Low power and Small-sized ISP +Camera Development Kit

Image Signal Processor THP7312 + CDK

Free from FPGA & Firmware coding is a new trend for camera development.

New Solution for Camera Development

Construct camera system as desired

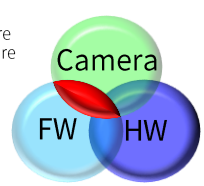
- Flexible choice of a camera module
- Easy turning of image quality & operation mode

Timely launch to market

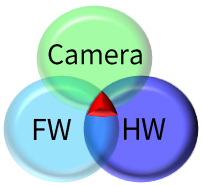
- Intuitive development with GUI
- Automatic generation of custom firmware

Issues of Camera Development

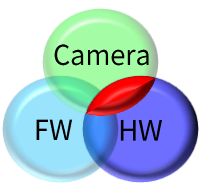
Note:
FW = Firmware
HW = Hardware



- Heavy loading for developing firmware



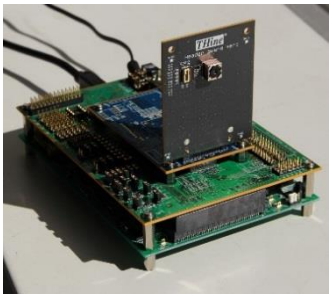
- Both hardware & firmware knowledge required besides camera technology



- Obliged to design FPGA circuit
- Large IC size & high power consumption

Suggestion from THine Electronics

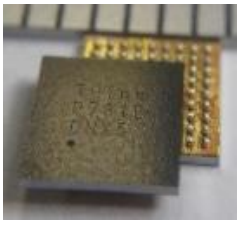
CDK (Camera Development Kit)



- Easy tuning of FW templates with GUI Tools
- Real time checking of results on an evaluation board

Firmware coding is no longer necessary

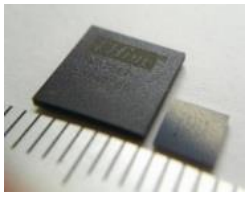
THP7312 (ISP)



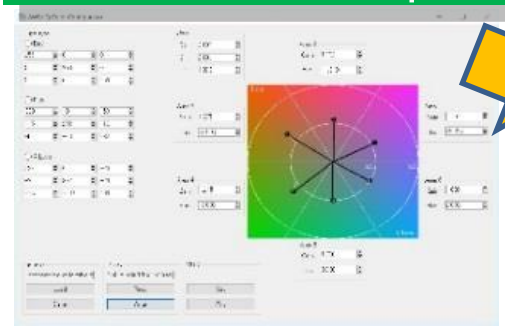
Small size	3.9mm WLCSP 8mm BGA
High pixel	Up to 16Mpixel
High speed	300Mpixel/sec MIPI 1Gbps*4lane

Low power

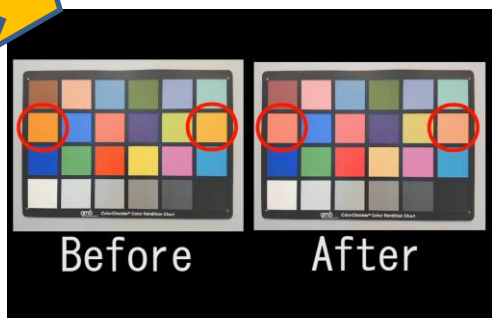
High function

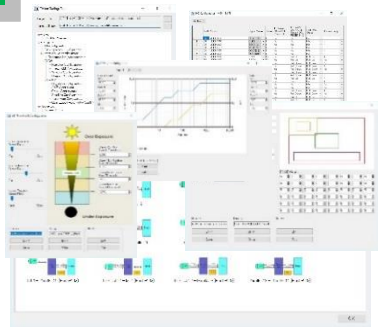


Example of GUI Tools



Color Configurator





Other example

Image Signal Processor THP7312 +Camera Development Kit

Product Overview

THP7312 is an image signal processer with well-tuned, high-speed pipelined and power saving hardware engine interfaced with variety of CMOS image sensors in digital camera modules in machine vision, consumer, medical, office automation, education and VR/AR/MR cameras.

The THP7312 controls AE, AWB and AF functions with its hard-wired circuits. You can utilize the THP7312's original noise reduction and variety of image correction functions as a means to get the top level quality of pictures and movies in your camera system.

Features

- Sensor Correction
  - Black Level Correction
  - Adaptive Correction of Defect/Dust Pixels
  - Lens Shading Correction
  - De-mosaic
  - Support Alternate Row HDR
  - Support RGB-IR
- Adaptive Image Signal Processing
  - Noise Reduction
  - Edge Enhancement
  - Multi Axis Color Correction
  - Gamma Correction
- Auto Functions
  - Auto Exposure (Multi Point)
  - Auto Focus (Multi Point, Continuous)
  - Auto White Balance
  - Auto Flicker Cancel
  - Auto Strobe Light Dimmer
  - Auto Scene Detection
  - Auto Fog Detection
- Others
  - Face Detection
  - Movie Image Anti Shaking (EIS)
  - De-fog
  - Dual PLL
  - JPEG
  - Digital Zoom (Super Resolution)
  - Resize x3 (MIPI Virtual channel)
  - Horizontal Mirror
  - Special Effects
    Monochrome, Sepia, Reverse, etc.
  - Peripheral Control
    - VCM, Mechanical Shutter, Zoom Lenses
    - LED Flash

Specification

Image Size / Frame Rate	16fps@16Mpixel, 20fps@13Mpixel, FHD 1080p-60fps / HD 720p-120fps
Pixel Rate	300Mpixel/sec
Package	WLCSP81 (3.937mm x 3.960mm x 0.615mm, 0.4mm pitch) BGA81 (8mm x 8mm x 1.2mm, 0.8mm pitch)
Supply Voltage	CORE 1.2V, I/O 1.8V or 2.8V selectable
Sensor Interface	MIPI(4lane)RAW12/10/8bit + MIPI(2lane)RAW12/10/8bit, 1Gbps/lane Parallel RAW12/10/8bit I2C Master (Up to 400KHz)
Host Interface	MIPI (4lane), YUV420/422, JPEG, or RAW8bit, 1Gbps/lane Parallel, YUV420/422, JPEG or RAW8bit I2C Slave (Up to 400KHz), SPI Slave
External Interface	GPIO, SPI Master (Quad interface)