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Datasheet

SGD

GKIGA1VDMC1S0

SG-01-026

Thin-Film-Transistor LCD Module
Model: GKIGA1VDMC1S0

Acceptance

Solomon Goldentek Display Corp.

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Revise Records

Rev.	Date	Contents	Written	Approved
A	2022/05/20	Preliminary Specification	Sam_Hsieh	Ken Hung

Special Notes

Note1.	
Note2.	
Note3.	
Note4.	
Note5.	

Contents

1. General Description and Features

GKIGA1VDMC1S0 is a transmissive type color active matrix TFT (Thin Film Transistor) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT-LCD module, a receiver circuit and a back-light unit. Graphics and texts can be displayed on a WXGA 1280(W) x RGB x 800 (H) dots (16:10 aspect ratio) with 16.7M colors. The following table described the features of GKIGA1VDMC1S0.

1.1 Features

- Transmissive and back-light with 42 LEDs are available.
- IPS mode.
- LVDS Receiver 6/8 Bits Interface.
- RoHS Compliance

1.2 LCD Module

Item	Specification	Unit
Screen Size	10.1 inches	Diagonal
Display Resolution	1280 (H) x 800 (V)	Pixel
Active Area	216.96(H) x 135.6(V)	mm
Outline Dimension	258.66(H) x 177.3 (V) x 8.5 (T) (No fixed feature)	mm
Display Mode	Normally Black, IPS	--
Pixel Arrangement	R,G,B Stripe	--
Pixel Size	0.1695 x 0.1695	mm
Surface Treatment	Gloss(3H)	
Display Color	16.7M	--
Viewing Direction	Full View	--
Input Interface	LVDS Receiver 6/8 Bits Interface	--

2. Mechanical Information

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal (H)	(258.36)	(258.66)	(258.96)	mm	
	Vertical (V)	(177.0)	(177.3)	(177.6)	mm	
	Thickness (T)	(8.2)	(8.5)	(8.8)	mm	(1)
Weight		--	(347)	--	g	--

Note (1) Not Include Component. Refer to the Outline Dimension Drawing as attached.

3. Electrical Specifications

3.1 Absolute Max. Ratings

3.1.1 Absolute Ratings of Environment

If the operating condition exceeds the following absolute maximum ratings, the TFT LCD module may be damaged permanently.

(Ta=25±2°C, V_{SS}=GND=0)

Item	Symbol	Min.	Max.	Unit	Note
Storage temperature	T_{STG}	-30	80	°C	(1)
Operating temperature	T_{OPR}	-30	80	°C	(1,2,3)

Note (1) 95 % RH Max. (40 °C ≥ Ta). Maximum wet-bulb temperature at 39 °C or less. (Ta > 40 °C) No condensation.

Note (2) In case of below 0°, the response time of liquid crystal (LC) becomes slower and the color of panel becomes darker than normal one. Level of retardation depends on temperature, because of LC's character

Note (3) Only operation is guarantied at operating temperature. Contrast, response time, another display quality are evaluated at +25°C.

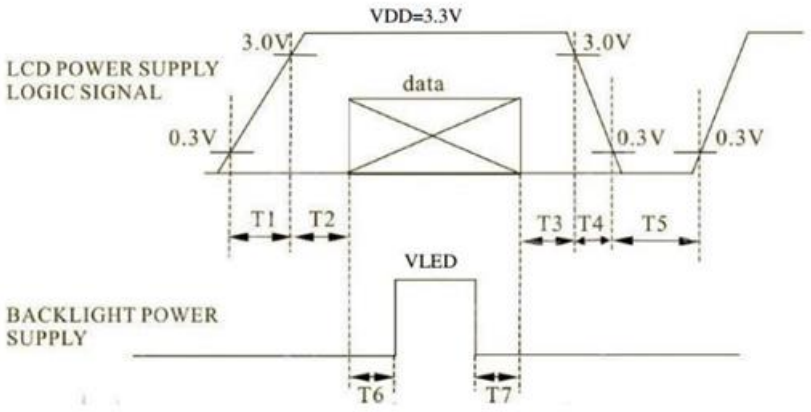
3.1.2 Electrical Absolute Maximum Ratings

3.1.2.1 TFT-LCD Module

(V_{SS}=GND=0)

Parameter	Symbol	Min.	Max.	Unit	Remark
Power Supply for LCM	V_{CC}	-0.3	7.0	V	

0.5<t1≤10ms 200ms≤t5
0<t2≤50ms 200ms≤t6
0<t3≤50ms 200ms≤t7
0<t4≤10ms



3.1.3 DC Electrical Characteristics of the TFT LCD

(Ta=25±2°C, V_{SS}=GND=0)

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Power supply for LCM	V_{CC}	3.0	3.3	3.6	V	
Power supply voltage for led driver	V_{LED}	-	12	-		
Power Supply current for led driver	I_{LED}	(570)	(650)			
Power Supply current for LCM	I_{DD}	--	(270)	--	mA	Note 1

Note1: fv =60Hz , Ta=25°C , Display pattern : Black pattern

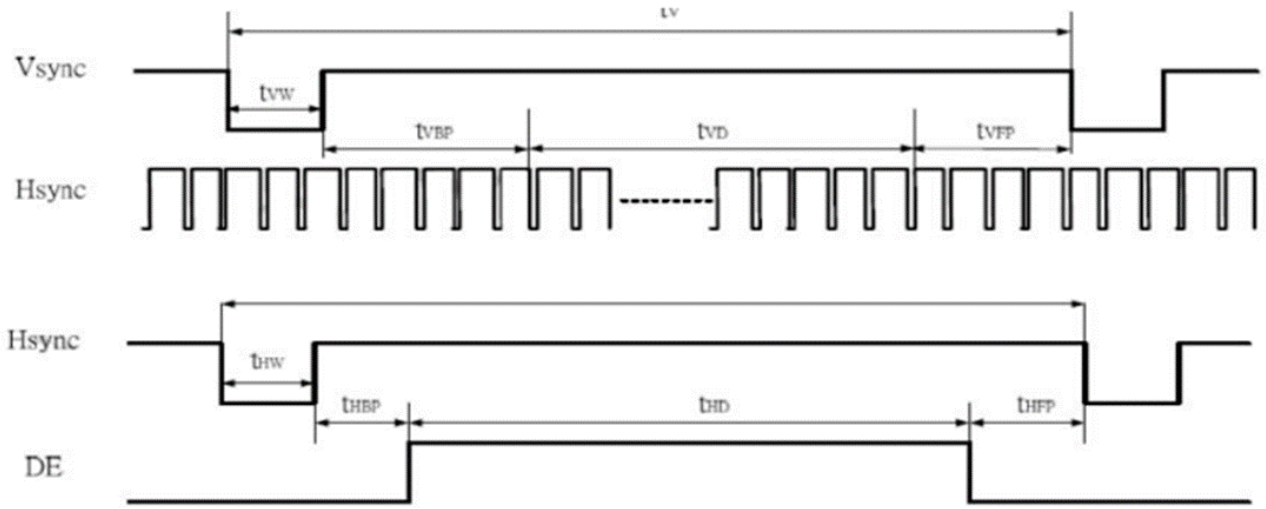
3.2 AC Timing Characteristic of The LCD

3.2.1 Timing Condition

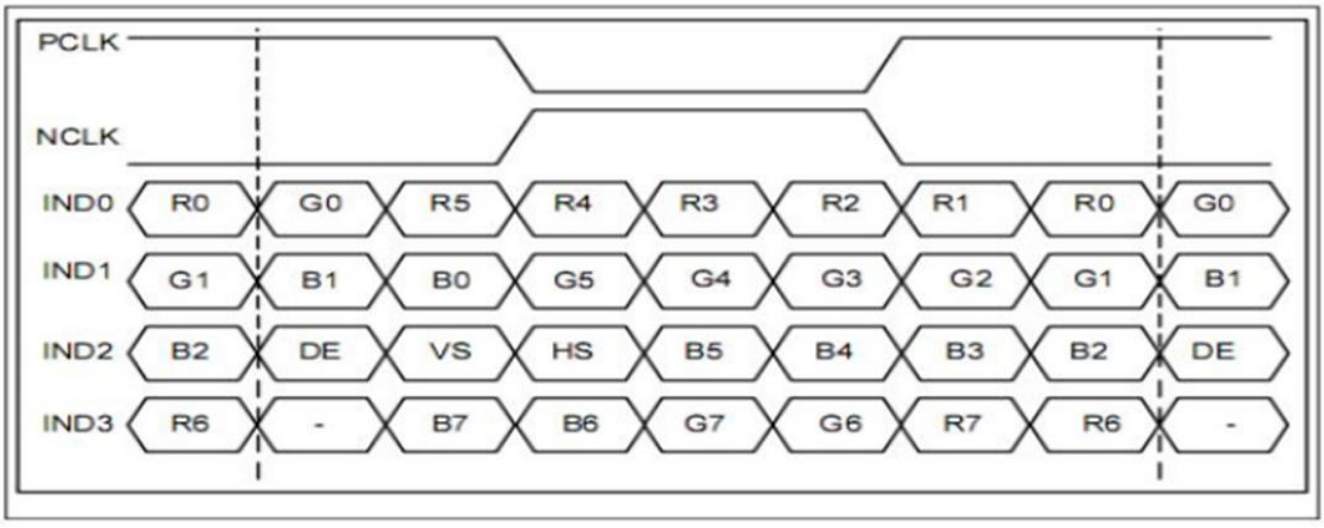
Parameter	Symbol	Min.	Typ.	Max.	Unit.
Frame Rate	--	--	60	--	Hz
Frame Period	Tv	815	823	1023	line
Vertical Display Time	T_{VD}		800		line
Vertical Blanking Time	T_{VW} +T_{VBP} +T_{VFP}	15	23	33	Line
1 Line Scanning Time	T_H	1410	1440	1470	Clock
Horizontal Display Time	T_{HD}		1280		Clock
Horizontal Blanking Time	T_{HW} +T_{HBP} +T_{HFP}	60	160	190	Clock
Clock Rate	1/TC	68.9	71.1	73.4	MHz

3.3 Timing Sequence(Timing Chart)

3.3.1 Horizontal Timing Sequence



3.3.2 LVDS Input Data Mapping(VESA)



4. Optical Characteristics

4.1 Optical characteristic of the LCD

The following items are measured under stable conditions. The optical characteristics should be measured in a dark room or equivalent state with the methods.

Measuring equipment: BM-7A

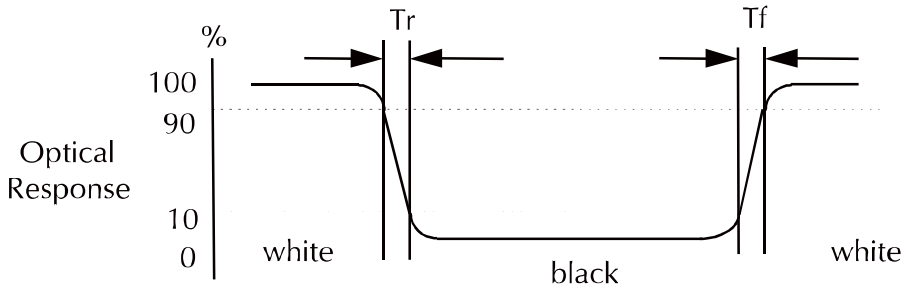
Item		Symbol	Condition	Min	Type	Max	Unit	Note
Brightness		B		700	900	-	cd/m^2	
Response time		$T_{r+}T_f$	θ=0°	-	25	50	ms	.
Contrast ratio(Center)		CR	At optimized viewing angle	(800)	(1000)	-	-	
Luminance Uniformity (9 Points)		ΔL		70	-	-	%	
Color Chromaticity (CIE 1931)	White	Wx	θ=0° Normal Viewing Angle	0.262	0.312	0.362	--	BM-7A
		Wy		0.301	0.351	0.401		
Viewing Angle	Hor.	θ_R	CR≥10	70	80	--	Degree	
		θ_L		70	80	--		
	Ver.	θ_U		70	80	--		
		θ_D		70	80	--		
LED Life Time		-	-	50000	-	-	hr	

a. Test equipment setup

After stabilizing and leaving the panel alone shall be warmed up for the stable operation of LCM, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7(fast) with a viewing angle of 2° at a distance of 50cm and normal direction.

b. Definition of response time: Tr and Tf

The response time is defined as the following figure and shall be measured by switching the input signal for "black" and "white".

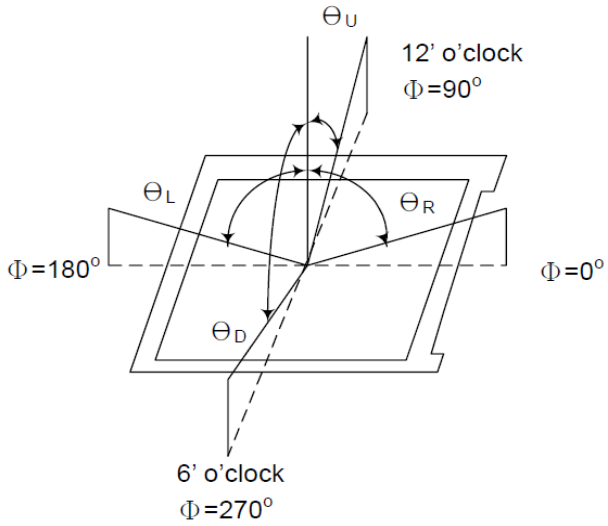


c. Definition of contrast ratio:

$$\text{Contrast Ratio (CR)} = \frac{\text{Brightness measured when LCD is at "white state"}}{\text{Brightness measured when LCD is at "black state"}}$$

d. Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

e. View Angle



f. Definition of Luminance of White: Luminance of white at the center points

Light Source of Back-Light Unit	LED Type

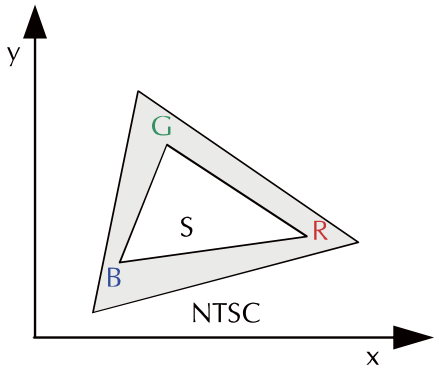
g. Definition of White Uniformity

$$\text{White Uniformity} = \frac{\text{Min. luminance of white among 9-points}}{\text{Max. luminance of white among 9-points}} \times 100\%$$

h. The definition of Color Gamut -Color Chromaticity CIE 1931

Color coordinate of white & red, green, blue at center point.

Color Gamut : NTSC(%) = (RGB Triangle Area / NTSC Triangle Area) x 100



5. I/O Terminal

5.1 Pin Assignment (Part No: JAE F1-SE20P-HFE-E3000) or equivalent

Pin No.	Symbol	I/O	Function	Remark
1	LND3+	I	+LVDS differential data input	
2	LND3-	I	-LVDS differential data input	
3	NC	--	Not connect	
4	SEL6/8	I/O	H:8bit L:6bit	
5	VSS	I	Power ground	
6	PINC	I	+LVDS differential clock input	
7	NINC	I	-LVDS differential clock input	
8	VSS	P	Power ground	
9	IND2+	I	+LVDS differential data input	
10	IND2-	I	-LVDS differential data input	
11	VSS	P	Power ground	
12	IND1+	I	+LVDS differential data input	
13	IND1-	I	-LVDS differential data input	
14	VSS	P	Power ground	
15	IND0+	I	+LVDS differential data input	
16	IND0-	I	-LVDS differential data input	
17	VSS-	P	Power ground	
18	NC	--	Not connect	
19-20	VDD	P	Power ground	

Notes:

1) NC Pin must be retained; this pin can't contact GND or other signal.
2) GND Pin must ground contact, can not be floating.

5.2 Back Light Unit.

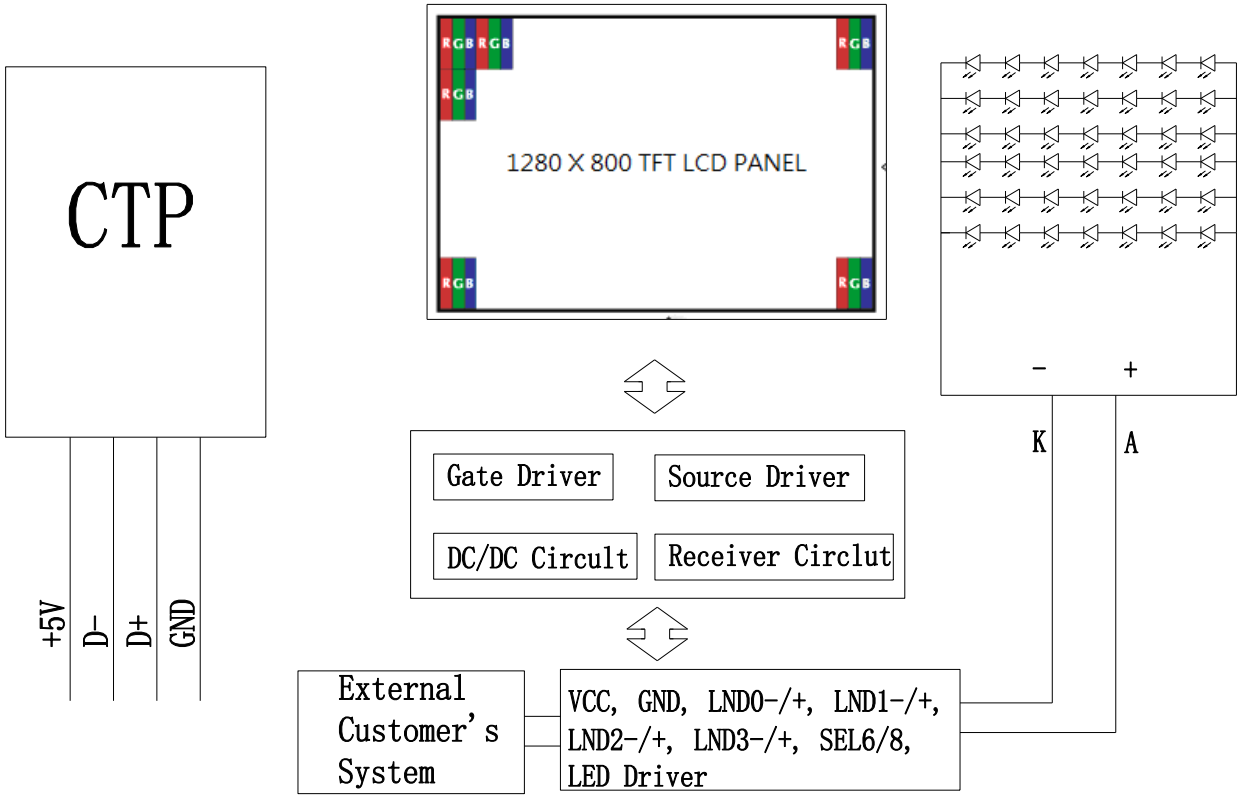
Pin Assignment (Part No: JAE F1-S6P-HFE-E1500) or equivalent

Pin No.	Symbol	I/O	Function	Remark
1-2	VLED	P	Power Supply(+12.0V)	
3-4	VLSS	P	Power ground	
5	LED EN	I	LED enable pin	
6	LED PWM	I	Power input signal for LED driver	

Pin Assignment (Part No: MOLEX 53261-0871) or equivalent

Pin No.	Symbol	I/O	Function	Remark
1	VDD	P	Power Supply(3.3V)	
2	D-	I	D- data input	
3	D+	I	D+ data input	
4	VSS	P	Power ground	
5-8	NC		Not connect	

5.3 Block Diagram



6. Displayed Color and Input Data

COLOR	INPUT DATA	R DATA								G DATA								B DATA							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
		MSB							LSB	MSB							LSB	MSB							LSB
BASIC COLOR	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	BLUE(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	CYAN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MAGENTA	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	YELLOW	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	WHITE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RED	RED(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(2)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREEN	GREEN(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	GREEN(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	GREEN(254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	GREEN(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
BLUE	BLUE(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BLUE(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	BLUE(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	BLUE(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	BLUE(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

0 : Low level voltage, 1 :High level voltage

Each basic color can be displayed in 256 gray scales from 8 bit data signals. With the combination of total 24 bit data signals, the 16,777,216-color display can be achieved on the screen.

7. Projected Capacitive Touch Panel

7.1 Main Feature

Item	Specification	Unit
Screen Size	10.1 inches	Diagonal
Type	Capacitive Touch Panel	--
Input Mode	Human's Finger	--
Active Area	216.96 (H)(typ.) X 135.6 (V)(typ.)	mm
Module Outline	258.66 (H)(typ.) X 177.3 (V)(typ.)	mm
Interface	USB	--
Cover glass pencil-handness	6H(min)	--
Digital Power Supply	3.3V DC (typ)	V
IC solution	ILI2511	-

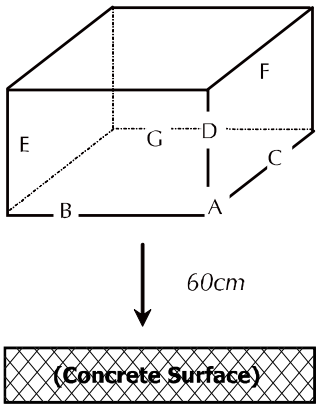
7.2 Pin Assignments and Definitions

Pin No.	Symbol	I/O	Function	Remark
1	+5V	P	Power Supply For CTP	
2	DM(D-)	I	Data Pin	
3	DP(D+)	I	Data Pin	
4	GND	P	Ground	

8.

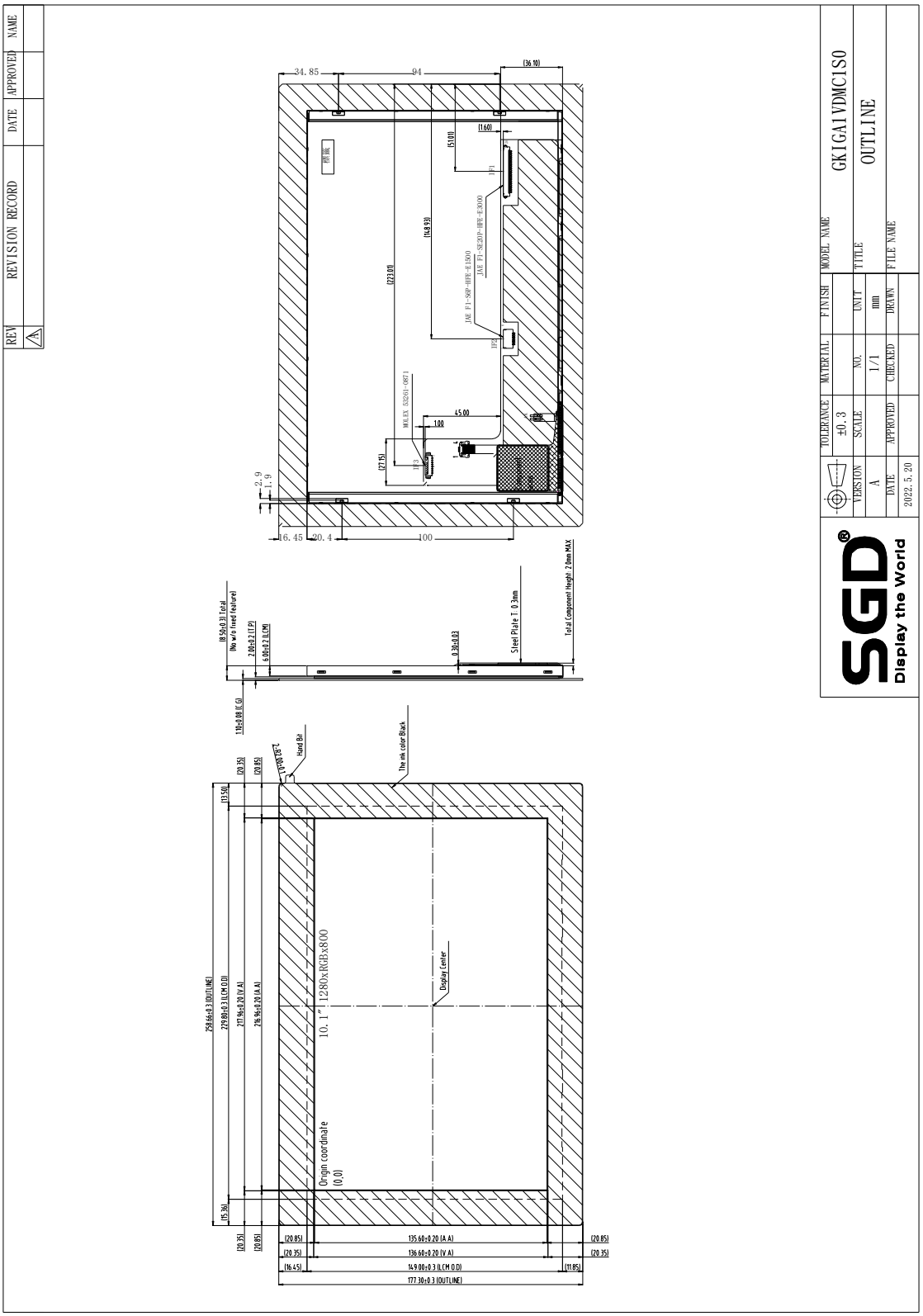
No change on display and in operation under the following test condition.

Condition: Unless otherwise specified, tests will be conducted under the following condition.
Temperature: 20±5°C.
Humidity: 65±5%RH.
Tests will be not conducted under functioning state.

No.	Parameter	Condition	Notes
1	High Temperature Operating	80°C±2°C, 240hrs (Operation state).	
2	Low Temperature Operating	-30°C±2°C, 240hrs (Operation state).	1
3	High Temperature Storage	80°C±2°C, 240hrs.	2
4	Low Temperature Storage	-30°C±2°C, 240hrs.	1,2
5	High Temperature and High Humidity Storage Test	60°C±2°C, 90%, 240hrs.	1,2
6	Vibration Test	Total fixed amplitude: 1.5mm. Vibration Frequency: 10~55Hz. One cycle 60 seconds to 3 direction of X, Y, Z each 15 minutes.	3
7.	Drop Test	To be measured after dropping from 60cm high on the concrete surface in packing state.  *Dropping method corner dropping:* *A corner: Once edge dropping.* *B, C, D edge: Once face dropping.* *E, F, G face: Once.*	

Notes:
1. No dew condensation to be observed.
2. The function test shall be conducted after 4 hours storage at the normal temperature and humidity after removed from the test chamber.
3. Vibration test will be conducted to the product itself without putting I in a container.

9. Dimensional Outlines



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