DISPLAY Elektronik GmbH

DATA SHEET

5,7” TFT MODULE

DEM 320240H TMH-PW-N

Product specification **Version: 4.0**

24.05.2007

REVISION HISTORY:				
Revision	Date	Description	Written By	Approved By
1.0	09-May-2007	New Release.	XH	MH
2.0	21-May-2007	1) add "Number of color" and "weight" in the Item 1.0. 2) Modify "outline drawing" 3) Modify "LOT NUMBERING SYSTEM".	XH	MH
3.0	02-JUL.-2007	1) Modify the unit of pixel size from mm change to μm.	XH	JY
4.0	23-JUL-2007	1) Modify "OUTLINE DRAWING" 2) Modify "PACKAGING STANDARD"	XH	MH

CONTENTS

1.0 GENERAL SPECIFICATION

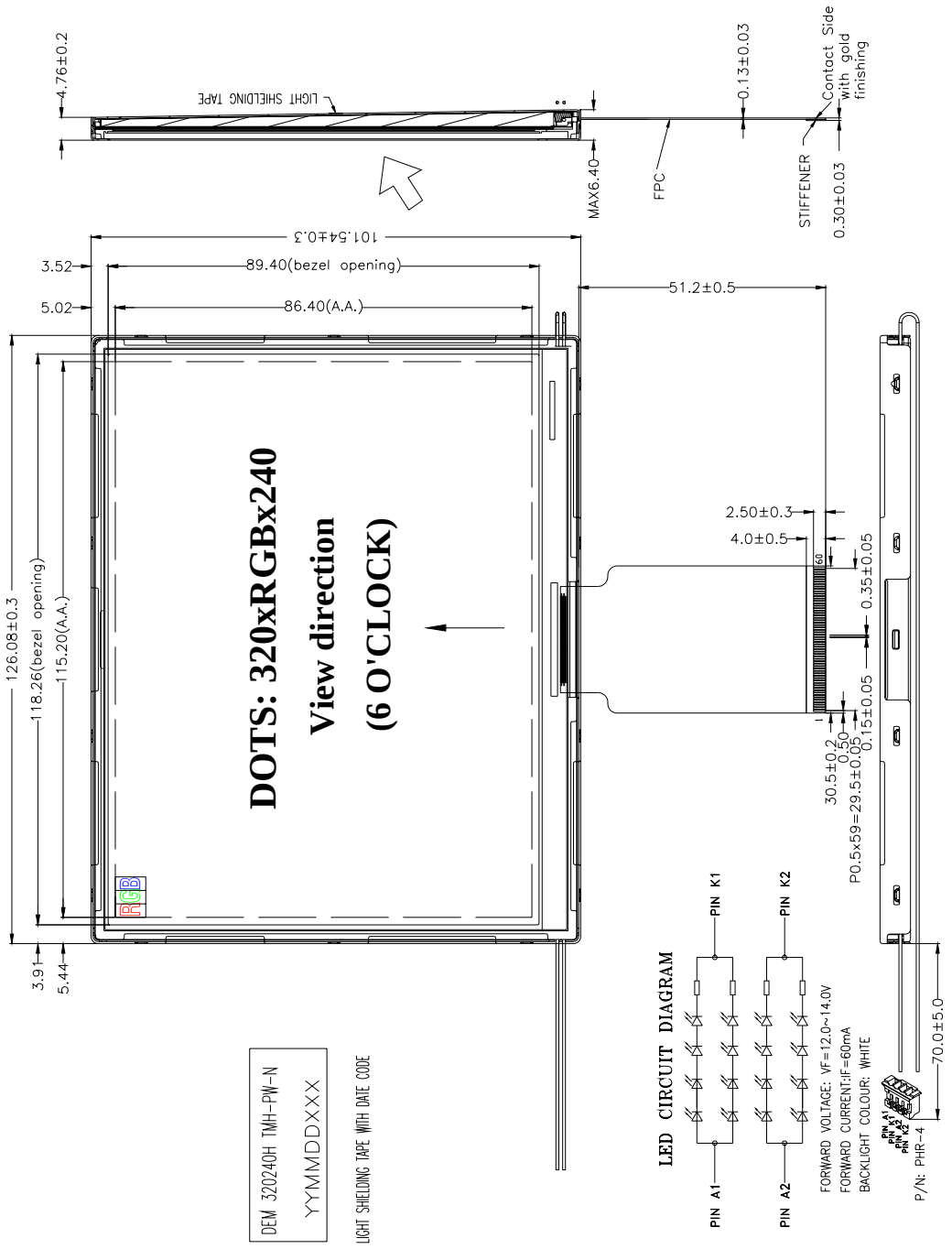
Item	Contents	Unit
Display Technology	5.7 inch A-Si TFT active-matrix Transmissive	-
Module Outer Dimension	126.08 x 101.54 x 6.4 (max.)	mm
Pixel Size	0.120(RGB) x 0.360	mm
Effective Display Area	115.2 x 86.4	mm
Number of Dots	320(RGB) x 240	dots
Viewing Direction	6	O'clock
Color-Filter-Array	RGB Stripe	-
Number Of Colors	16M	-
Backlight	LED white backlight, long-lifetime	-
IC	Source driver: HX8218; Gate driver: HX8615 (see note 1)	-
Interface type	Digital 8-bit serial/24-bit parallel RGB, CCIR601/656	-
Operating temperature	Wide Temperature, -20°C ~ 70°C	°C
Storage temperature	Wide Temperature, -30°C ~ 80°C	°C
Weight	~ 124	g
Other features	▪ DE (Data Enable, Dotclk) mode, SYNC (Vsync, Hsync, Dotclk) mode ▪ Built-in TCON and DAC ▪ Support NTSC/PAL TV system ▪ Line inversion mode ▪ Ultra low power consumption	

Note 1: Please also refer to the IC datasheet for detailed driving informations.

2.0 OUTLINE DRAWING

PIN ASSIGNMENT:

PIN	SYMBOL	PIN	SYMBOL
1	VCOM	31	D14
2	OSD_HS	32	D15
3	OSD_VS	33	D16
4	OSD_CLK	34	D17
5	OSD_R	35	D20
6	OSD_G	36	D21
7	OSD_B	37	D22
8	OSD_EN	38	D23
9	DVCC	39	D24
10	ZX1	40	D25
11	ZX2	41	D26
12	ZX3	42	D27
13	DEN	43	QXH
14	IVS	44	NPC
15	IHS	45	POL
16	CLK	46	SPDA
17	D00	47	SPCK
18	D01	48	SPENA
19	D02	49	IF1
20	D03	50	IF2
21	D04	51	LRC
22	D05	52	UD
23	D06	53	RESETB
24	D07	54	DGND
25	AVSS	55	VGH
26	AVDD	56	VEE
27	D10	57	DVDD
28	D11	58	DVSS
29	D12	59	NC
30	D13	60	NC



3.0 INTERFACE PIN DESCRIPTION

Pin NO.	Symbol	Function
1	VCOM	Common electrode driving signal.
2	OSD_HS	OSD Hsync output.
3	OSD_VS	OSD Vsync output.
4	OSD_CLK	OSD clock output.
5	OSD-R	OSD red data input. Normally pull low.
6	OSD-G	OSD green data input. Normally pull low.
7	OSD_B	OSD blue data input. Normally pull low.
8	OSD_EN	OSD enable input. Normally pull low.
9	DVCC	Digital power for source driver. 3V ~ 3.6V.
10	ZX1	Zoom in/out mode setting pin.
11	ZX2	Zoom in/out mode setting pin.
12	ZX3	Zoom in/out mode setting pin.
13	DEN	Input data enable control. Normally pull low.
14	IVS	Vertical sync input in digital RGB mode.
15	IHS	Horizontal sync input in digital RGB mode.
16	CLK	Clock signal. Latching data at the rising edge.
17 ~ 24	D00 ~ D07	Digital data input.
25	AVSS	Analog ground.
26	AVDD	Analog power. 4.5V ~ 5.5V.
27 ~ 34	D10 ~ D17	Digital data input.
35 ~ 42	D20 ~ D27	Digital data input.
43	QXH	Reference signal for video decoder to arrange data sequence.
44	NPC	NTSC or PAL mode auto detection result.
45	POL	Polarity select for the line inversion control signal.
46	SPDA	Serial port Data input/output.
47	SPCK	Serial port Clock. Normally pull high.
48	SPENA	Serial port Data Enable Signal. Normally pull high.
49	IF1	Control the input data format.
50	IF2	Control the input data format.
51	LRC	The shift direction of device internal shift register setting pin.
52	UD	Up/down scan setting.
53	RESETB	Hardware global reset. Low active. Normally pull high.
54	DGND	Digital ground for source driver.
55	VGH	Power supply for LCM Gate High (+15V)
56	VEE	Power supply for LCM Gate Low (-7V).
57	DVDD	Digital power supply for Gate Driver.
58	DVSS	Digital ground for Gate Driver.
59	NC	No connection.
60	NC	No connection.

Input Signal, Basic Display Colors and Gray Scale of Each Colors

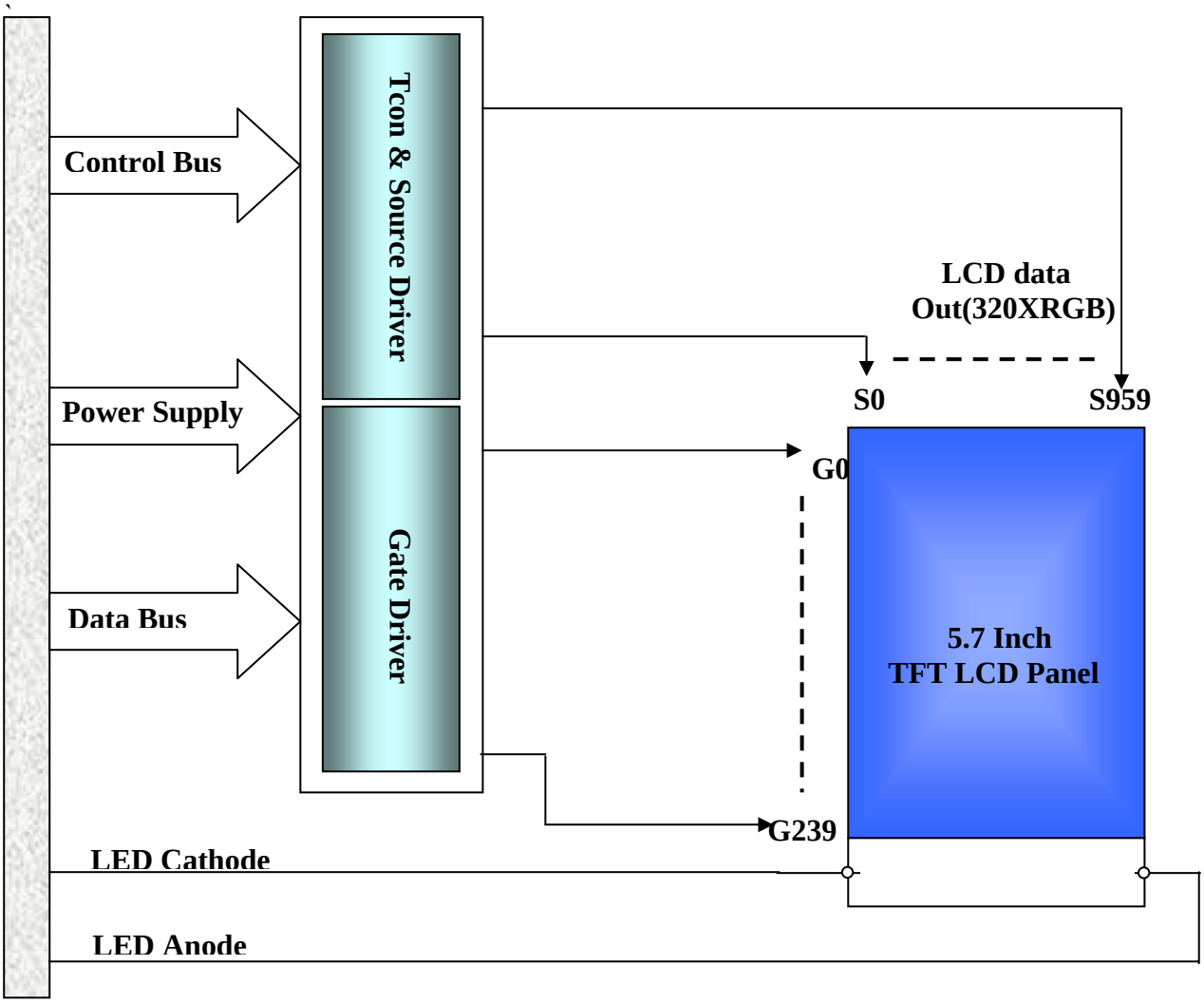
COLOR	DISPLAY	DATA SIGNAL																		GRAY SCALE LEVEL
		RED						GREEN						BLUE						
		R0	R1	R2	R3	R4	R5	G0	G1	G2	G3	G4	G5	B0	B1	B2	B3	B4	B5	
BASIC COLOR	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
	BLUE	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	-
	GREEN	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	-
	CYAN	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	-
	RED	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	-
	MAGENTA	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1	-
	YELLOW	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	-
	WHITE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-
GRAY SCALE OF RED	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R0
	DARK	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R1
	↑	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R2
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	R3~R60
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
		1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	R61
	↓																			
	LIGHT	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	R62
	RED	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	R63
GRAY SCALE OF GREEN	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G0
	DARK	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	G1
	↑	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	G2
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	G3~G60
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
		0	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0	G61
	↓																			
	LIGHT	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	G62
	GREEN	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	G63
GRAY SCALE OF BLUE	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	B0
	DARK	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	B1
	↑	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	B2
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	B3~B60
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
		0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	B61
	↓																			
	LIGHT	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	B62
	BLUE	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	B63

Note) Definition of Gray :

Rn : Red Gray, Gn : Green Gray, Bn : Blue Gray (n = Gray level)

Input Signal : 0 = Low level voltage, 1 = High level voltage

4.0 BLOCK DIAGRAM



5.0 ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Condition	Min	Max	Unit
Power voltage	DV_{DD}	DV_{SS}=0	-0.3	7	V
	AV_{DD}	AV_{SS}=0	-0.3	7	V
	DV_{CC}	DGND=0	-0.3	7	V
Gate on voltage	VGH	GND=0	-0.3	32	V
Gate off voltage	VGL		-22	0.3	V
Input voltage	Vin	-	-0.3	DV_{CC}+0.3	V
Logical output voltage	Vout		-0.3	7.0	V

6.0 ELECTRICAL CHARACTERISTICS

Item	Symbol	Min	Typ.	Max	Unit	Remarks
Power voltage	DV_{DD}	2.7	3.3	5.5	V	
	AV_{DD}	3.8	5	5.5	V	
	DV_{CC}	3	3.3	3.6	V	
Gate on voltage	VG_H	7	15	V_{EE}+40	V	
Gate off voltage	VG_L	-20	-10	-5	V	
Input high voltage	VI_H	0.7xV_{DD}	-	V_{DD}	V	
Input low voltage	VI_L	V_{SS}	-	0.3xV_{DD}	V	
Output high voltage	VO_H	V_{DD}-0.3	-	V_{DD}	V	IO_H=200uA
Output low voltage	VO_L	V_{SS}	-	V_{SS}+0.3	V	IO_L=200uA
Output voltage deviation	V_{VD}	-	±20	-	mV	
DC offset	V_{OS}	-	-	±20	mV	

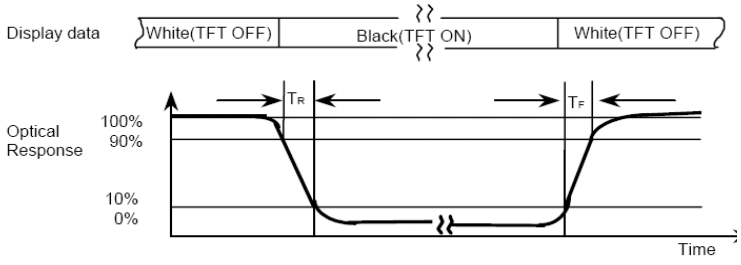
7.0 BACKLIGHT SPECIFICATIONS

Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	Vf	12	13	14	V	If = 60 mA
Forward Current	If	-	60	-	mA	
Reverse Voltage	Vr	-	-	5	V	
Reverse current	Ir	-	-	15	mA	Vr = 3.0V
Chromaticity coordinates	X	0.287	-	0.320	-	
	Y	0.276	-	0.328	-	
Luminance (BLU only)	Lv	2800	3400	4000	cd/m^2	If = 60 mA
Uniformity	Δ	70	75	85	%	Min/max*100%
Half-Brightness Life Time	50000 Hours					

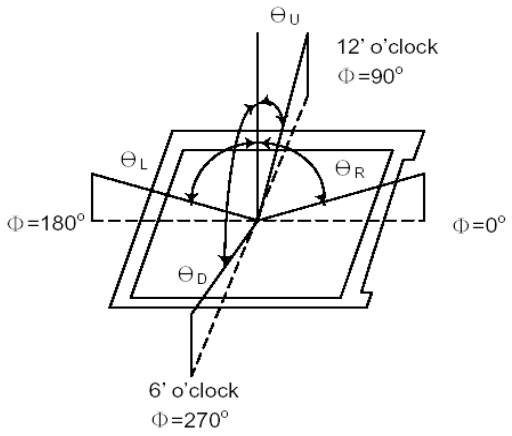
8.0 OPTICAL CHARACTERISTICS (Ta=25°C)

No	Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
1	Response Time	Rise	Tr	θ = ϕ = 0°	-	15	30	ms	(1)
		Fall	Tf	θ = ϕ = 0°	-	35	50	ms	
2	Contrast Ratio		CR	θ = ϕ = 0°	150	250	-	-	(2)
3	Viewing Angle (CR ≥ 10)		Right	ϕ = 0°	-	45		Deg	(3)
			Left	ϕ = 180°	-	45		Deg	
			Upper	ϕ = 90°	-	15		Deg	
			Lower	ϕ = 270°	-	35		Deg	
4	Color Chromaticity (CIE1931)	Red	Rx	θ = ϕ = 0°	0.610	0.640	0.670	-	(4)
			Ry		0.314	0.344	0.374	-	
		Green	Gx		0.268	0.298	0.328	-	
			Gy		0.553	0.583	0.613	-	
		Blue	Bx		0.107	0.137	0.167	-	
			By		0.083	0.103	0.123	-	
		White	Wx		0.282	0.312	0.342	-	
			Wy		0.299	0.329	0.359	-	
	Luminance of White(Center point of LCM)		L		200	250	-	Cd/m^2	(5)

Note (1): Definition of Response Time



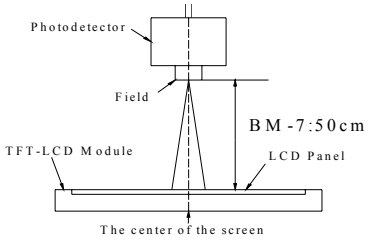
Note (3): Definition of Viewing



Note (2): Definition of Contrast Ratio
CR = Brightness at all pixels "White" / Brightness at all pixels "Black"

Note (4): Measured at center point vertically with backlight on.

Note(5):After stabilizing and leaving the panel alone at a given temperature for 30 min ,the measurement should be executed .Measurement should be executed in a stable, windless, and dark room. 30 min after lighting the back-light. This should be measured in the center of screen.
Environment condition: Ta=25±2°C Back-Light On condition



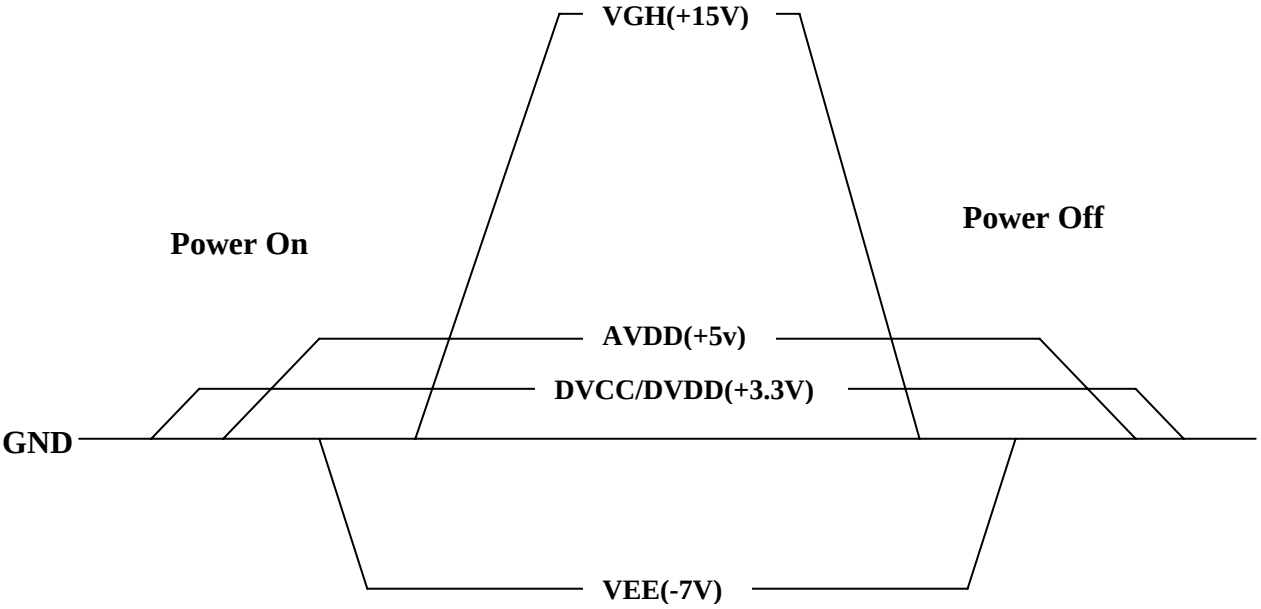
9.0 INTERFACE TIMING

9.1 Power ON/OFF Sequence

To prevent the device from damaging due to latch up, the power on/off sequence shown below must be followed:

Power on: DVCC/DVDD → AVDD → VEE → VGH → DATA

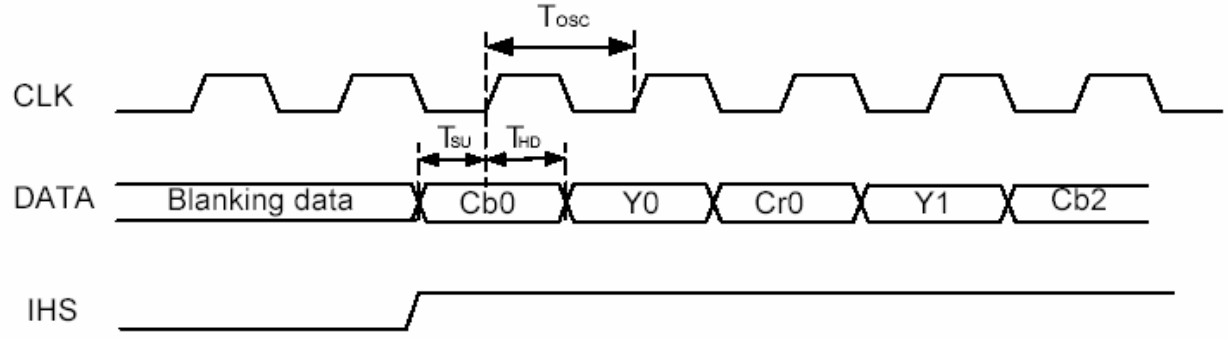
Power 0ff: DATA → VGH → VEE → AVDD → DVCC/DVDD



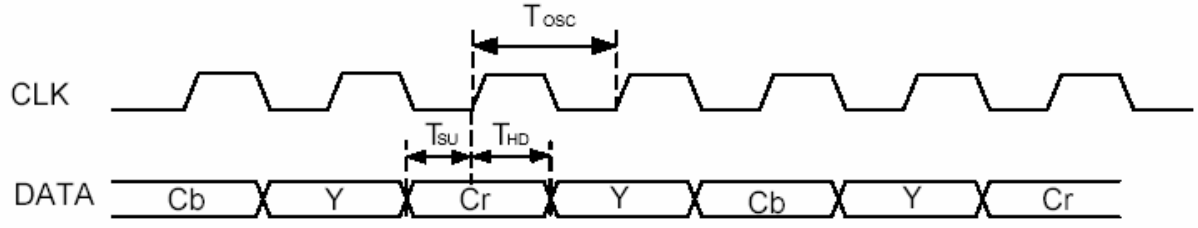
9.2 Timing controller timing chart

9.2.1 Clock and data waveform

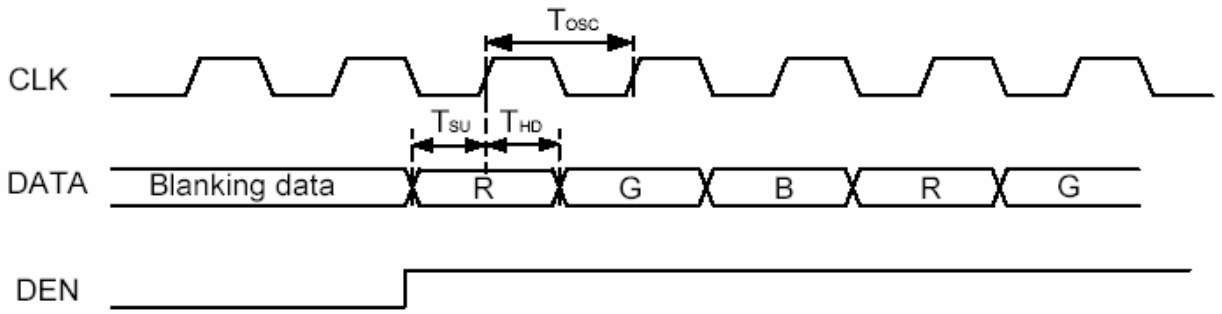
- **CCIR601 (HS_POL="L" in Register R2)**



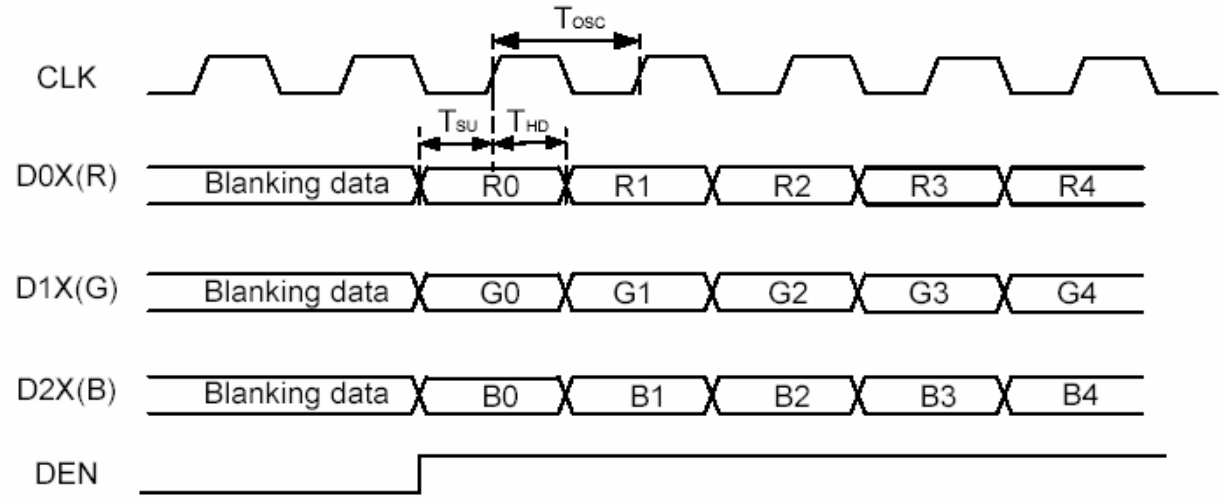
- **CCIR656**



● **Digital Serial RGB**



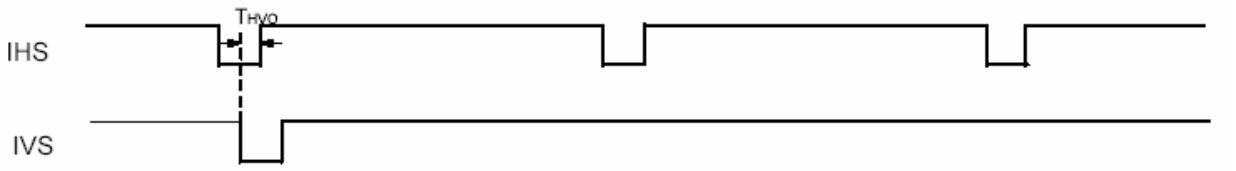
● **Digital Parallel RGB**



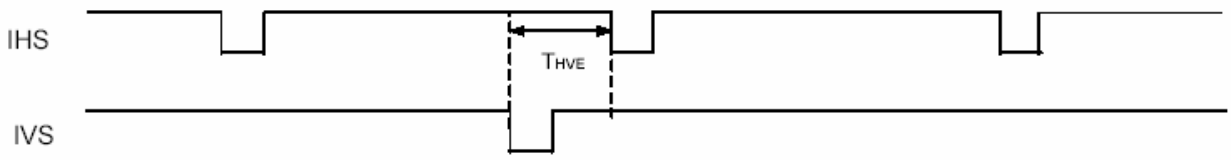
9.2.2 Digital/Analog RGB timing waveform

IVS and IHS timing

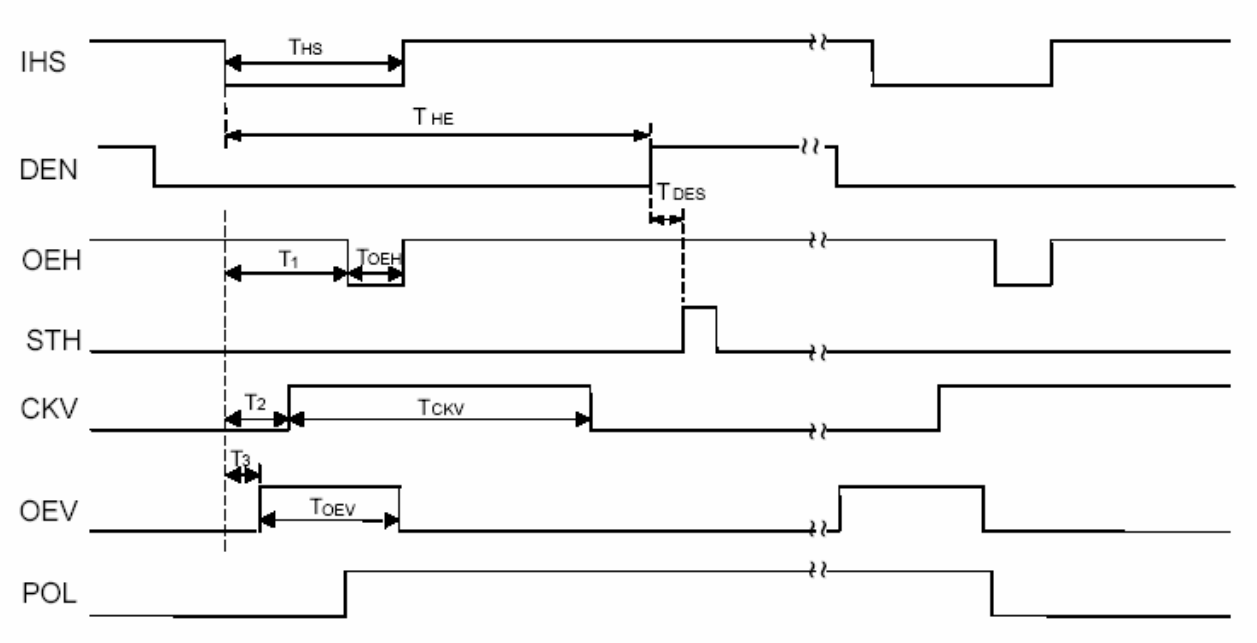
● Odd field



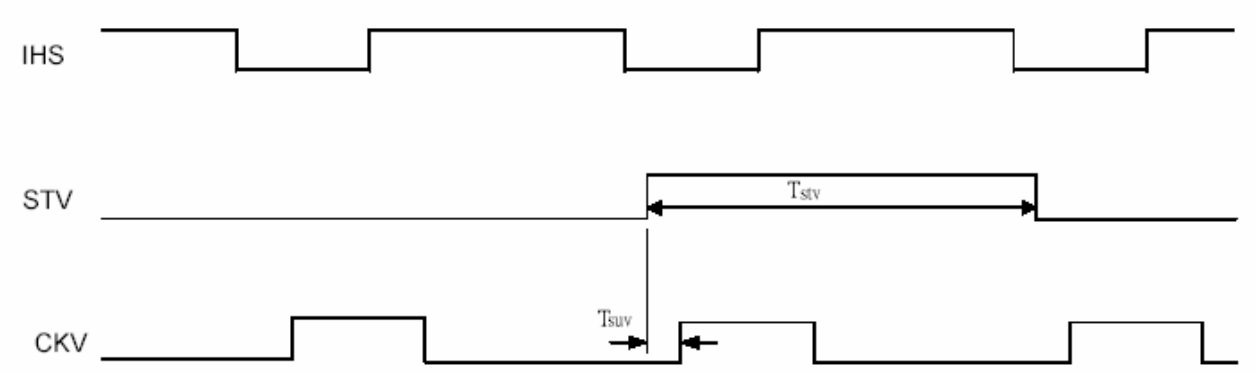
● Even field



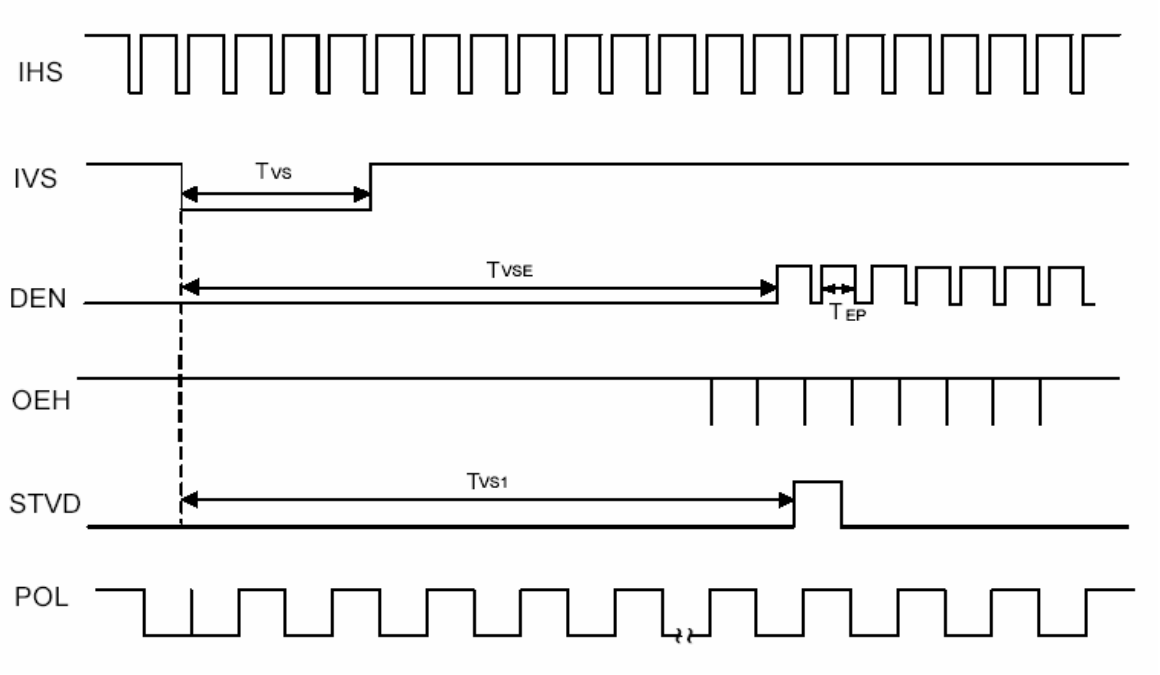
Horizontal control timing waveform



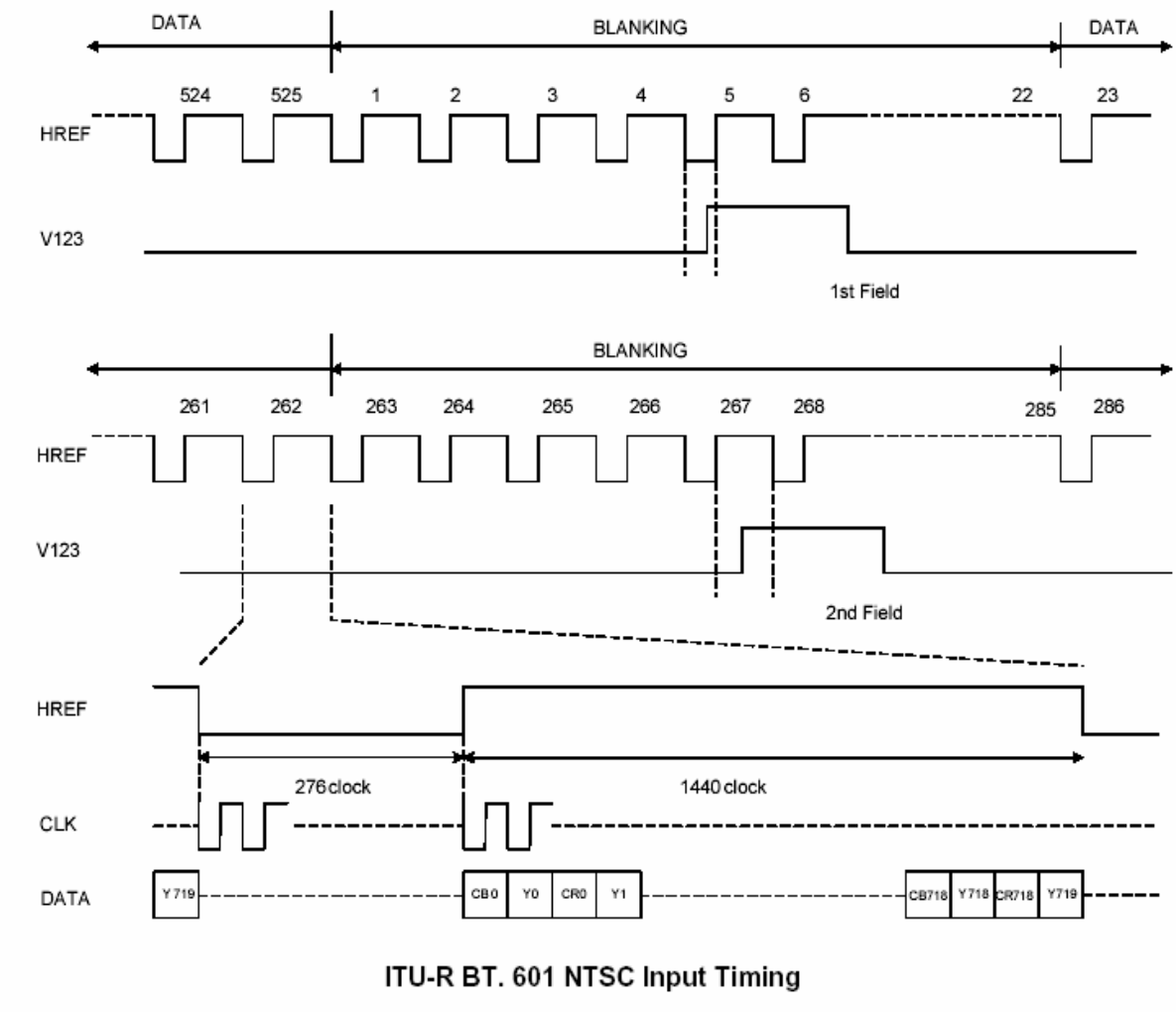
Vertical shift clock timing waveform



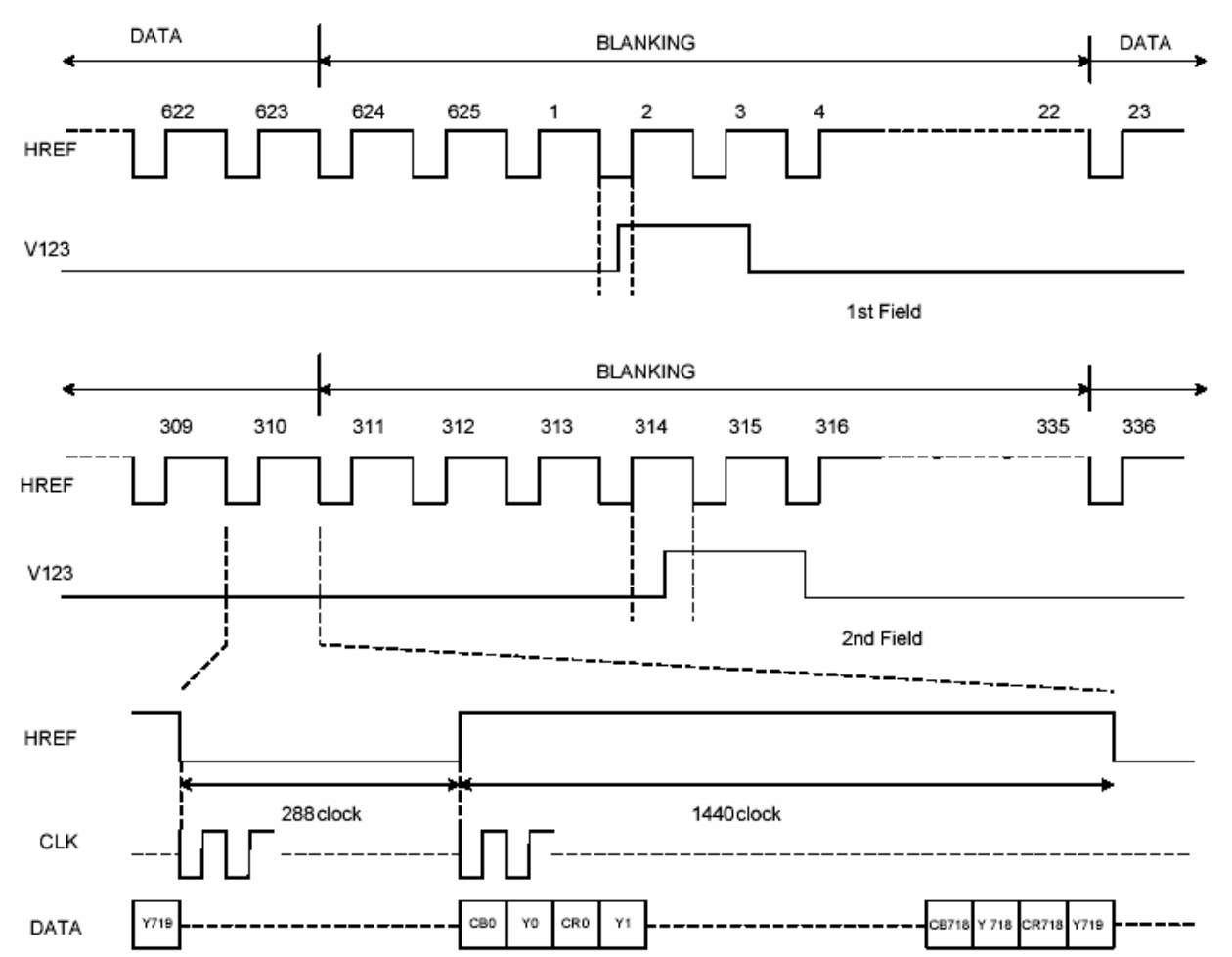
Vertical control timing waveform



9.2.3 CCIR601 timing waveform VS_POL="H", HS_POL="L" in Register R2)



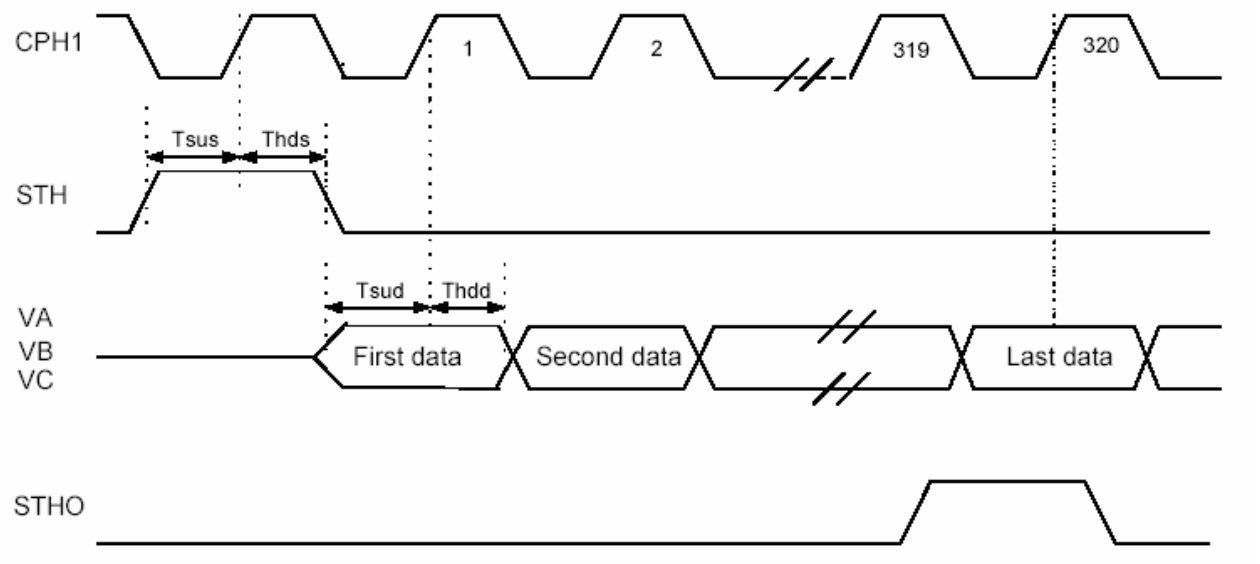
ITU-R BT. 601 NTSC Input Timing



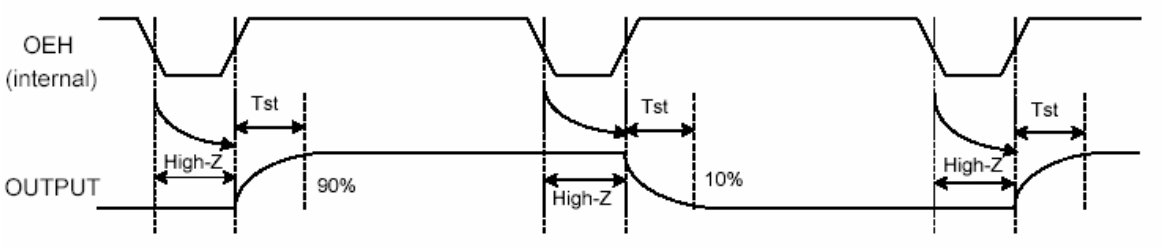
ITU-R BT. 601 PAL Input Timing

9.3 Source driver timing chart

9.3.1 Clock and start pulse timing waveform



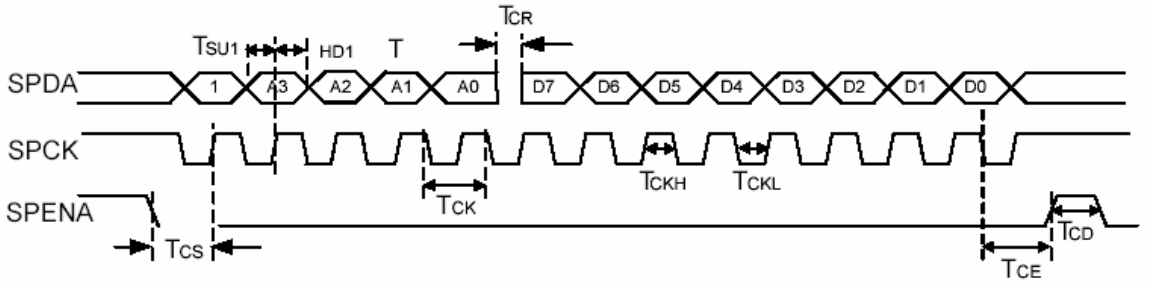
9.3.2 OEH and Data Output timing waveform



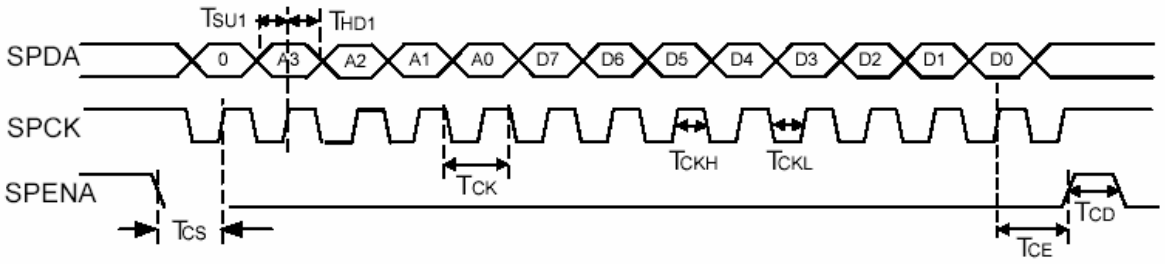
9.4 SPI timing characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
SPCK period	T_{CK}	60	-	-	ns
SPCK high width	T_{CKH}	30	-	-	ns
SPCK low width	T_{CKL}	30	-	-	ns
Data setup time	T_{SU1}	12	-	-	ns
Data hold time	T_{HD1}	12	-	-	ns
SPENA to SPCK setup time	T_{CS}	20	-	-	ns
SPENA to SPDA hold time	T_{CE}	20	-	-	ns
SPENA high pulse width	T_{CD}	50	-	-	ns
SPDA output latency	T_{CR}	-	1/2	-	T_{CK}

- **SPI "read" timing**

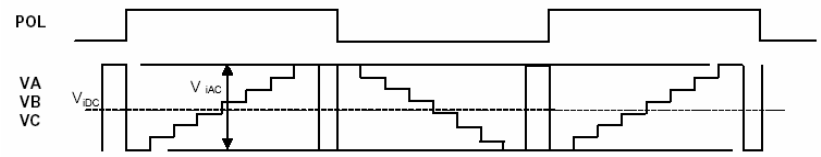


- **SPI "write" timing**



9.5 Analog video signal characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Video signal amplitude (VA,VB,VC)	VIAC	-	3.81	-	V
	VIDC	-	2.385	-	V



10.0 STANDARD SPECIFICAION FOR RELIABILITY

10.1 Standard specification of Reliability Test

No	Test Item	Content of Test	Test Condition	Applicable Standard
1	High temperature storage	Endurance test applying the high storage temperature for a long time.	80+/-3 °C 240 hrs	------
2	Low temperature storage	Endurance test applying the low storage temperature for a long time.	-30+/-3 °C 240 hrs	------
3	High temperature operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	70+/-3 °C 240 hrs	------
4	Low temperature operation	Endurance test applying the electric stress under low temperature for a long time.	-20+/-3 °C 240 hrs	------
5	High temperature / Humidity operation	Endurance test applying the electric stress (Voltage & Current) and temperature / humidity stress to the element for a long time.	40 °C, 90 %RH 120 hrs	MIL-202E-103B JIS-C5023
6	Temperature cycle	Endurance test applying the low and high temperature cycle. -20°C 30min. ⇌ 25°C 5min. ⇌ 70°C 30min. 1 cycle	-20°C / 70°C 10 cycles	------
Mechanical Test				
7	Drop Test	Endurance test applying the drop during transportation.	Packed, 100cm free fall (6 sides, 1 corner, 3edges)	----

Remarks: For operation test, above specification is applicable when test pattern is changing during entire operation test. Please allow a 24hours recovery time for some display abnormality after reliability tests.

10.2 Failure Judgment Criteria

After the reliability tests above, test sample shall be let return to room temperature and humidity for at least 4 hours before final tests are carried out.

Criterion Item	Failure Judgment Criteria
Electrical characteristic	Electrical short and open.
Mechanical characteristic	Out of mechanical specification
Optical characteristic	Out of the Appearance Standard

11.0 QUALITY ASSURANCE

11.1 Acceptable Quality Level (AQL)

Each lot should satisfy the quality level defined as follows:

a) Inspection method: MIL-STD-105E Level II normal one time sampling

b) AQL level

Category	AQL	Definition
Major	0.25%	Functional defective as product
Minor	1.00%	Satisfy all functions as product but not satisfy cosmetic standard

11.2 Conditions of Inspection

The inspection should be performed under following conditions:

a) Under 2 pieces of 40W white fluorescent lamps located 1m height from the LCD module.

b) 30cm view distance vertically from the LCD panel.

c) Under normal temperature 20~25°C and normal humidity 60±15%RH.

d) LCD voltage at stated in the specification and within ±0.5V of the typical value at 25°C.

11.3 Cosmetic Screening Criteria

<table>
<tr><th>No</th><th>Defect</th><th>Judgment Criteria</th><th>Category</th></tr>
<tr><td>1</td><td>Spots/Dust
/Bubble
(Round type)</td><td><table><tr><td>Size, d (mm)</td><td>Acceptable quantity in active area</td></tr><tr><td>d ≤ 0.15</td><td>Disregard</td></tr><tr><td>0.15 < d ≤ 0.20</td><td>2</td></tr><tr><td>0.2 ≤ d ≤ 0.30</td><td>1</td></tr><tr><td>d > 0.3</td><td>0</td></tr></table></td><td>Minor</td></tr>
<tr><td>2</td><td>Dust
/Bubble
/Scratches
(Line type)</td><td><table><tr><td>Width, W (mm)</td><td>Length, L (mm)</td><td>Acceptable quantity in active area</td></tr><tr><td>W≤ 0.01</td><td>Disregard</td><td>Disregard</td></tr><tr><td>W≤ 0.03</td><td>L≤ 3.0</td><td>2</td></tr><tr><td>W≤ 0.05</td><td>L≤ 3.0</td><td>1</td></tr><tr><td>W> 0.05</td><td>Disregard</td><td>0</td></tr></table></td><td>Minor</td></tr>
<tr><td>3</td><td>Background color & Rainbow</td><td>Not to be noticeable.</td><td>Minor</td></tr>
<tr><td>4</td><td>Allowable density</td><td>Above defects should be separated more than 5mm each other.</td><td>Minor</td></tr>
<tr><td>6</td><td>Coloration</td><td>Not to be noticeable coloration in the viewing area of the LCD panels.
Back-lit type should be judged with back-lit on state only.</td><td>Minor</td></tr>
<tr><td>7</td><td>Rainbow</td><td>Not to be noticeable.</td><td>Minor</td></tr>
<tr><td>8</td><td>Dot size</td><td>To be 95% ~ 105% of the dot size (Typ.) in drawing.
Partial defects of each dot (ex. pin-hole) should be treated as ‘spot’.</td><td>Minor</td></tr>
</table>

Note: d = (long length + short length) / 2

12.0 PRECAUTIONS FOR USING LCD MODULE

Handing Precautions

- The display panel is made of glass and polarizer. Do not subject it to mechanical shock by dropping or impact which may cause chipping especially on the edges.
- Do not touch, push or rub the exposed polarizers with anything harder than an HB pencil lead (glass, tweezers, etc.). The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.
- If the display surface becomes contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If it is heavily contaminated, moisten cloth with Isopropyl alcohol or ethyl alcohol. Avoid using solvents like acetone (ketene), water, toluene, ethanol to clean the polarizer surface.
- Please keep the temperature within specified range for use and storage. Polarization degradation, bubble generation or polarizer peel-off may occur with high temperature and high humidity.
- Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.
- Install the LCD Module by using the mounting holes. When mounting the LCD module make sure it is free of twisting, warping and distortion.
- Exercise care to minimize corrosion of the electrode. Corrosion of the electrodes is accelerated by water droplets, moisture condensation or a current flow in a high-humidity environment.
- NC terminal should be open. Do not connect anything.
- If the logic circuit power is off, do not apply the input signals.
- Avoid contacting oil and fats.
- Condensation on the surface and contact with terminals due to cold will damage, stain or dirty the polarizer. After products are tested at low temperature they must be warmed up in a container before coming is contacting with room temperature air.
- Wipe off saliva or water drops immediately, contact with water over a long period of time may cause deformation or color fading.
- For LCD module with FPC, please handle the FPC carefully and do not stress the FPC excessively which will damage the circuitry or components on the FPC.

Electro-Static Discharge Control

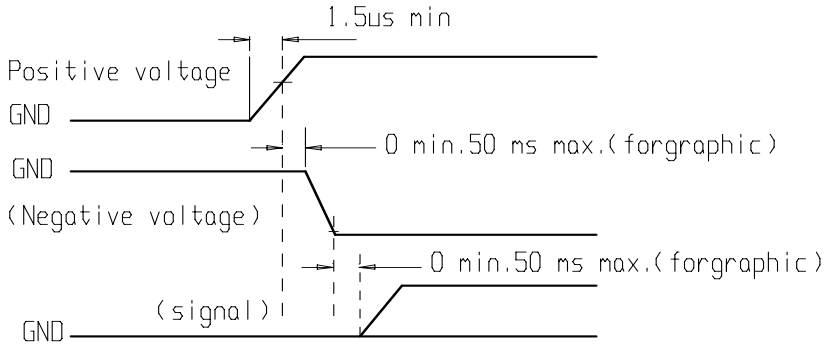
- Since this module uses a CMOS LSI, the same careful attention should be paid to electrostatic discharge as for an ordinary CMOS IC.
- Be sure to ground the body when handling the LCD modules. Tools required for assembling, such as soldering irons, must be properly grounded.
- To reduce the amount of static electricity generated, do not conduct assembling and other work under dry conditions. To reduce the generation of static electricity, be careful that the air in the work is not too dried. A relative humidity of 50%-60% is recommended.
- The LCD module is coated with a film to protect the display surface. Exercise care when peeling off this protective film since static electricity may be generated.
- When soldering the terminal of LCM, make certain the AC power source for the soldering iron does not leak.

Precaution for soldering to the LCM

- Observe the following when soldering lead wire, connector cable and etc. to the LCD module.
- Soldering iron temperature: 300 ~ 350°C.
  Soldering time: 3 sec.
  Solder: eutectic solder.
  Above is a recommended approach. Due to different solder composition and processing method, it is recommended that customer need to study and fine tuning their soldering process parameters accordingly.
- If soldering flux is used, be sure to remove any remaining flux after finishing to soldering operation. (This does not apply in the case of a non-halogen type of flux.) It is recommended that you protect the LCD surface with a cover during soldering to prevent any damage due to flux spatters.

Precautions for Operation

- Viewing angle varies with the change of liquid crystal driving voltage (V_O). Adjust V_O to show the best contrast.
- Driving the LCD in the voltage above the limit shortens its lifetime.
- Response time is greatly delayed at temperature below the operating temperature range. However, it will recover when it returns to the specified temperature range.
- If the display area is pushed hard during operation, the display will become abnormal. However, it will return to normal if it is turned off and then back on.
- When turning the power on, input each signal after the positive/negative voltage becomes stable.



Storage

- When storing LCDs as spares for some years, the following precautions are necessary.
- Store them in a sealed polyethylene bag. If properly sealed, there is no need for desiccant.
- Store them in a dark place. Do not expose to sunlight or fluorescent light, keep the temperature between 0°C and 35°C.
- Environmental conditions:
  -- Do not leave them for more than 168hrs. at 60°C.
  -- Should not be left for more than 48hrs. at -20°C.

Safety

- It is recommended to crush damaged or unnecessary LCD into pieces and wash them off with solvents such as acetone and ethanol, which should later be burned.
- If any liquid leaks out of a damaged glass cell and comes in contact with the hands, wash off thoroughly with soap and water.

13.0 LOT NUMBERING SYSTEM

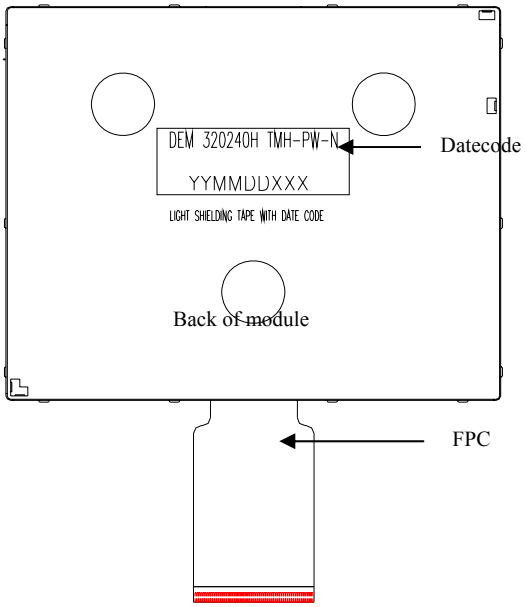
13.1 Definition of Lot Number

One lot means the delivery date and times to customer at one time.

YYMMDD XXX
(1) (2)

(1) Manufacturing date (COG bonding) (YY: Year, MM: Month, DD: Day)
(2) Serial number starts from A01, A02…..,A99, B01, B02….

13.2 Location of lot number



Remarks:
This datecode is meant for traceability purpose and will not affect functionality of the display module. Thus, there is no special control on the font type and font size of the datecode as long as it is visible and readable.
Please refer to outline drawing for datecode orientation and its content.

14.0 ROHS COMPLIANT PRODUCT

Standard of specific chemical substance

1. Cadmium and Cadmium Compounds	Less than 100ppm
2. Hexavalent Chromium Compounds	Less than 1000ppm
3. Lead and Lead Compounds	Less than 1000ppm
4. Mercury and Mercury Compounds	Less than 1000ppm
5. Polybrominated Biphenyls (PBBs)	Less than 1000ppm
6. Polybrominated Diphenyl ethers (PBDEs)	Less than 1000ppm

15.0 LIMITED WARRANTY

Please inspect the LCD modules within one month after your receipt. Unless agreed between DISPLAY and customer, DISPLAY will replace or repair any of its LCD modules, which are found to be functionally defective when inspected in accordance with DISPLAY LCD/LCM acceptance standards (copies available upon request) for a period of one year from date of shipments. Cosmetic/visual defects must be returned to DISPLAY within 90 days of shipment. Confirmation of such date shall be based on freight documents. The warranty liability of DISPLAY limited to repair and/or replacement on the terms set forth above. DISPLAY will not be responsible for any subsequent or consequential events.