CP8510iR

1/3″, **HD, WDR**, **RGB**-**iR,** 1280x720, Analog output with 1Mega pixel image

Product Description

CP8510 is a true HDR image sensor designed with a dual Pixel structure for automotive cameras and security systems. CP8510 is set up with a 1280x720 image array, outputs up to 30 frames (1280x720) per second, and supports various forms of digital output format. CP8510 has various camera control functions, and can be programmed through a two-wire serial interface.

Product Features

- System-on-a-chip(SoC)-completely integrated camera system
- Digital or HD-Analog output
- Integrated microcontroller for flexibility
- Parking Guide, OSD, Privacy Zone Mask,
- 2ch Two-wire serial interface (Master, Slave)

Application
- Automotive Solution (ex. Black Box, AVM)
- CCTV / Door-Phone
- USB Camera

PARAMETER		TYPICAL VALUE
Optical Dimension	Optical Format	1/3 inch
	Pixel Size	2.0 um X 2.0 um
	Effective Resolution	1288(H) X 728(V)
	Effective Pixel Area	5.152mm(H) X 2.912mm(V)
Output		10bit, 8bit RGB Bayer YCbCr422, RGB565/555
		HD-Analog@148.5Mhz
Input Clock Frequency		27MHz
Maximum Frame Rate		1280x720 30fps(YCbCr)@74.25MHz 60fps(YCbCr)@148.5MHz
Shutter Type		Electronic Rolling Shutter
Sensitivity		5.5 V / lux-sec
Dynamic Range (HDR mode)		120 dB
SNR_MAX		40.3 dB
Max. Programmable Gain		analog (x64), digital (x32)
Supply Voltage	Pixel	2.8V ± 10%
	Analog	2.8V ± 10%
	I/O	2.8V ± 10%
	Digital	1.5V ± 10%
Power Consumption	Active	385mW@30fps YUV 425mW@30fps HD-Analog
	Standby	5mW
Operating Temperature		-20°C ~ 85°C
Package Type (Size)		60 CLCC (12mm x 12mm)

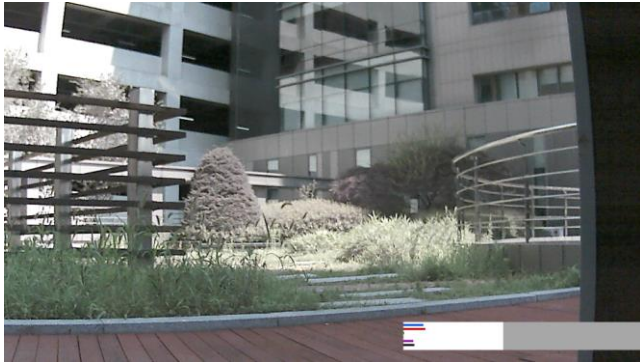## ▶ Functional Block Diagram

CLAIRPIXEL
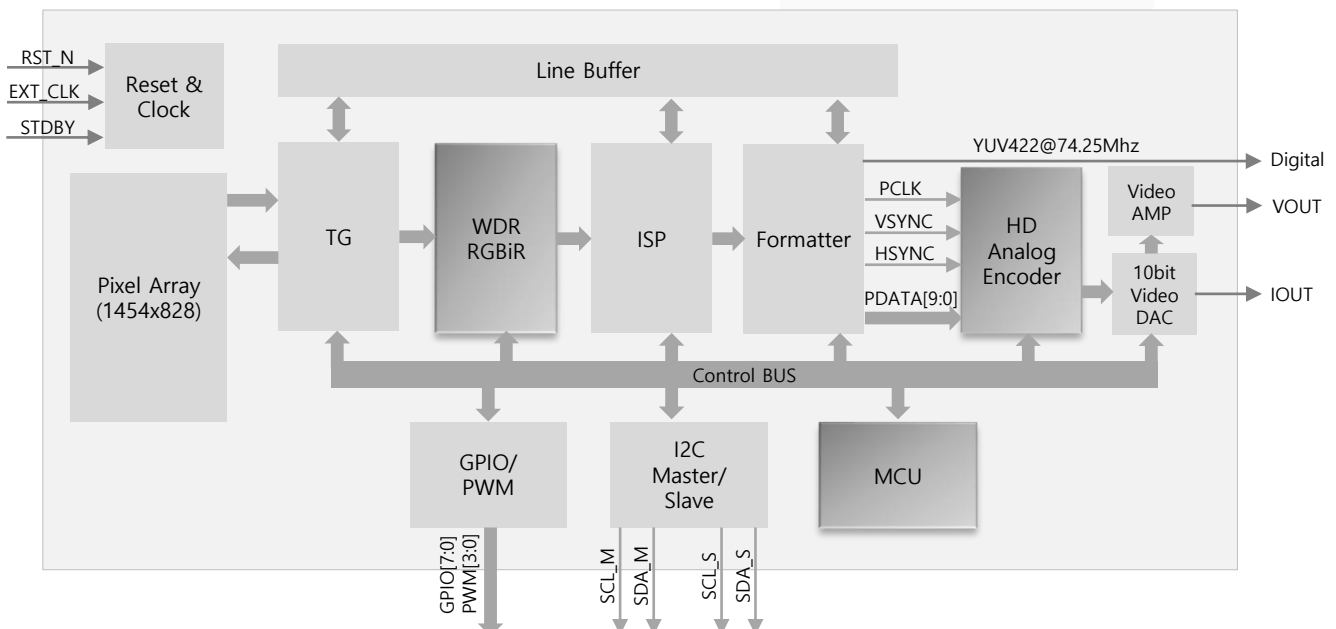
▶ CP8510iR Performance

Daylight image without ICR filter (Daylight, 6800k, PM2:30)

RGBiR technology allows color representation during daytime by using only OLPF (bandpass) without using mechanical ICR filters.

(Products that cannot use mechanical ICR filters can have the same effect as those that use ICR.)
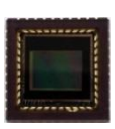
Normal CMOS | RGBiR

WDR MODE

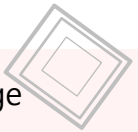At night, it changes to WDR mode, reducing IR-LED saturation.

Normal CMOS | RGBiR (with WDR)

Better than Human Eye
CLAIRPIXEL

CP8510iR STRUCTURE
1/3', **HD, HDR**, RGB-**iR,** 1280x720, Analog output with 1Mega pixel image

Pixel Structure

The CP8510iR sensor does not use the existing Bayer pattern, but uses its own Dual Pixel.
This technology improves the resolution of images and enhances color expression.
It can also perform WDR functions at night-time, reducing saturation of IR-LEDs

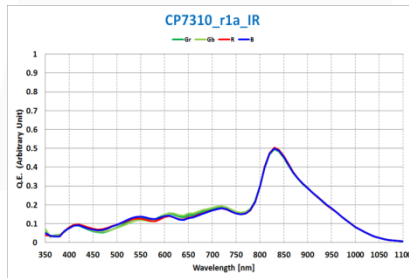| B	I	G	I	B	I	G	I
G	I	R	I	G	I	R	I
B	I	G	I	B	I	G	I
G	I	R	I	G	I	R	I
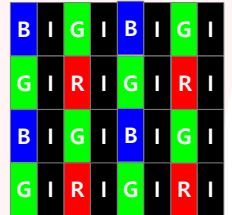
Filter wavelength

The CP8510iR sensor applies a Cut Filter with different permeability characteristics to each pixel.
It separates RGB wavelength from natural light (sunlight) and improves color reproducibility.
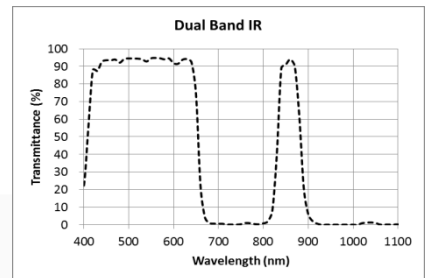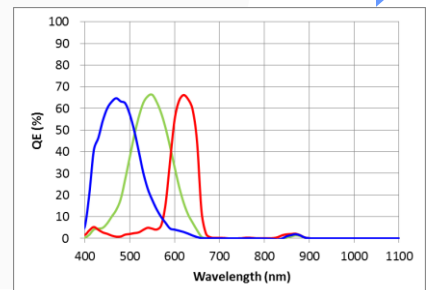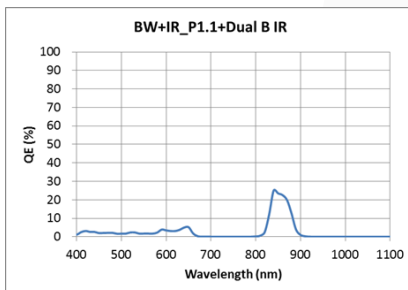
Sensor Internal Filter

CP7310_r1a_LP
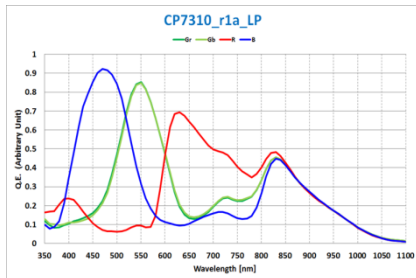
All pass(RGB+iR)

CP7310_r1a_IR

IR Pass

Sensor External Filter

Dual Band IR

Bandpass Filter

RGB+IR image – IR image = True RGB image
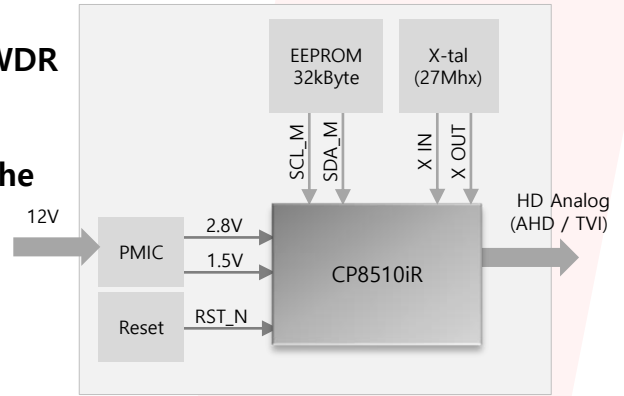

BW+IR_P1.1+Dual B IR
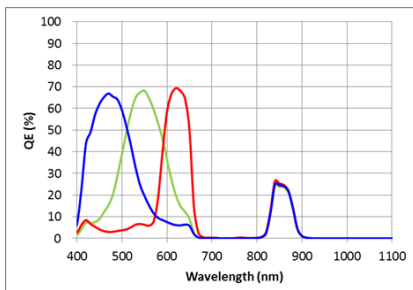
System Block Diagram

Module Block(Analog Output)

The CP8510iR is a One-Chip SoC sensor with WDR and HD-Analog Tx in one sensor.

In addition, the video AMP is included inside the sensor and it supports differential output, which can be used for noise-sensitive systems such as automobiles.

Analog Camera Module

Package Information

Package Type : CLCC (60pin, 12mmx12mm)

TOP VIEW

BOTTOM VIEW

SIDE VIEW