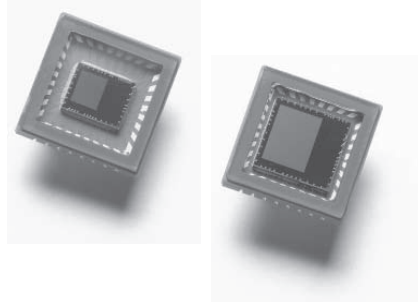


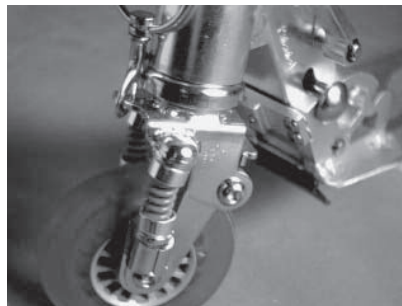
# Agilent Technologies CMOS Monochrome Image Sensors ADCS-1121 (CIF), ADCS-2121 (VGA) Product Overview



## Description

The ADCS-1121 and ADCS-2121 CMOS Monochrome Image Sensors capture high quality, low noise images while consuming very low power. Housed in a new industry-standard Ceramic Leadless Chip Carrier (CLCC) packaging, these parts integrate a highly sensitive active pixel photodiode array with timing control and onboard A/D conversion. Available in either VGA (640x480) or CIF (352x288) resolution image arrays, the devices are ideally suited for a wide variety of applications.

The ADCS-2121 and ADCS-1121, when coupled with compatible image processors from either Agilent or selected Agilent partners, provide a complete imaging system to enable rapid end-product development. Designed for low-cost consumer electronic applications, the ADCS-1121 and ADCS-2121 image sensors deliver unparalleled performance for main-stream imaging applications.



## Features

- High quality, low cost CMOS image sensors
- Industry-standard 32-pin CLCC package
- VGA resolution (640H x 480V) – ADCS-2121
- CIF resolution (352H x 288V) – ADCS-1121
- High frame rates for digital video  
VGA: 15 frames/second  
CIF: 30 frames/second
- High sensitivity, low noise design ideal for capturing high-quality images in a variety of lighting conditions
- Integrated analog-to-digital converters:  
VGA (ADCS-2121): 10 bit, programmable  
CIF (ADCS-1121): 8 bit, fixed
- Parallel and serial output
- Automated, dark response compensation
- Automatic subtraction of column fixed pattern noise
- Still image capability
- Synchronous serial or UART interface
- Integrated voltage references

## Typical Applications

- Bar code scanner
- Biometrics
- Machine vision
- Optical character recognition
- Surveillance



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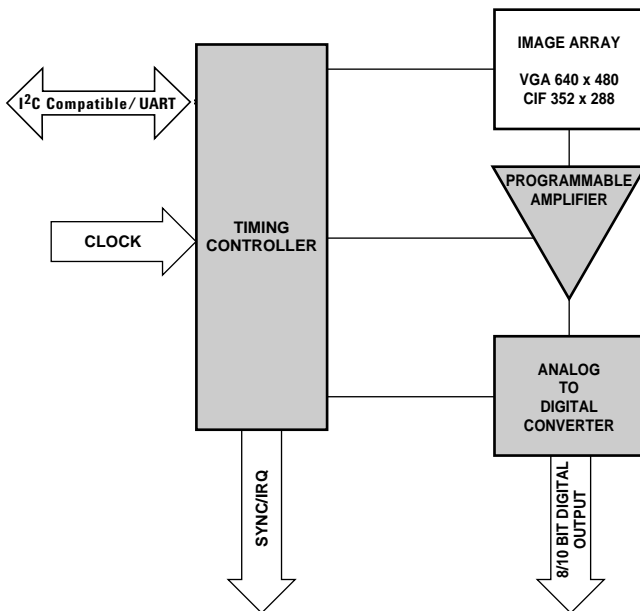
## Image Sensor Specifications

| Part Number                              | ADCS-2121 (VGA)   | ADCS-1121 (CIF)   |
|--|---|---|
| Active Pixel Array Resolution            | 640 x 480   | 352 x 288   |
| Pixel size                               | 7.4 x 7.4 $\mu\text{m}$                                     | 7.4 x 7.4 $\mu\text{m}$                                     |
| Maximum Clock Rate                       | 25 MHz (VGA)  | 32 MHz (CIF)  |
| Effective Sensor Dynamic Range           | 65 dB (VGA)   | 61 dB (CIF)   |
| Effective Noise Floor                    | 43 e-   | 43 e-   |
| Dark Signal <sup>[1,3]</sup>             | 240 e-/sec (@ 22°C)   | 240 e-/sec (@ 22°C)   |
| Saturation Voltage                       | 1.22V   | 1.22V   |
| Full Well Capacity                       | 68,000 e-   | 68,000 e-   |
| Conversion Gain <sup>[2]</sup>           | 17 $\mu\text{V}/\text{e-}$                                  | 17 $\mu\text{V}/\text{e-}$                                  |
| Programmable Gain Range                  | 1– 40 (8 bit resolution)                                    | 1– 40 (8 bit resolution)                                    |
| Fill Factor                              | 42%   | 42%   |
| Exposure Control                         | 0.5 $\mu\text{sec}$ minimum, 0.5 $\mu\text{sec}$ increments | 0.5 $\mu\text{sec}$ minimum, 0.5 $\mu\text{sec}$ increments |
| Supply Voltage                           | 3.3V, -5%/+10%  | 3.3V, -5%/+10%  |
| Absolute Max. Power Supply Voltage       | 3.6V  | 3.6V  |
| Absolute Max. DC Input Voltage (any pin) | 3.6V  | 3.6V  |
| Power Consumption (typical)              | 150 mW operating, 150 $\mu\text{W}$ standby                 | 150 mW operating, 150 $\mu\text{W}$ standby                 |
| Power Consumption (max)                  | 200 mW operating, 3.3 mW standby                            | 200 mW operating, 3.3 mW standby                            |
| Optical Format                           | 1/3"  | 1/4"  |
| Operating Temperature                    | -5° to +65°C  | -5° to +65°C  |
| Storage Temperature                      | -40° to +125°C  | -40° to +125°C  |
| Package Type                             | 32-pin CLCC   | 32-pin CLCC   |

### Notes:

1. Specified over complete pixel area
2. Measured at unity gain
3. Excludes dark current shot noise

## ADCS Sensor Top Level Block Diagram



For product information and a complete list of Agilent contacts and distributors, please go to our web site.

[www.agilent.com/semiconductors](http://www.agilent.com/semiconductors)

E-mail: SemiconductorSupport@agilent.com

Data subject to change.

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