i-Chips

IMAGE PROCESSORS

IP00C790

4K Warping/Edge-blending LSI with Single Color Processing

Product Description

The IP00C790 is the industries first, exclusive LSI for 4K warping and edge blending. It can handle a native 4K image up to 4096 x 2160, 60fps. This chip is capable of single color processing of either: R, G or B. A full color 4K implementation requires three C790 chips. However, the 4K implementation based on the C790 is easier to design. This is because of the embedded frame memory and direct connection, through a proprietary interface, between the C790 and the C734 a front-end scaler. Also, the C790 features image quality control and correction such as per pixel edge-blending and uniformity correction etc., that is required to achieve higher image quality.

Features

Input (1-port)
10-bit R or G or B single color @100MHz x 2 proprietary LVDS
40-bit (10-bit x 4) R or G or B single color @150MHz LV-CMOS

Output (1-port)
10-bit R or G or B single color @100MHz x 2 proprietary LVDS

Image Size
Max image active area 4096 x 2160

External/Internal Sync
Output sync signal is compatible with internal/external signal

Interpolation Filter
Horizontal/vertical 6-symbol programmable FIR filter

Distortion Correction Method
• Coordinate correction look up table
• Load from external CPU or external serial flash memory

Distortion Correction Amount
• Up to 45 degrees (horizontal /vertical)
• Any angle rotation (up to 45˚ rotation + 90˚ rotation)
• Vertical shrink ratio is about x 0.3

Image Correction
• Edge-blending (per pixel correction available)
• Uniformity correction
• Mirror/flip image
• 90˚ rotation

Image Quality Control
• 16-bit color gamma correction tables (7LUT available)
• Error diffusion

CPU Interface
8-bit parallel/4-wire serial

External Memory
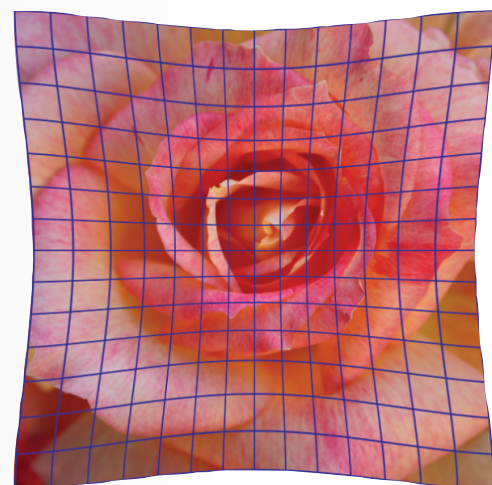DDR2-SDRAM 1Gbit embedded. No external memory

Serial Flash Interface
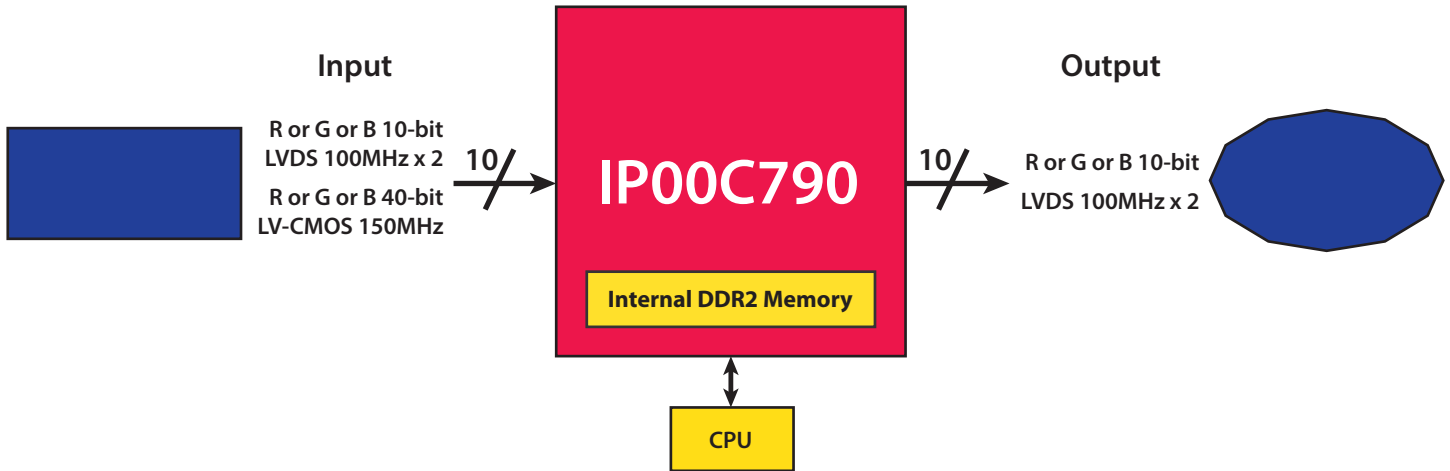2G-bit x 1(max)

Power Supply
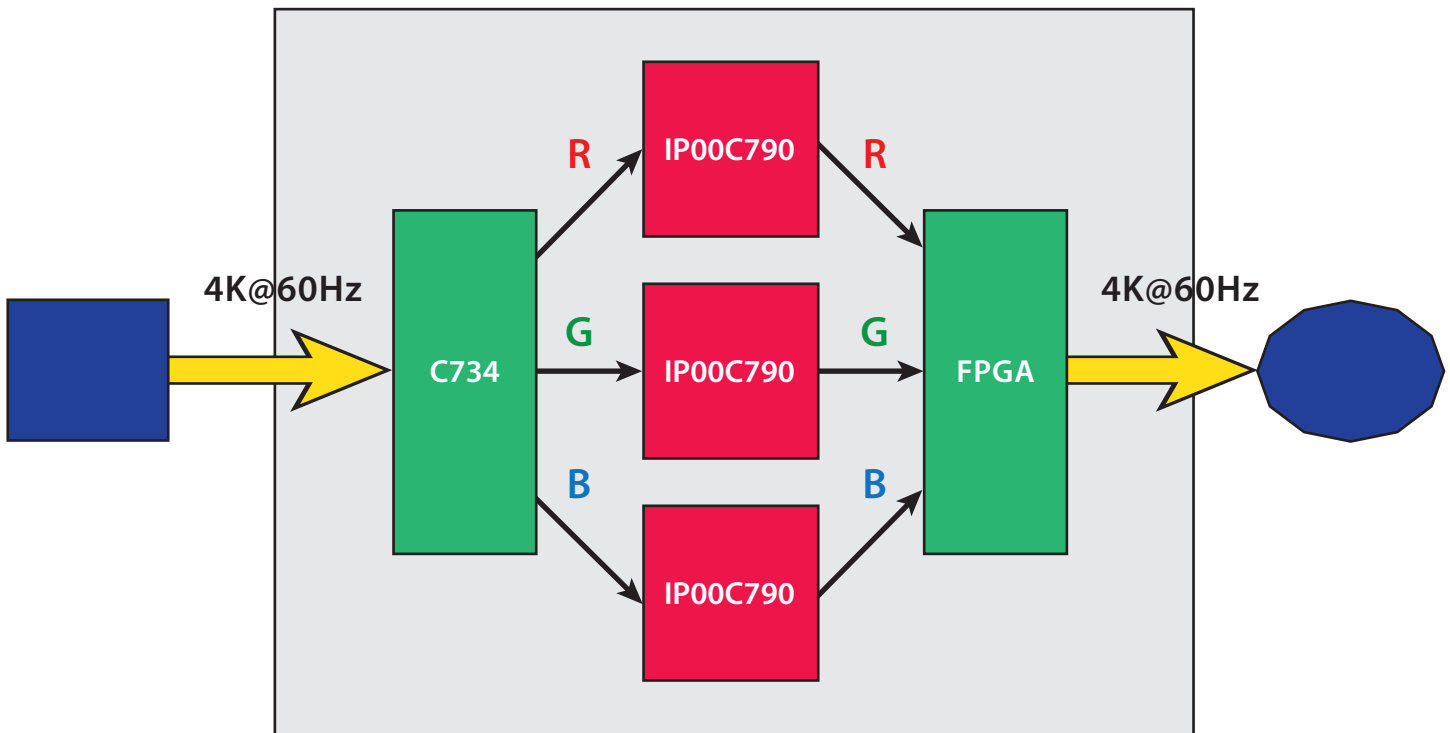3.3V/1.8V/1.2V

Package
496-pin BGA (1.0mm pitch), 27mm x 27mm

Warping Example

IP00C790 2K Warping/Edge-blending LSI with Built-in Memory

IP00C790 Block Diagram

Input

R or G or B 10-bit
LVDS 100MHz x 2

R or G or B 40-bit
LV-CMOS 150MHz

10

IP00C790

Internal DDR2 Memory

CPU

10

Output

R or G or B 10-bit
LVDS 100MHz x 2

IP00C790 4K System Configuration

4K@60Hz

C734

R — **IP00C790** — R

G — **IP00C790** — G

B — **IP00C790** — B

FPGA

4K@60Hz

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

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