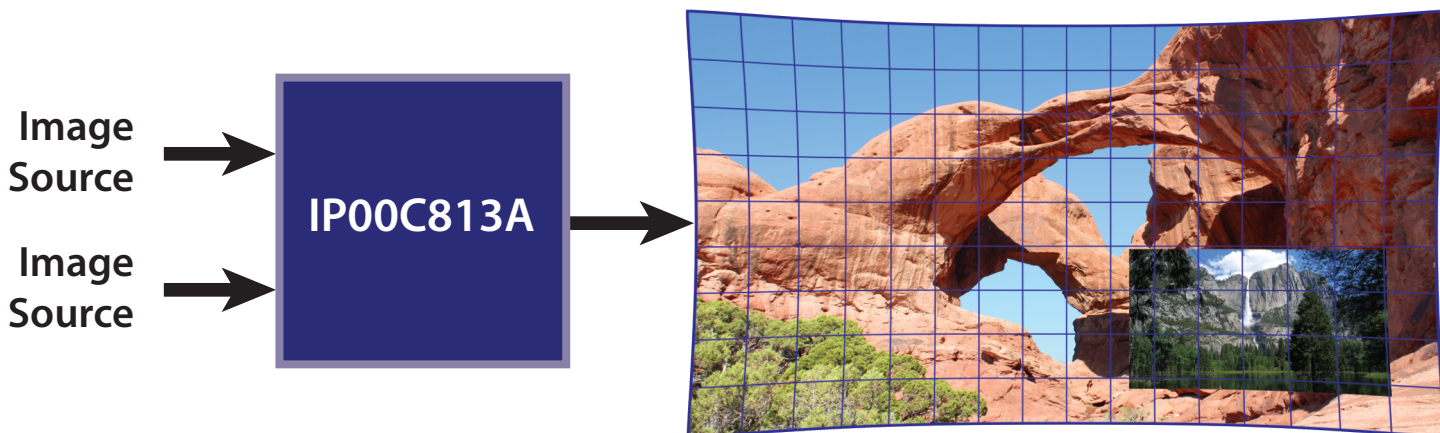
The IP00C813A also features a state-of-the-art edge blending function to allow for the seamless tiling of multiple images.

Applications

The IP00C813A is an ideal solution for camera systems where the input image contains optical distortion, and for projectors to be able to produce high-quality images on non-flat surfaces.



Actual Size



IP00C813A FEATURES

INPUT

- 30-bit RGB/30-bit YUV 4:4:4/20-bit YUV 4:2:2/10-bit YUV 422 @ 166 MHz
- 60-bit RGB/60-bit YUV 4:4:4/40-bit YUV 4:2:2 @ 166 MHz (Parallel)
- Analog: CVBS/S-Video
- 2176 pixels of active video

OUTPUT

- 30-bit RGB/30-bit YUV 4:4:4/20-bit YUV 4:2:2 @ 166 MHz
- Compatible with FPD link (2x2 only, no CMOS) @ 135 MHz/each
- 2176 pixels of active video

DE-INTERLACING

- 3D/MPEG/mosquito/block noise reduction
- 2:2, 2:3 and multi cadence detection
- Chroma bug canceller

SCALING

- 6 symbol filter (horizontal only – 8 symbol) with FIR Filter
- Independent H and V scaling ratios (aspect ratio correction)
- Coefficient filter ROM embedded (64 set)
- 90 degree image rotation (image and OSD)
- Vertical keystone correction

VIDEO DECODER

- NTSC-M, JPN, 4.43 PAL-B, D, G, H, I, CombinationN, 60, & SECAM
- VBI (Closed caption/CGMS/WSS) data extraction
- Clamp Pulse output, raw data output

PiP & PoP FUNCTIONS

- Two (2) fully independent video inputs
- Frame rate conversion with frame tear protection

BITMAP OSD

- 256 colors/High color OSD (RGB 565) compatible
- Embedded font engine (65536 words)
- Support for blinking and semi-transparent (4 color) OSD

EMBEDDED CPU

- ARM926EJ-S core with 16 KB instruction, 16 KB data
- Work RAM (64KB)
- Ethernet, USB 2.0 (host, function)
- DMAC (2ch)/UART (4ch)/I2C (master/slave)
- Timer (4ch)/Interruption control/IR remote control/RTC
- 10-bit ADC (8ch)/10-bit DAC (6ch)

WARPING

- Coordinated look-up table
- Correction up to a 25 degree angle both horizontal and vertical
- Rotation angle up to 25 degrees
- Edge-blending

EXTERNAL CPU INTERFACE

- 8-bit parallel, 4-line serial (with external CPU)
- External connection to Flash/SRAM/SDRAM
- Address: 23-bit/Data: 16-bit
- External interruption input (4 line)

IMAGE QUALITY CONTROL

- 12-bit gamma correction with interpolation (up to 7 LUTs available)
- 12-bit color gamma correction table x 2 (2, 7, or 31 set) x 2
- H and V edge enhancement function (9 symbols)
- Bias x 3, Gain x 2, CSC equipped for RGB <-> YUV
- Color management function
- Fully compatible with xvYCC
- Uniformity correction
- Input image detection of APL, Histogram, Min/Max, edge strength/position measurement, etc.

EXTERNAL MEMORY

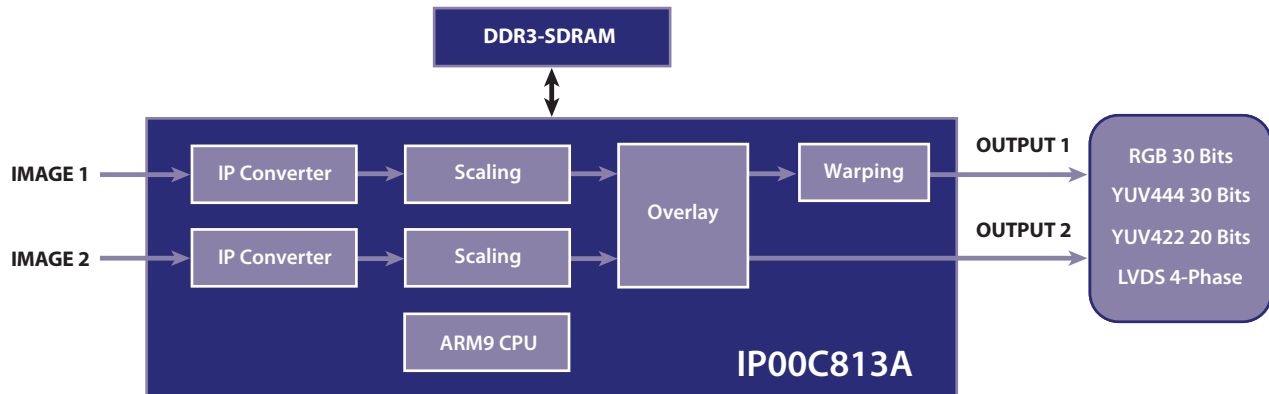
- Memory-bus 64-bit 800MHz
- DDR3-SDRAM PC800 (1G/512M/bit x 16) x 4

POWER SUPPLY

- 3.3V, 1.5V and 1.2V
- Separate power consumption (Scaler and CPU)

PACKAGE

- 900-pin Plastic BGA; 35mm x 35mm (1mm pitch)



IP00C813A Block Diagram

For more information please visit:
www.i-chips.com or info@i-chips.com

i-Chips

IMAGE PROCESSORS

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