

Contact Type Image Sensor

1. Application

This specification sheet is applied to Contact Type Image Sensor UA2B200AX.

2. General Description

The UA2B200AX is a contact type image sensor with a valid pixel density of 200 DPI capable of scanning an image at the rate of 250 μ s/line for 200 mm width. The video signal is outputted at the 8-bit long digital value and is provided with black and white output correcting function for each pixel.

3. Specifications

The specifications of this contact type image sensor are shown in the table below.

Item	Specifications		Remarks
Valid scanning width	200mm		Sensor output width 207.4 mm (Including white-basis output)
Pixel density	200dpi		
Number of valid pixels	Valid scanning pixel	1574 pixel (No. 2-1575 pixel)	Total pixel: 1632 pixels
	White-basis output pixel	16 pixel min (No. 1617-1632 pixel)	Minimum number of pixels at maximum tolerance.
Storing time	250 μ s/line		Feed speed
Output clock frequency	7.0MHz		Maximum 7.5 MHz

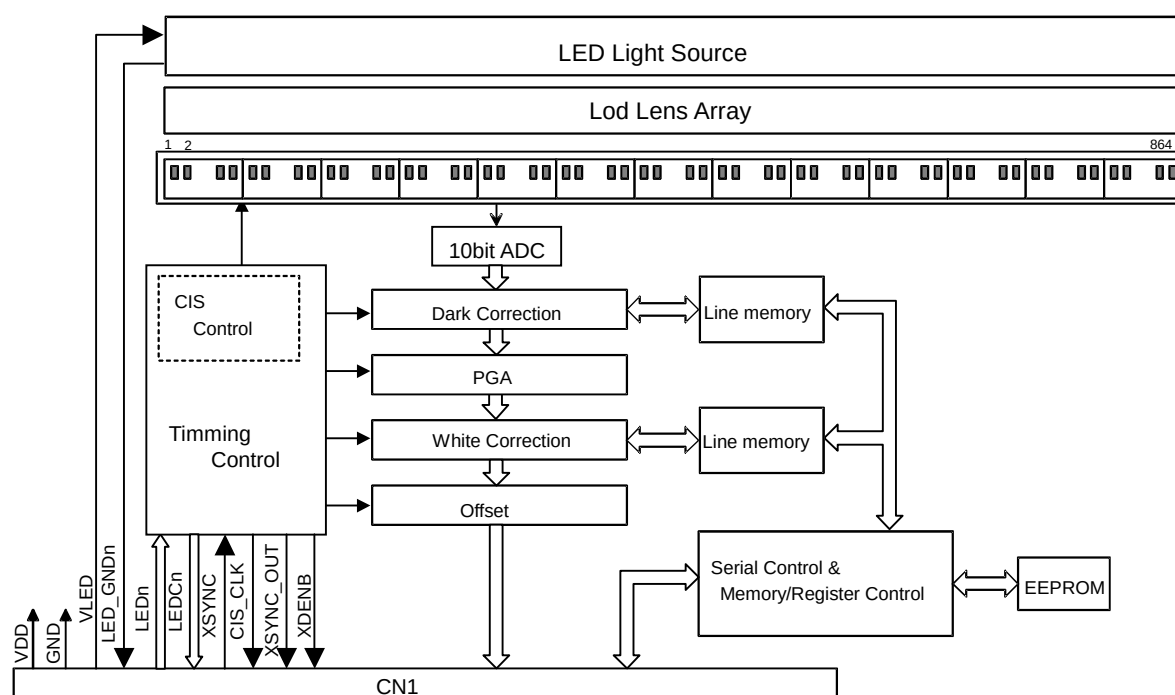
4. Configuration

The configuration of this contact type image sensor is shown in the table below.

Item	Configuration			Remarks
Optical system	Rod lens array			Angular aperture: 20 degrees
Light source	LED light source	Blue	($\lambda = 470\text{nm}$)	(LED1,LED0)=(1,0)
		Green	($\lambda = 525\text{nm}$)	(LED1,LED0)=(0,1)
		Red	($\lambda = 655\text{nm}$)	(LED1,LED0)=(0,0)
		Infra-red	($\lambda = 940\text{nm}$)	(LED1,LED0)=(1,1)
Power supply	For sensor drive		5V $\times$ (0.5A)	TBD
	For LED	Blue	45mAmax.	at LED On duty 1/4
		Green	45mAmax.	
		Red	35mAmax.	
		Infrared	50mAmax.	
Data output mode	8-bit width digital output			TTL output
Digital signal processing	Black output correction by sensitiveness (pixel unit) White output correction by sensitiveness (pixel unit) Gain adjustment (PGA)			PGA : Programmable Gain Amp.
Block diagram	Fig.1			
Timing diagram	Fig.2			
Outline drawing	Fig.4			

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Fig. 1 Internal block diagram



5. Standard Operating Conditions and Property Specifications

This contact type image sensor shall satisfy the following characteristics.

Characteristic specifications

Item	Code	Specifications	Unit	Remarks
White output	DVp	60min.	Hex	Minimum white output value after black correction
White output uniformity	DUd	0Amax.	HEX	Deviation little to the black offset
MTF	%	TBD	%	Resolution at scanning an original of 1.87 LP/mm using light source G

Note) Only black correction is made for standard shipment and no white correction.

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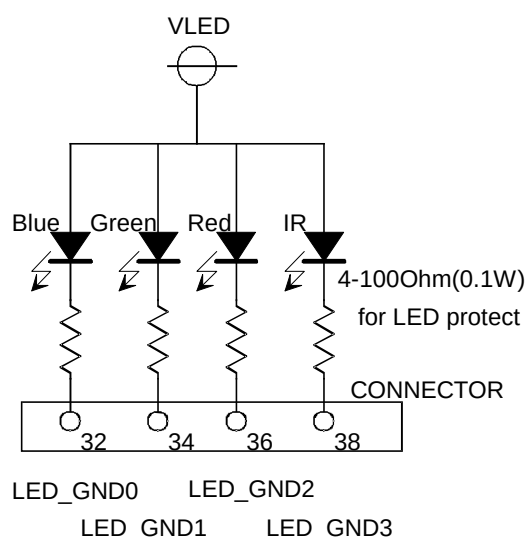
The measurement conditions of characteristic specifications are shown in the following.

Measurement Conditions of Property Specifications

Item	Code	Specifications		Unit	Remarks
Power voltage	VDD	+5.0		V	
LED drive current	I_{LED}	Red	30typ.	mA	at LED On duty 1/4
		Green	40typ.		
		Blue	40typ.		
		Infra-Red	45typ.		
White-basis chart		0.05 - 0.09		O.D.	
Storing time	Trep	250.0		μsec	
Output clock rate	fCIS_CLK	7.0		MHz	
Operating ambient temperature	Ta	25		°C	

- Note) 1) The definition of specification measurement item shall be as follows. The testing chart shall be placed in a stationary state at the scanning position shown in the outline drawing (Fig. 3) for scanning.
 2) Specification measurement shall all be made after black correction.

Fig. 3 LED connection equivalent circuit

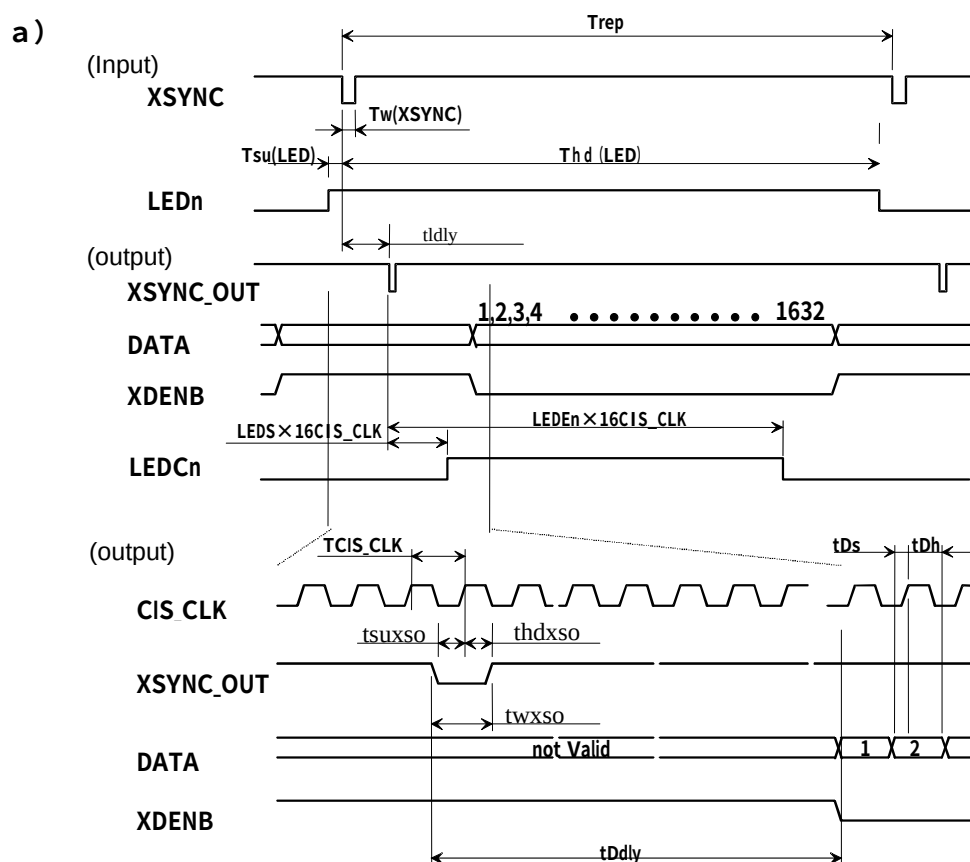


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6. Timing Conditions

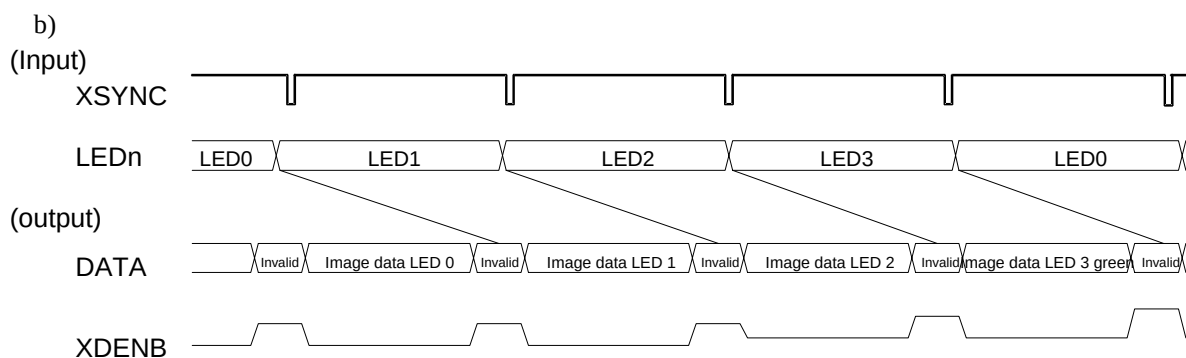
Item	Code	MIN	TYP	MAX	Unit	Remarks
Scanning cycle	Trep		250.0		μsec	XSYNC
XSYNC effective period	Tw(XSYNC)	500			nsec	
CIS_CLK cycle	TCIS_CLK	135	143		nsec	7.0MHz typ.
CIS_CLK duty	—	45	50	55	%	
Output line delay	Tldly		36		CIS_CLK	
XSYNC_OUT effective width	Twxso		1		CIS_CLK	
XSYNC_OUT setup time	Tsuxso	10		50	nsec	
XSYNC_OUT hold time	Thdxso	50			nsec	
Data output delay time	TDdly	18	19	20	CIS_CLK	
DATA setup time	tDs	10		50	nsec	
DATA hold time	tDh	50			nsec	
LED selection setup time	Tsu(LED)	200			nsec	
LED selection hold time	Thd(LED)	2			μsec	

Fig. 2 Timing conditions



- (Note)
1. This diagram is based on CIS_CLK. [clk] in the unit shows the number of CIS_CLKs.
 2. XSYNC is valid only at falling ↓ edge.
 3. LEDS, LEDEn shows Register Values of CIS signal processing unit.

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7. Connector Pin Arrangement

7.1 CN1 (CIS control and signal output)

CN1 pin arrangement

Connector: SM40B-SRDS-G-TF (JST)

Pin No.	Name	Pin No.	Name
1	Data0(LSB)	2	Data1
3	Data2	4	Data3
5	GND	6	GND
7	Data4	8	Data5
9	Data6	10	Data7(MSB)
11	GND	12	GND
13	CIS_CLK	14	GND
15	XSYNC_OUT	16	XDENB
17	VDD	18	VDD
19	XSYNC	20	GND
21	XMW	22	XME
23	XUCS	24	SELBUS
25	UCK	26	GND
27	UDI	28	LEDC0
29	UDO	30	LEDC1
31	VLED	32	LED_GND0
33	LED0	34	LED_GND1
35	LED1	36	LED_GND2
37	LEDC2	38	LED_GND3
39	LEDC3	40	FG

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Outline drawing (Fig. 4)

