
Product Specification

Product Transparent Panel Kit

Model No. LCD-140-TRN

1. General Specifications

NO.	Item	Specification	Unit
1	Display resolution (pixel)	1366(H) X 768(V), HD resolution	
2	Active area	309.40(H) X 173.95(V)	mm
3	Screen size	14.0 inches diagonal	Inches
4	Pixel pitch	0.2265(H) X 0.2265(V)	mm
5	Color configuration	Stripe	
6	Overall dimension	320.9(W) X 199.1(H) X 3.6(D) (max)	mm
7	Weight	320Max.	Grams
8	Surface treatment	Glare, 3H	
9	Input color signal	6 bit LVDS	
10	Display colors	262K (6 bit)	
11	Optimum viewing direction	6 o'clock	
12	Backlight	W-LED	
13	RoHS	RoHS compliance	

2. Electrical Specifications

2-1 Pin Assignment

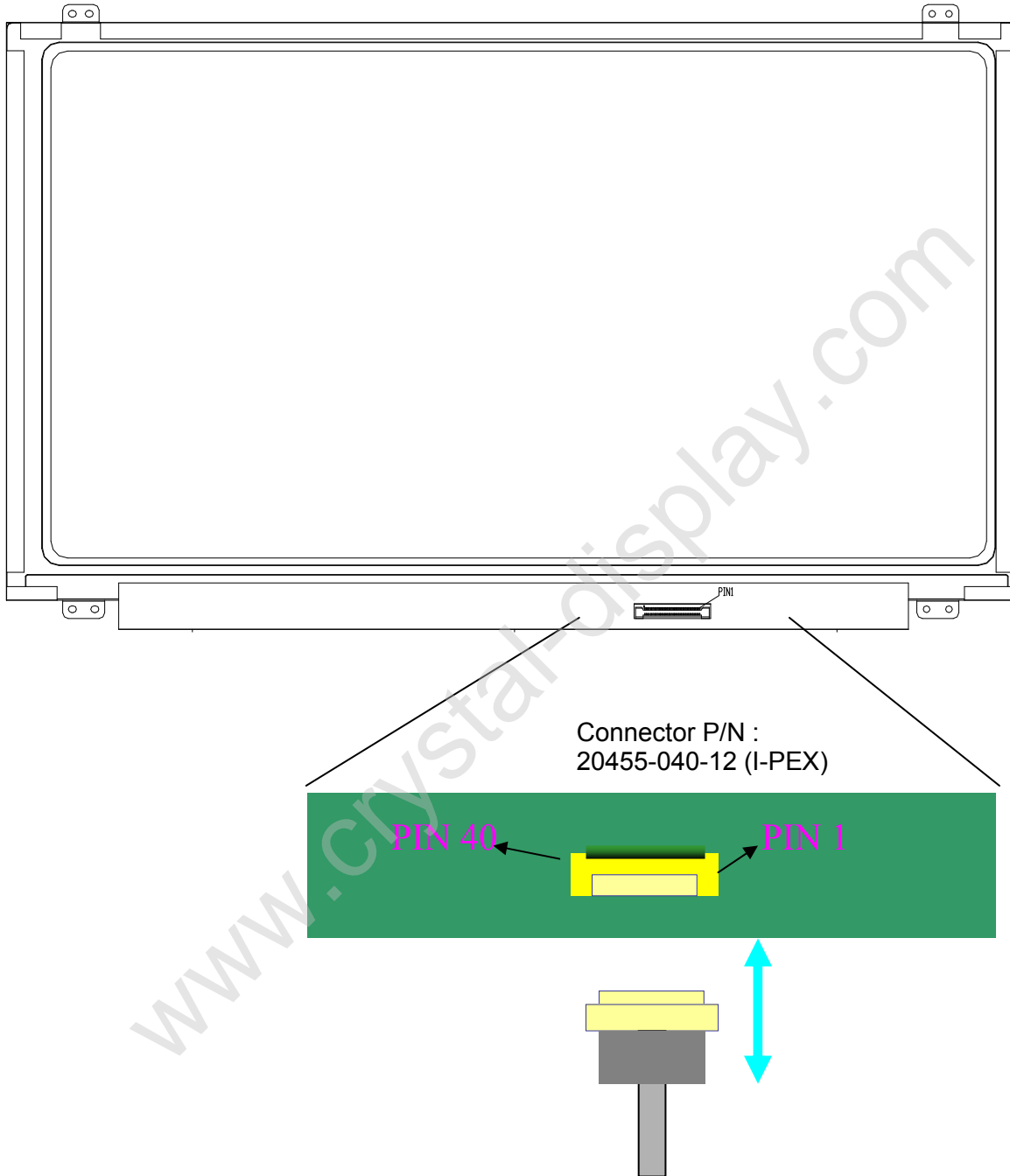
a. Panel connector

Connector Part No: GS13401-1110S-7H (Foxconn)

User's connector Part No: 20453-040T-12 (I-PEX) or equivalent

Pin No	Symbol	Description	Remark
1	DIAG_LOOP	Plug detection pin	
2	V _{CC}	Power Supply (+3.3V)	
3	V _{CC}	Power Supply (+3.3V)	
4	V _{EDID}	DDC Power +3.3V	
5	BIST	BIST function enable (+3.3V)	
6	CLK _{EDID}	DDC Clock	
7	DATA _{EDID}	DDC Data	
8	Rxin0-	Differential Data Input	R0~R5,G0
9	Rxin0+	Differential Data Input	
10	GND	Ground	
11	Rxin1-	Differential Data Input	G1~G5,B0,B1
12	Rxin1+	Differential Data Input	
13	GND	Ground	
14	Rxin2-	Differential Data Input	B2~B5,DE,Hsync,Vsync
15	Rxin2+	Differential Data Input	
16	GND	Ground	
17	CLK-	Differential Clock Input	
18	CLK+	Differential Clock Input	
19	NC	No connection (Reserve)	
20	NC	No connection (Reserve)	
21	NC	No connection (Reserve)	
22	NC	No connection (Reserve)	
23	NC	No connection (Reserve)	
24	NC	No connection (Reserve)	
25	NC	No connection (Reserve)	
26	NC	No connection (Reserve)	
27	NC	No connection (Reserve)	
28	NC	No connection (Reserve)	
29	NC	No connection (Reserve)	
30	NC	No connection (Reserve)	
31	LED_GND	LED Ground	
32	LED_GND	LED Ground	
33	LED_GND	LED Ground	
34	DIAG_LOOP	Plug detection pin	
35	LED_PWM	PWM dimming signal input	
36	LED_EN	LED enable pin (3.3V)	
37	NC	No connection (Reserve)	
38	V_LED	LED power supply 7.5V~21V	
39	V_LED	LED power supply 7.5V~21V	
40	V_LED	LED power supply 7.5V~21V	

b. General Block Diagram (Rear Side)



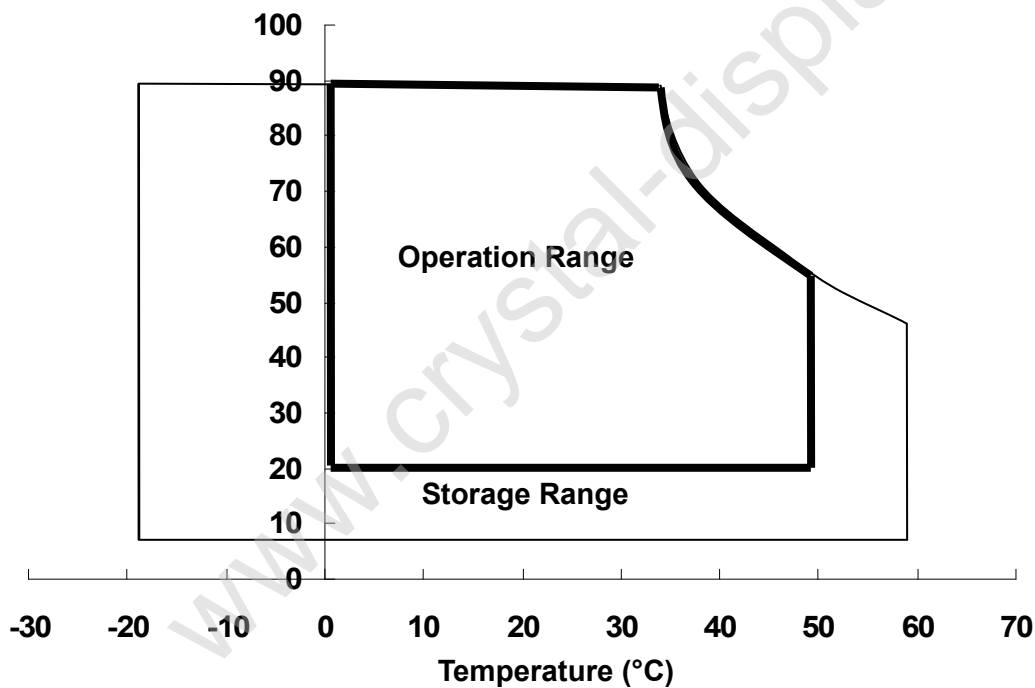
2-2. Absolute Maximum Ratings

Parameter	Symbol	Values		Unit	Remark
		Min.	Max.		
Power input voltage	V_{CC}	- 0.3	4.0	V	At 25°C
Signal input voltage	V_{IN}	- 0.3	4.0	V	At 25°C
Operating temperature	T_{OP}	0	50	°C	Note 1
Storage temperature	T_{ST}	- 20	60	°C	Note 2

Note 1: The relative humidity must not exceed 90% non-condensing at temperatures of 40°C or less. At temperatures greater than 40°C, the wet bulb temperature must not exceed 39°C.

Note 2: The unit should not be exposed to corrosive chemicals.

Relative Humidity (%RH)



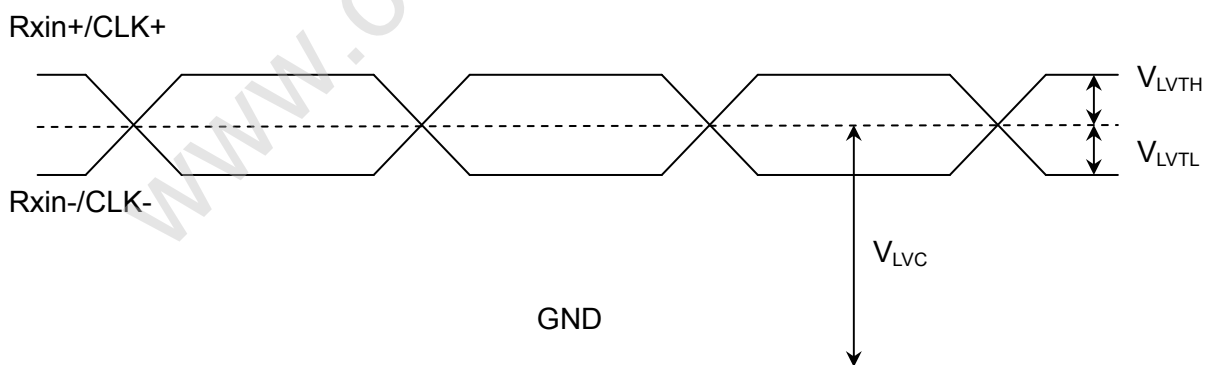
2-3. Electrical Characteristics

a. Typical operating conditions

Item	Symbol	Min.	Typ.	Max.	Unit	Remark	
Power input voltage	V_{CC}	3	3.3	3.6	V		
Permissive power input ripple	V_{RF}	-	-	0.1	V		
Power input current	I_{CC}	-	260	300	mA	Note 1	
Power consumption	P_C	-		1.2	Watts	Note 1	
LVDS interface	Differential input high threshold voltage	V_{LVTH}	-	-	+100	mV	LVDS interface
	Differential input low threshold voltage	V_{LVTL}	-100	-	-	mV	
	Common input voltage	V_{LVC}	1.0	1.2	1.4	V	
	Terminating resistor	R_T	90	100	110	ohm	
Rush current	I_{Rush}	-	-	1.5	A	Note 3	
LED rush current	$I_{LED-Rush}$	-	-	3.0	A	Note 4	

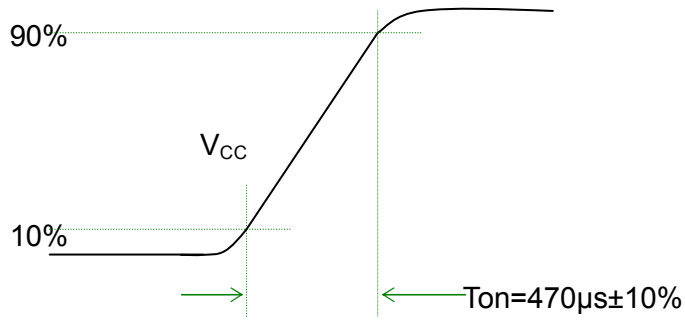
Note 1: The specified input current and power consumption are under the $V_{CC} = 3.3\text{ V}$, 25°C , $f_V = 60\text{Hz}$ (frame frequency) condition whereas mosaic pattern is displayed.

Note 2: LVDS waveform diagram

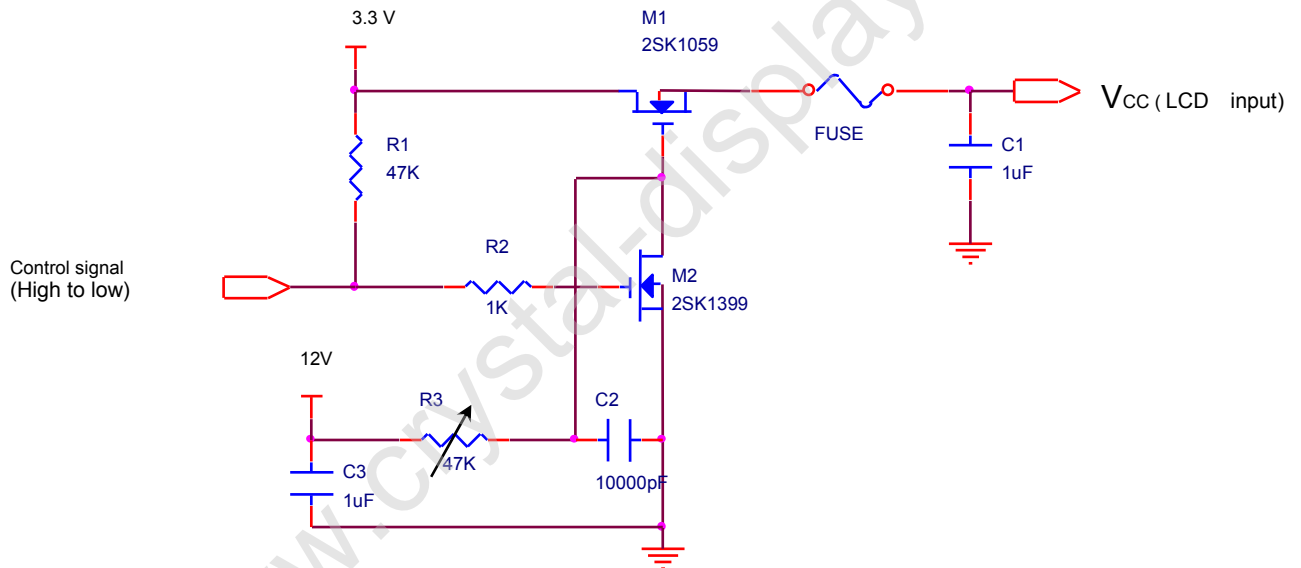


Note 3: Test condition

- (1) Pattern: Black pattern
- (2) $V_{CC} = 3.3\text{ V}$, V_{CC} rising time = $470\ \mu\text{s} \pm 10\%$

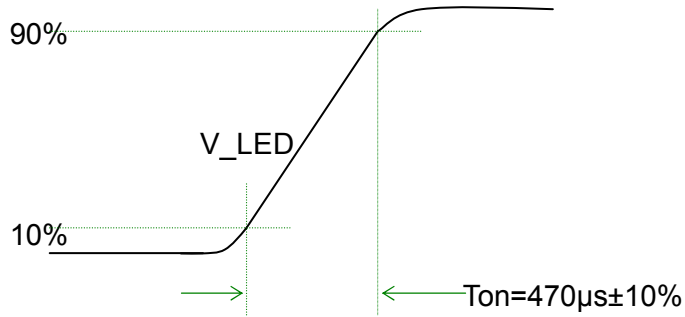


(3) Test circuit

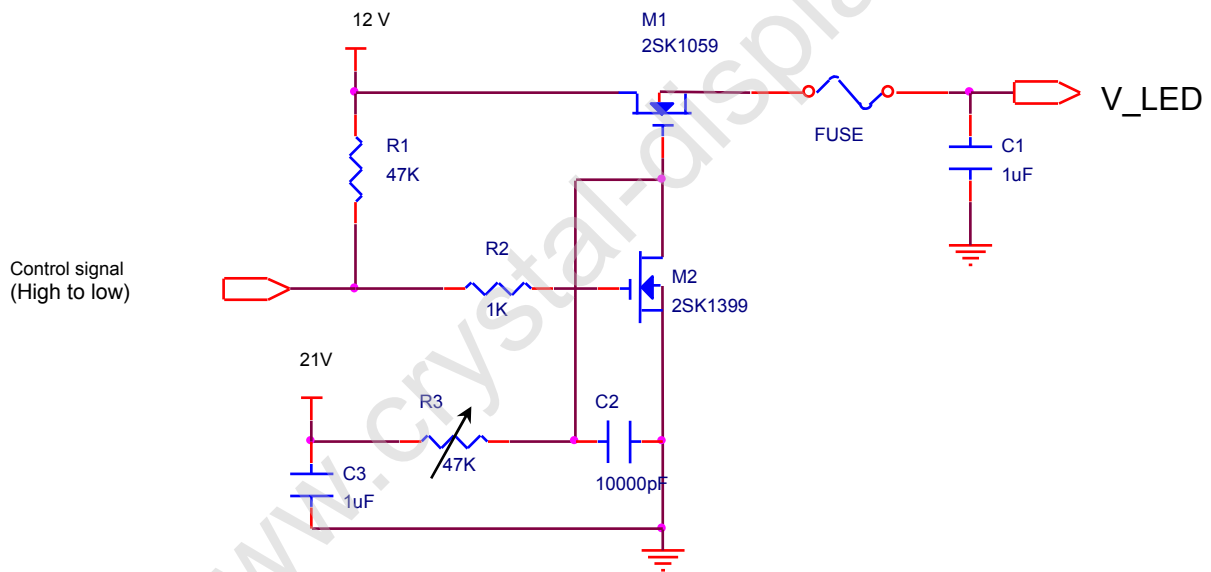


Note 4: Test condition

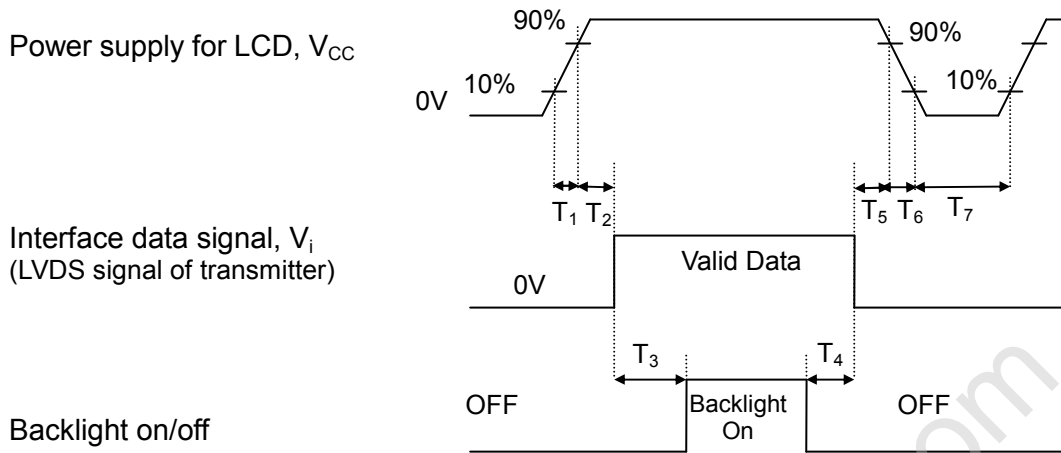
- (1) Pattern: LED duty 100%
- (2) $V_{LED} = 12.0V$, V_{LED} rising time = $470 \mu s \pm 10\%$



(3) Test circuit



b. Power sequence

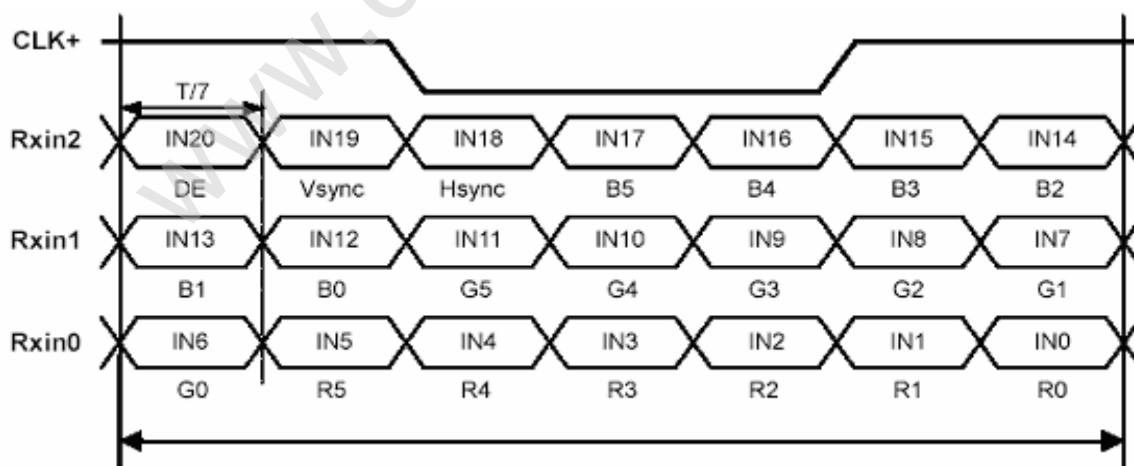


Power sequence timing table

Parameter	Value			Units
	Min.	Typ.	Max.	
T_1	0.5	-	10	ms
T_2	0	-	50	ms
T_3	200	-	-	ms
T_4	200	-	-	ms
T_5	0	-	50	ms
T_6	0	-	10	ms
T_7	400	-	-	ms

c. Display color vs. input data signals

Signal Name	Description	Remark
R5	Red Data 5 (MSB)	Red-pixel data. Each red pixel's brightness data consists of these 6 bits pixel data.
R4	Red Data 4	
R3	Red Data 3	
R2	Red Data 2	
R1	Red Data 1	
R0	Red Data 0 (LSB)	
	Red-pixel Data	
G5	Green Data 5 (MSB)	Green-pixel data. Each green pixel's brightness data consists of these 6 bits pixel data.
G4	Green Data 4	
G3	Green Data 3	
G2	Green Data 2	
G1	Green Data 1	
G0	Green Data 0 (LSB)	
	Green-pixel Data	
B5	Blue Data 5 (MSB)	Blue-pixel data. Each blue pixel's brightness data consists of these 6 bits pixel data.
B4	Blue Data 4	
B3	Blue Data 3	
B2	Blue Data 2	
B1	Blue Data 1	
B0	Blue Data 0 (LSB)	
	Blue-pixel Data	

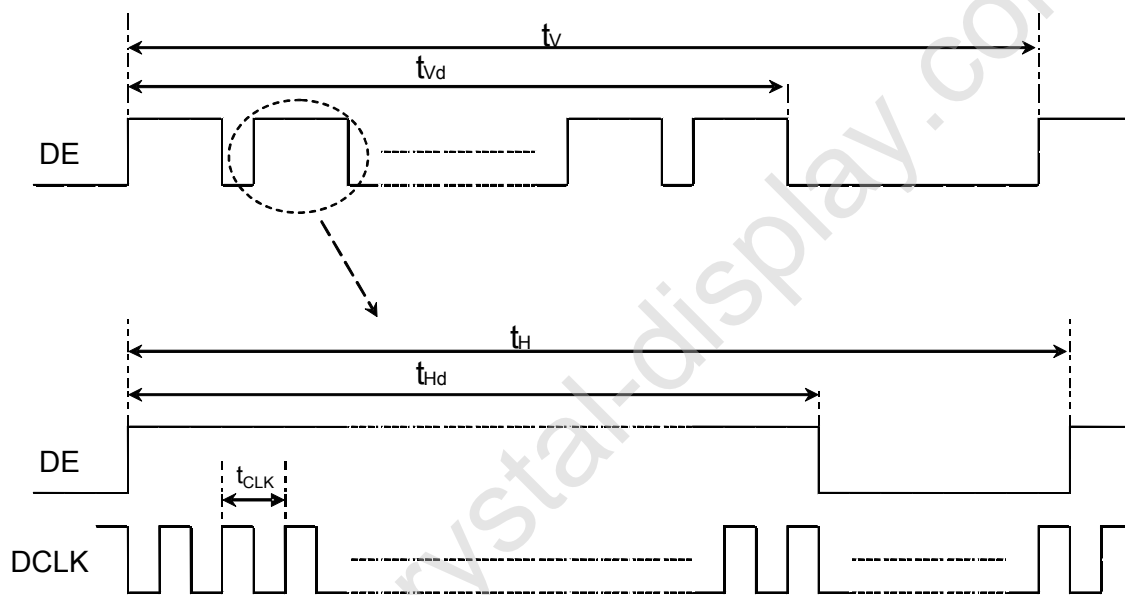


Signal for 1 DCLK cycle (t_{CLK})

d. Input signal timing

Timing table

Description	Symbol	Min	Typ	Max	Unit
Frame rate	--	40	60	--	Hz
Clock freq.	$1/t_{CLK}$	45	71	85	MHz
Line cycle time	t_H	1400	1498	1800	t_{CLK}
Line width-active	t_{Hd}	1366	1366	1366	t_{CLK}
Frame cycle time	t_v	780	790	900	t_H
V width-active	t_{vd}	768	768	768	t_H

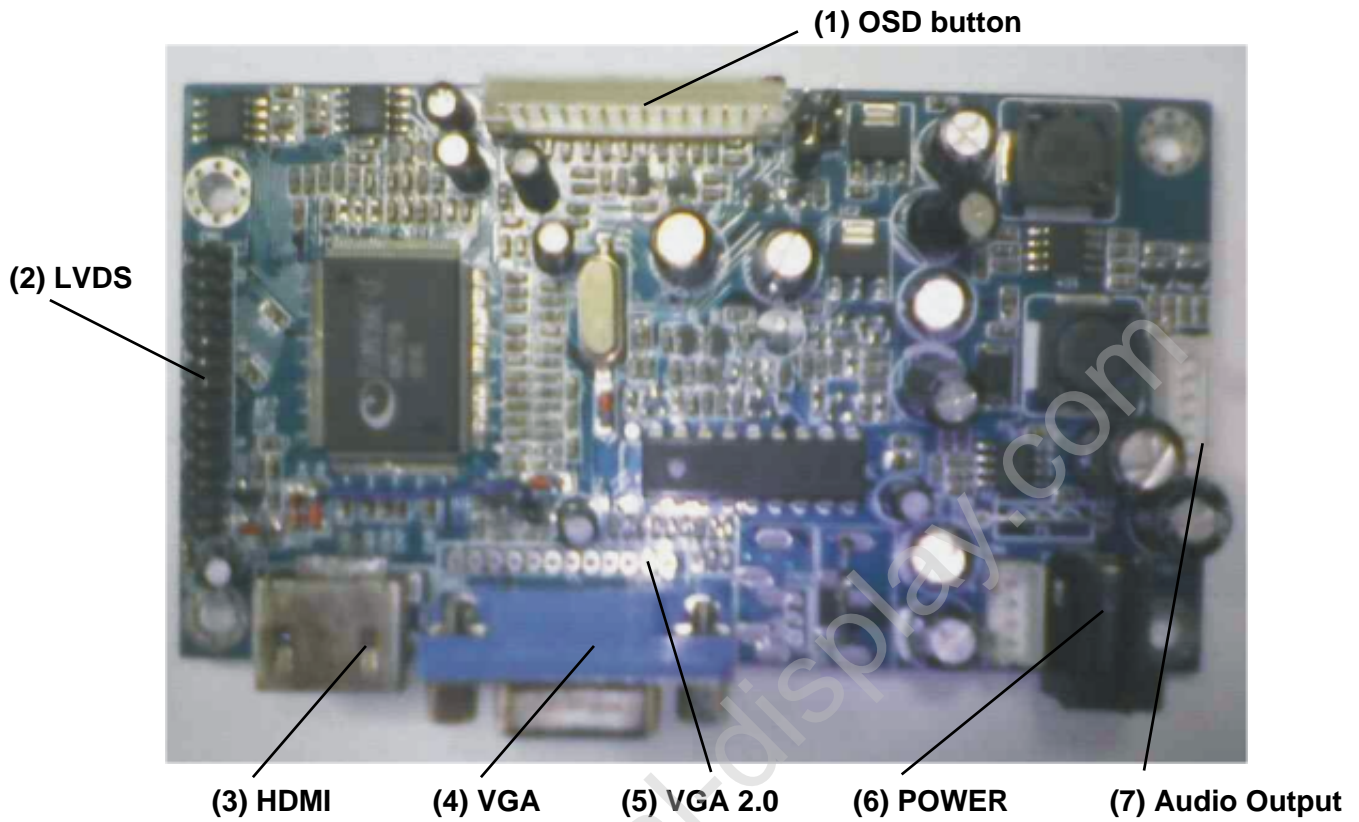


e. Display position

D(1, 1)	D(2, 1)	.....	D(683, 1)	.....	D(1365, 1)	D(1366, 1)
D(1, 2)	D(2, 2)	.....	D(683, 2)	.....	D(1365, 2)	D(1366, 2)
⋮		⋮	⋮	⋮
D(1, 384)	D(2, 384)	.....	D(683, 384)	.....	D(1365, 384)	D(1366, 384)
⋮		⋮	⋮	⋮
D(1, 767)	D(2, 767)	.....	D(683, 767)	.....	D(1365, 767)	D(1366, 767)
D(1, 768)	D(2, 768)	.....	D(683, 768)	.....	D(1365, 768)	D(1366, 768)

4. A/D BOARD

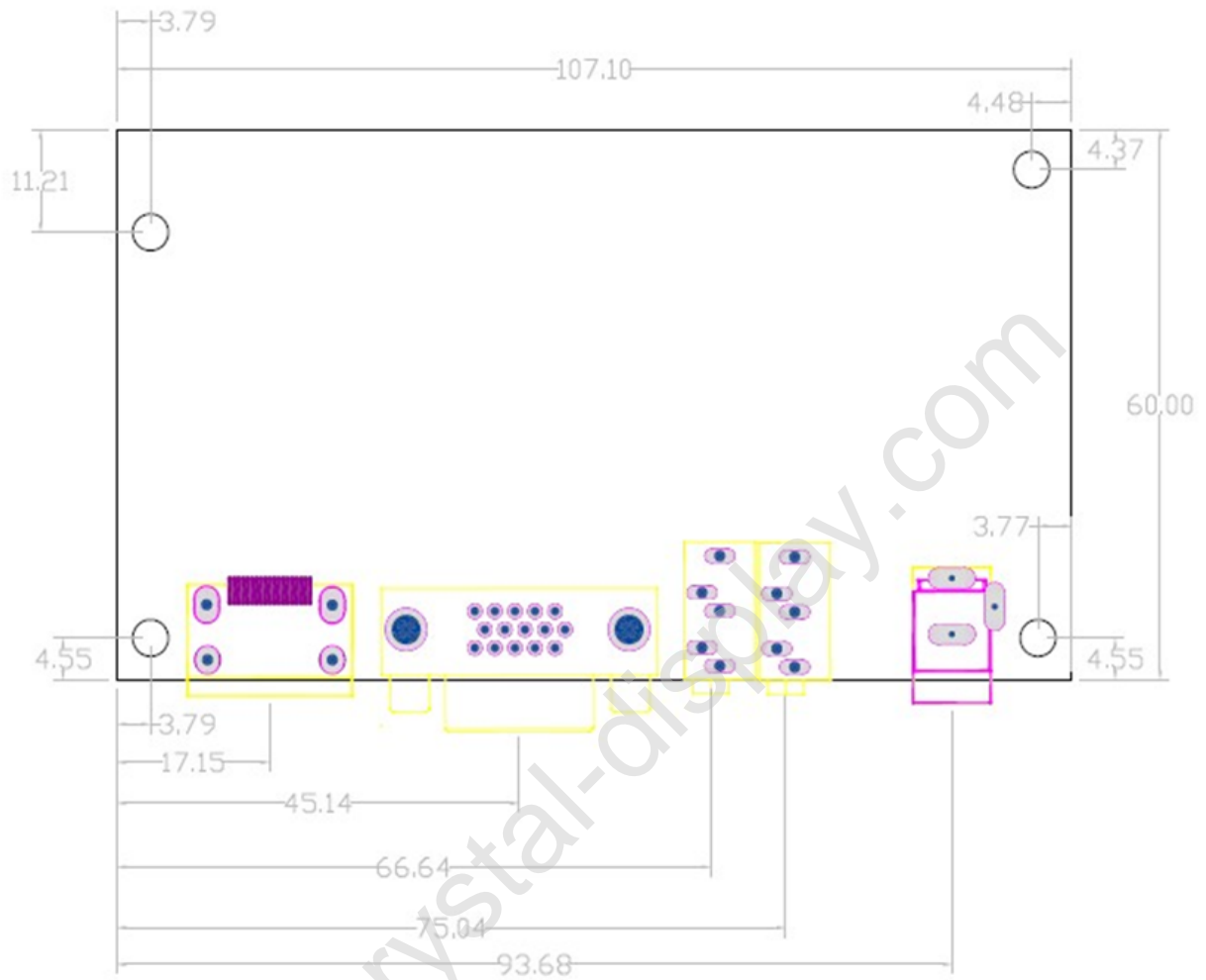
4.1 A/D BOARD SPECIFICATIONS



4.2 RESOLUTION SUPPORT

VGA	Resolution	HDMI	Resolution
	640x480		720-50Hz
	800x600		720-60Hz
	1024x768		720-24Hz
	1280x1024		720-25Hz
	1440x900		720-30Hz
	1600x1200		1080i 50
	1600x1050		1080i 60
	1920x1080		1080p 24
	1920x1200		1080p 25
	1280x800		1080p 30
	1280x960		1080p 50
	1280x720		480i
			480p
			576i
			576p

4.3 A/D BOARD Mechanical Drawing



5. LVDS Cable

LVDS Cable connects the Panel AND A/D Board



LVDS Cable length :25cm