AND Displays

AND104SLD-HB

800 x 600 Pixels
LCD Color Monitor

The AND104SLD-HB is a compact full color TFT LCD module, whose driving board is capable of converting composite video signals to the proper interface of LCD panel and is suitable for car TV, portable DVD and GPS, multimedia applications and other AV systems.

This device consists of amorphous silicon TFT liquid crystal display with B/L unit. The display has 1440 x 234 pixels on a 7.0 inch diagonal screen. X and Y drivers, LSI controller, and a built-in CCFL backlight inverter (with optional board.)

Features

• Pixel in stripe configuration
• 10.4 inch (26.4 cm) diagonal screen
• High brightness 2-CCFL backlight (350 Nits)
• Slim and compact, designed for O/A application
• Amorphous silicon TFT-LCD with B/L unit
• Display Colors: 262,144 colors
• +3.3V DC supply voltage for TFT LCD panel driving
• Wide viewing angle
• **RoHS compliant**

Mechanical Characteristics

Item	Specification	Unit
Screen Size	10.4 inch (26.4 cm) diagonal	–
Display Format	800 x (R, G, B) x 600	dot
Display Colors	262,144	–
Active Area	211.2 (H) x 158.4 (V)	mm
Pixel Pitch	0.264 (H) x 0.264 (V)	mm
Pixel Configuration	Stripe	–
Outline Dimensions	243 (W) x 185.1 (H) x 10.5 (D) (typ.)	mm
Weight	475 ± 20	g
Backlight	CCFL, 2-CCFL	–
Surface Treatment	Anti-glare and Wide View Film	–
Display Mode	Normally White	–
Gray Scale Inverstion Direction	12 o'clock	–

Product specifications contained herein may be changed without prior notice. It is therefore advisable to contact Purdy Electronics before proceeding with the design of equipment incorporating this product.

AND Displays

TFT-LCD Optical Characteristics

Item		Symbol	Conditions	Specifications			Units
				Min.	Typ.	Max.	
Viewing Angle	Horizontal	θ	CR ≥ 10	±55	±60	–	deg
	Vertical	θ (to 12 o'clock)		50	55	–	deg
		θ (to 6 o'clock)		35	40	–	deg
Contrast Ratio		CR	Optimum direction	200	400	–	–
Response Time	Rise	TR	$\theta = 0°$ / $\varphi = 0°$	–	15	50	ms
	Fall	Tf		–	25	50	ms
Uniformity		U	–	55	80	–	%
Luminance		L	$\theta = 0°$ / $\varphi = 0°$	300	350	–	cd/m^2
White Chromaticity		x		0.30	0.33	0.36	–
		y		0.34	0.37	0.40	–
Cross Talk Ratio		CTK		–	–	3.5	%
Lamp Life Time		–	+ 25 ° C	50,000	–	–	hrs

Input Terminals: TFT-LCD Panel Driving - Connector type: MOLEX 53779-1470

Pin #	Symbol	Description
1	VDD	Power supply: +3.3V
2	VDD	Power supply: +3.3V
3	GND	Ground
4	GND	Ground
5	IN0-	Pixel Data Transmission Pair 0 (negative -)
6	IN0+	Pixel Data Transmission Pair 0 (positive +)
7	IN1-	Pixel Data Transmission Pair 1 (negative -)
8	IN1+	Pixel Data Transmission Pair 1 (positive +)
9	IN2-	Pixel Data Transmission Pair 2 (negative -)
10	IN2+	Pixel Data Transmission Pair 2 (positive +)
11	CLK-	Sampling Clock (negative -)
12	CLK+	Sampling Clock (positive +)
13	GND	Ground
14	GND	Ground

Electrical Characteristics - Recommended Operating Conditions   GND=0V, Ta=25ºC

Item	Symbol	Min.	Typ.	Max.	Unit	Remarks
Supply Voltage	V_{DD}	3.0	3.3	3.6	V	
Current Dissipation	I_{DD}	–	190	380	mA	Note 1
LVDS Differential Input High Threshold	V_{TH}	–	–	100	mV	Note 2
LVDS Differential Input Low Threshold	V_{TL}	-100	–	–		
Lamp Current	I_{FL}	6.0	14.0	16.0	mS	Note 3, Note 5
Lamp Voltage	V_L	420	475	530	Vrms	Note3, I_L = 14mA
Starting Voltage (25ºC) (Reference Value)	V_S	–	–	810	Vrms	Note 4
Starting Voltage (0ºC) (Reference Value)	V_S	–	–	1080	Vrms	
Starting Voltage (-20ºC) (Reference Value)	V_S	–	–	1125	Vrms	
Lamp Driving Frequency	F_L	20	50	80	KHz	
Lamp Power Consumption	–	5.88	6.65	7.42	W	Note 5, I_L = 14mA

Note 1: To test the current dissipation of VDD, using the "color bars" testing pattern shown below:
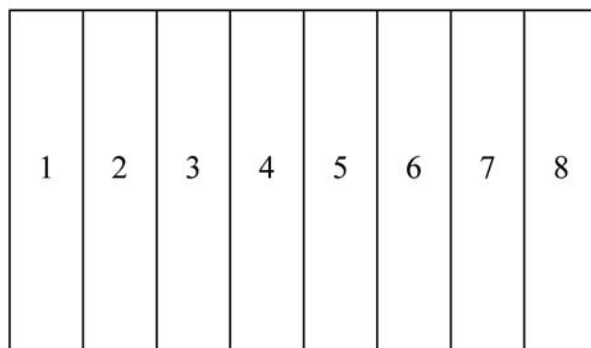
1. White
2. Yellow
3. Cyan
4. Green
5. Magenta
6. Red
7. Blue
8. Black

I_{DD} current dissipation testing pattern

Note 2: This LCD module conforms to LVDS standard.

Note 3: The backlight driving waveform should be as close to sine-wave as possible. In order to satisfy the quality of B/L, no matter the kind of inverter, the output lamp current must be between Min. and Max. to avoid the abnormal display image caused by B/L.

Note 4: The "Max. of starting voltage" means the minimum voltage of inverter to turn on the CCFL and it should be applied to the lamp for more than 1 second to start up. Otherwise the lamp may not be turned on.

**Note 5:** Lamp current is measured with current meter for high frequency as shown below:
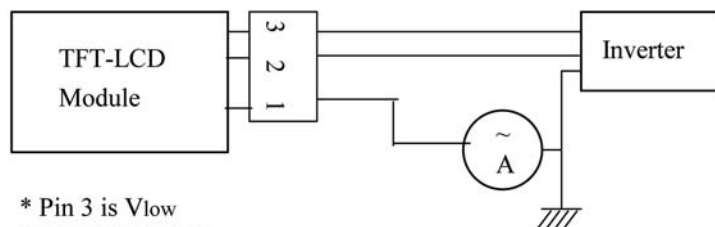
* Pin 3 is Vlow
** Current meter :
   Yokogawa 2016-01

Lamp current dissipation testing configuration

Note 6: The life time is determined as the time at which brightness of lamp is 50% compare to that of initial value at the typical lamp current.

LVDS Interface Block Diagram

LVDS Interface Block Diagram
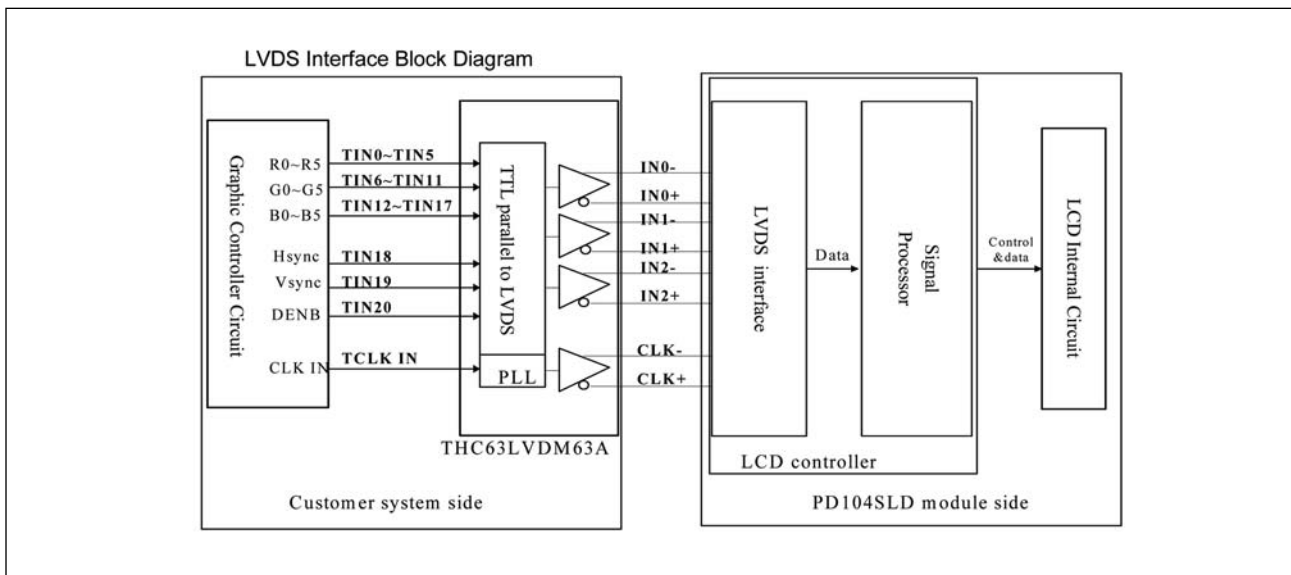
Backlight Driving - Connector Type: BHR-03VS-1 of Japan Solderless Terminal MFG Co., LTD

Pin No.	Symbol	Description	Remarks
1	LV	Ground	White
2	HV	Lamp Power Input	Pink (or Gray)
3	HV	Lamp Power Input	Pink (or Gray)

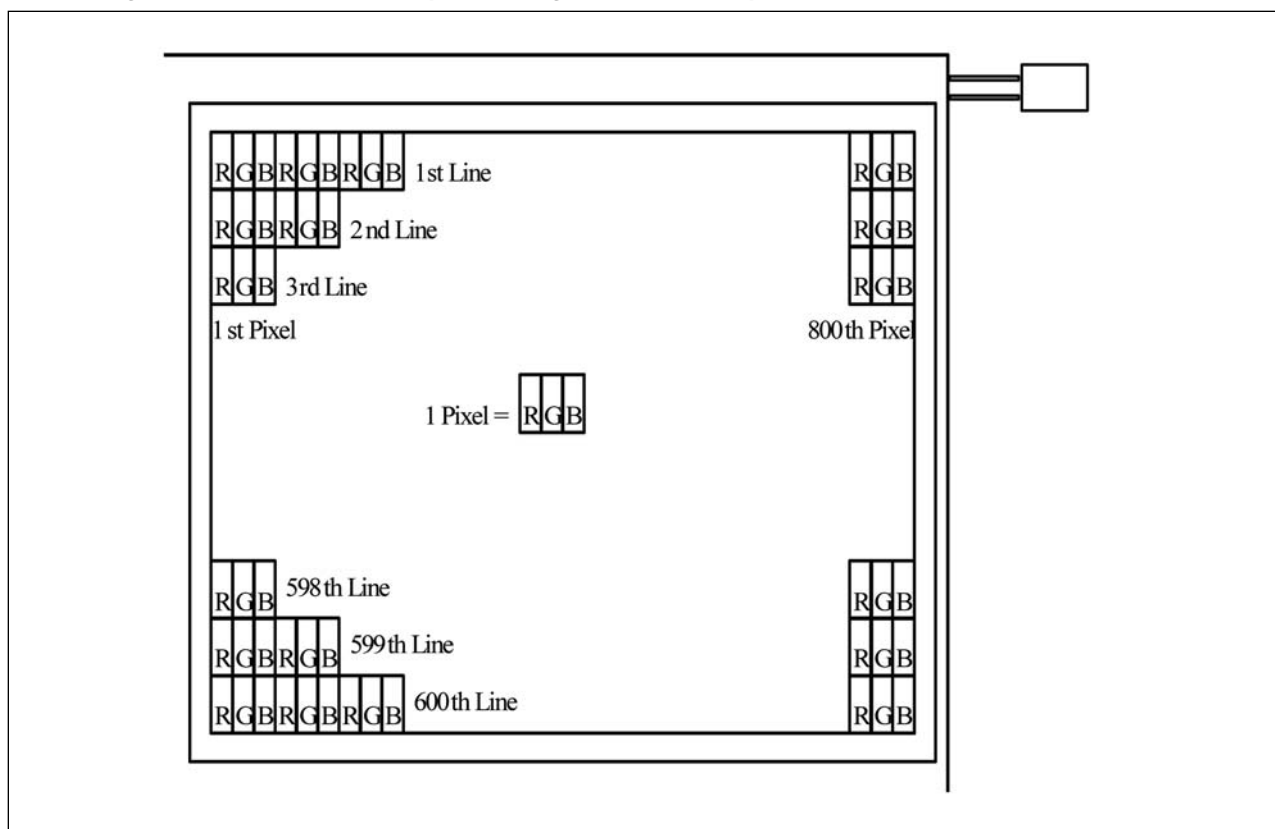**Backlight Absolute Maximum Ratings**   GND=0V, Ta=25°C

Parameters	Symbol	Min.	Max.	Unit
Supply Volate	V_{DD}	-0.3	+4.0	V
Backlight Driving Voltage	V_L	–	2000	V
Backlight Driving Frequency	F_L	20	80	KHz

Blcok Diagram
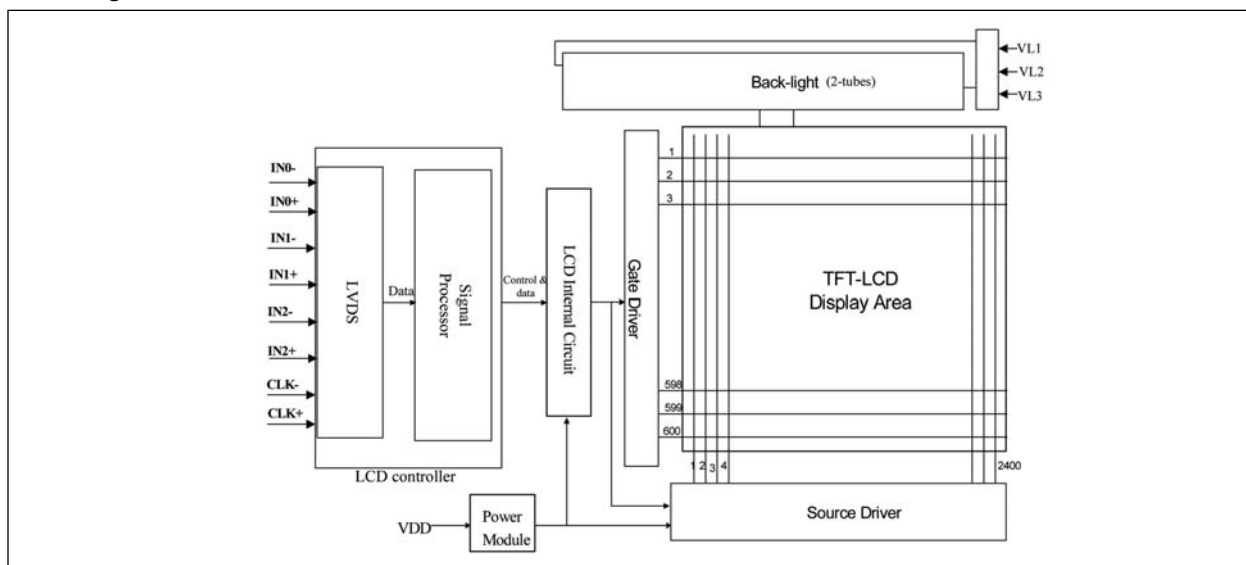
Timing Specifications

Item	Symbol	Min.	Typ.	Max.	Unit
Frame Cycling	t1	604 x t3	628 x t3	800 x t3	–
		–	16.58	–	ms
Vertifcal Display Period	t2	600 x t3	600 x t3	600 x t3	
Horizontal Scanning Time	t3	920 x t5	1056 x t5	1064 x t5	
		–	26.4	–	us
Horizontal Display Period	t4	800 x t5	800 x t5	800 x t5	
Clock Cycle	t5	–	25.0	–	ns
Clock High Level Time	t6	9.0	–	–	ns
Clock Low Level Time	t7	9.0	–	–	ns
Hold time	t8	4.0	–	–	ns
Setup time	t9	5.0	–	–	ns

Pixel Arrangement - The LCD module pixel arrangement is the stripe.

Dimensional Outline

General mechanical tolerance = 0.5mm