



ANDpSi104AC36100-HB

10.4" XGA Color p-Si TFT LCD Module

The ANDpSi104AC36100-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. This reduces the thickness, weight and overall size of the display. The LVDS interface allows fast data transfer for 6-bit or 8-bit operation. Built in long life LEDS backlight (MTBF: 70k hours). This makes the display ideal for portable, battery-operated applications.

Features

- p-Si construction with drivers on glass
- High luminance
- Built in field replaceable LEDs backlight
- 6-bit (256K) or 8-bit (16.7M)
- Slim (5.2mm MAX) and lightweight design
- 10.4" XGA (1024 x 768 pixels color display)
- LVDS Interface system
- Applications: Notebook PC, Display Terminals; Scientific, Medical, Test & Measurement Instruments; Office Automation Equipment
- RoHS compliant

Mechanical Characteristics

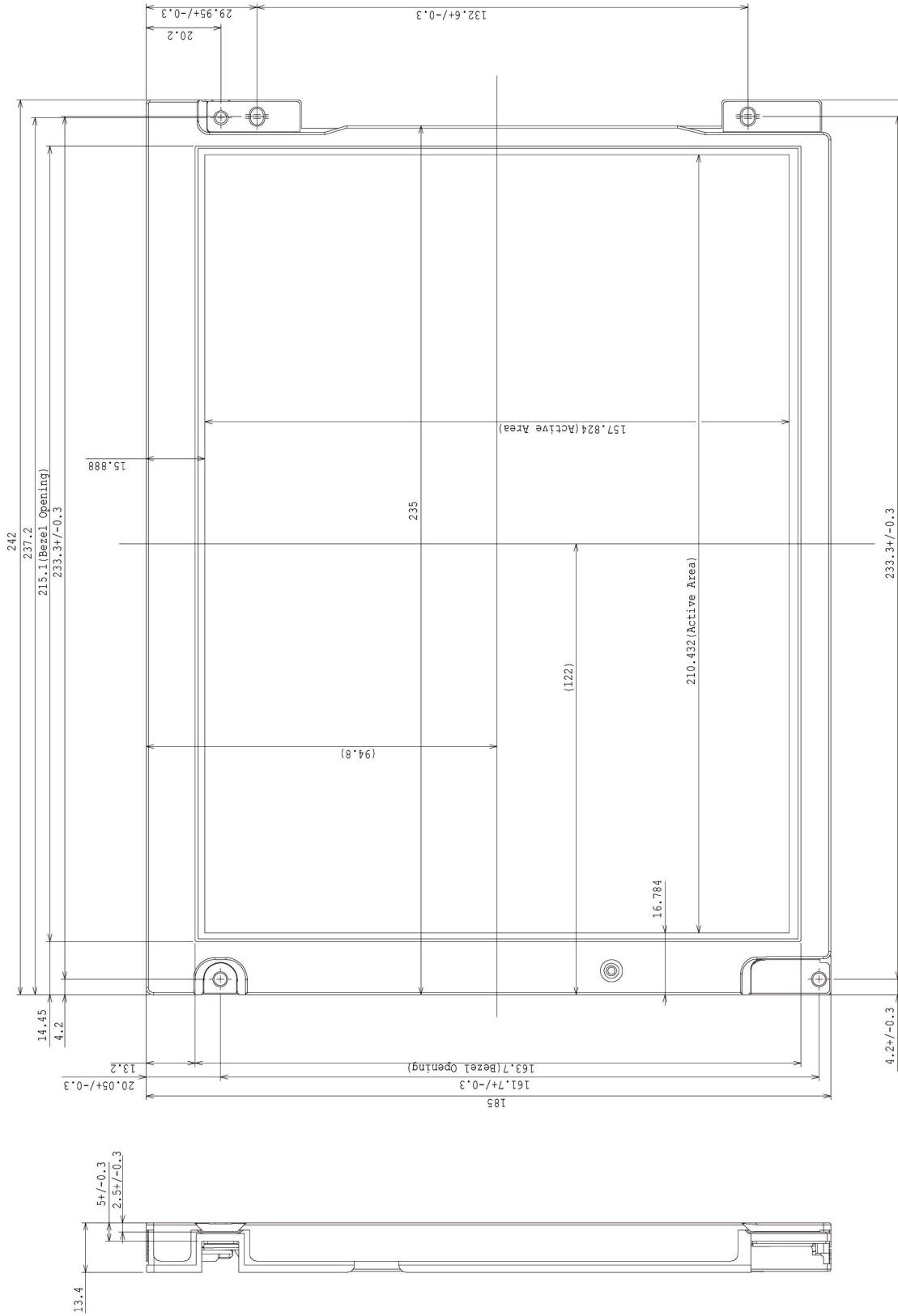
Item	Standard Value	Unit
Dimensional Outline (Typ.)	242.0 (W) x 185.0 (H) x 13.4 typ. (D)	mm
Number of Pixels	1024 (W) x 768 (H)	pixels
Active Area	210.432 (W) x 157.824 (H)	mm
Pixel Pitch	0.2055 (W) x 0.2055 (H)	mm
Weight (approximately)	600	grams
Backlight	Sidelight (LEDS)	-

Absolute Maximum Ratings

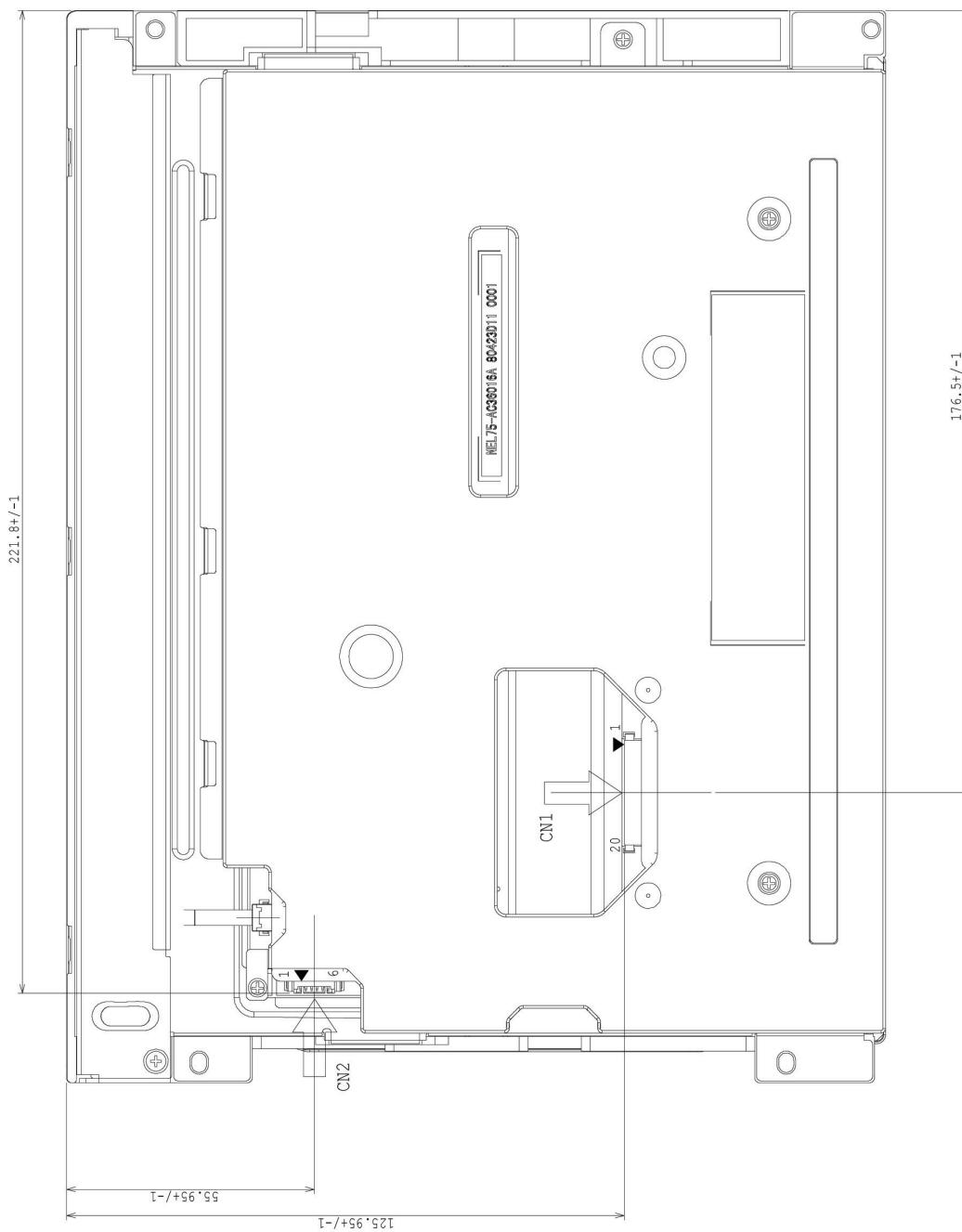
Item	Symbol	Min.	Max.	Unit
Supply Voltage	VDD	-0.3	4.0	V
	VLED	0	20	V
Input Signal Voltage	VIN	-0.3	VDD + 0.3	V
Operating Temperature	TOP	-20	70	°C
Storage Temperature	TSTG	-30	80	°C
Storage Humidity (Max. wet bulb temp. = 30 °C)	-	10	90	% (RH)

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.

Mechanical Drawing


Dimensional Outline - Rear



Timing Specification <H-Sync/V-Sync +DE Mode> (Notes 1 - 6 below)

Item	Symbol	Min.	Typ.	Max.	Unit
Frame Period	t_v	778 x t_h	806 x t_h	860 x t_h	—
		16.66	17.86	—	ms
Vertical Display Term	t_{vd}	768 x t_h	768 x t_h	768 x t_h	—
		1334 x t_c	1344 x t_c	1462 x t_c	—
One Line Scanning Time	t_h	20.5	20.7	—	μs
		1024 x t_c	1024 x t_c	1024 x t_c	—
Horizontal Display Term	t_{hd}	15.0	15.384	16.0	ns
Clock Period	t_c	—	—	—	—

Note 1: Refer to Timing Chart and LVDS specifications

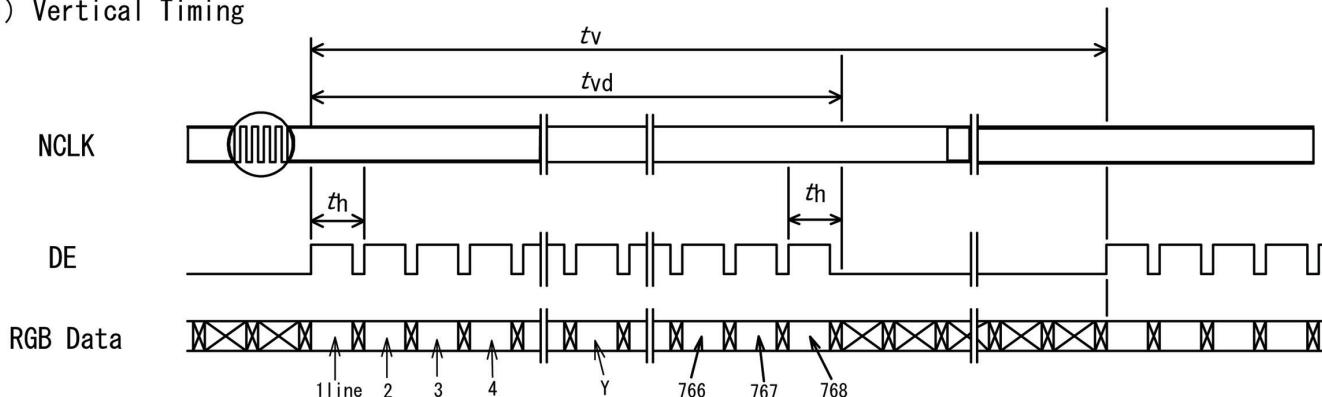
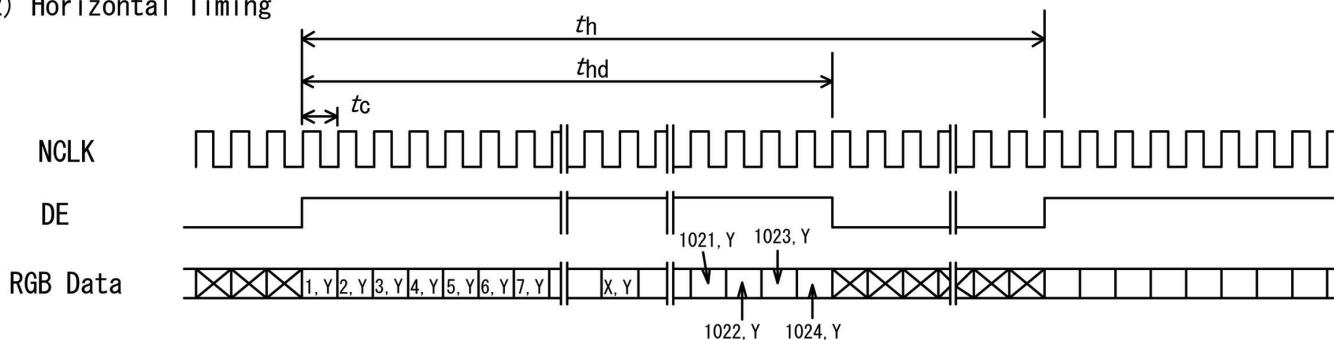
Note 2: If ENAB is fixed to "H" or "L" level for certain period while NCLK is supplied, the panel displays black with some flicker.

Note 3: Don't fix NCLK to "H" or "L" level while the VDD is supplied. If NCLK is fixed to "H" or "L" level for certain period while ENAB is supplied, the panel may be damaged. When it holds on, DC voltage supplies to liquid crystal materials and it may cause damage to liquid crystal materials.

Note 4: Please adjust LCD operating signal timing and LED PWM frequency, to optimize the display quality. There is a possibility that flicker is observed by the interference of LCD operating signal timing and PWM condition (especially driving frequency), even if the condition satisfies above timing specifications and recommended operating conditions shown on page 1)

Note 5: Do not make t_v , t_{vd} and t_h fluctuate. If t_v , t_{vd} , and the t_h are fluctuate, the panel display is black.

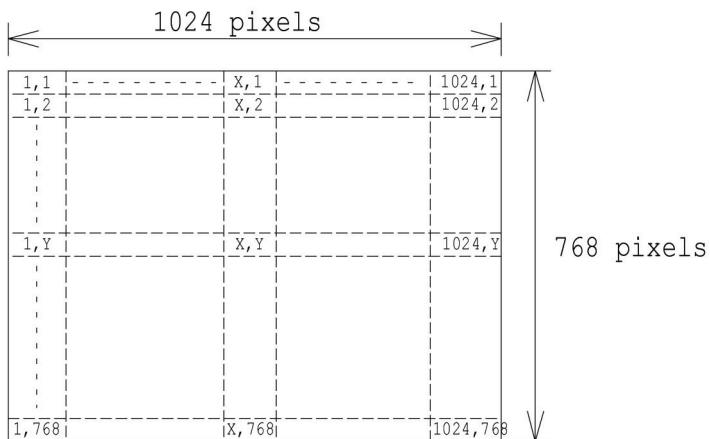
Note 6: Keep constant the number of clock within one line scanning time and the number of scanning line within one frame period.

Timing Chart
(1) Vertical Timing

(2) Horizontal Timing

CN2 LED Input Signal (Connector: 53261-0671 / Molex Connector: 51021-0600 / Molex Inc.)

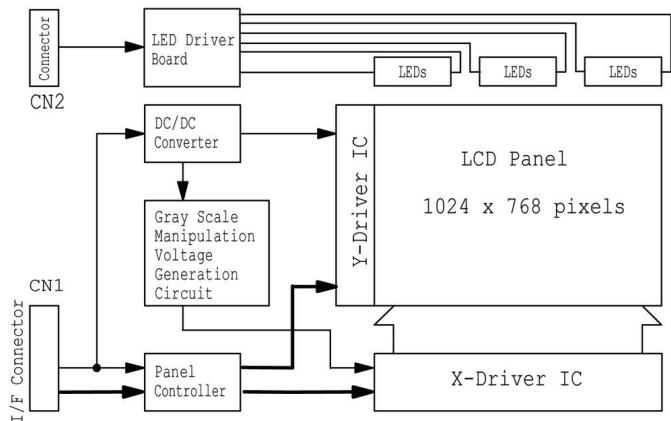
Terminal No.	Symbol	Function.
1	VLED	Power Supply: +12V
2	VLED	Power Supply: +12V
3	VSS	CND
4	VSS	GND
5	ON?OFF	"H (+3.3V)": ON, "L (GND or Open)": OFF
6	PWM	1-100 % (200 Hz)

Purdy Electronics Corporation • 720 Palomar Avenue • Sunnyvale, CA 94085

Tel: 408-523-8200 • Fax: 408-733-1287 • sales@purdelectronics.com • www.purdelectronics.com



Block Diagram



Connector Pin Assignment for Interface CN1 Input Signal (1)

Terminal No.	Symbol	Function
1	VDD	Power Supply: +3.3V
2	VDD	Power Supply: +3.3V
3	GND *	Ground
4	GND *	Ground
5	RxIN0-	Trans Data of Pixels 0 (Negative: -)
6	RxIN0+	Trans Data of Pixels 0 (Positive: +)
7	GND *	Ground
8	RxIN1-	Trans Data of Pixels 1 (Negative: -)
9	RxIN1+	Trans Data of Pixels 1 (Positive: +)
10	GND *	Ground
11	RxIN2-	Trans Data of Pixels 2 (Negative: -)
12	RxIN2+	Trans Data of Pixels 3 (Positive: +)
13	GND *	Ground
14	CLK-	Sampling Clock (Negative: -)
15	CLK+	Sampling Clock (Positive: +)
16	CLK _{EDID}	DDC Clock
17	U/D	Vertical Reverse ("L" level or Open: Normal, "H" level: Reverse)
18	L/R	Horizontal Reverse ("L" level or Open: Normal, "H" level: Reverse)
19	NC **	Non Connection (open)
20	DATA _{EDID}	DDC Data

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

** Please connect NC pin to nothing. Don't connect it to ground not to other signal input.

Connectors: 20268-020E-12F / I-PEX Co., LTD.

Mating Connector: 20230-020B-F or 20230-T20-F or 20230-W20B-F / I-PEX Co., LTD. DF19G20S-1C (plug), DF19A-2830SCFA (crimp contact) / Hirose Electric Co., LTD.

Optical Characteristics Ta = 25°C

Item	Min.	Typ.	Max.	Unit
Contrast Ratio	(CR)	(250)	(400)	-
Viewing Angle (CR ≥ 10)	(Upper/Lower)	-	100	-
	(Left/Right)	-	120	-
Response Time	(ton)			
	(toff)			
Luminance (PWM = 100%)	(L)	280	400	-
Lamp Life Time (MTBF) * , ** (PWM = 100%)		70,000		cd/m ²
				h

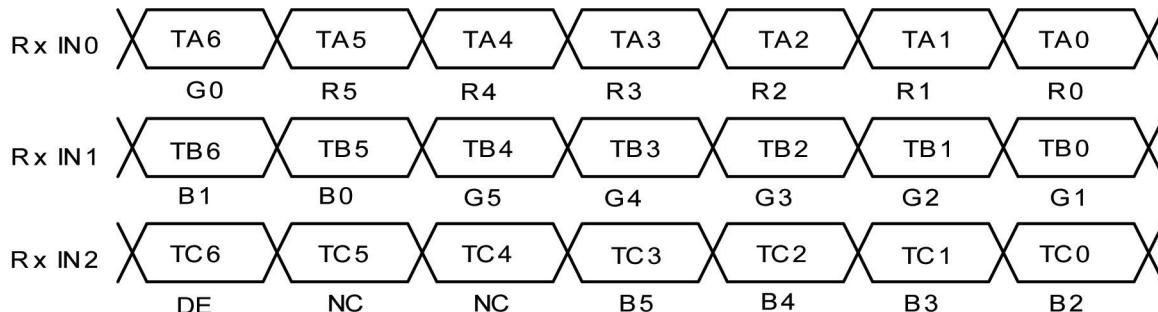
* Conditions: Ta = 25°C, continuous lighting

** Definitions of failure: 1) LCD luminance becomes half of the minimum value, 2) LED doesn't light normally.

6-Bit Transmitter

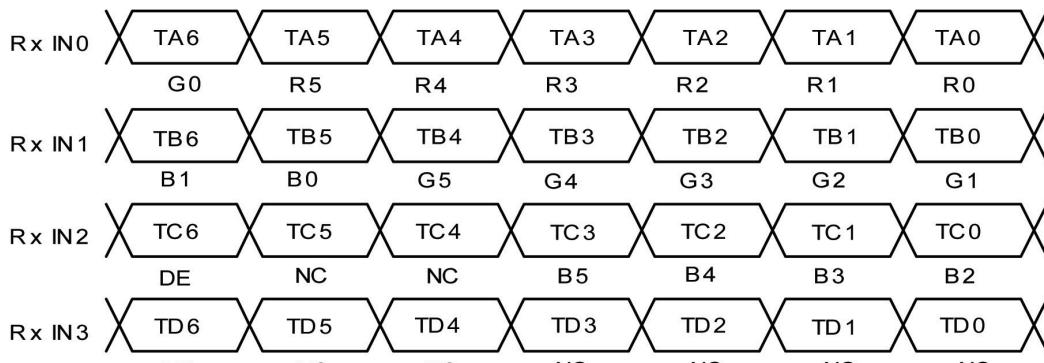
THC63LVDF63A, THC63LVDM63A				ANDpSi104AC36100-HB		
Input Terminal No.		Input Signal (Graphics controller output signal)		Output Signal Symbol	Interface (CN1)	
Symbol	DS90CF363	Symbol	Function		Terminal	Symbol
TA0	44	R0	Red Pixels Display Data (LSB)	TA- TA+	No. 5 No. 6	RxIN0- RxIN0+
TA1	45	R1	Red Pixels Display Data			
TA2	47	R2	Red Pixels Display Data			
TA3	48	R3	Red Pixels Display Data			
TA4	1	R4	Red Pixels Display Data			
TA5	3	R5	Red Pixels Display Data (MSB)			
TA6	4	G0	Green Pixels Display Data (LSB)			
TB0	6	G1	Green Pixels Display Data	TB- TB+	No. 8 No. 9	RxIN1- RxIN1+
TB1	7	G2	Green Pixels Display Data			
TB2	9	G3	Green Pixels Display Data			
TB3	10	G4	Green Pixels Display Data			
TB4	12	G5	Green Pixels Display Data (MSB)			
TB5	13	B0	Blue Pixels Display Data (LSB)			
TB6	15	B1	Blue Pixels Display Data			
TC0	16	B2	Blue Pixels Display Data	TC- TC+	No. 11 No. 12	RxIN2- RxIN2+
TC1	18	B3	Blue Pixels Display Data			
TC2	19	B4	Blue Pixels Display Data			
TC3	20	B5	Blue Pixels Display Data (MSB)			
TC4	22	NC *1	Non Connection (open)			
TC5	23	NC *1	Non Connection (open)			
TC6	25	DE	Compound Synchronization Signal			
CLK IN	26	NCLK	Data Sampling Clock	TCLK - TCLK +	No. 14 No 15	CLK - CLK +

Note 1) Please connect NC pin to nothing. Don't connect it to ground or to other signal input.



Recommended Transmitter (DS90CF383) to ANDpSi104AC36100-HB Interface Assignment: 8 bit Transmitter

DS90CF383 *Please connect NC to nothing: not to ground or other signal input.				ANDpSi104AC36100-HB	
Input Terminal No.		Input Signal (Graphics controller output signal)		Output Signal Symbol	Interface (CN1)
Symbol	DS90CF383	Symbol	Function		Terminal
TA0	51	R0	Red Pixels Display Data (LSB)	TA- TA+	No. 5 No. 6
TA1	52	R1	Red Pixels Display Data		
TA2	54	R2	Red Pixels Display Data		
TA3	55	R3	Red Pixels Display Data		
TA4	56	R4	Red Pixels Display Data		
TA5	3	R5	Red Pixels Display Data (MSB)		
TA6	4	G0	Green Pixels Display Data (LSB)		
TB0	6	G1	Green Pixels Display Data	TB- TB+	No. 8 No. 9
TB1	7	G2	Green Pixels Display Data		
TB2	11	G3	Green Pixels Display Data		
TB3	12	G4	Green Pixels Display Data		
TB4	14	G5	Green Pixels Display Data (MSB)		
TB5	15	B0	Blue Pixels Display Data (LSB)		
TB6	19	B1	Blue Pixels Display Data		
TC0	20	B2	Blue Pixels Display Data	TC- TC+	No. 11 No. 12
TC1	22	B3	Blue Pixels Display Data		
TC2	23	B4	Blue Pixels Display Data		
TC3	24	B5	Blue Pixels Display Data (MSB)		
TC4	27	NC *1	Non Connection (open)		
TC5	28	NC *1	Non Connection (open)		
TC6	30	DE	Compound Synchronization Signal		
TD0	50	NC*	Non Connection (open)	TD- TD+	-
TD1	2	NC*	Non Connection (open)		
TD2	8	NC*	Non Connection (open)		
TD3	10	NC*	Non Connection (open)		
TD4	16	NC*	Non Connection (open)		
TD5	18	NC*	Non Connection (open)		
TD6	25	NC*	Non Connection (open)		
CLK IN	31	NCLK	Data Sampling Clock	TCLK- TCLK+	No. 14 No. 15



Electrical Specification (Ta=25°C) (Recommended Operation Condition)

Item		Min.	Typ.	Max.	Unit	Remarks
Supply Voltage	(VDD)	3.0	3.3	3.6	V	
	(VLED)	10.8	12.0	13.2	V	
Differential Input Voltage	(VID)	0.25	–	0.45	V	
Common Mode Input Voltage	(VCM)	1.0	1.25	2.0	V	
High Level Input Voltage	(VIH)	2.2	–	VDD	V	U/D, L/R
Low Level Input Voltage	(VIL)	0	–	0.7	V	U/D, L/R
Backlight On/Off Signal	(Vonoff)	2.2	–	VDD	V	ON
		0	–	0.7	V	OFF
Luminance Control Signal	(VPWM)	0	–	3.3	V	
Current Consumption	(IDD) *	–	(230)	–	mA	
	(ILED)	–	(430)	–	mA	PWM = 100%
Power Consumption (8 color bars pattern)		–	(5.9)	–	W	PWM = 100%

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	H	H	H	H	H	H	H	—
	Green	L	L	L	L	L	H	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	H	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	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	
		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	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	L	H	L	L	L	L	L	L	L2
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3~L60	
		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	L61
	Light	L	L	L	L	L	H	H	H	H	H	H	H	L	L	L	L	L	L	L62
	Green	L	L	L	L	L	H	H	H	H	H	H	H	H	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		
		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	L61
	Light	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	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	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			
		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	L61
	Light	H	H	H	H	H	L	H	H	H	H	H	H	H	L	H	H	H	H	L62
	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	White L63