

LI5020SA

2/3 inch Diagonal 5.33MP CMOS Sensor on 180pin LGA with 3.4 μ m Square Pixels at 120fps.

DESCRIPTION

LI5020SA is a CMOS type of solid-state image sensor with a 2/3 inch effective pixel array of 5.33M pixels. It uses a global shutter feature as a charge storage period control feature.

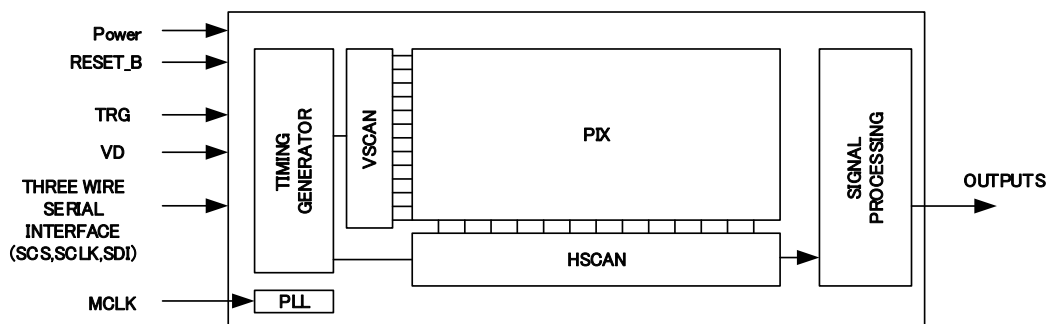
It can output an effective 2592 x 2056 pixels of video at 120 fps and 12bit via 12 channels of digital signal output.

*LI5020SA series consists of LI5020SAC (color) and LI5020SAM (monochrome) and LI5020SAI (RGBIR).

FEATURES

- LI5020SAM: Monochrome sensor
- LI5020SAC: Color sensor (RGB on-chip color filter)
- LI5020SAI: RGBIR sensor (RGB IR on-chip color filter)
- Global shutter / Progressive scan
- Recording screen size: 2/3 inch equivalent (8.8 mm x 7.0 mm)
- Number of effective pixels: 2592 x 2056 (Horizontal x Vertical)
- Pixel size: 3.4 μ m x 3.4 μ m
- Number of output channels Data: 12 lanes, Clock: 2 lanes
- Main clock frequency: 36 MHz (recommended)
- Output format: LVDS output maximum 864 Mbps @12 bit
- Analog gain: 0 to 36 dB
- Digital gain: 0 to 24 dB
- Maximum of 8 areas (horizontal 8, vertical 8) of optional segmentation (ROI: Region Of Interest) feature
- Horizontal and vertical inverted output feature
- External trigger exposure control feature
- Sensitivity (Green) of LI5020SAC: 30,000 e/lx/sec @Analog gain x1
- Sensitivity (Green) of LI5020SAI: 30,000 e/lx/sec @Analog gain x1
- Sensitivity of LI5020SAM: 54,000 e/lx/sec @Analog gain x1
- Saturation: 12,000 e @Analog gain x1, 60fps, Dynamic Range Priority Mode
- Saturation: 7,000 e @Analog gain x1, 120fps, Frame Rate Priority Mode
- Dark random noise: 2.6 e rms @Analog gain x1
- Dark current: 1.3 e/sec @Analog gain x1, room temperature
- Power consumption: 510 mW(Typ.) @using all pixels 120 fps
- Power consumption: 440 mW(Typ.) @using all pixels 42 fps
- Power supply voltages: 3.3 V, 1.2 V
- 180 pin ceramic LGA
- Package size: 18.96mm x 18.10mm x 2.51mm

FUNCTIONAL BLOCK DIAGRAM



	250MP		120MP			5MP Global shutter						1/1.8" 2.1MP HDR	1" 12MP		
	LI8020SAC	LI8020SAM	120MXSC	120MXSM	120MXSI	LI5010SAC	LI5010SAM	LI5010SAI	LI5020SAC	LI5020SAM	LI5020SAI	LI7050SAC	LI7030SAC		
Filter Type	RGB	Monochrome	RGB	Monochrome	RGB-NIR	RGB	Monochrome	RGB-NIR	RGB	Monochrome	RGB-NIR	RGB	RGB		
Sensitivity (e-/lx/sec)	4,600 (Green)	11,000	10,000 (Green)	20,000	10,000 (Green)	30,000 (Green)	47,000	30,000 (Green)	30,000 (Green)	54,000	30,000 (Green)	55,000 (Green)	22,000		
Dark Random Noise	3.8 erms @ 12dB		2.3e rms @ gain x8, Room Temperature			2.6e rms @ Analog gain x1			2.6e rms @ Analog gain x1			1.1e rms @ room temperature	2.6e rms @ 4K3K, 24fps(12bit)		
Saturation	5,400 [e] (@6dB)		10,000 [e] (@gain x0.5)			12,000e – Dynamic Range Priority Mode (@ Analog gain 0 dB)			12,000e – Dynamic Range Priority Mode (@ Analog gain 0 dB)			30,000 [e] (@gainx1)		25,000 [e]	
						7,000e – Frame Rate Priority Mode (@ Analog gain 0 dB)			7,000e – Frame Rate Priority Mode (@ Analog gain 0 dB)						
Resolution (megapixels)	250		122			5			5			2.12	12		
Effective Pixels (Horizontal xVertical)	19568 x 12588		13272 x 9176			2592 x 2056			2592 x 2056			1936 x 1096	4004 x 3000		
Sensor Size	APS-H (29.35mm x 18.88mm)		APS-H (29.22mm x 20.20mm)			Approx. 2/3 inch (8.8mm x 7.0mm)			Approx. 2/3 inch (8.8mm x 7.0mm)			1/1.8 inch (7.94mm x 4.49mm)	1 inch (12.8mm x 9.6mm)		
Pixel Size	1.5µm x 1.5µm		2.2µm x 2.2µm			3.4µm x 3.4µm			3.4µm x 3.4µm			4.1 µ m x 4.1 µ m	3.2µm x 3.2µm		
Maximum Frame Rate	5 fps		9.4 fps			60fps – Dynamic Range Priority Mode			60fps – Dynamic Range Priority Mode			60fps	4K3K video at 24 fps (12bit)		
						120fps – Frame Rate Priority Mode			120fps – Frame Rate Priority Mode			30 fps (HDR)	4K2K video at 60 fps (10bit)		
Shutter Type	Rolling		Rolling			Global electronic shutter function			Global electronic shutter function			Rolling	Rolling		
I/F	LVDS		LVDS			LVDS			LVDS			MIPI CSI-2	LVDS		
Power Consumption (Type)	2.0W (under recommended operating conditions)		2.5 W (under recommended operating conditions)			500mW (all pixels @ 120 fps)			510mW (all pixels @ 120 fps) 440mW (all pixels @ 42 fps)Low Power mode			320mW (all pixels @ 60 fps)	540 mW @4K2K readout, 60fps (10bit)		

The contents of this specification are subject to change without notice