

Crystal Image through
Imaging Innovation

PIXELPLUS



***Surround View Monitoring Processor
with 4CH HDR ISP/Analog HD Rx***

PI5008KA
Brief Datasheet

Rev 0.35

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1. General Description

1.1. Product Overview

The PI5008 is a high performance SVM (Surround View Monitoring) processor for automotive application. A surround view monitor system stitches multi-view from several cameras and helps to figure out where other cars and pedestrians around. Up to 4-channel video inputs can be processed to compose a surround view and outputs with user overlaid data. To reduce overall system cost, PI5008 integrates four HDR ISP and four analog HD Rx in it. Four lane MIPI Rx, four analog SD/HD and conventional two parallel ports with multiplexed mode are supported for video input interfaces. Digital and analog HD output supporting various standard formats also can be configured to interconnect with external display devices. Dual CPU and VPU (Video Processing Unit) enables the user to implement specific functions such as object detection and some automotive related algorithms.

1.2. Features

◆ CPU

- ✓ 32-bit Andes D10 RISC, Dual-Core
 - *Max 229.5MHz each, 8K/8K Cache*
- ✓ DSP, FPU(Floating Point Unit) Embedded, 128-bit AXI Bus

◆ Video Input

- ✓ Digital
 - 4 Lane MIPI Interface
 - Parallel 2Ch Digital Video Input: BT.1120/601, 12-bit Bayer
- ✓ Analog
 - 4Ch Analog HD/SD Rx
 - Bi-directional UTC interface

◆ Video Output

- ✓ Digital
 - BT.1120 8/16-bit, BT.601 8-bit Interface
 - RGB 565/666/888
 - 4Ch Multiplexed Parallel Output for Recoding
 - Bayer Parallel Output for UVC Interface
- ✓ Analog
 - HD/SD with 10-bit@148.5MHz Video DAC

◆ DDR Interface

- ✓ DDR2/DDR3/LPDDR2
 - 400/459MHz, 16-bit Interface for 720p@60fps, 960p@30fps
 - 400/459MHz, 32-bit Interface for 1080p@30fps

◆ 4Ch ISP

- ✓ Input Format
 - Up to 20-bit combined raw bayer format
 - 12-bit compressed combined raw bayer format
 - 10-bit non-HDR raw bayer format
- ✓ Auto Exposure/Auto White Balance
- ✓ Color Interpolation, Spatial Noise Reduction
- ✓ Auto Defect Pixel Correction
- ✓ Edge Enhancement
- ✓ Saturation/Hue/Contrast Enhancement

◆ Automotive Specific Functions

- ✓ SVM/AVM
 - 2D/3D Surround View Monitoring
 - Dynamic Blending for Blind Spot
 - Brightness Control between Cameras
- ✓ VPU(Vision Processing Unit) for Optical Flow and Canny Edge Detection

◆ Display Control

- ✓ OSD
 - 5-BMP/RLE Overlay Layer
 - Supports 8/16/24/32(ARGB)-bit per Pixel BMP Mode

◆ Diagnosis

- ✓ Video Input/Output: No Video, Format Error, Freeze, Genlock Error Detection
- ✓ Flash Memory Error Detection

◆ Peripherals

- ✓ UART 3 ports, QSPI 1 port, SPI 3 ports, I²C 2 ports, I²S 1 port
- ✓ Timers, Watch Dog Timer, GPIO, General ADC 2 port, PWM

◆ Operating Temperature/Package

- ✓ -40~105 °C
- ✓ 369 FBGA Package

1.3. Block Diagram

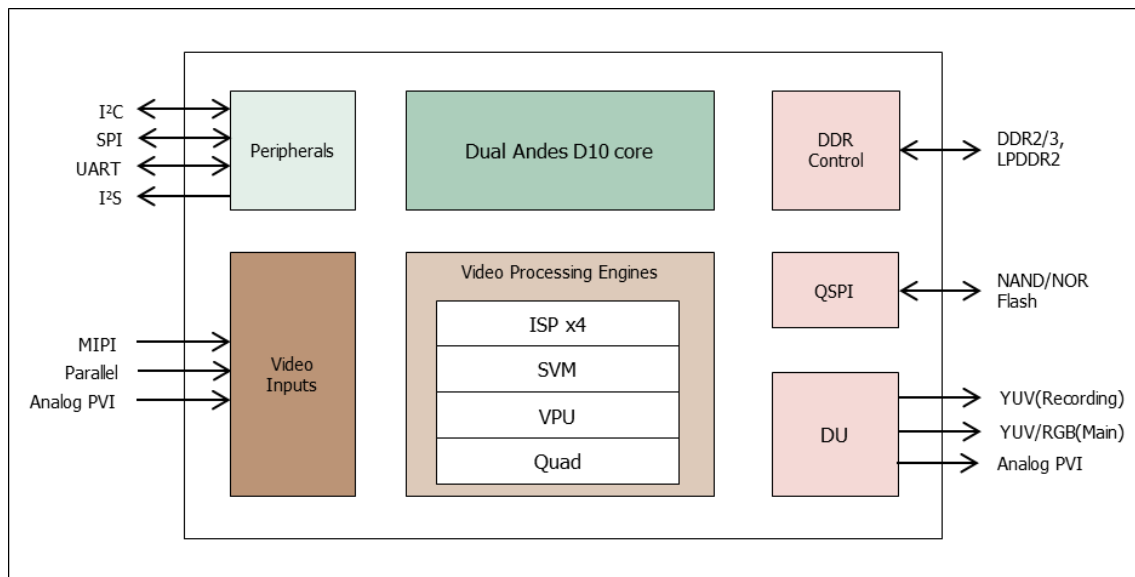
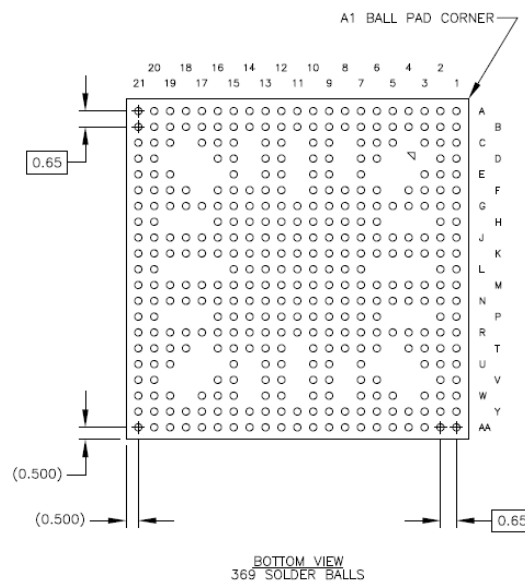
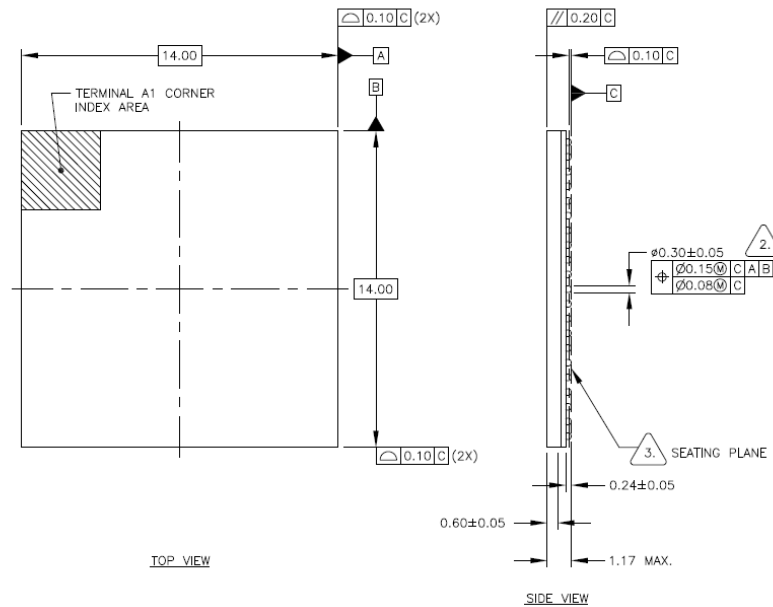


Fig 1. Functional Block Diagram

1.4. Package Specification

PI5008K package type is 369 FBGA. Package mechanical drawing is as below.



4. REFERENCE SPECIFICATIONS:
 A. AWW SPEC #001-2234: PACKING OPERATION PROCEDURE
 B. AWW SPEC #001-2062: MARKING

3. PRIMARY DATUM C AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS
2. DIMENSION IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER, PARALLEL TO PRIMARY DATUM C
1. ALL DIMENSIONS AND TOLERANCES CONFORM TO ASME Y14.5 - 2009

NOTES: UNLESS OTHERWISE SPECIFIED