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TECHNOLOGIES



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# Datasheet

## **ORTUSTECH**

**COM104H9M11**

OR-20-042

# Specifications for

## Blanview TFT-LCD Monitor (PLAN)

Version 0.3

MODEL G9M11

# ORTUSTECH

所属長	検印	担当
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## Contents

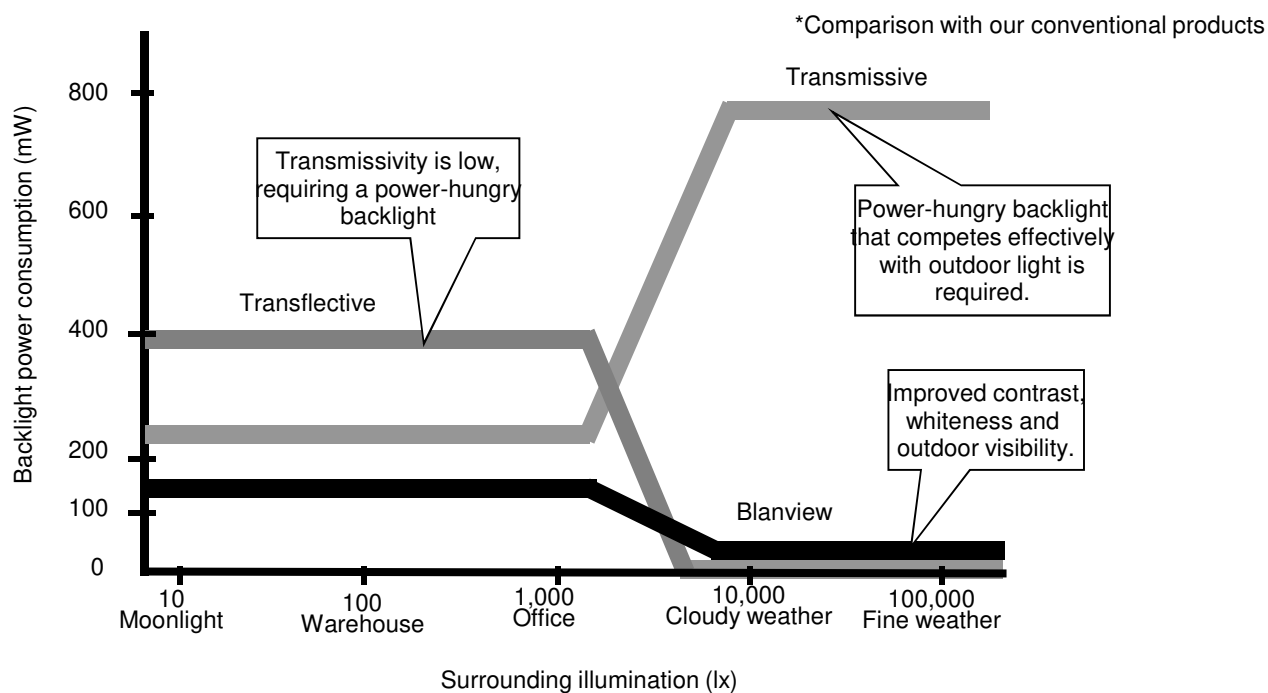
1. Application	.....	4
2. Outline Specifications		
2.1 Features of the Product	.....	5
2.2 Display Method	.....	5
3. Dimensions and Shape		
3.1 Dimensions	.....	7
3.2 Outward Form	.....	8
3.3 Serial No. print (S-print)	.....	9
4. Pin Assignment	.....	10
5. Absolute Maximum Rating	.....	11
6. Characteristics		
6.1 DC Characteristics	.....	12
6.2 LVDS Interface		
6.2.1 LVDS DC Characteristics	.....	13
6.2.2 LVDS AC Characteristics	.....	14
6.2.3 Input Data Format	.....	15
6.3 Input Timing Characteristics	.....	16
6.4 Power-ON/OFF Sequence timing	.....	17

1. Application



<Features of Blanview>

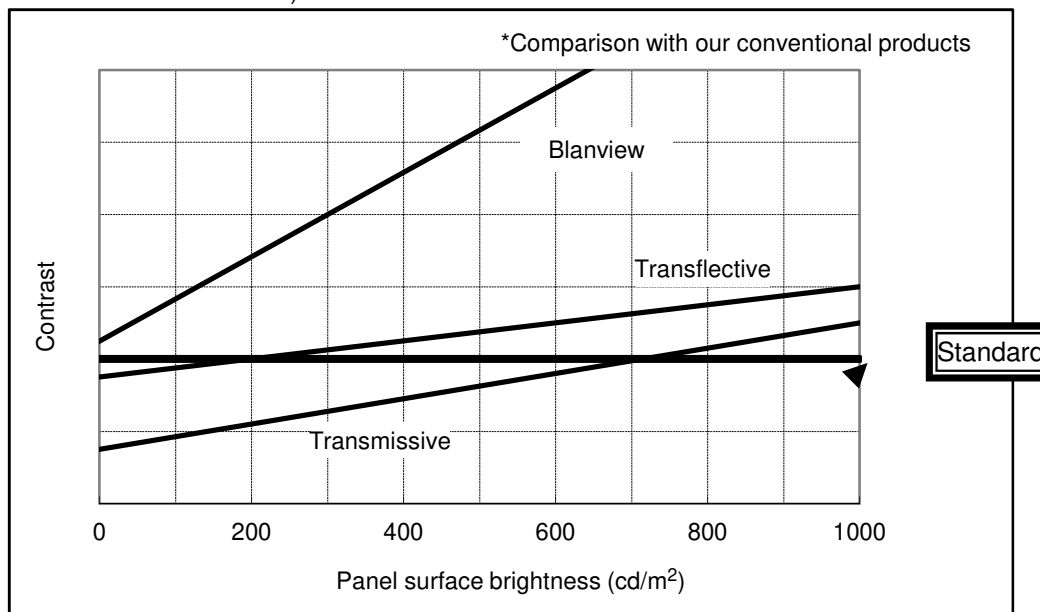
- Backlight power consumption required to assure visibility. (equivalent to 3.5"QVGA )



- Contrast characteristics under 100,000lx. (same condition as direct sunlight.)

With better contrast (higher contrast ratio), Blanview TFT-LCD has the best outdoor readability in three different types of TFT-LCD.

Below chart shows contrast value against panel surface brightness. (Horizontal: Panel surface brightness/ Vertical: Contrast value) LCD panel has enough outdoor readability above our Standard line. (TOPPAN PRINTING criteria)





## 3. Dimensions and Shape

## 3.1 Dimensions

Items	Specifications	Unit	Remarks
Outline dimensions	(230.0)[H] × (180.2)[V] × (11.0)[D]	mm	Exclude FPC and
Active area	211.2[H] × 158.4[V]	mm	Diagonal 264.0 mm
Number of dots	2400[H] × 600[V]	dot	
Dot pitch	88.0[H] × 246.0[V]	um	
Weight	T.B.D.	g	Include FPC cable

3.2 Outward Form

Fig. 2 Outline drawing

3.3 Serial No. print (S-print)

T.B.D

## 4. Pin Assignment

**LCD\_CN**

No.	Symbol	Details
1	VCC	Power supply (3.3V)
2	VCC	Power supply (3.3V)
3	GND	Ground
4	GND	Ground
5	R0-	LVDS DATA0(-)
6	R0+	LVDS DATA0(+)
7	GND	Ground
8	R1-	LVDS DATA1(-)
9	R1+	LVDS DATA1(+)
10	GND	Ground
11	R2-	LVDS DATA2(-)
12	R2+	LVDS DATA2(+)
13	GND	Ground
14	CLK-	LVDS CLK(-)
15	CLK+	LVDS CLK(+)
16	GND	Ground
17	R3-	LVDS DATA3(-) *Note
18	R3+	LVDS DATA3(+) *Note
19	MODE	VESA/JEIDA switching terminal (Low: 8bit_JEIDA or 6bit_JEIDA / High: 8bit_VESA)
20	SC	Display direction switching (Low: Normal display, High: Reverse display)

- Used connector: 20186-020E-11F (I-PEX) or FI-SEB20P-HFE (JAE)
- Corresponding connector: 20197-\*20U-F (I-PEX) or FI-S20S[for discrete Wire], FI-SE20ME[for FPC] (JAE)

Note) For 6-bits input, set MODE = 0 (JEIDA) and set pin numbers 17, 18 as the following recommended inputs.

- Enter GND at 17 and 18.  
or
- Enter the Low data of the LVDS transmitter in 17 and 18.  
or
- Connect pin 17 to VCC via 680Ω-10kΩ and pin 18 to GND via 620Ω-10kΩ.

**BL\_CN**

No.	Symbol	Details	Remark
1	VL	Backlight Voltage (12V)	
2	VL	Backlight Voltage (12V)	
3	GNDL	Ground	
4	GNDL	Ground	
5	BLEN	Backlight ON-OFF	High: ON Low: OFF
6	VPDIM	Light Dimmer Control (PWM) input	High active

- Used connector: FI-S6P-HFE (JAE)
- Corresponding connector: FI-S6S (JAE)
- Please make sure to check a consistency between pin assignment in "3.2 Outward Form" and your connector pin assignment when designing your circuit.  
Inconsistency in input signal assignment may cause a malfunction.

## 5. Absolute Maximum Rating

Item	Symbol	Rating		Unit
		MIN	MAX	
LCD Supply Voltage	VCC	-0.3	4.0	V
Input Voltage for Logic	VI	-0.3	VCC+0.3	V
Backlight Power Supply Input Voltage	VL	-0.3	14.0	V
Backlight ON-OFF	BLEN	-0.3	14.0	V
Light Dimmer Control (PWM) input Voltage	VPDIM	-0.3	5.75	V
Operational temperature range Note1	Top	-30	70	°C
Storage temperature range	Tstg	-30	80	°C

Note1: Panel surface temperature

## 6. Characteristics

## 6.1 DC Characteristics

## 6.1.1 LCD Display Module

(Unless otherwise noted, Ta=25 °C, VCC=3.3V, GND=0V)

Item	Symbol	Condition	Rating			Unit	Applicable terminal
			MIN	TYP	MAX		
LCD Supply Voltage	ICC		(3.0)	3.3	(3.6)	V	VCC
LCD operating current	ICC		-	TBD	TBD	mA	VCC
Allowable ripple voltage	VRP	VCC=+3.3V	-	-	TBD	mVp-p	VCC
Input Voltage for Logic	LCD_VIH		0.8×VCC	-	VCC	V	MODE, SC
	LCD_VIL		0	-	0.2×VCC	V	MODE, SC

## 6.1.2 Backlight

(Unless otherwise noted, Ta=25 °C, VL=12V, GND=0V)

Item	Symbol	Condition	Rating			Unit	Applicable terminal
			MIN	TYP	MAX		
Supply Input Voltage	VL		(10.8)	12.0	(13.2)	V	VL
Supply Input Current	IL		--	TBD	TBD	mA	VL
Supply Input Rush Current	ILR	VL=12.0V	--	--	TBD	A	VL(Reference)
Backlight ON-OFF	High_BLEN	ON	(2.5)	--	(VL)	V	BLEN
	Low_BLEN	OFF	0	--	(0.4)	V	
Light Dimmer Control PWM Input Voltage	Low_VPDIM	ON	(2.5)	--	(5.5)	V	VPDIM
	High_VPDIM	OFF	0	--	(0.4)	V	
PWM frequency	f PDIM		200	500	1000	Hz	VPDIM
Dimming Rate (PWM Duty)	DR	VL=12.0V	(5)	--	100	%	VPDIM
Estimated Life of LED Note	LL	IL=(45)mA Ta=25°C	--	( 70,000 )	--	hrs	

- Note:
- The lifetime of the LED is defined as a period till the brightness of the LED decreases to the half of its initial value.
  - This figure is given as a reference purpose only, and not as a guarantee.
  - This figure is estimated for an LED operating alone. As the performance of an LED may differ when assembled as a monitor together with a TFT panel due to different environmental temperature.
  - Estimated lifetime could vary on a different temperature and usually higher temperature could reduce the life significantly.

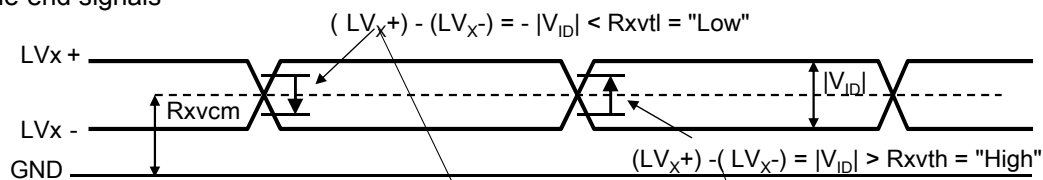
## 6.2 LVDS Interface

## 6.2.1 LVDS DC Characteristics

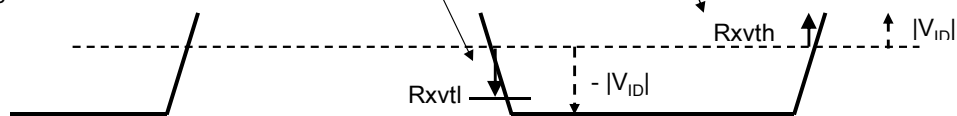
(Unless otherwise noted,  $T_a=25^\circ\text{C}$ ,  $V_{CC}=3.3\text{V}$ ,  $GND=0\text{V}$ )

Item	Symbol	Condition	Rating			Unit	Applicable terminal
			MIN	TYP	MAX		
Differential input high threshold	Rxvth	$R_{XVCM}=1.2\text{V}$	-	-	0.1	V	CLK+, CLK- R0+, R0-, R1+, R1- R2+, R2-, R3+, R3-
Differential input low threshold	Rxvtl		-0.1	-	-	V	
Differential input Common-mode voltage	Rxvcm		0.6	1.2	$2.4- V_{ID} /2$	V	
Differential input voltage	$ V_{ID} $		0.2	0.4	0.6	V	
Differential input leakage current	RVXliz		-10	-	10	$\mu\text{A}$	

## Single end signals



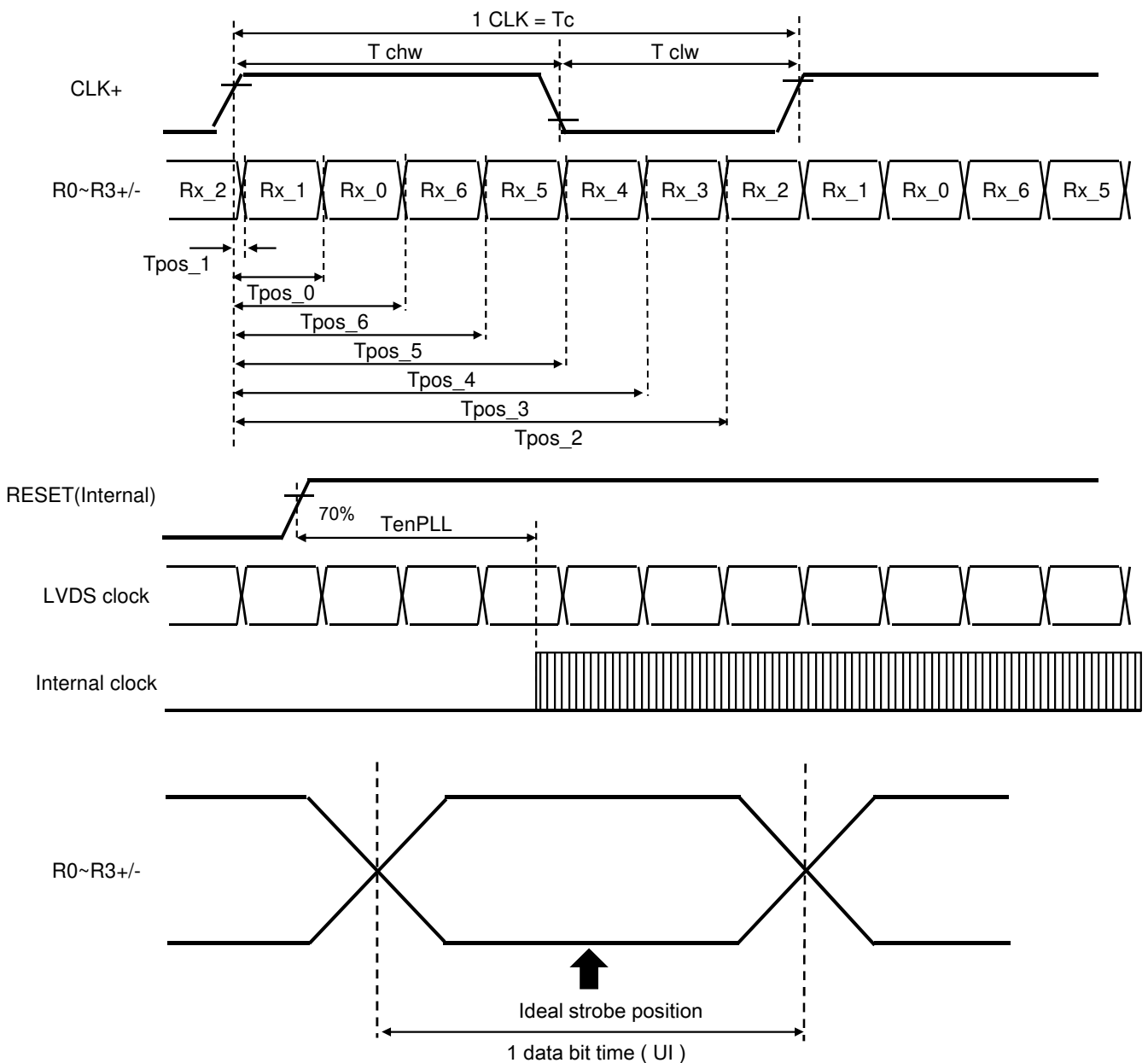
## Differential signals



6.2.2 LVDS AC Characteristics

(Unless otherwise noted, Ta=25 °C, VCC=3.3V, GND=0V)

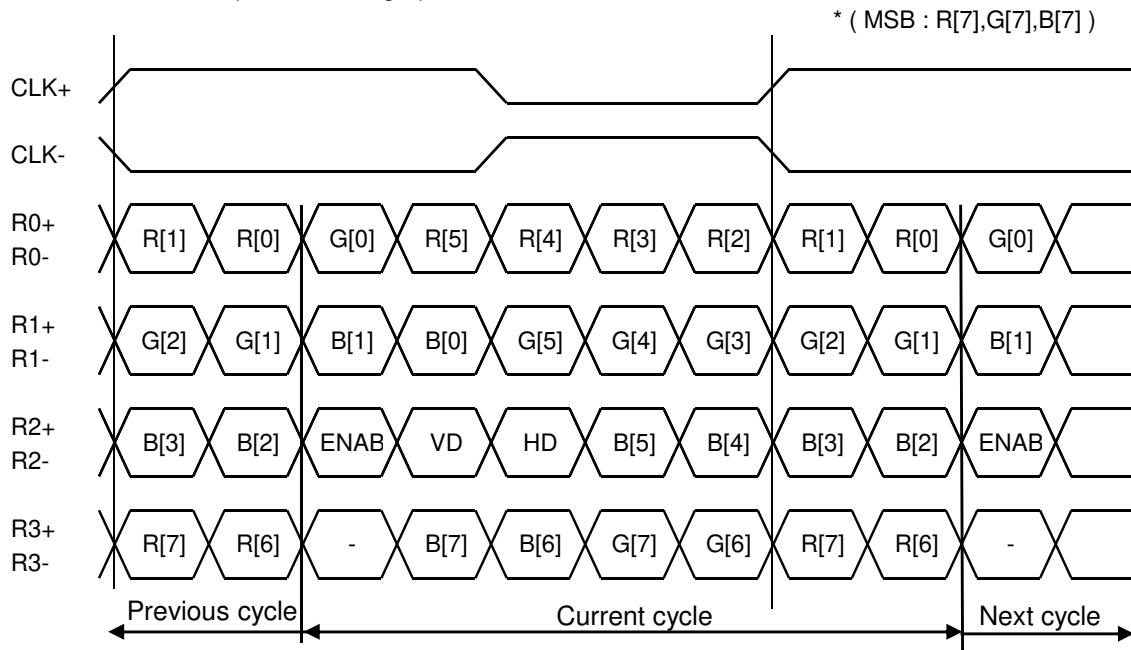
Item	Symbol	Rating			Unit
		MIN	TYP	MAX	
CLK Frequency	f clk	20	-	80	MHz
Clock period	Tc	12.5	-	50	ns
1 data bit time	UI	-	1/7	-	Tc
CLK High level Width	T chw	-	4	-	UI
CLK Low level Width	T clw	-	3	-	UI
Position 1	Tpos_1	-0.25	0	0.25	UI
Position 0	Tpos_0	0.75	1	1.25	UI
Position 6	Tpos_6	1.75	2	2.25	UI
Position 5	Tpos_5	2.75	3	3.25	UI
Position 4	Tpos_4	3.75	4	4.25	UI
Position 3	Tpos_3	4.75	5	5.25	UI
Position 2	Tpos_2	5.75	6	6.25	UI
PLL wake-up time	TenPLL	-	-	150	us



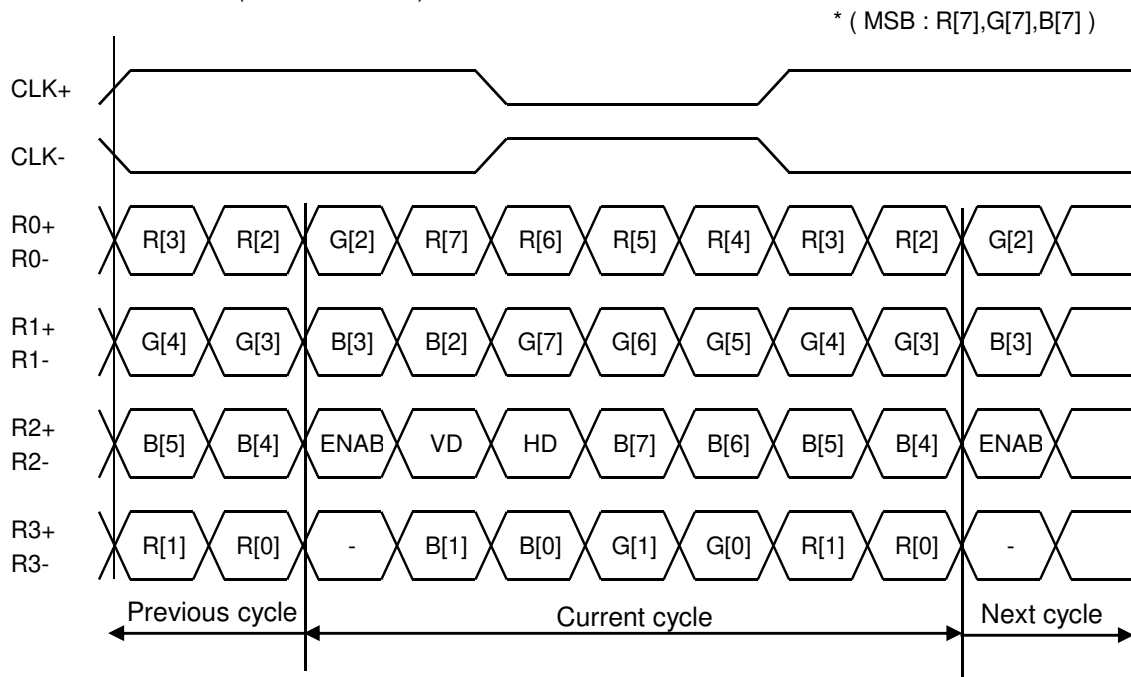


### 6.2.3 Input Data Format

#### VESA Format 8bit ( MODE = High )



#### JEIDA Format 8bit ( MODE = Low )

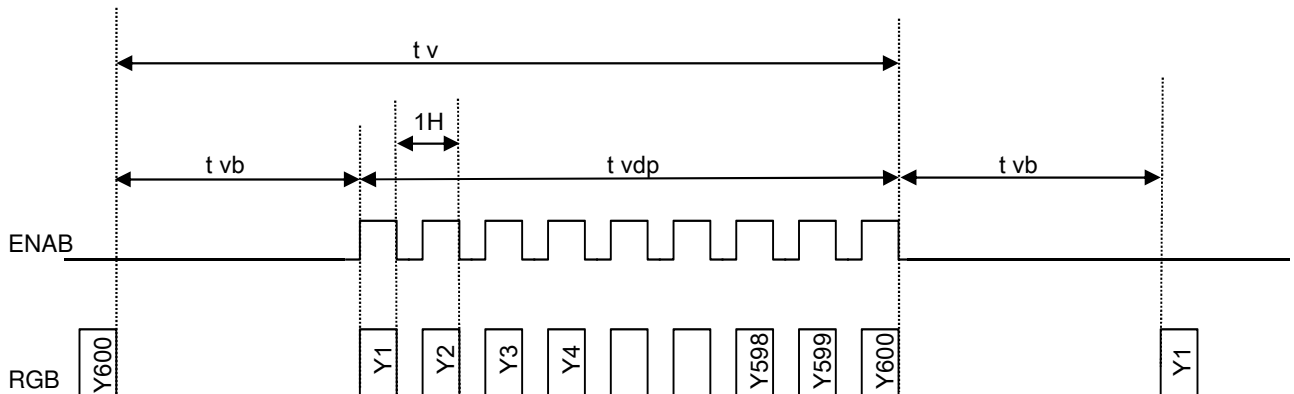


6.3 Input Timing Specifications

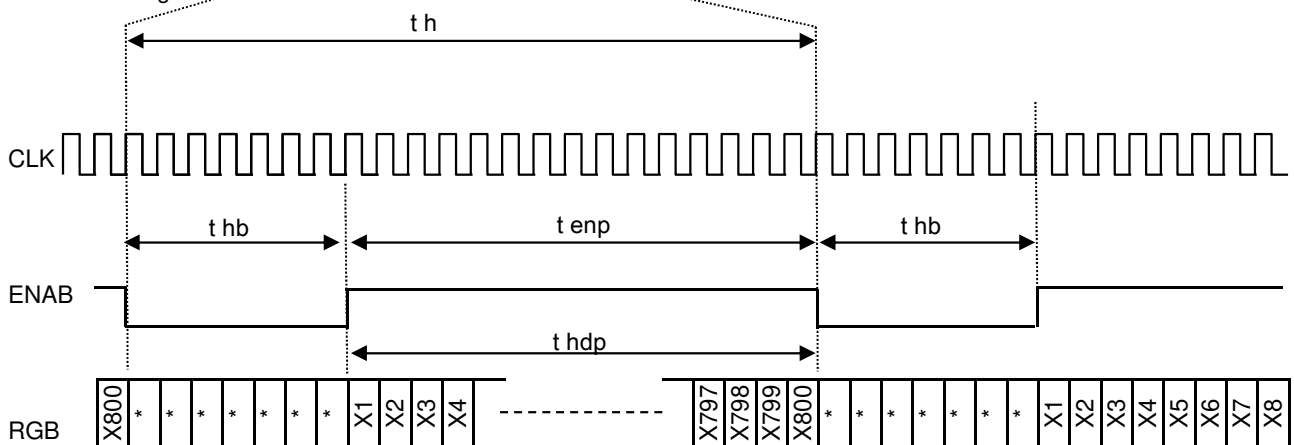
Item	Symbol	Rating			Unit	Signal ( * )	
		MIN	TYP	MAX			
CLK frequency	fCLK	(35)	40	(42)	MHz	CLK	
Vertical	Frequency	fVD	(55)	60	(64.2)	Hz	VD,ENAB R[7:0],G[7:0],B[7:0]
	Period	t <sub>v</sub>	(613)	628	-	H	
	Blanking Time	t <sub>vb</sub>	(13)	28	-	H	
	Active Time	t <sub>vdp</sub>	600			H	
Horizontal	Frequency	fHD	(35.2)	37.9	(39.2)	kHz	CLK,HD,ENAB R[7:0],G[7:0],B[7:0]
	Period	t <sub>h</sub>	(826)	1056	-	CLK	
	Blanking Time	t <sub>hb</sub>	(26)	256	-	CLK	
	ENAB pulse width	t <sub>enp</sub>	800			CLK	
	Active Time	t <sub>hdp</sub>	800			CLK	

(\*) Input terminals are (R0 +/-, R1 +/-, R2 +/-, R3 +/-, CLK +/-).

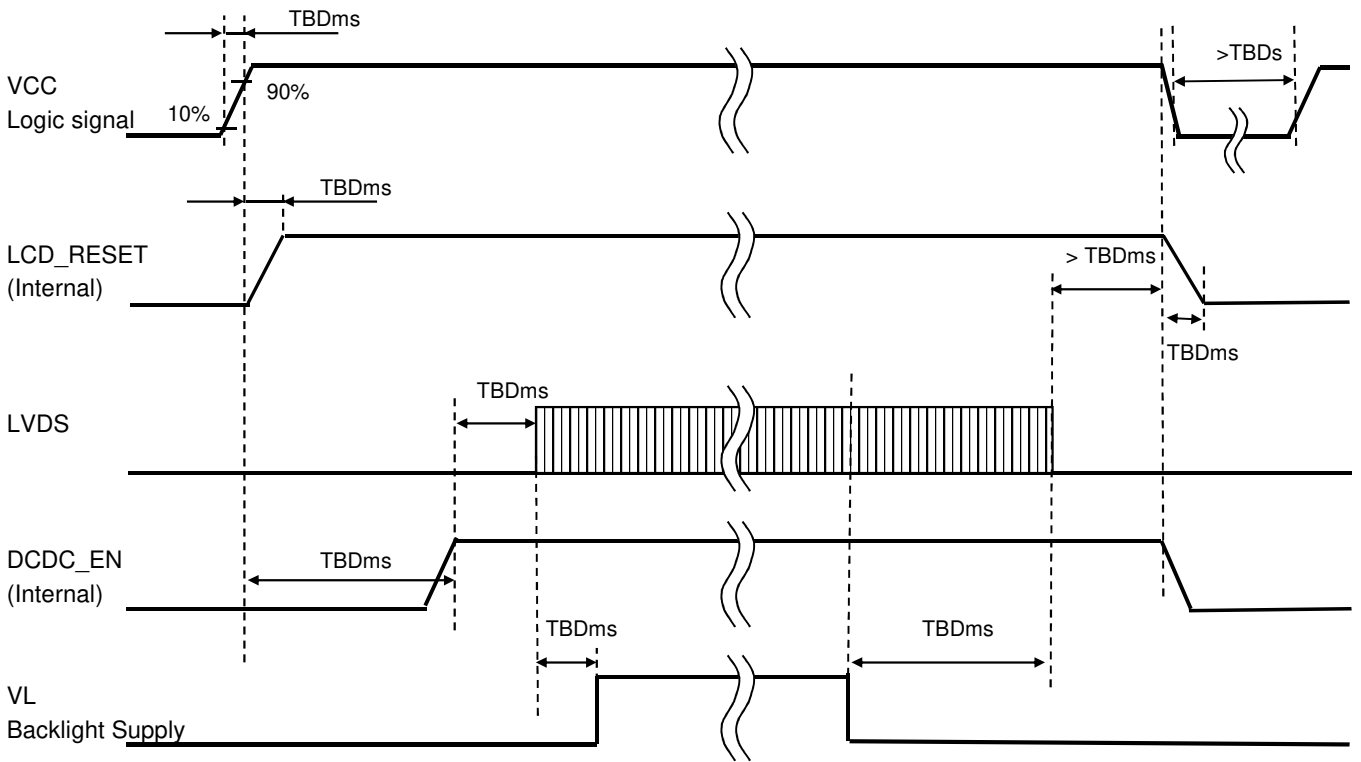
<Vertical timing>



<Horizontal timing>



### 6.4 Power ON/OFF Sequence



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