

Purpose :

To define the 200 DPI Contact Image Sensor ( CIS ) electrical characteristics, maximum rating, and operational conditions.

Scope:

All DYNA IMAGE' s DL100-05AUJT, 200 DPI A4 size contact image sensor specifications.

1. Product Description

Outline	232.0mm×17.5mm×11.15mm
Readable Width	216mm ( Effective Width 215 mm )
Number Of Sensor Elements	1728 ( 1~1720 dots available )
Resolution	8 dots/mm
Scanning speed	5 msec/line
Light Source	Wavelength 570 nm
Data Output	1 Analogue

2. Electrical Characteristics at 25 °C

Item	Symbol	Note	Min.	Typ.	Max.	Unit
Power Supply	VDD	Ref. To GND	4.75	5.00	5.25	V
	VLED		22.8	24.0	25.2	V
Input CLK Voltage	VIH	SI & CLK	3.2			V
	VIL				0.8	V
Input CLK Current	IIH	SI & CLK			20	uA
	IIL				-0.2	mA
CLK Frequency	Fmax			0.5	0.75	MHz

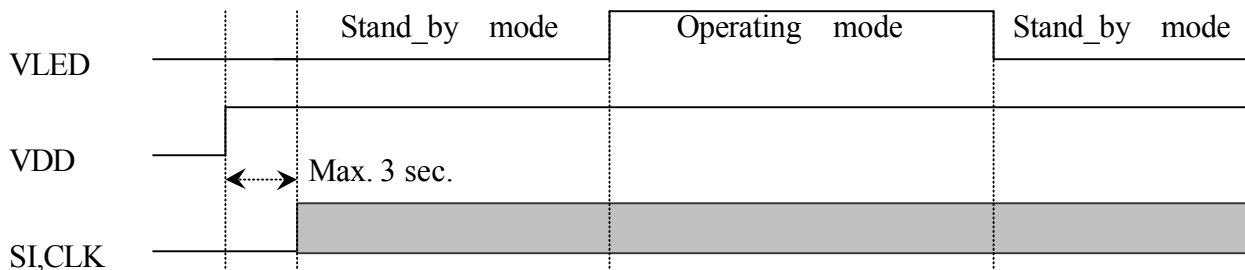
### 3 Absolute Maximum Rating

Item	Symbol	Maximum Rating	Unit
Power Supply	VDD	6	V
	IDD	40	mA
	VLED	26	V
	ILED	120	mA
Input Signal	VH	VDD+0.5	V
	VL	-0.5	V
Storage Temperature	TSTG	-20 to 60	°C
Storage Humidity	HSTG	10 to 85	%RH
Operating Temperature	TOP	0 to 50	°C
Operating Humidity	HOP	10 to 85	%RH

### 4. Recommended Operating Conditions at Ta= 25 °C

Item	Symbol	Spec.	Unit	Note
Power Supply	VDD	+5.0	V	
	VLED	+24.0	V	LED voltage
Bright Output Max	VRmax	2.0±0.3	V	O.D.=0.05~0.09
Bright Output Min	VRmin	>VRmax*0.537	V	O.D.=0.05~0.09
Dark Output	Vd	0~200	mV	LED Off
Dark Output Uniformity	Ud	Max. 200	mV	LED Off
Modulation Transfer Function	MTF	Min. 30	%	4.0 lp/mm
Linearity	$\gamma$	0.8 to 1.1		O.D. = 1.2

#### 4.1. Recommended Conditions at “STAND\_BY MODE”



1>. The Max. delay time is 3 sec after Power\_on.

2>. The CLK & SI need to keep during the “Stand\_By mode”.

PRODUCT SPECIFICATION	DYNA IMAGE CO.	INTERNAL DATA STRICTLY PRIVATE
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### 5. Pin functional Description

No.	Signature	Name	Description
1	SIG	Signal Output	Video Output Signal From Amplifier
2	GND	Ground	0 V DC; Reference Point
3	VDD(+5V)	Supply Voltage	+5V DC Supply Voltage Ref. To GND
4	SI	Start Pulse	Adjust Integration Time
5	CLK	Clock	CIS Main Clock
6	GLED	GND for LED	Ground For Light Source
7	VLED(+24)	VLED for LED	Supply Voltage (+24V) For Light Source

### 6. Definition

(1) Bright output Max. is defined as follows:

$$VR_{max} = \text{Max}(V_{pn} - V_{dn})$$

$V_p$ : The Output Value Measured White Paper Of O.D.=0.05~0.09 (reference to GND)

$V_d$ : The Output Value Measured When LEDs Off (reference to GND)

$n=1\sim 1720$  pixel

(2) Bright output Min. is defined as follows:

$$VR_{min} = \text{Min}(V_{pn} - V_{dn})$$

$V_p$ : The Output Value Measured White Paper Of O.D.=0.05~0.09 (reference to GND)

$V_d$ : The Output Value Measured When LEDs Off (reference to GND)

$n=1\sim 1720$  pixel

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(3) Dark output level is defined as the output of the sensor when LEDs is off.

(4) Ud is defined as follows:

$$Ud = Vd(max) - Vd(min)$$

(5) MTF is defined as follows:

$$MTF = \frac{V_{max} - V_{min}}{V_{max} + V_{min}} \times 100(\%)$$

Vmax, Vmin: The output reading of 4.0 lp/mm test chart(reference to Vd).

(6) Gamma is tested as follows:

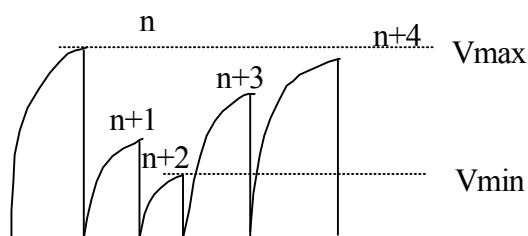
1>. Test Vp(avg) by PC\_TESTER, when Vled = + 24.0 V and O.D. chart = 0.08 ( Reflection = R1 )

2>. Test Vp(gray) by PC\_TESTER, change LED voltage and O.D. chart = 0.08 to simulate O.D. = 1.20 ( Reflection = R2 )

$$3>. Vp(avg) , Vp(gray) = \frac{\sum Vp(i)}{1720}$$

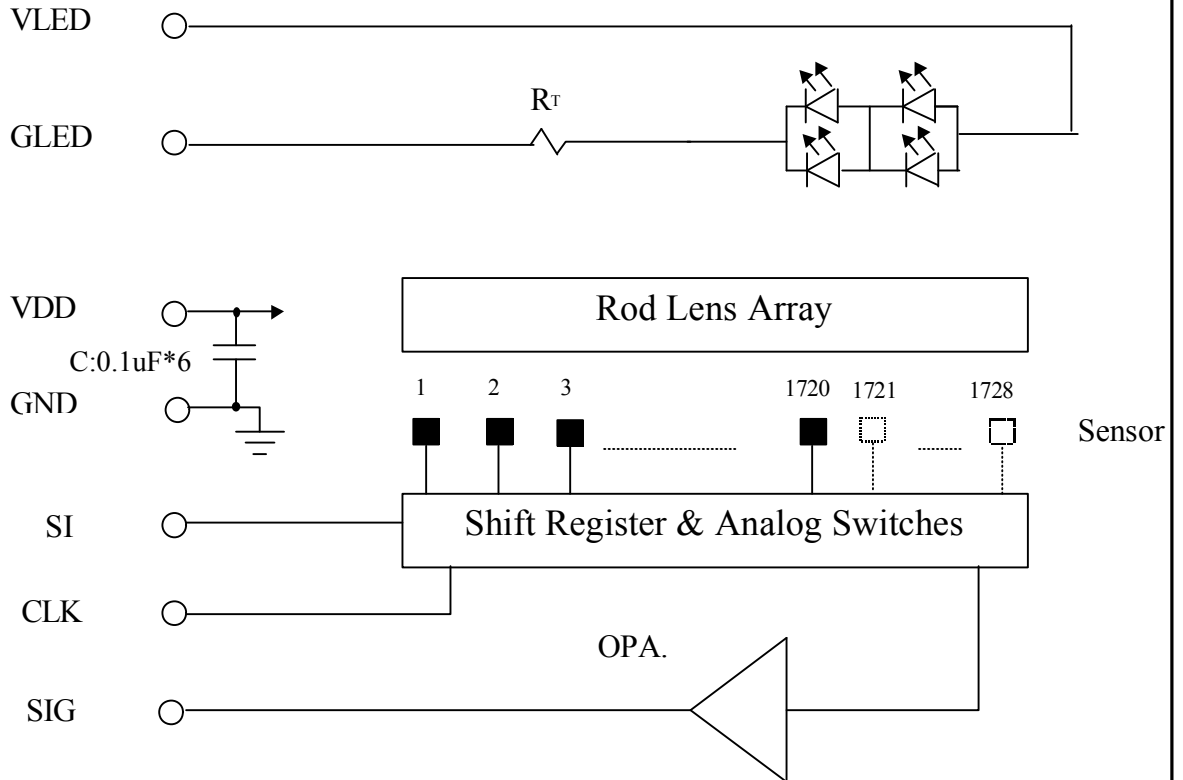
$$4>. \text{Gamma} = \frac{\text{Log} ( Vp(avg)/Vp(gray))}{\text{Log} ( R1/R2)}$$

(7). Particle testing method:

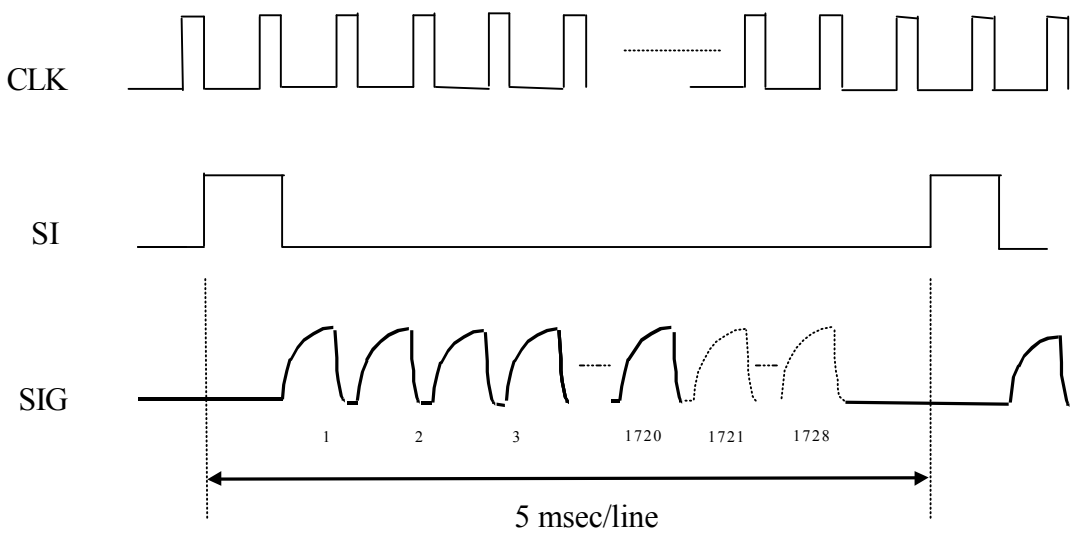


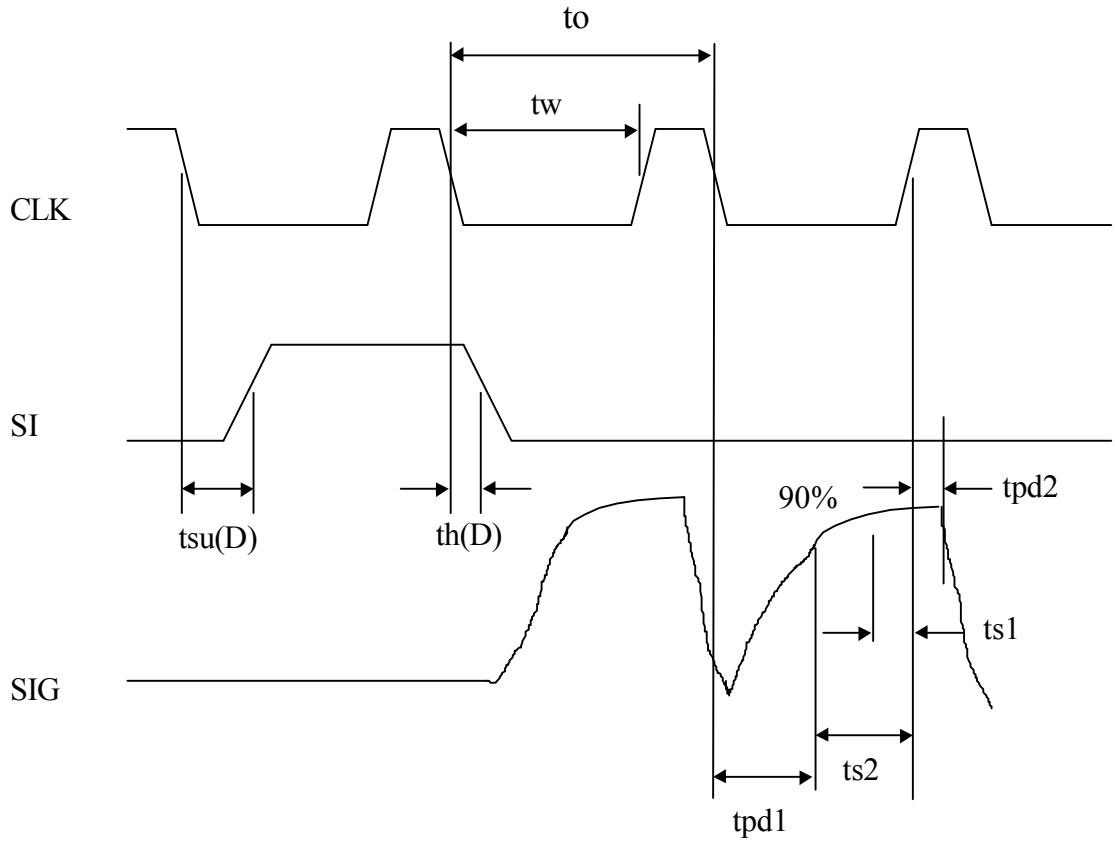
$$V_{gap} = V_{max} - V_{min} \leq 0.5 \text{ V}$$

7. Block Diagram



8. Timing Chart CLK=500 KHz ( High Duty Cycle 25% )





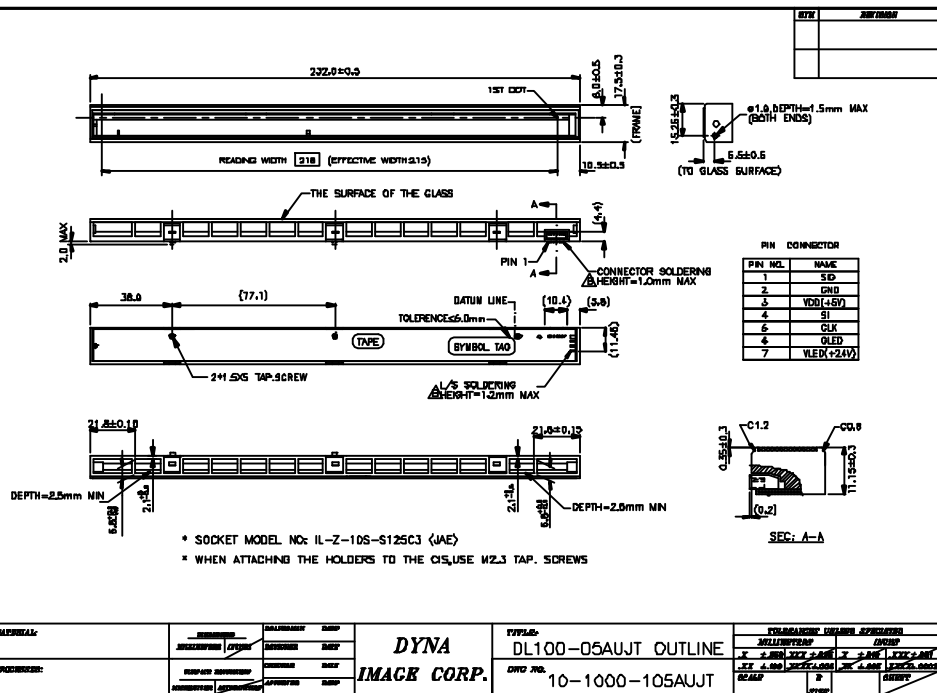
Item	Symbol	Min.	Typ.	Max.	Unit
Clock Frequency	$F_{max} = 1/t_o$		500	750	KHz
Clock Duty	$t_w/t_o$		75		%
Setup Time	$t_{su}(D)$	5		$t_w$	ns
Hold Time	$t_{h}(D)$	5		$t_w$	ns
SIG Delay Time	$t_{pd1}$	0		1100	ns
	$t_{pd2}$	0		300	ns
SIG Stable Time	$t_{s1}(*note1)$	50			ns
	$t_{s2}(*note2)$			250	ns

\*note1: We recommend user to sample signal in this region.

\*note2:  $t_{s2}$  is the time period which output signal is during its 90%~100%.

\* Technical information in this document is subject to change without notice.

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MATERIAL:	RESIN	PC	PC	DINA	DL100-05AUJT OUTLINE	DRAWING NO.	10-1000-105AUJT	DATE	REV.
	REVISION	DATE	DATE						
FINISHES:	RESIN	PC	PC	IMAGE CORP.	DRAWING NO.	10-1000-105AUJT	DATE	REV.	
	REVISION	DATE	DATE						