HM104XG101B

10.4" Color TFT

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1.0 General Specifications

Parameter	Specification	Unit	Remark
Active Area	210.40(W) × 157.80(H)	mm	
Number of Pixels	1024 RGB × 768	pixels	
Pixel Pitch	205.5(H) × 205.5(V)	um	
Pixel Arrangement	RGB stripe		
Display Colors	16.7 M	colors	
Color Gamut	70%(typ.)		
Display Mode	Normally Black, Transmissive mode		
Dimensional Outline	230×180.2×12.95	mm	-
Viewing Direction (Human Eye)	U/D/L/R free viewing direction		
D-IC	Source: HX8282-A01DPD300-K Gate: HX8695-E01BPD200		
Touch Interface	USB 2.0 (no need TS drivers for Windows 10)		

Note:

1. At the U/D/L/R direction, the viewing angle is same.
2. The TFT and CF Align Direction.

2.0 Absolute Maximum Ratings

The absolute maximum ratings are list on table as follows. When used out of the absolute maximum ratings, the LSI may be permanently damaged. Using the LSI withinthe following electrical characteristics limit is strongly recommended for normal operation. If these electrical characteristic conditions are exceeded during normal operation, the LSI will malfunction and cause poor reliability.

Parameter	Symbol	Value	Unit
Power Supply voltage	V_{CC}	3 ~ 3.6	V
Operating temperature range	T_{OPR}	-30 ~ 85	℃
Storage Temperature range	T_{STG}	-40 ~ 90	℃

Note:

If the absolute maximum rating of even is one of the above parameters is exceeded even momentarily, the quality of the product may be degraded. Absolute maximum ratings, therefore,specify the values exceeding which the product may be physically damaged. Be sure to use the product within the range of the absolute maximum ratings.

3.0 Electrical Specifications

3.1 Electrical Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remark
Power Supply Voltage	VCC	3	3.3	3.6	V	Note1
Power Supply Current	IVCC	-	360	550	mA	
Power Consumption	PD		0.99	1.32	W	Note2
	PBL	3.69	3.96	4.22	W	
	Ptotal		4.95	5.54	W	

Note:

1. The supply voltage is measured and specified at the interface connector of LCM.

   The current draw and power consumption specified is for 3.3V 60Hz at 25℃.

   a) Typ : Window XP pattern

   b) Max : Skip 2 dot 255 pattern

2. Frame rate=60HZ, Typ. Pattern: White pattern 25℃.

3.2 Backlight Driving Conditions

Parameter	Symbol	Min	Typ	Max	Unit	Remark
Backlight Power supply	VLED	10.8	12.0	12.8	V	-
Logic Low level (EN, PWM)	V_{IL}	-	-	0.7	V	-
Logic High level (EN, PWM)	V_{IH}	2.0	3.3	-	V	-
PWM Frequency	PWM	200	-	25K	Hz	-
Backlight Current	I_{FLED}	-	380	-	mA	-
Backlight Power	P_{BL}	-	4.6	-	W	-
LED Life time	Hrs		50000		H	-

4.0 Interface Connection

4.1 The LCD Module Electrical Interface Connection

The Recommended connector is IS100-L30R-C23

Pin No	Symbol	I/O	Description	
1	VCC_3V3	Power supply for LED	Analog power supply for LCD.	3.3V
2	VCC_3V3	Power supply for LED	Analog power supply for LCD.	3.3V
3	VCC_3V3	Power supply for LED	Analog power supply for LCD.	3.3V
4	GND	Power supply	POWER GND	
5	GND	Power supply	POWER GND	
6	GND	Power supply	POWER GND	
7	UPDN	I	setting.Normally pull low,When UPDN =H ,reverse scan.	
8	SHLR	I	Soure Driver internal shift register,Normally pull high.	
9	NC	/	NO CONNECTION	
10	NC	/	NO CONNECTION	
11	SEL6/8	I	6-bit/8-bit input select (Low→8 bit Input Mode , High→6 bit Input Mode)	
12	GND	Power supply	POWER GND	
13	NC	/	NO CONNECTION	
14	GND	Power supply	POWER GND	
15	RX0N	I	- LVDS differential data input	
16	RX0P	I	+LVDS differential data input	
17	GND	Power supply	POWER GROUND	
18	RX1N	I	- LVDS differential data input	
19	RX1P	I	+LVDS differential data input	
20	GND	Power supply	POWER GROUND	
21	RX2N	I	- LVDS differential data input	
22	RX2P	I	+LVDS differential data input	
23	GND	Power supply	POWER GROUND	
24	RXCLKN	I	-LVDS differential clock input	
25	RXCLKP	I	+LVDS differential clock input	
26	GND	Power supply	Digital power supply for LCD.	
27	RX3N	I	- LVDS differential data input	
28	RX3P	I	+LVDS differential data input	
29	GND	Power supply	POWER GND	
30	NC	/	NO CONNECTION	

4.2 The BL POWER Electrical Interface Connection

The Recommended connector is 3808K-F05N-03L

LED FPC PIN MAP	
PIN	NAME
1	NC
2	PWM(typ 3.3V)
3	EN(typ 3.3V)
4	GROUND
5	VLED(typ 12V)

5.0 Resolution:1024x768

DE mode

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	52	65	71	MHz
Horizontal Display Area	thd		1024		DCLK
HSD Period	th	1114	1344	1600	DCLK
HSD Blanking	thb+thfp	90	320	376	DCLK
Vertical Display Area	tvd		768		T_H
VSD Period	tv	778	806	845	T_H
VSD Blanking	tvbp+tvfp	10	38	77	T_H

HV mode

Horizontal timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	57	65	70.5	MHz
Horizontal Display Area	thd		1024		DCLK
HSD Period	th	1200	1344	1400	DCLK
HSD Plus With	thpw	1	-	140	DCLK
HSD Black Porch	Thbp		160		DCLK
HSD front Porch	thfp	16	160	216	DCLK

Vertical timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd		768		T_H
VSD Period	tv	792	806	840	T_H
VSD Plus With	tvpw	1	-	20	T_H
VSD Black Porch	Tvbp		23		T_H
VSD front Porch	tvfp	1	15	49	T_H

6.0 Optical Specifications

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Viewing Angle	Horizontal	Θ3	CR>10	70	85		°
		Θ9		70	85		°
	Vertical	Θ12		70	85		°
		Θ6		70	85		°
Contrast Ratio		CR	Θ= 0°		1100		
Luminance		cd/m2	Θ= 0°	400	450		nit
Uniformity		%	Θ= 0°		80%		
NTSC		%	Θ= 0°	65	70		
Reproduction Of color	Red	Rx	Θ= 0°	0.626	0.656	0.686	
		Ry		0.295	0.325	0.355	
	Green	Gx		0.258	0.288	0.318	
		Gy		0.563	0.593	0.623	
	Blue	Bx		0.108	0.138	0.168	
		By		0.078	0.108	0.138	
White		Wx	Θ= 0°	0.265	0.315	0.365	
		Wy		0.29	0.34	0.39	
Response Time		Tr+Tf	Θ= 0°		30	40	ms

7.0 Mechanical Characteristics

7.1 Dimension Requirements for LCD Part

Mechanical outlines for the panel **(**H: horizontal length, V: Vertical length**)**

Parameter	Specification	Unit	Remark
Panel size	222.13(W) × 171.52(H)	mm	
CF size	218.83(W) × 165.82(H)	mm	
Active area	210.432(W) × 157.824(H)	mm	
Number of pixels	1024RGB × 768	pixels	
	(1 pixel = R + G + B dots)		
Pixel pitch	205.5 ×205.5	um	
Pixel arrangement	RGB 2 domain Stripe		
Panel ID	1.6 × 10	mm	
COG pad area(G/S)	3.3/5.7	mm	
D-IC to FPC distance	0.7	mm	Source
D-IC width(G/S)	0.59/ 0.62	mm	
D-IC to CF edge(G/S)	2.11/ 2.98	mm	
FPC to Glass edge	0.3	mm	Source
FPC width	1.1	mm	Source
Seal Area (U/D/L/R)	4.2/3.796/4.4/3.998	mm	
Dimension Outline	230 (W) x 180.2(H)× 10.5(D)	mm	
Display mode	Normally Black		

Note:

1. Source pad down
2. The size specified is calculated by IC–driver Source: HX8282A, Gate: HX8695E, the size maybe changed ifcustomer use other IC.

8.0 Reliability Test

Experimental project	Test conditions
High temperature storage	+80℃, 240h
Cryogenic storage	-30℃, 240h
High temperature operation	+70℃, 240h
Operates at low temperatures	-20℃, 240h
High temperature and high humidity operation	+50℃, 80%RH max, 240h
Thermal shock	-20℃(30min) ~+60℃(30min) Change time:5min, 20 Cycle
ESD	C=150pF, R=330Ω, The product is powered on the white screen test and hit the front Air: AA district 9 The dots are evenly distributed Contact: Iron frame edges 9 dot
Packaging shocks	200Hz,1.47G, Random, +X+Y±Z, each direction 30min
The package has fallen	Height: 60cm, 1corner, 3edges, 6surfaces

9.0 Outline Dimension (unit: mm)