AND Displays

ANDpSi121C505-HB

12.1" XGA Color p-Si TFT LCD Module

The ANDpSi121C505-HB is 1024 x 768 Color TFT display that utilizes new poly-silicon (p-Si) technology to provide a brighter, thinner and lighter display with high-resolution. The p-Si TFT technology allows the row and column LCD drivers to be fabricated directly on the LCD glass. This eliminates the need for discrete TAB drivers and also reduces the thickness, weight and overall size of the display. The 12.1" XGA resolution expands applications in such areas as electronics books and personal digital-picture viewers.

Features

• RoHS Compliant

- p-Si construction with drivers on glass
- High luminance
- Single CCFL, Sidelight type
- 202 pixels per inch - equivalent to printed materials
- LVDS interface system
- XGA (1024 x 768 pixels color display)
- Fast response time
- Applications: electronic books and personal digital-picture viewers

Mechanical Characteristics

Item	Specification	Unit
Outline Dimensions	261.0 (W) x 199.0 (H) x 5.0 max (D)	mm
Number of Pixels	1024 (W) x 768 (H)	pixels
Active Area	245.76 (W) x 184.32 (H)	mm
Pixel Pitch	0.24 (W) x 0.24 (H)	mm
Weight (approx.)	275	gram
Backlight	CCFL, Sidelight type (1 lamp)	–

Absolute Maximum Ratings

Item	Symbol	Min.	Max.	Unit
Supply Voltage	V_{DD}	-0.3	4.0	V
	V_{FL}	0	2.0	kV(rms)
FL Driving Frequency	f_{FL}	–	100	kHz
Input Signal Voltage	V_{IN}	-0.3	V_{DD} + 0.3	V
Operating Temperature	T_{op}	0	50	°C
Storage Temperature	T_{stg}	-20	60	°C
Humidity (Max. Wet bulb temp = 29°C)	–	10	90	%(RH)

Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V_{DD}	3.0	3.3	3.6	V
V_{FL}: I_{FL}=6.0 mA(rms)	V_{FL}	–	(620)	–	V(rms)
FL Start Voltage (Ta = 0°C)	–	1200	–	(1400)	V(rms)
Differential Input	V_{ID}	100	_	600	mV
Common Mode Input Voltage	V_{CM}	1.0	–	2.4-(V_{ID})/2	V
Current Consumption	*1 (I_{DD})	–	(225)	–	mA
	*2 (I_{FL})	–	6.0	–	mA(rms)
*2 *3 Power Consumption I_{FL}=6.0 mA(rms)	P	–	(4.46)	–	W

Notes:
*1: 8 color bars pattern
*2: Excepting the efficiency FL inverter

Optical Characteristics (Ta = 25°C)

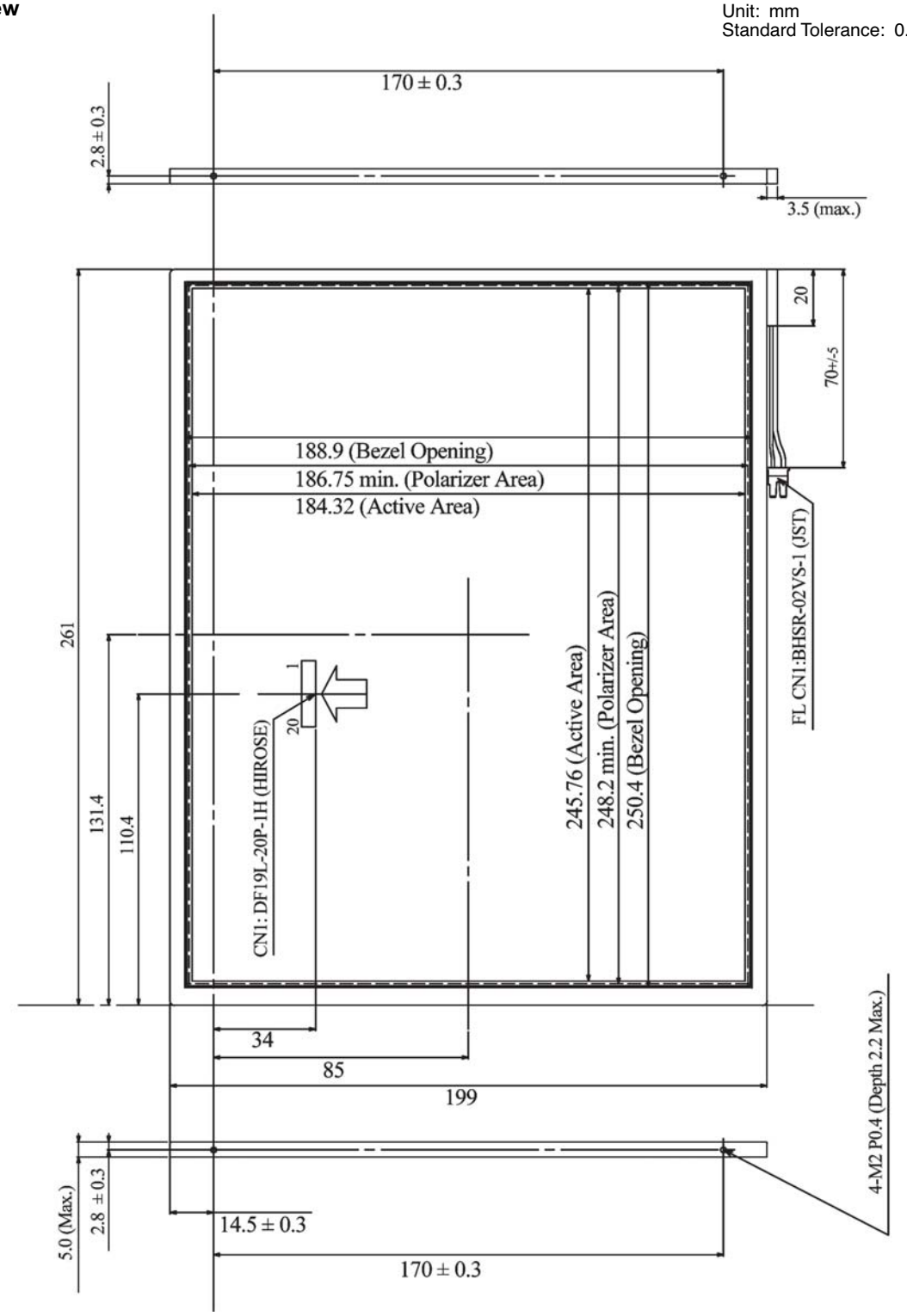
Item	Sym.	Condition	Min.	Typ.	Max.	Unit
Contrast Ratio	CR	ϕ = 0°, θ = 0°	100	250	–	–
Response Time	t_{on}	ϕ = 0°, θ = 0°	–	–	50	ms
	t_{off}		–	–	50	ms
Luminance	L	I_{FL}=(6.0)mA(rms)	–	(165)	–	cd/m^2

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.

Dimensional Outline

Front View

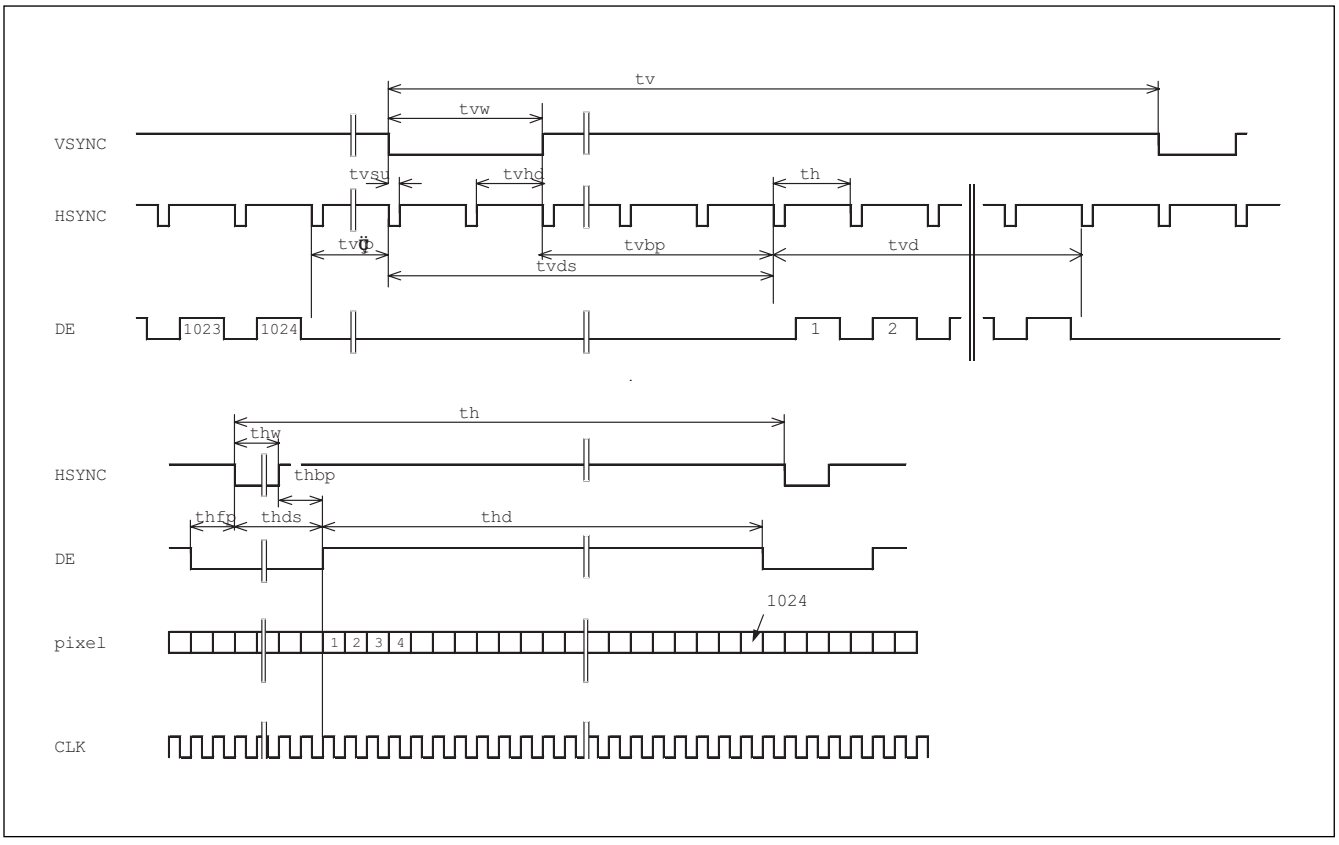
Unit: mm
Standard Tolerance: 0.5mm

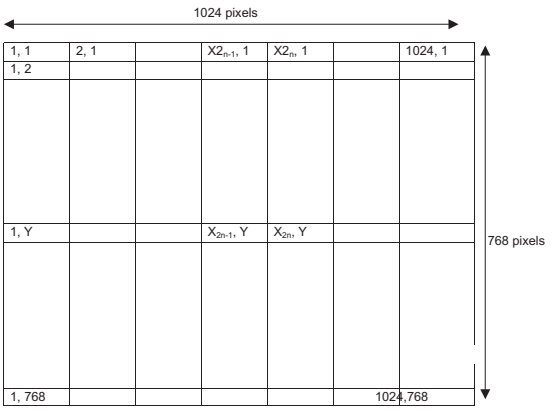


Timing Specifications

Item	Symbol	Min	Typ	Max	Unit
Horizontal Scanning Term	*th*	1334 x *tc*	1344 x *tc*	–	clock
H-sync Pulse Width	*th*w	4 x *tc*	136 x *tc*	–	clock
Horizontal Front Porch	*th*fp	4 x *tc*	24 x *tc*	–	clock
Horizontal Back Porch	*th*bp	24 x *tc*	160 x *tc*	–	clock
Horizontal Data Sync Period	*th*ds	32 x *tc*	296 x *tc*	–	clock
Horizontal Display Term	*th*d	1024 x *tc*	1024 x *tc*	1024 x *tc*	clock
Frame Period	*tv*	778 x *th*	806 x *th*	860 x *th*	line
V-sync Pulse Width	*tv*w	2 x *th*	6 x *th*	–	line
V-sync Set Up Time (to H-sync)	*tv*su	8 x *tc*	–	–	clock
V-sync Hold Time	*tv*hd	(thbp+16) x *tc*	–	–	clock
Vertical Front Porch	*tv*fp	1 x *th*	3 x *th*	–	line
Vertical Back Porch	*tv*bp	2 x *th*	29 x *th*	–	line
Vertical Data Sync Period	*tv*ds	8 x *th*	35 x *th*	–	line
Vertical Display Time	*tv*d	768 x *th*	768 x *th*	768 x *th*	line
Clock Period	*tc*	15.0	15.38	–	ns

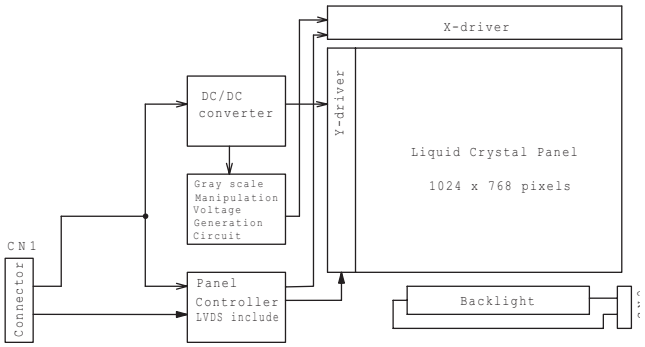
Timing Chart





Recommended Inverter:

Block Diagram



1) Drivers are fabricated on the LCD glass

2) Connectors

CN1: DF19L-20P-1H / Hirose Electric Co., Ltd.
Mating Connector - DF19G-20S-1F / (FPC)
Mating Connector - DF19G-20S-1C / (Cable)
CN2: BHSR-02VS-1/Japan Solderless Terminal Mfg. Co., Ltd
Mating Connector - SM02B-BHSS-1 / JST

Connector Pin Assignment for Interface

CN1 Input Signal
(DF19L-20P-1H / Hirose Electric Co., Ltd.)

Terminal No.	Symbol	Function
1	V_{DD}	Power Supply: +3.3V
2	V_{DD}	Power Supply: +3.3V
3	V_{SS}	Ground
4	V_{SS}	Ground
5	RxIN0-	Negative LVDS differential data input (R0-R5-G0)
6	RxIN0+	Positive LVDS differential data input (R0-R5-G0)
7	V_{SS}	GND
8	RxIN1-	Negative LVDS differential data input (G1-G5, B0-B1)
9	RxIN1+	Positive LVDS differential data input (G1-G5, B0-B1)
10	V_{SS}	GND
11	RxIN2-	Negative LVDS differential data input (B2-B5, HS, VS, DE)
12	RxIN2-	Positive LVDS differential data input (B2-B5, HS, VS, DE)
13	V_{SS}	GND
14	CLK-	Clock Signal (-)
15	CLK+	Clock Signal (+)
16	V_{SS}	GND
17	NC	
18	NC	
19	V_{SS}	GND
20	V_{SS}	GND

Note: Please connect GND pin to ground. Don't use it as no-connect or nor connection with high impedance.

CN2 CCFL Power Source
(BHSR-02VS-1/Japan Solderless Terminal Mfg Co., Ltd.)

Terminal No.	Symbol	Function
1	V_{FLH}	CCFL Power Supply (High Voltage)
2	V_{FLL}	CCFL Power Supply (Low Voltage)

Note (2): 256K colors are displayed by the combinations of 18 data bits.

	Display	R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0	Gray Scale Level
Basic Color	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	–
	Blue	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	–
	Green	L	L	L	L	L	L	H	H	H	H	H	H	L	L	L	L	L	L	–
	Lt. Blue	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	–
	Red	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	–
	Purple	H	H	H	H	H	H	L	L	L	L	L	L	H	H	H	H	H	H	–
	Yellow	H	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	L	L	–
	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H		–
Gray Scale of Red	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L1
		L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L2
					:						:						:			L3~L60
					:						:						:			
		H	H	H	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L61
	Light	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L62
	Red	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	Red L63
Gray Scale of Green	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L1
		L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L2
					:						:						:			L3~L60
					:						:						:			
		L	L	L	L	L	L	H	H	H	H	L	H	L	L	L	L	L	L	L61
	Light	L	L	L	L	L	L	H	H	H	H	H	L	L	L	L	L	L	L	L62
	Green	L	L	L	L	L	L	H	H	H	H	H	H	L	L	L	L	L	L	Green L63
Gray Scale of Blue	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L1
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L2
					:						:						:			L3~L60
					:						:						:			
		L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	L	H	L61
	Light	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	L	L62
	Blue	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	Blue L63
Gray Scale of White & Black	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark	L	L	L	L	L	H	L	L	L	L	L	H	L	L	L	L	L	H	L1
		L	L	L	L	H	L	L	L	L	L	H	L	L	L	L	L	H	L	L2
					:						:						:			L3~L60
					:						:						:			
		H	H	H	H	L	H	H	H	H	H	L	H	H	H	H	H	L	H	L61
	Light	H	H	H	H	H	L	H	H	H	H	H	L	H	H	H	H	H	L	L62
	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	White L63