



**ALP027XXX**

**Low-Temperature Polysilicon  
0.33-inch TFT LCD Module**

This low power consumption 0.33 inch Low-Temperature polysilicon TFT black and white LCD module is suitable for view finder of digital video camera.

**Features**

- Diagonal 0.835 cm (0.33 inch) display size.
- 300 X 225 = 67,500 dots.
- Transmissive type.
- Black and white delta arrangement.
- Polarizer ; None.
- Low power consumption (panel typ. 7.7 mW) by common inversion drive built-in negative power supply generator and gate level shifter.
- Up/down and right/left inverse function.
- Built-in level shifter circuit.
- Recommended IC ; LV4149W (analog I/F).
- Recommended temperature (panel surface) ; -10 to +60 °C.
- Storage temperature ; -20 to +70 °C.

**Specifications**

Item	Specifications	unit	Remarks
Dot count (H) X (V)	300 X 225	dot	
Active area dimensions (H) X (V)	6.671 X 4.995	mm	
Display size (diagonal)	0.835 (0.33 inch)	cm	
Dot pitch (H) X (V)	0.0222 X 0.0222	mm	
Color arrangement	Delta	-	
Module external dimensions (W) X (H)*1 X (D)	(typ.) 10.6 X 11.3 X 1.4	mm	Note1
FPC length	(typ.) 28.5	mm	
Weight	About 0.5	g	

Note1 : Excluding flexible cable and projections.

\*1 : H = Height.

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### Absolute Maximum Ratings at VSS = 0V

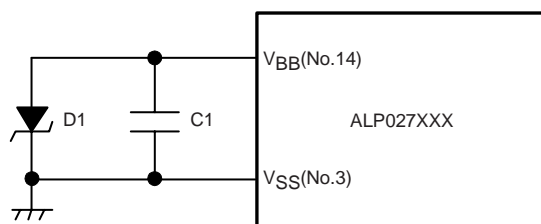
Item	Symbol	Ratings	unit
H/V driver power supply voltage	VDD	-1.0 to +10	V
V driver negative power supply voltage	VBB	-6.0 to -1.0	V
Common electrode voltage	COM	-1.0 to +10	V
Scan direction signal voltage	CSH, CSV	-1.0 to +10	V
H/V driver/Drain storage circuit input signal voltage	STH, XSTH, CKH1, CKH2 DSG, XDSG	-1.0 to +10	V
V driver input voltage	STV, XSTV, CKV1, CKV2, ENB, XENB	-1.0 to +10	V
Video signal/Drain storage data signal input voltage	V1, V2, V3, DSD	-1.0 to +8	V
Operating temperature	Topr	-10 to +60	°C
Storage temperature	Tstg	-20 to +70	°C

### Operating Conditions at VSS = 0V

Item	Symbol	min	typ	max	unit
Power supply voltage	VDD	8.2	8.5	8.8	V
VBB output voltage	VBB	-4.5	(-4.0)	-3.5	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.



	Capacitance [ $\mu$ F]	Rating voltage	Capacitance tolerance
C1	0.022	16VDC and more	+80% and less, -20% and more
D1	RD5.1S - B2 or RD5.1UM - B2 (NEC makes) or the corresponding products		

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### Input Signal

Item		Symbol	min	typ	max	unit
H driver/Drain storage circuit input signal voltage	Low	VHIL	-0.3	0.0	0.3	V
	High	VHIH	2.5	3.0	4.0	V
V driver input signal voltage	Low	VVIL	-0.3	0.0	0.3	V
	High	VVIH	2.5	3.0	4.0	V
H scan control signal voltage	Low	VHSIL	VSS	-	VSS+0.2	V
	High	VHSIH	VDD-0.2	-	VDD	V
V scan control signal voltage	Low	VVSIL	VSS	-	VSS+0.2	V
	High	VVSIH	VDD-0.2	-	VDD	V
Video signal center level	analog I/F	VVC	3.30	3.50	3.70	V
Video signal voltage	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
Common electrode signal center level	analog I/F	VCOM c	(VVC-0.3)	(VVC-0.3)	(VVC-0.3)	V
			-0.2	-0.2	-0.2	
Common electrode voltage amplitude	analog I/F	VCOM p-p	-	3.5	3.6	V
Drain storage data signal voltage		VDS	VVC-0.2	VVC	VVC+0.2	V

### Power Consumption

Item	Symbol	Condition	min	typ	max	unit
Panel power consumption	I		-	0.9	-	mA
Panel power consumption (NTSC)	PWR		-	7.7	-	mW

### Optical Specifications at Ta = 25°C, θ = 0°, SANYO standard measurement system

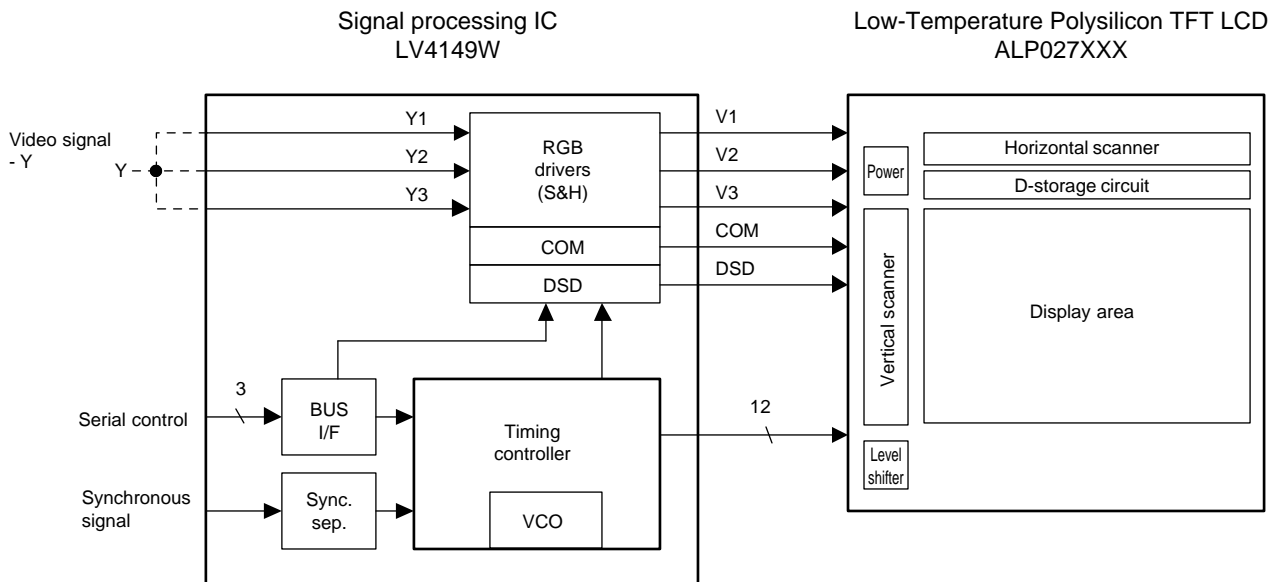
Item		Symbol	min	typ	max	unit
Contrast ratio		CR	-	100	-	-
V-T characteristic	V90	VT90	-	1.5	-	V
	V10	VT10	-	2.4	-	
Transmittance		T	-	6.8	-	%

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## Input Pin Assignmene

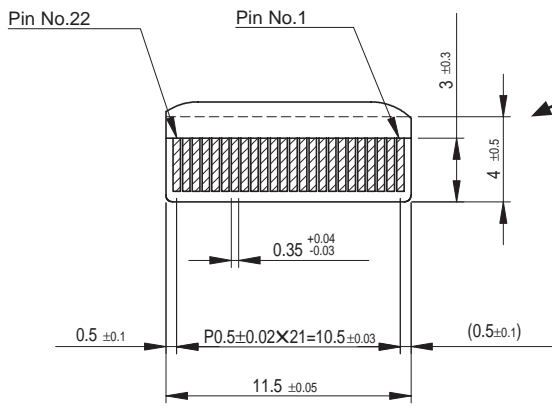
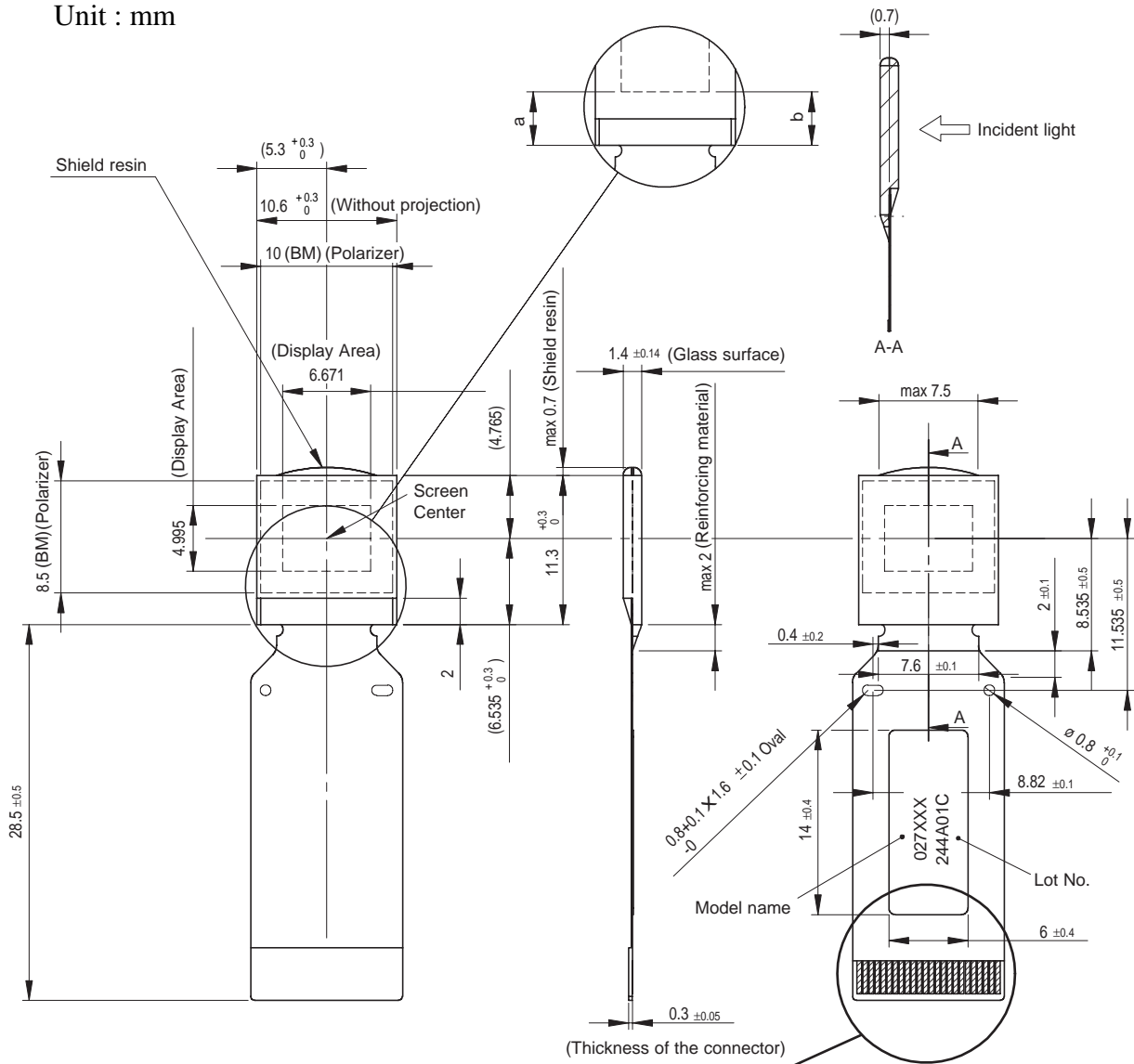
No.	Symbol	Function
1	XSTH	Inverted signal of STH
2	STH	H driver start signal
3	VSS	VSS for V and H driver
4	CKH1	H driver clock1
5	CKH2	H driver clock2
6	VDD	VDD for H · V driver
7	CSH	Right/left scan control signal (H : Normal scan, L : Reverse scan)
8	V1	Video signal (V1)
9	V2	Video signal (V2)
10	V3	Video signal (V3)
11	DSG	Drain storage gate signal
12	XDSG	Inverted signal of DSG
13	DSD	Drain storage data signal
14	VBB	Negative power supply for V driver
15	CSV	Up/down scan control signal (H : Normal scan, L : Reverse scan)
16	ENB	Enable signal
17	XENB	Inverted signal of ENB
18	XSTV	Inverted signal of STV
19	STV	V driver start signal
20	CKV2	V driver clock2
21	CKV1	V driver clock1
22	COM	Common electrode voltage

## System Configuration



Package Dimensions

Unit : mm



(Detail drawing of FPC terminal)

- Note 1. Unspecified dimensional tolerance shall be  $\pm 0.2$ .  
 2. For the LCD module positioning, avoid areas near the corners and projections.  
 3. Please implement the protection for ESD on actual unit.  
 4. Panel's horizontal slant should be  $0.06 \geq |a-b|$

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