

PRODUCT SPECIFICATION	DYNA IMAGE CO.	INTERNAL DATA STRICTLY PRIVATE																																																																						
1. Purpose : This specification applies to A3, 300DPI DL408-03CSM Color Contact Image Sensor Module. 2. Outline : The CIS module consists of a rod lens array, a cold-cathode fluorescent lamp, an al-case, a substrate on which a 3-line R,B,G sensor is mounted,...etc. 3. Specification : <table><tr><td>Readable width</td><td>308.8mm</td></tr><tr><td>Number of sensor elements</td><td>3648 pixel/color</td></tr><tr><td>Resolution</td><td>300 dpi/color</td></tr><tr><td>Distance between adjacent sensor arrays</td><td>300 dpi</td></tr><tr><td>Scanning speed (color)</td><td>3.8 ms/line (R, G, B)</td></tr><tr><td>Scanning speed (mono)</td><td>1.9 ~ 10 ms/line</td></tr><tr><td>Light source</td><td>CCFL</td></tr><tr><td>Data output</td><td>3 analogue (parallel)</td></tr><tr><td>Outward dimension (W*H*L)</td><td>18.7*19.3*345.0 mm (attachment)</td></tr></table> 4. Pin Function Description : (CIS Module) <table><tr><td>No.</td><td>Signature</td><td>Name</td><td>Description</td></tr><tr><td>1</td><td>Vdd</td><td>Supply voltage</td><td>+5 V DC supply (ref. to gnd)</td></tr><tr><td>2</td><td>Gnd</td><td>Ground</td><td>0V DC ; reference point</td></tr><tr><td>3</td><td>SigG</td><td>Signal output (G)</td><td>Video output signal (green)</td></tr><tr><td>4</td><td>Gnd</td><td>Ground</td><td>0V DC ; reference point</td></tr><tr><td>5</td><td>SigR</td><td>Signal output (R)</td><td>Video output signal (red)</td></tr><tr><td>6</td><td>Gnd</td><td>Ground</td><td>0V DC ; reference point</td></tr><tr><td>7</td><td>Gnd</td><td>Ground</td><td>0V DC ; reference point</td></tr><tr><td>8</td><td>SigB</td><td>Signal output (B)</td><td>Video output signal (blue)</td></tr><tr><td>9</td><td>Gnd</td><td>Ground</td><td>0V DC ; reference point</td></tr><tr><td>10</td><td>Si</td><td>Start pulse</td><td>Adjust integration time</td></tr><tr><td>11</td><td>Gnd</td><td>Ground</td><td>0V DC ; reference point</td></tr><tr><td>12</td><td>Clk</td><td>Clock</td><td>CIS main clock</td></tr></table>			Readable width	308.8mm	Number of sensor elements	3648 pixel/color	Resolution	300 dpi/color	Distance between adjacent sensor arrays	300 dpi	Scanning speed (color)	3.8 ms/line (R, G, B)	Scanning speed (mono)	1.9 ~ 10 ms/line	Light source	CCFL	Data output	3 analogue (parallel)	Outward dimension (W*H*L)	18.7*19.3*345.0 mm (attachment)	No.	Signature	Name	Description	1	Vdd	Supply voltage	+5 V DC supply (ref. to gnd)	2	Gnd	Ground	0V DC ; reference point	3	SigG	Signal output (G)	Video output signal (green)	4	Gnd	Ground	0V DC ; reference point	5	SigR	Signal output (R)	Video output signal (red)	6	Gnd	Ground	0V DC ; reference point	7	Gnd	Ground	0V DC ; reference point	8	SigB	Signal output (B)	Video output signal (blue)	9	Gnd	Ground	0V DC ; reference point	10	Si	Start pulse	Adjust integration time	11	Gnd	Ground	0V DC ; reference point	12	Clk	Clock	CIS main clock
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(CCFL lamp)

No.	Signature	Name	Description
3	VGnd	Ground	0V DC ; reference point
2	N.C.	No Connection	No Connection
1	VCCFL	Supply voltage	Lamp input voltage

5. Recommended Operating Condition :

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply	Vdd	4.75	5.00	5.25	V	
Input Voltage	VIH	3.2			V	SI & CLK
	VIL			0.8	V	
Input Current	IIH			20	uA	SI & CLK
	IIL			-0.2	mA	
Inverter Input Voltage	VIN		15.0		V	
Inverter Input Current	IIN		330	400	mA	
Lamp Current	IL	6.50	7.00	7.50	mArms	
Driving Frequency	F	24.0	29.0	34.0	KHz	
Rush Current	RI			600	mA	
No Load Output Voltage	VS	1450	1600		Vrms	
Clock Frequency	Clk		1.0		MHz	
Clock Pulse "L" Duty			75		%	tw/to °∞
Start Pulse Period	Si		3.8		ms	°∞
Start Pulse Width			to		ns	°∞
Rise Time	tr			20	ns	°∞
Fall Time	tf			20	ns	°∞
Delay Time	tdsi1	tw/8		7tw/8	ns	°∞
Delay Time	tdsi2	tw/8		7tw/8	ns	°∞
Sig O/P Sampling Time	ts2	50	100	150	ns	°∞

°∞refer to item-10 timing chart

Note : CCFL Lamp warm up time : 30 seconds (minimum @Ta = 25°C)

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6. Absolute Maximum Rating : (@ Ta=25℃J)

Item	Symbol	Maximum Rating	Unit	Note
Power Supply	Vdd	6.0	V	
Input Signal	VIH	Vdd + 0.5	V	SI, CLK terminal
	VIL	-0.5	V	
Operating Temp.		0 ~ 50	℃J	°Ø°Ø
Operating Humidity		10 ~ 80	%RH	
Storage Temperature		-25 ~ 70	℃J	
Storage Humidity		10 ~ 80	%RH	

°Ø°Ø: The operating temperature shall be measured at the location (AI-case) as below.

Measuring point

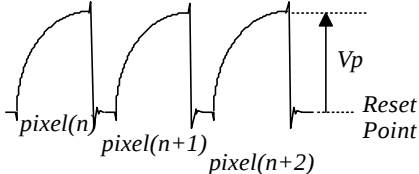
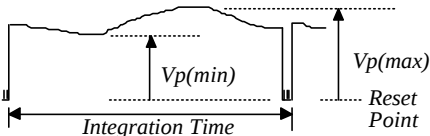
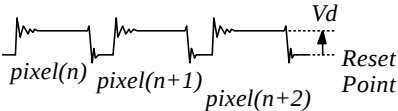
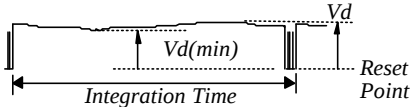
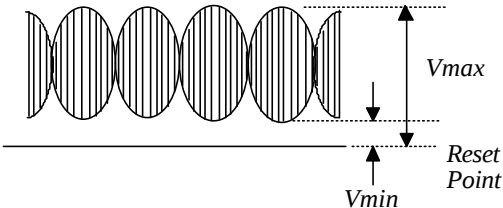


7. Electro-Optical Characteristic : (@ Ta=25℃J , Clk=1.0Mhz , Si=3.8msec)

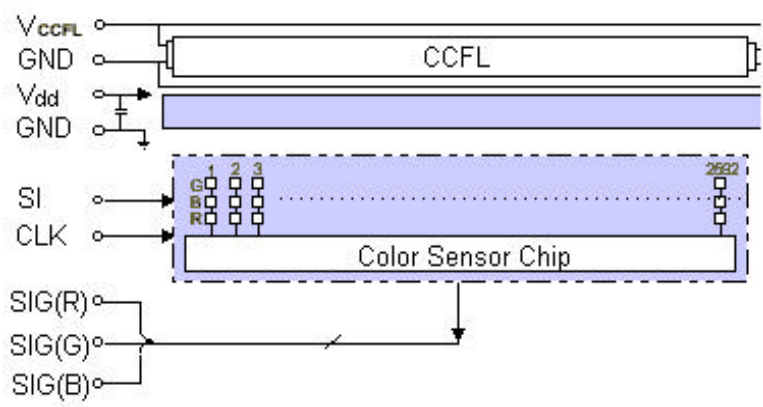
Item	Symbol	Min.	Typ.	Max.	Unit	Note
Bright Output	Vp(R)	360	500	900	mV	O.D. = 0.05 ~ 0.09
	Vp(G)	360	480	900		
	Vp(B)	320	420	900		
Bright Output Uniformity	Up	-30		+30	%	
Dark Output	Vd			120	mV	CCFL turn off
Dark Output Uniformity	Ud			120	mV	
Modulation Transfer Function (main scanning)	MTF	30			%	5.85lp/mm chart
Sig Delay Time	tpd			400	ns	
Sig Output Stability Time	tsl	350			ns	
Current Consumption	Idd		22	25	mA	
Gamma value	γ	0.8		1.1		
Chip Slant (Y axis)				42	°gm	

note: MTF is measured at 2.50 to 2.80 mm above the surface of al . case .

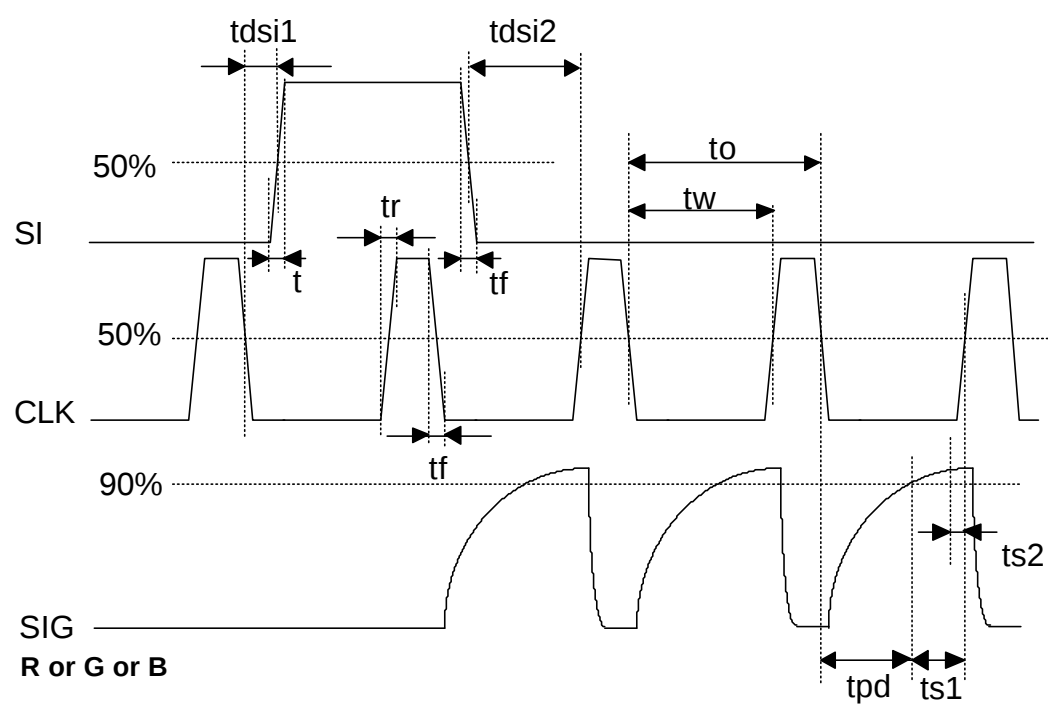
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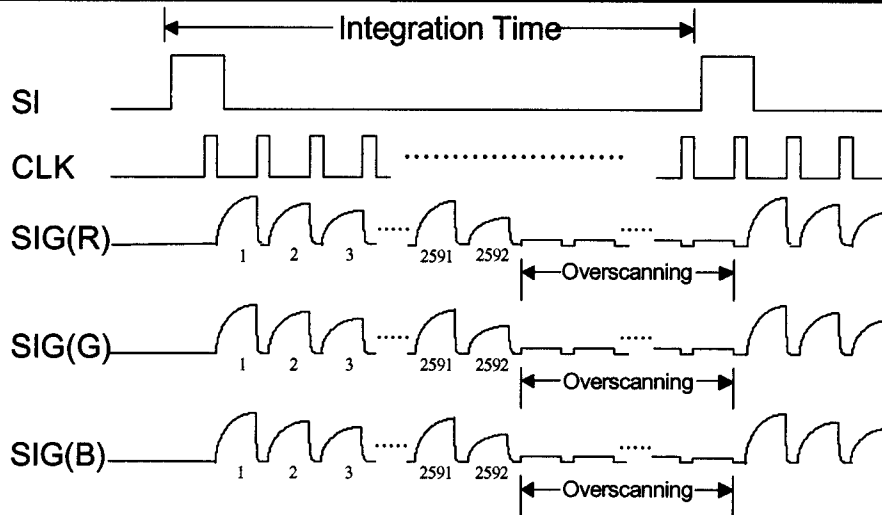
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8. Definition of Electrical Characteristics : (1) Bright Output : $V_p = \frac{V_p(\max) + V_p(\min)}{2}$ $V_p(\max)$ and $V_p(\min)$ are the maximum and minimum output values measured with white paper of O.D.=0.05 ~ 0.09. (2) Bright Output Uniformity : $U_p = \frac{V_p(\max) - V_p}{V_p} * 100\% \text{ or }$ $U_p = \frac{V_p - V_p(\min)}{V_p} * 100\%$ (3) Dark Output : V_d, the maximum output value among all sensor elements as CCFL turn off. (4) Dark Output Uniformity : $U_d = V_d - V_d(\min.)$ the difference between maximum and minimum dark voltage among all sensor elements (5) Modulation Transfer Function : $MTF = \frac{V_{\max} - V_{\min}}{V_{\max} + V_{\min}} \times 100(\%)$ $V_{\max}$ and $V_{\min}$ are the maximum and minimum output readings with 5.85 lp/mm chart. (6) Gamma Value : $g = \frac{\text{Log}[(V_2 - V_d) / (V_1 - V_d)]}{\text{Log}(t_2 / t_1)}$ V_1, V_2 are the output at storage time t_1 and t_2 respectively. Gamma value measured far away from chip saturation region.		
    		
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9. Block Diagram :



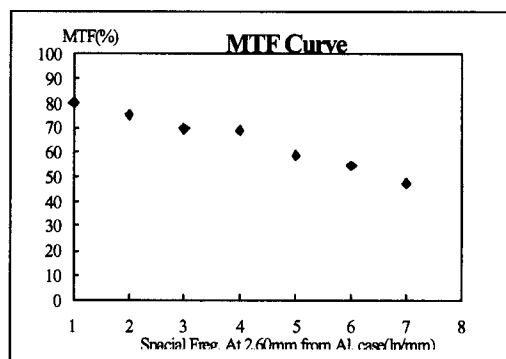
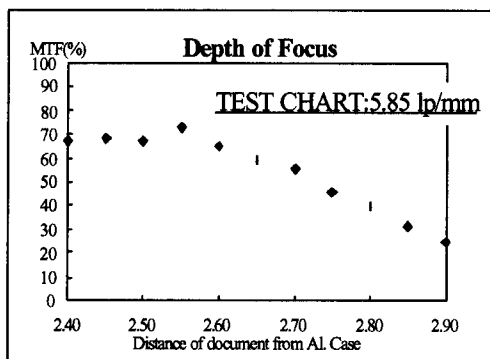
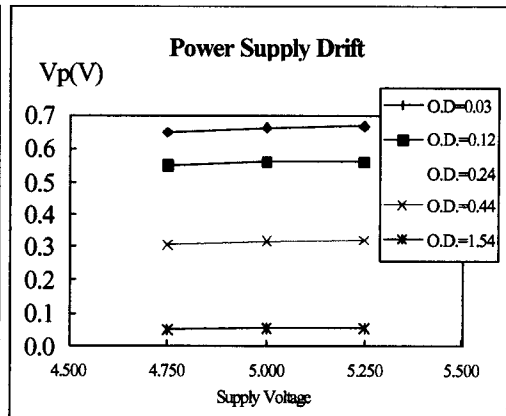
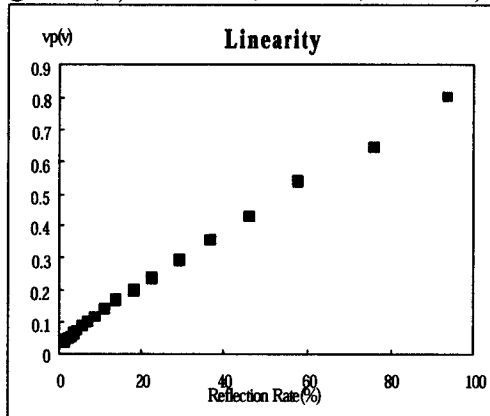
10. Timing Chart :





11. Standard Characteristic Curves of Green Output (for reference only)

(@ Ta=25°C, Clk=1.0Mhz, Si=3.8ms, Vdd=5.0V)



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