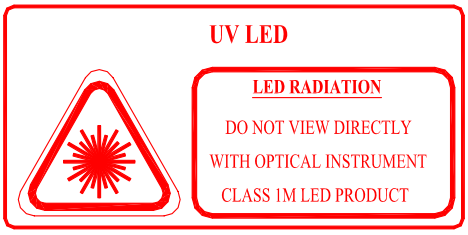
Notice: This is not a final specification.
Outline, some parametric limits and figures are subject to change.

密 CONFIDENTIAL



CONTACT IMAGE SENSOR

ULM2R128X-170704

Approved by customer		

A: 2017.07.04 original Qiu xiao

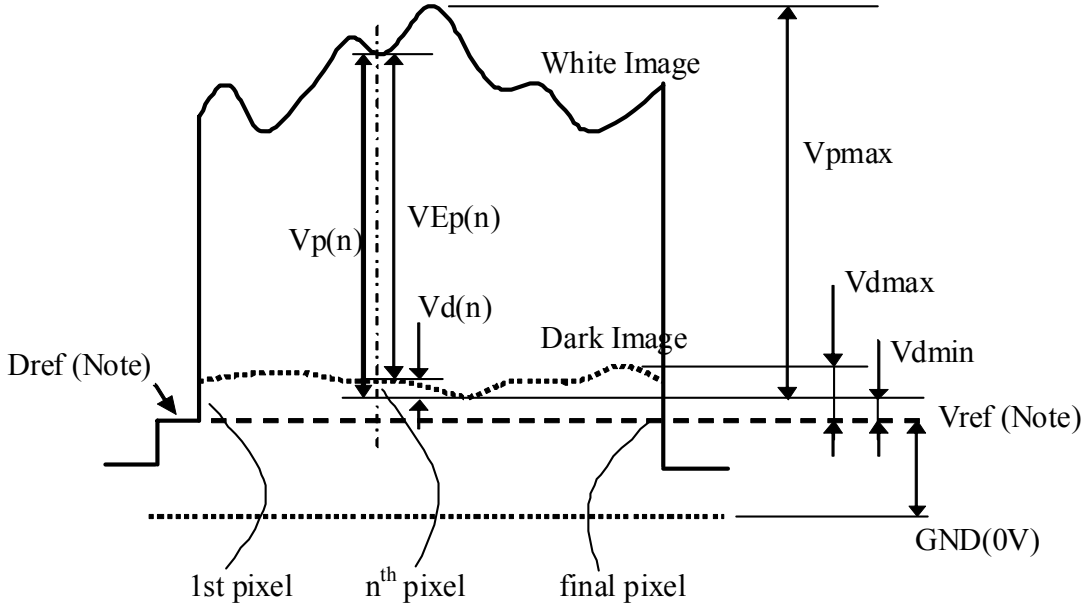
1. Outline

Item		Specification		Note
Scanning width		128 mm		
Sensor element density		200DPI (WHEC TEST)	100DPI	
Effective number of sensor elements		1008 elements (Full 1008 elements)	504 elements (Full 504 elements)	Switched by CNT SI: 200DPI SI: 100DPI
Scanning speed	Color (R/G/B/IR/UV)	66×5 μsec/line	39×5 μsec/line	SI=VDD 600 SI=GND 300
	Black&White:	66 μsec/line	39 μsec/line	
Clock speed		8 MHz		
Rod lens array		Two rows		L15
Light source		Red λp = 630nm ± 15nm 50 mA×2 Green λp = 520nm ± 15nm 50 mA×2 Blue λp = 465nm ± 10nm 50 mA×2 IR λp = 940nm ± 20nm 50 mA×2 UV λp = 365nm ± 15nm 25 mA×4		LED At least two LED vendors
Filter		Filter4		
Power supply		+3.3V×140mA		
Data output 3 analog output		Block #1 288 pixels Block #2 288 pixels Block #3 432 pixels	Block #1 144 pixels Block #2 144 pixels Block #3 216 pixels	Synchronous
Dimensions		Figure 1		

2.Image Data Output Characteristics (Ta = 25ºC)

The shipment test in WHEC is done on the condition of this table at 200 dpi mode.

Item	Symbol	Light Source Specification					Note
		Red	Green	Blue	IR	UV	
DC supply voltage	VDD	+3.3V					Detector Logic
LED supply voltage	VLED	<3.0V	<5.0V	<5.0V	<2.0V	<5.0V	
LED supply current	ILED	50mA×2	50mA×2	50mA×2	50mA×2	25 mA×4	
White image target		0.05~0.09 OD				whec target	
Video reference	Vref	800 ± 200 V					
Dark output minimum	Vdmin	-200 ~ +150mV					
White output maximum	Vpmax	600 ± 100 mV **T.B.D**				300±100mV **T.B.D**	
White output uniformity	UEp	Less than 55%				Less than 65%	**T.B.D**
MTF(MIN)		20%	30%	15%	5%	----	71.37lppi
Linearity	Gamma	1.0 ± 0.05					



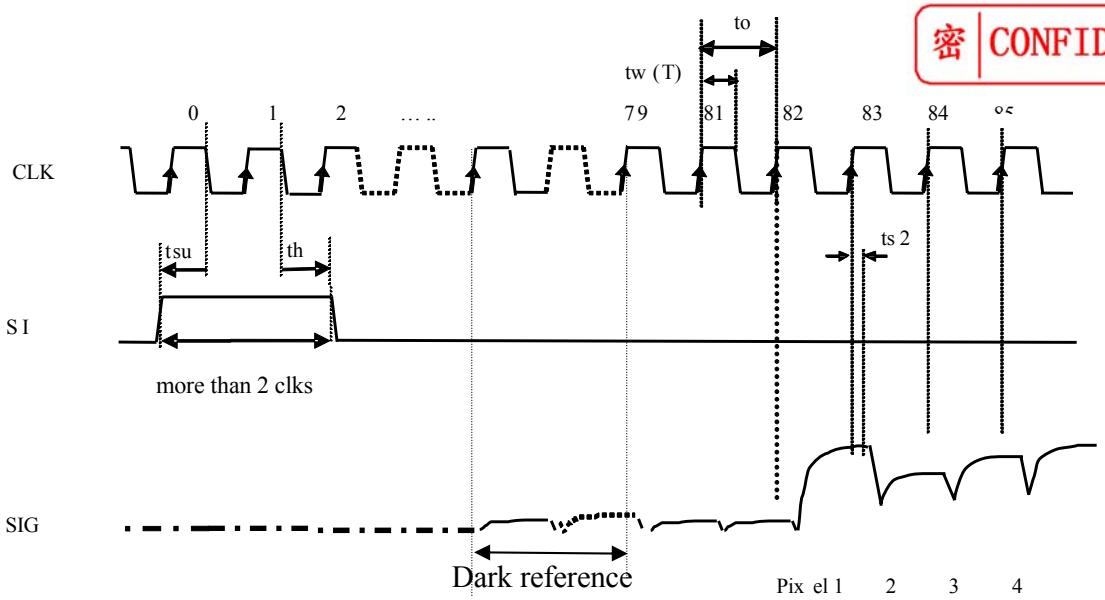
Note1:Vref is the reference voltage for video signals,Do not use the GND instead of Vref

Figure 2. Output Signals Waveform

4.Electrical Characteristics (Ta = 25 ºC)

Item	Symbol	Condition		Specification			Unit
				Min.	Typ.	Max.	
DC Supply Voltage	VDD	GND reference		3.13	3.3	3.47	V
DC Supply Current	IDD	VDD = 3.3V			140	260	mA
LED Forward Voltage	VFred	IF=20mA IF=30mA IF=40mA IF=60mA		1.8 2.1 2.1 2.3	2.0 2.3 2.4 2.5	2.2 2.5 2.6 2.7	V V V
	VFgreen	IF=20mA IF=30mA IF=40mA IF=60mA		3.0 3.3 3.4 3.6	3.2 3.6 3.8 4.0	3.5 4.0 4.1 4.4	V V V
	VFblue	IF=20mA IF=30mA IF=40mA IF=60mA		3.1 3.3 3.4 3.6	3.3 3.7 3.8 4.0	3.5 4.1 4.2 4.3	V V V
	VFir	IF=20mA IF=30mA IF=40mA IF=60mA		1.1 1.2 1.2 1.4	1.2 1.4 1.4 1.5	1.4 1.5 1.6 1.6	V V V
	VFuv	IF=30mA IF=40mA IF=60mA		3.5 3.6 4.4	3.4 3.4 3.5	3.9 4.0 4.8	V V V
Input voltage **(Note1)**	VIH	SI,CLK		2.4			V
	VIL					0.5	V
Input Current **(Note1)**	IIH	SI,CLK				5	mA
	IIL			-0.5			µA
Clock frequency	f	CLK			8		MHz
Clock pulse duty		tw(T)/to; to=1/f		48	50	52	%
SI setup time	tsu	SI-CLK	**(Note 2)**	30		to	ns
SI hold time	th	SI-CLK		30		5×to	ns
Data output stability time	ts2	CLK-SIG		20		30	ns

Note 1) 74HC244 or equivalent is recommended for input signal.
Note 2) These are reference values, tsu, th, ts2 are determined according to the evaluation of user's device.

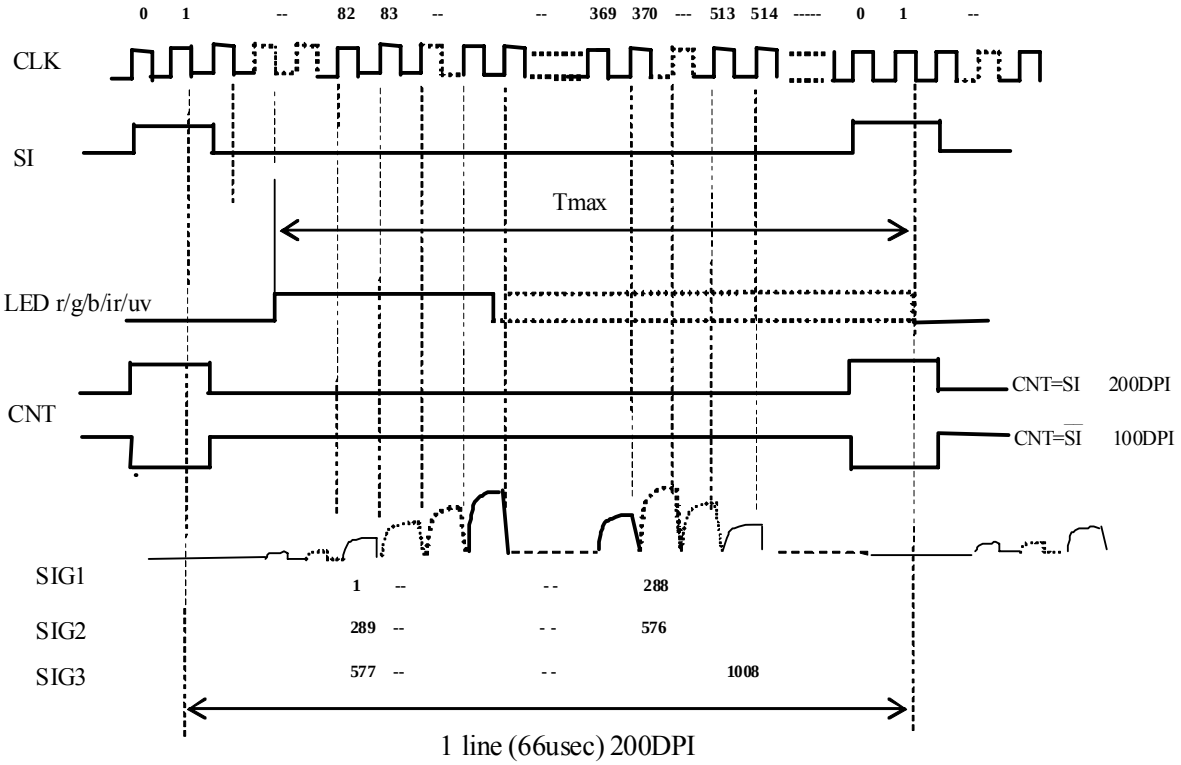


Dark reference for Dref appears between clock 75# to 79#; Dark dummy stable time is as same as ts2.

Figure 3. Timing Diagram

CLK:8MHz (L:duty 50%)

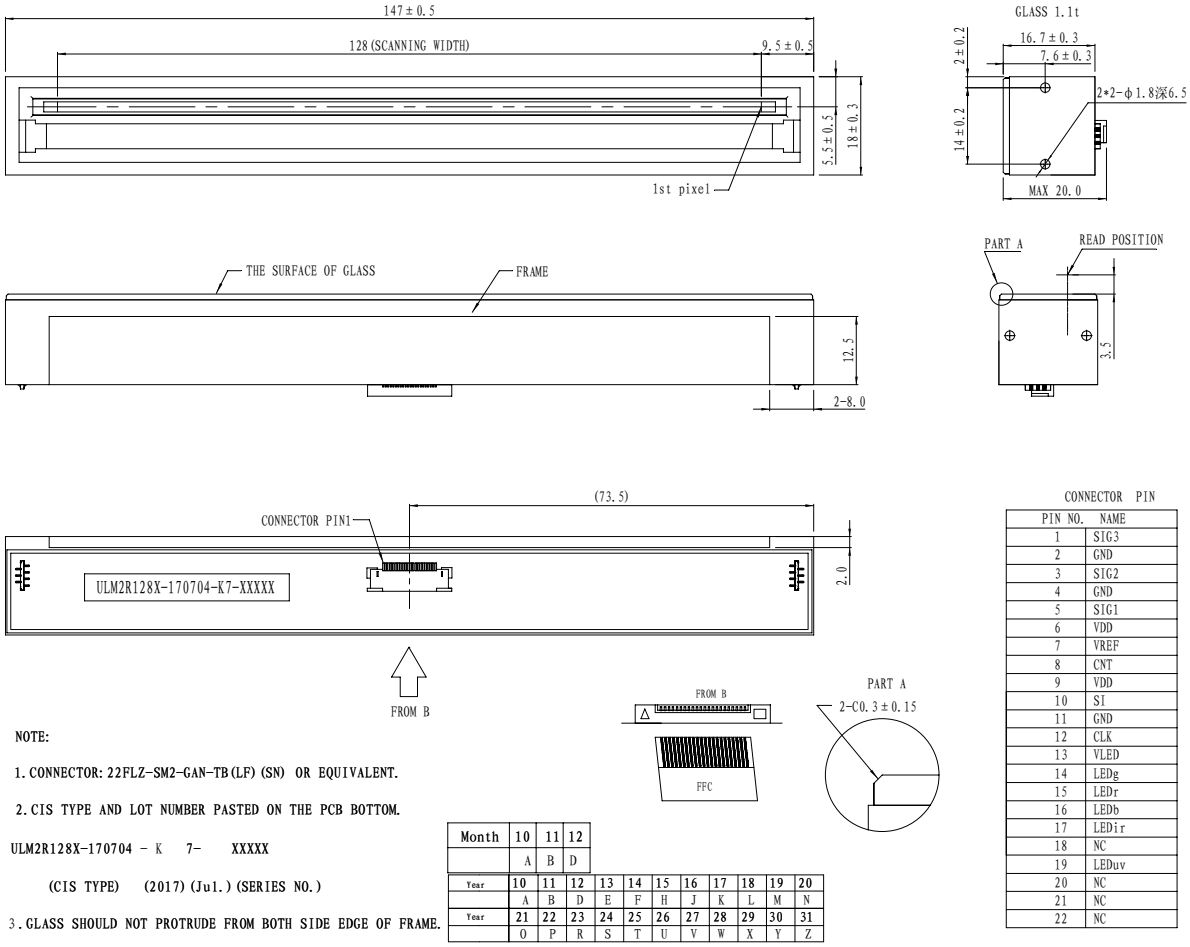
This is the WHEC shipping test condition.



Note: After 288#,576#,1008#signal,at least 8 clocks needed.

Figure4. Timing Diagram(This is WHEC shipping test condition)

Figure1.Dimensions



CONNECTOR PIN

PIN NO.	NAME
1	SIG3
2	GND
3	SIG2
4	GND
5	SIG1
6	VDD
7	VREF
8	CNT
9	VDD
10	SI
11	GND
12	CLK
13	VLED
14	LEDg
15	LEDr
16	LEDb
17	LEDir
18	NC
19	LEDuv
20	NC
21	NC
22	NC

NOTE:

1. CONNECTOR: 22FLZ-SM2-GAN-TB(LF)(SN) OR EQUIVALENT.

2. CIS TYPE AND LOT NUMBER PASTED ON THE PCB BOTTOM.

ULM2R128X-170704 - K 7- XXXXX

(CIS TYPE) (2017)(Jul.)(SERIES NO.)

3. GLASS SHOULD NOT PROTRUDE FROM BOTH SIDE EDGE OF FRAME.

Month	10	11	12
	A	B	D

Year	10	11	12	13	14	15	16	17	18	19	20
	A	B	D	E	F	H	J	K	L	M	N
Year	21	22	23	24	25	26	27	28	29	30	31
	O	P	R	S	T	U	V	W	X	Y	Z