

General Purpose ISP for small form factor cameras

Product Overview

THP7312 is an image signal processor 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

- High-Speed and High-Quality Processing with Low Power Consumption Achieved by THine's Specialized Hardware
- Real-Time Processing for Movie Image Anti Shaking and HDR and Support RGB-IR sensor
- High performance 3A and customer functions achieved by powerful 32bit RISC MPU
- Smallest Package (WLCSP81 3.937mm x 3.960mm x 0.615mm, 0.4mm pitch)

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)<br>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<br>Parallel RAW12/10/8bit<br>I2C Master (Up to 400KHz)                 |
| Host Interface          | MIPI (4lane), YUV420/422, JPEG, or RAW8bit, 1Gbps/lane<br>Parallel, YUV420/422, JPEG or RAW8bit<br>I2C Slave (Up to 400KHz), SPI Slave |
| External Interface      | GPIO, SPI Master (Quad interface)                                                                                                      |



# THine Image Signal Processor THP7312

## Function

### • Sensor Correction

- Black Level Correction
- Static Correction of Consecutive Defect pixels
- Adaptive Correction of Consecutive Defect 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
- Dark Area Correction
- Memory Color Correction

### • Auto Functions

- Auto Exposure (Multi Point)
- Auto Focus (Multi Point, Continuous)
- Auto White Balance
- Auto Flicker Cancel

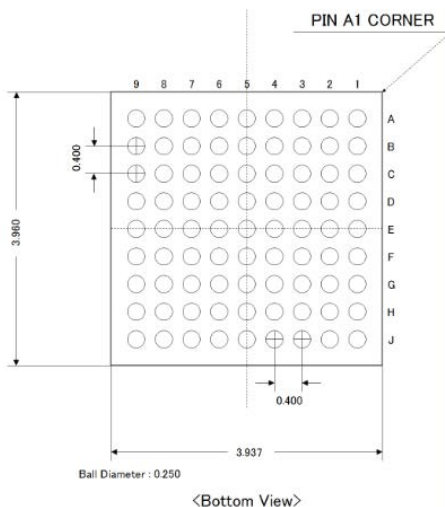
- Auto Strobe Light Dimmer
- Auto Scene Detection
- Auto Fog Detection

### • Others

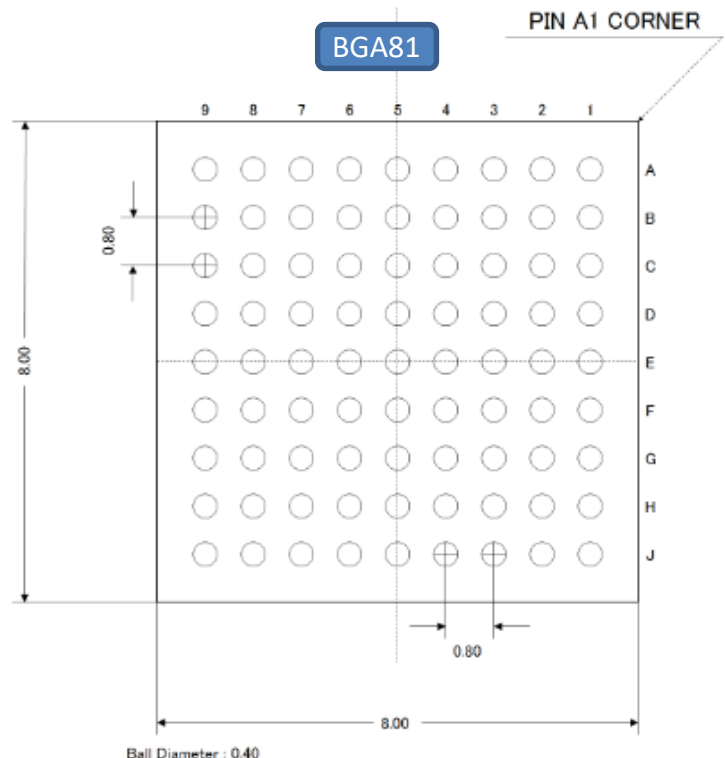
- Face Detection
- Movie Image Anti Shaking / Electrical Image Stabilization
- De-fog
- Dual PLL
- JPEG Encoder
- Digital Zoom (Super Resolution)
- Resize x3 (MIPI Virtual channel)
- Horizontal Mirror
- Special Effects  
Monochrome, Sepia, Reverse, Rich Color, Watercolor, Wild Monochrome, Smart Sepia, Blue Man, Emboss, Part Color, Pin Hole, Soft Focus, Miniature
- Peripheral Control
  - VCM, Piezo, SMA and STM
  - Mechanical Shutter, Zoom Lenses, Zoom Tracking
  - LED Flash, Xenon Flash

## Package Dimension (WLCSP81 / BGA81)

WLCSP81



BGA81



Notice: Any information could be changed by THine without prior notice.

