AND Displays

ANDpSi056ET0S

5.61" WSVGA Color p-Si TFT LCD Module

The ANDpSi056ET0S is 1024 x 600 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 5.6" WSVGA resolution expands applications in mini-notebook PC's.

Features

• RoHS Compliant

- High Luminance
- Single CCFL, Sidelight type
- Replaceable structure of lamp units
- Analog scaling board attachable to LCD backward
- Recommendable inverter attachable to LCD backward
- WSVGA (1024 x 600 pixels color display)
- Applications: display size for hand-held mobile devices

Mechanical Characteristics

Item	Specification	Unit
Outline Dimensions	141.8(W) x 84.4 (H) x 7.5max(D)	mm
Number of Pixels	1024(W) x 600(H)	pixels
Active Area	122.88 (W) x 72(H)	mm
Pixel Pitch	0.120(W) x 0.120(H)	mm
Weight (approx.)	85	gram
Backlight	Single CCFL, Sidelight type	–

Absolute Maximum Ratings

Item	Symbol	Min.	Max.	Unit
Supply Voltage	V_{DD}	-0.3	+4.0	V
Input Signal Voltage	V_{IN}	-0.3	V_{DD} + 0.3	V
Operating Ambient Temperature	T_{OP}	0	50	°C
Operating Ambient Humidity	H_{OP}	10	90	%(RH)
Storage Temperature	T_{STG}	-20	+60	°C
Storage Humidity	H_{STG}	10	90	%(RH)
Operating Temperature for Panel	–	0	+60	°C

Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage 1) I_{FL}=4.0mA(rms)	V_{DD}	3.0	3.3	3.6	V
	V_{FL}	–	500	–	V(rms)
FL Start Voltage (Ta = 0°C)	V_{SFL}	(1000)	–	(1500)	V(rms)
Common Mode Input Voltage 2)	V_{CM}	0.5	1.2	1.75	V
Differential Input High Threshold	V_{TH}	–	–	100	mV
Differential Input Low Threshold	V_{TL}	-100	–	–	mV
Current Consumption	*1(I_{DD})	–	(200)	–	mA
	*2(I_{FL})	–	4.0	(5.0)	mA(rms)
Pwr Consumption I_{FL}=4.0mA(rms)	P	–	2.66	–	W

*1) The module should be always operated within these ranges. The "Typ." shows the recommendable value.
*2) Recommended transmitter:

Optical Characteristics (Ta = 25°C)

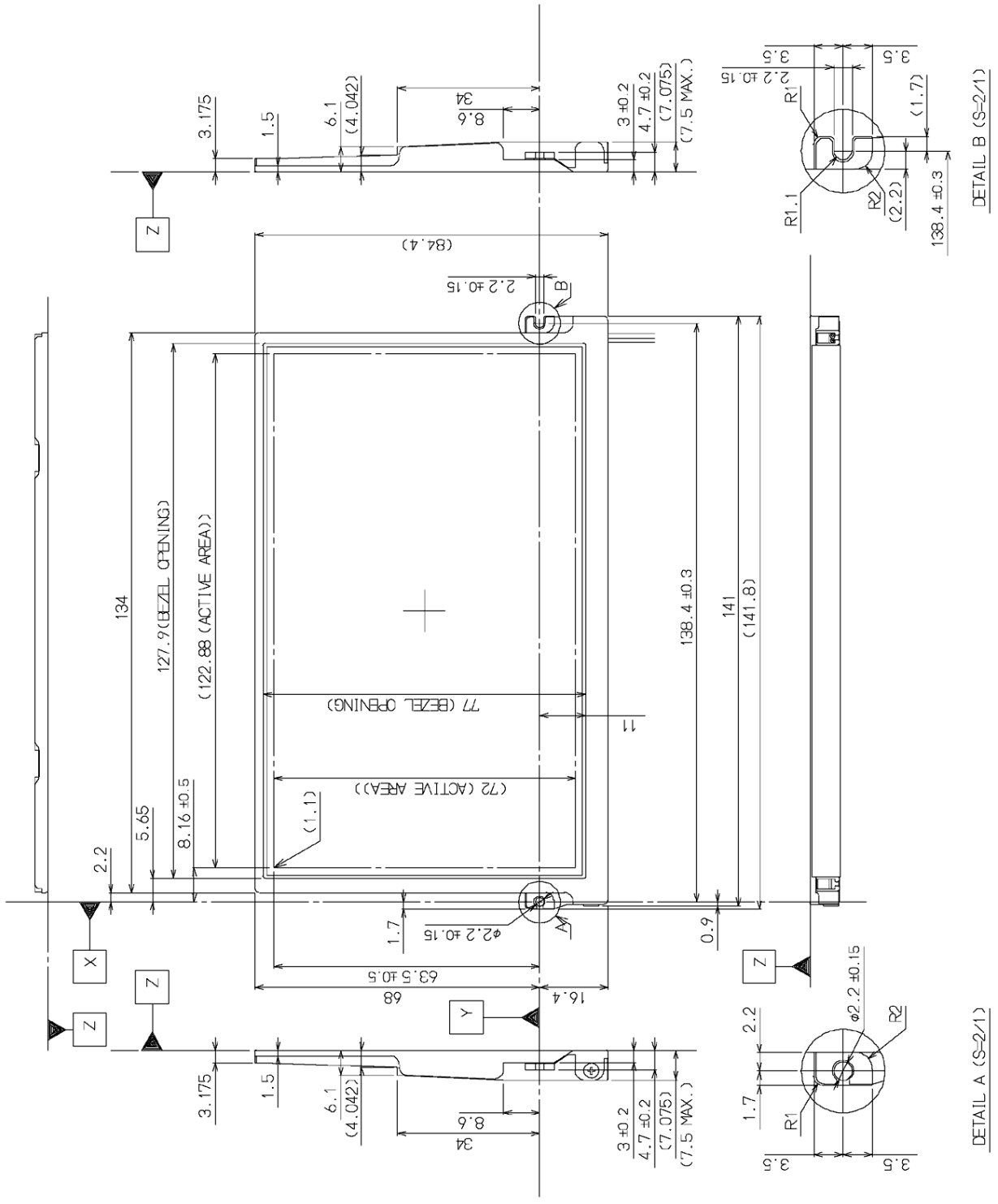
Item		Min.	Typ.	Max.	Unit
Contrast Ratio (CR)		(100)	(250)	–	–
Response Time	(t_{ON} + t_{OFF})	–	–	50	ms
Luminance (L) I_{FL}=4.0mA(rms)		90	120	–	cd/m^2

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

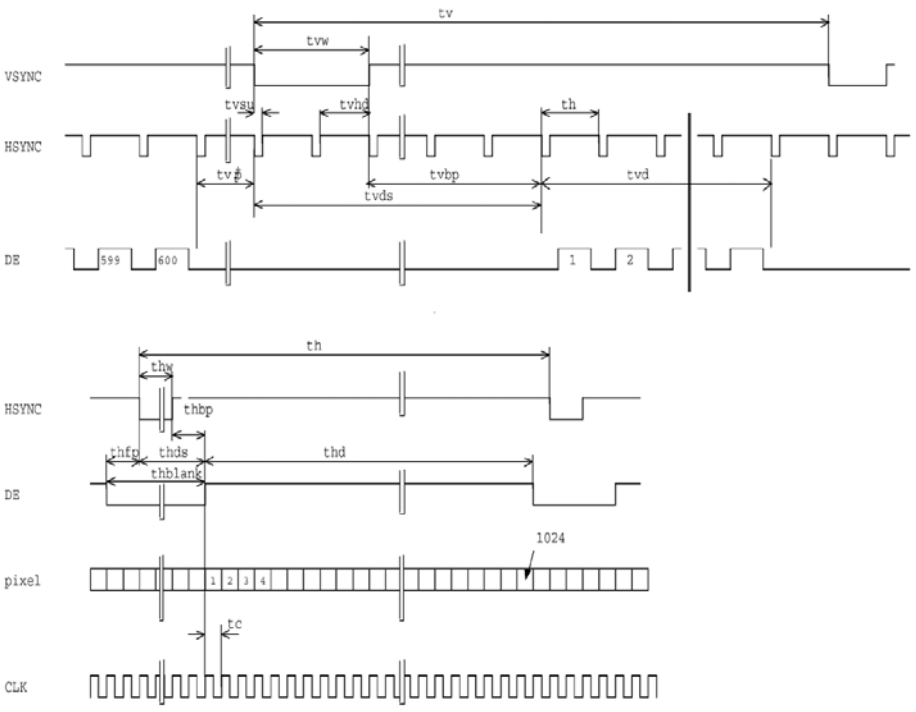


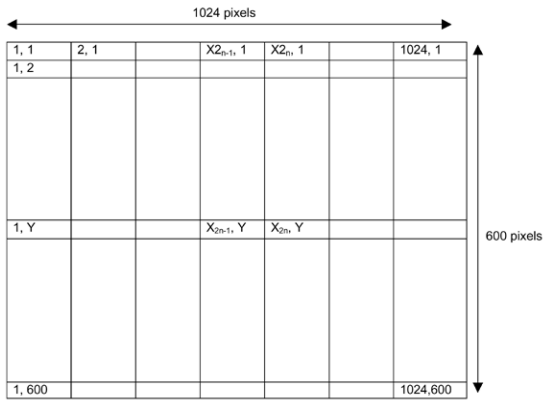
Timing Specifications *(see Notes below)*

Item	Symbol	Min	Typ	Max	Unit
Horizontal Scanning Term	*t*h	1334 x *t*c	1344 x *t*c	–	clock
H-sync Pulse Width	*t*hw	8 x *t*c	136 x *t*c	–	clock
Horizontal Front Porch	*t*hfp	4 x *t*c	24 x *t*c	–	clock
Horizontal Back Porch	*t*hbp	24 x *t*c	160 x *t*c	–	clock
Horizontal Data Sync Period	*t*hds	32 x *t*c	296 x *t*c	–	clock
Horizontal Display Term	*t*hd	1024 x *t*c	1024 x *t*c	1024 x *t*c	clock
Frame Period	*t*v	778 x *t*h	806 x *t*h	860 x *t*h	line
V-sync Pulse Width	*t*vw	2 x *t*h	6 x *t*h	–	line
V-sync Set up Time (to H-sync)	*t*vsu	8 x *t*c	–	–	clock
V-sync Hold Time	*t*vhd	8 x *t*c	–	–	clock
Vertical Front Porch	*t*vfp	1 x *t*h	3 x *t*h	–	line
Vertical Back Porch	*t*vbp	2 x *t*h	29 x *t*h	–	line
Vertical Data Sync Period	*t*vds	8 x *t*h	35 x *t*h	–	line
Vertical Display Time	*t*vd	600 x *t*h	600 x *t*h	600 x *t*h	line
Clock Period	*t*c	15.0	15.38	–	ns

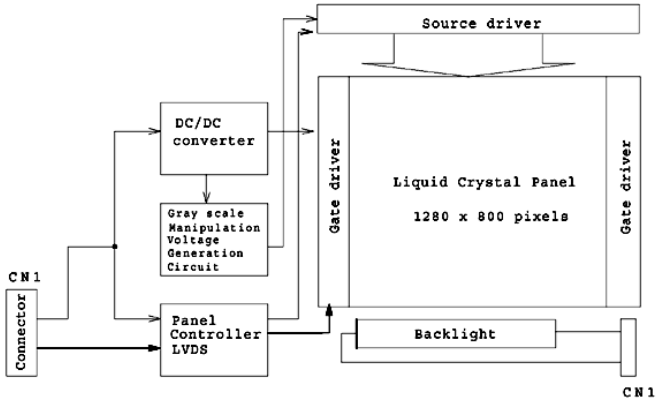
Notes:
Refer to "Timing Chart" below. If DE is fixed to "H" or "L" level for certain period while CLK is supplied, the panel displays black w/some flicker. If CLK is fixed to "H" or "L" level for certain period while DE is supplied, the panel may be damaged. Please adjust LCD operating signal timing and FL driving frequency, to optimize the display quality. There is a possibility that flicker is observed by the interference of LCD operating signal timing and FL driving condition (especially driving frequency), even if the condition satisfies above timing specifications and recommended operating conditions. Do not make *tv, th, thbp* and *tvds* fluctuate. If *tv, th, thbp* and *tvds* are fluctuate, the panel display black. In case of using the long frame period, the deterioration of display quality, noise, etc. may be occurred. CLK count of each Horizontal Scanning Time should be always the same. V-Blanking period should be 'n' X "Horizontal Scanning Time". (n:integer) Frame period should be always the same.

Timing Chart





Block Diagram



Back View

Connector Pin Assignment for Interface

CN1 Input Signal (see Notes below)
FH23-25S-0.3SHW(05) : gilding terminal / Hirose Electric Co., Ltd.

Mating FPC : Use gilding terminal FPC

Terminal No.		Symbol	Function
1		V_{DD}	Power Supply Voltage; 3.3V
	2	V_{DD}	Power Supply Voltage; 3.3V
3		V_{DD}	Power Supply Voltage; 3.3V
	4	V_{DD}	Power Supply Voltage; 3.3V
5		GND	GND
	6	GND	GND
7		GND	GND
	8	GND	GND
9		RxCLK+	Pos. LVDS differential clock input
	10	GND	GND
11		RxCLK-	Neg. LVDS differential clock input
	12	GND	GND
13		RxIN2+	Pos. LVDS diff. data input, [B2-B5, V,H-sync, DE]
	14	GND	GND
15		RxIN2-	Neg. LVDS diff. data input, [B2-B5, V,H-sync, DE]
	16	GND	GND
17		RxIN1+	Pos. LVDS diff. data input, [G1-G5, B0-B1]
	18	GND	GND
19		RxIN1-	Neg. LVDS diff. data input, [G1-G5, B0-B1]
	20	GND	GND
21		RxIN0+	Pos. LVDS diff. data input, [R0-R5, G0]
	22	GND	GND
23		RxIN0-	Neg. LVDS diff. data input, [R0-R5, G0]
	24	GND	GND
25		GND	GND

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

Mating Connector : SM02B-BHS-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	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