

# ALP127ALX

3.8cm (1.5/inch ) 521 x 218 dots

\* This specification is tentative and subject to change without notice. Please contact us when you use this module on your production.

## Overview

This low power consumption 1.5 inch low temperature poly-silicon TFT-LCD module is suitable for view finder of digital still camera.

## Features

- Diagonal 3.8cm (1.5inch) display size.
- 521x218=113,578 dots.
- Transmissive type.
- RGB delta color arrangement.
- Prifferd viewing angle ; 6 o'clock (FPC is bottom)
- Polarizer ; Glare type.
- Low power consumption (panel TYP. 15mW) by common inversion drive (built-in negative power supply generater and gate level shifter).
- Up/down and right/left inverse function.
- Built-in level shifter circuit.
- Thinness ; 3mmt (include BL).
- Recommended IC ; LV4141W (analog I/F), LC15004 (digital I/F)
- Operating temperature (panel surface) ; -10 to +60°C.
- Storage temperature ; -20 to +70°C.
- Harnessless type (Option ; built-in harness).

## Specifications

Item	Specifications	Unit	Remarks
Dot count(H)x(V)	521 x 218	dot	
Effective display dimensions (H)x(V)	30.247 x 22.672	mm	
Display size(diagonal)	3.8 (1.5inch)	cm	
Dot pitch(H)x(V)	0.058 x 0.104	mm	
Color arrangement	RGB Delta	-	
Module external dimensions(W)x(H)x(D)	TYP. 37 x 33.62 x 2.95	mm	Note1
FPC length	TYP.19.15	mm	
Weight	Approx. 9.5	g	

\*Note1 : Excluding flexible cable and protrusions.

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Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production.

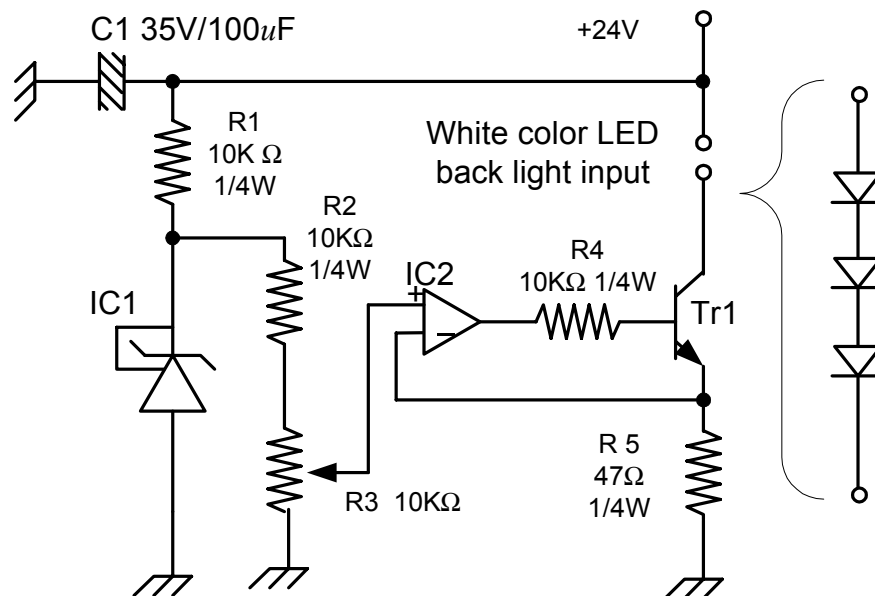
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## Absolute Maximum Ratings at VSS = 0V

Item	Symbol	Ratings	Unit
H driver power supply voltage	HVDD	-1.0 to +10	V
V driver power supply voltage	VDD	-1.0 to -10	V
V driver negative power supply voltage	VBB	-6.0 to -1.0	V
Common electrode voltage	VCOM	-1.0 to +10	V
Driving direction signal voltage	CSH,CSV	-1.0 to +11	V
H driver/Drain storage gate voltage	STH,XSTH,CKH1,CKH2, DSG,XDSG	-1.0 to +10	V
V driver input voltage	STV,XSTV,CKV1,CKV2, ENB,XENB	-1.0 to +10	V
Video/Drain storage data signal input voltage	VG,VR,VB,VDS	-1.0 to +8	V
Operating temperature	Topr	-10 to +60	°C
Storage temperature	Tstg	-20 to +70	°C
Backlight input current	If	30* <sup>1</sup>	mA

\*1 Ta = 25°C

## Constant Current Circuit for Measurement



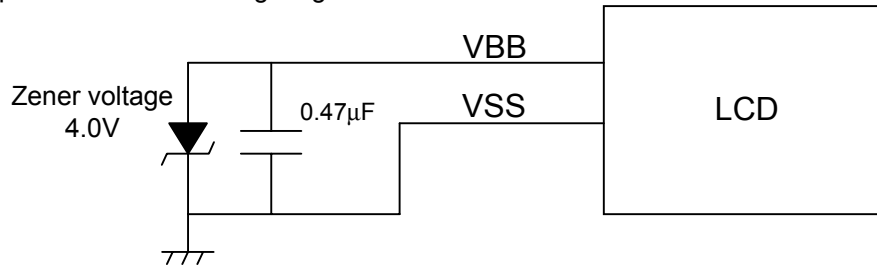
IC1=Diode 1431T  
 IC2=OP amplifier M358  
 Tr1=Transistor 2SC1213

## Operating Conditions VSS=0V

Item	Symbol	MIN	TYP	MAX	Unit
Power supply voltage	HVDD	8.2	8.5	8.8	V
	VDD	8.2	8.5	8.8	V
VBB output voltage	VBB	-	-4.0	-	V

## Negative Power Supply Generator

To stabilize VBB output voltage, VBB should be tied VSS through a zener diode with smoothing capacitor as the following diagram.



## Input Signal

Item		Symbol	MIN	TYP	MAX	Unit
H driver/Drain storage gate voltage	Low	VHIL	-0.3	0.0	0.3	V
	High	VHIH	2.5	3.0	4.0	V
V driver input voltage	Low	VVIL	-0.3	0.0	0.3	V
	High	VVIH	2.5	3.0	4.0	V
CSH	Low	VHSIL	-0.3	0.0	0.3	V
	High	VHSIH	HVDD	HVDD	HVDD	V
CSV	Low	VVSIL	-0.3	0.0	0.3	V
	High	VVSIH	VDD	VDD	VDD	V
Video signal center voltage	analog I/F	VVC	3.30	3.50	3.70	V
	digital I/F	VVC	2.55	2.75	2.95	V
Video signal voltage (analog I/F)	Black(H)	Vblack(H)	5.05	5.25	5.45	V
	Black(L)	Vblack(L)	1.55	1.75	1.95	V
	White-Black	Vsig w-b			2.70	V
Video signal voltage (digital I/F)	Black(H)	Vblack(H)	4.30	4.50	4.70	V
	Black(L)	Vblack(L)	0.80	1.00	1.20	V
	White-Black	Vsig w-b			2.70	V
Common electrode signal center voltage	analog I/F	VCOM c	(VVC-0.25) -0.2	(VVC-0.25)	(VVC-0.25) +0.2	V
	digital I/F	VCOM c	(VVC-0.25) -0.2	(VVC-0.25)	(VVC-0.25) +0.2	V
Common electrode signal center range	analog I/F	VCOM p-p		3.5		V
	digital I/F	VCOM p-p		3.5		V
Drain storage data signal		VDSD		VVC		V

## White LED Backlight Input Current/Voltage

Item	MIN	TYP	MAX	Unit
Forward current	19.5	20.0	20.5	mA
D.C. voltage(constant current ; 20 mA)	9.5	10.5	12.0	V

## Power Consumption

Item	Symbol	Condition	MIN	TYP	MAX	Unit
Panel power consumption	PWR		-	15	-	mW
Backlight power consumption		Constant current 20mA	-	210	-	mW

## Optical Specifications (Ta=25°C, SANYO standard measurement system)

Item	Symbol	Condition	MIN	TYP	MAX	Unit
Contrast ratio	CR	$\theta=0$	-	100	-	-
Viewing angle range	$\theta T$	$CR \geq 10$	-	15	-	°C
	$\theta B$			35		
	$\theta L$			45		
	$\theta R$			45		
Luminance	L	$\theta=0$	-	280	-	cd/m <sup>2</sup>

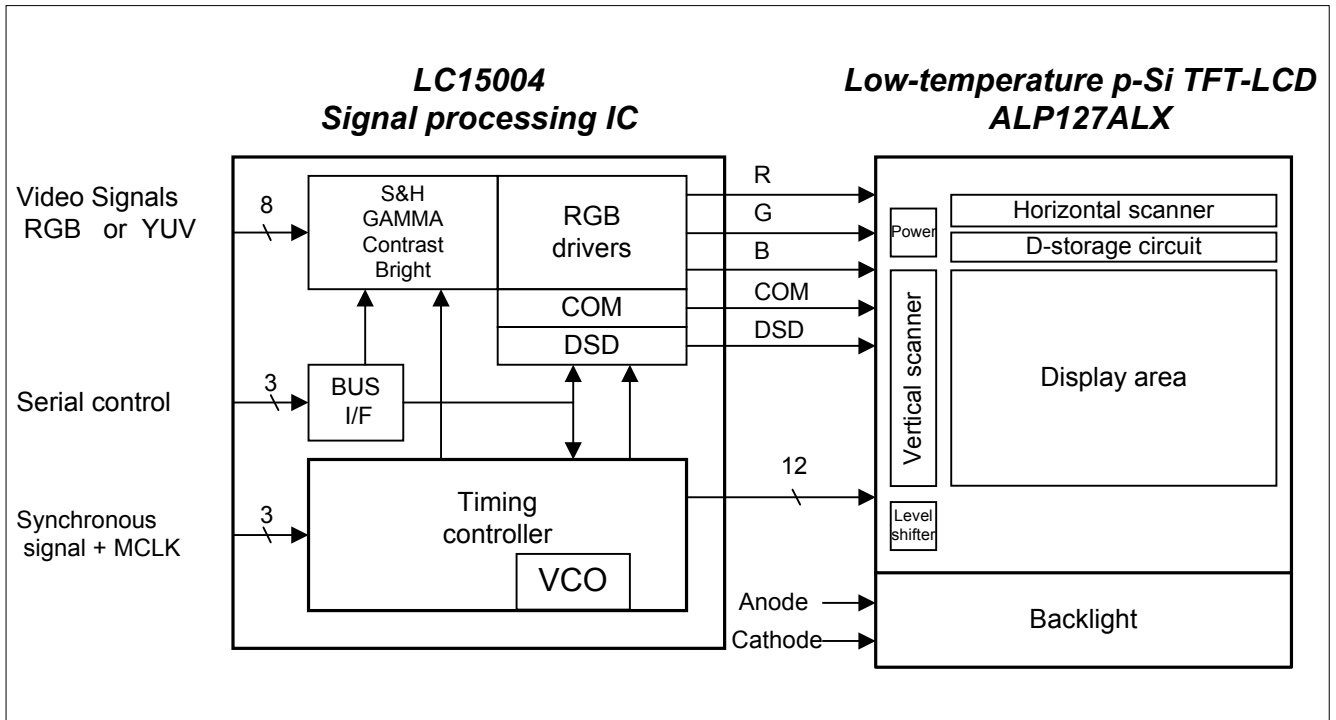
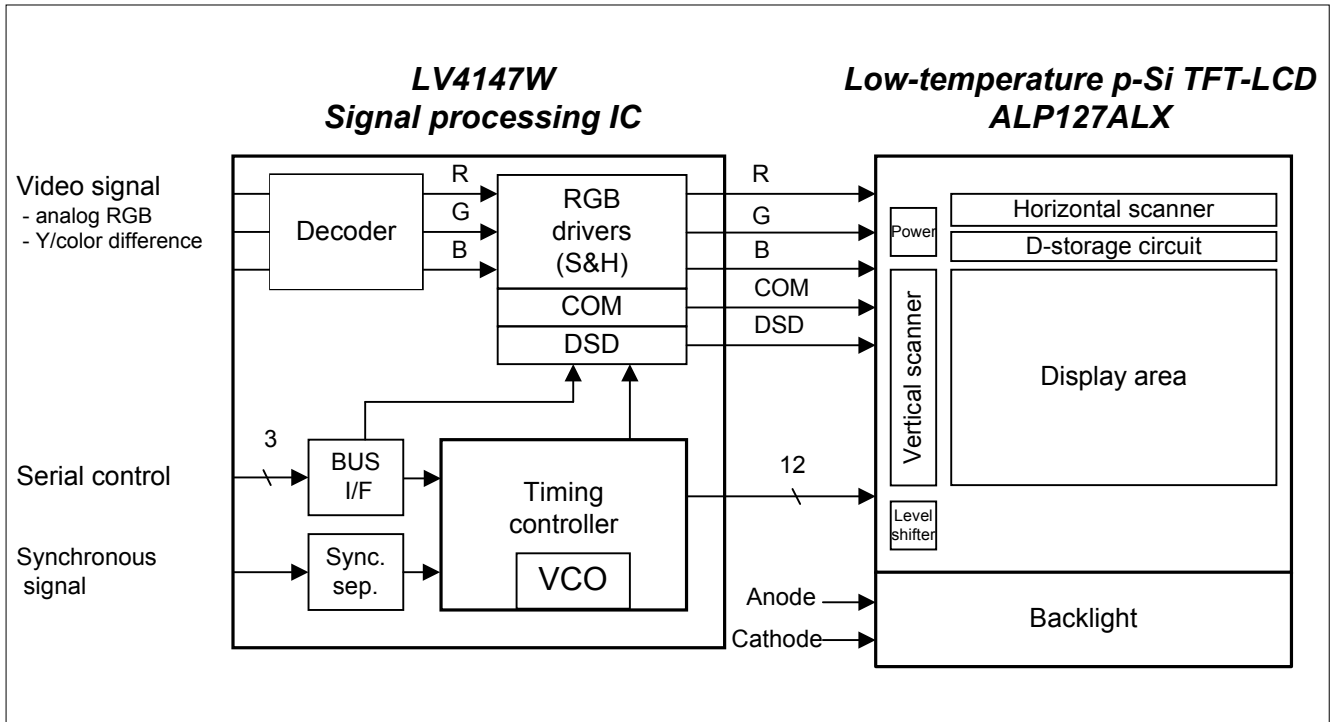
## Pin Function

No.	Symbol	Function
1	COM	Common electrode voltage
2	CKV1	V clock1
3	CKV2	V clock2
4	STV	V start signal
5	XSTV	Inverted signal of STV
6	VVDD	VDD for H/V drive
7	ENB	Enabla signal
8	XENB	Inverted signal of ENB
9	CSV	Up/down inverse control signal (H:Normal scan, L:Reverse scan)
10	VBB	VBB output terminal
11	DSG	Drain storage data signal
12	XDSG	Inverted signal of DSG
13	DSD	Drain storage data signal
14	B	Video signal (B)
15	R	Video signal (R)
16	G	Video signal (G)
17	CSH	Right/left inverse controll signal (H:Normal scan, L:Reverse scan)
18	NC	"Open"
19	VSS	VSS for V and H drive
20	STH	H start signal
21	XSTH	Inverted signal of STH
22	HVDD	VDD for H drive
23	CKH1	H clock1
24	CKH2	H clock2

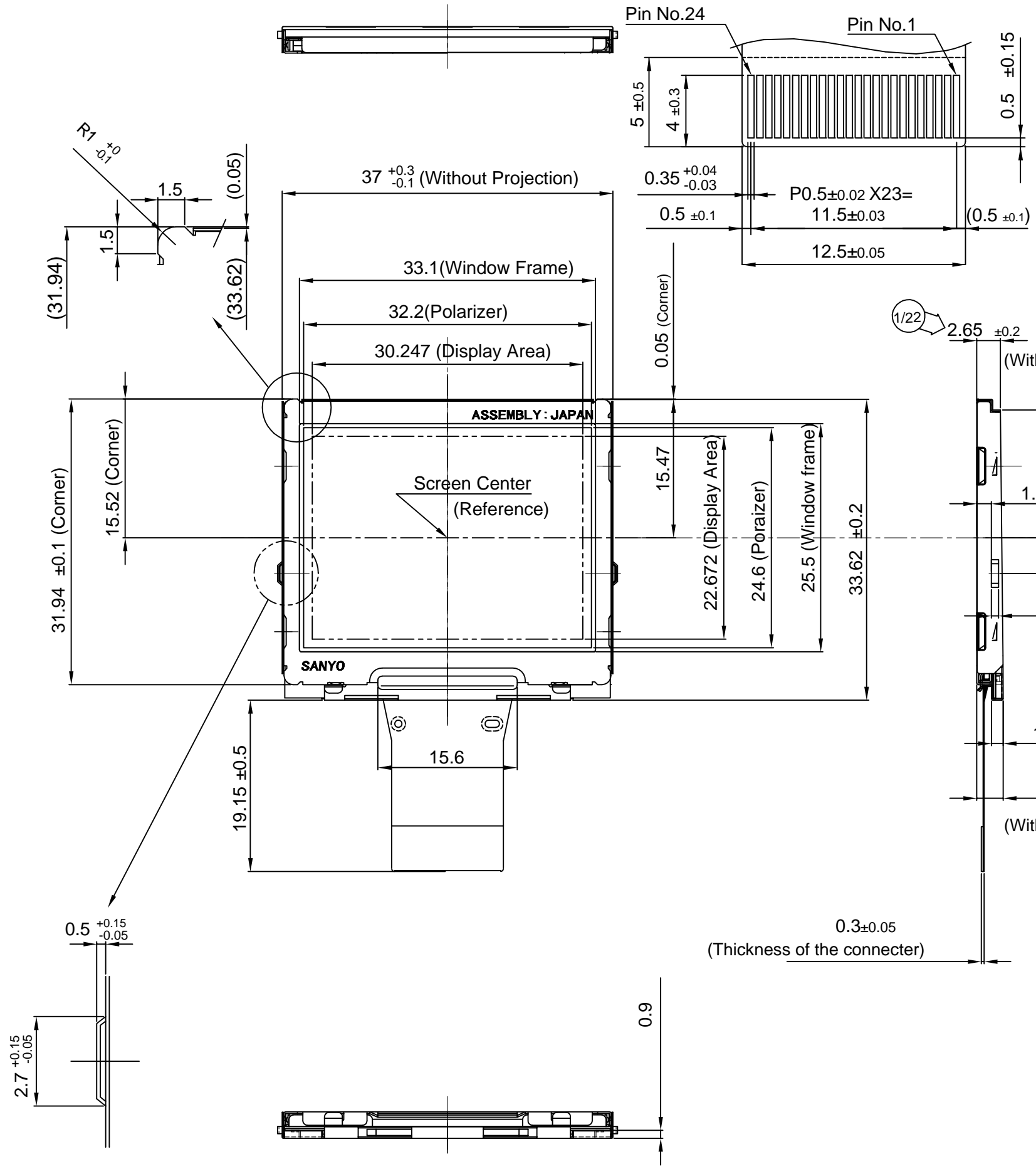
## Backlight Pin Function

No.	Symbol	Function
1	Anode	LED input pin
2	Cathode	GND

# System Configuration



**Package Dimension** Tentative



B[S=4:1]  
(FPC input Detail)

- Note1. Unspecified dimensional tolerance shall be  $\pm 0.4$ .
- 2. When assembling into the unit, ground the case (at the ground potential).
- 3. For the LCD module positioning, avoid areas near the corners and projections.

