

SPECIFICATION

MODEL NO: HCT546017HDA

CUSTOMER:

Customer Approval:

- ☐ Approve Specification Only
☐ Approve Specification and Sample

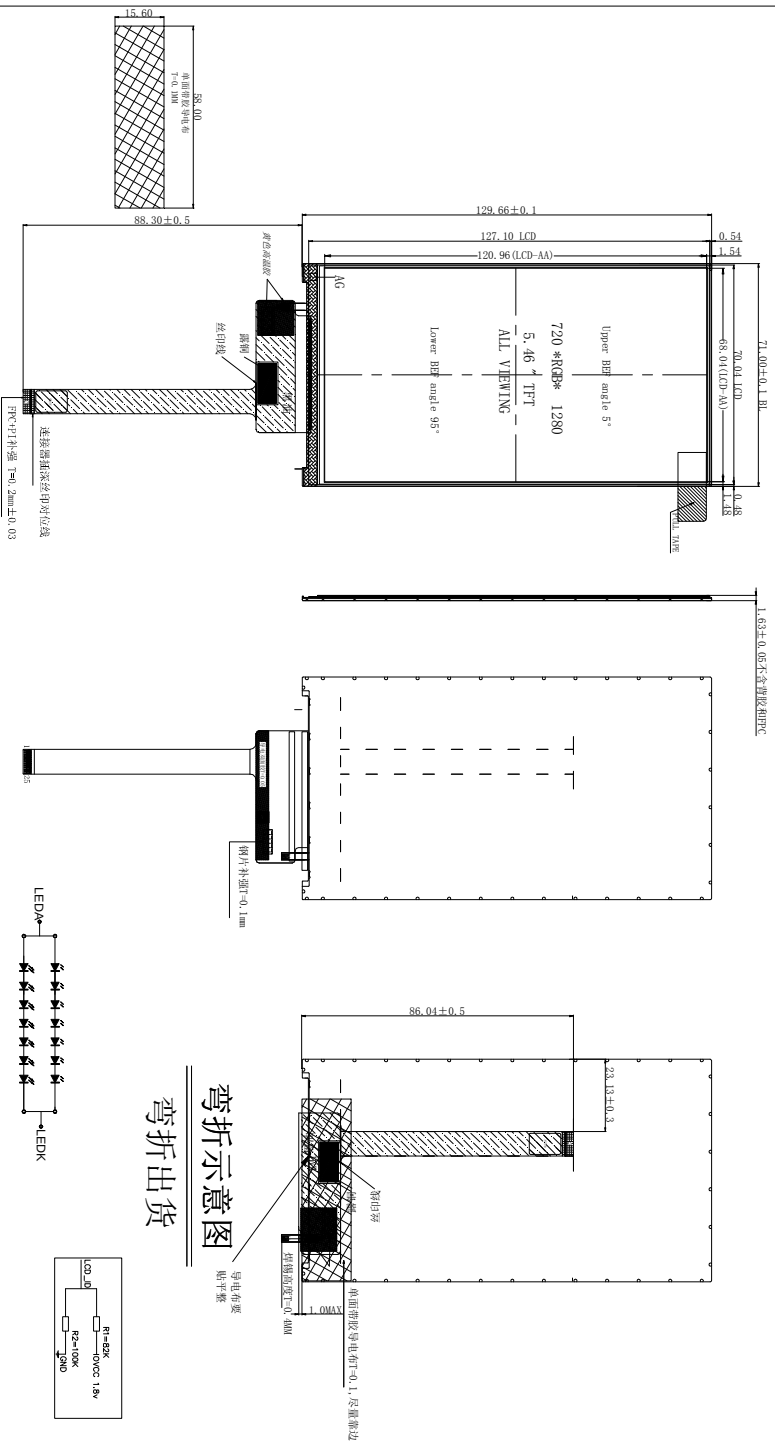
APPROVED BY
DATE:

Structural engineer	Electronic engineer	Department manager

1.Mechanical drawing

NOTES:

1. DISPLAY TYPE: 5.46 TFT
2. BACKLIGHT: 14-Chip WHITE LEDs
3. FRONT POLARIZER: TRANSMISSIVE/POSITIVE
4. REAR POLARIZER: TRANSMISSIVE/POSITIVE
5. OPERATING TEMP: $-10^{\circ}\text{C} \sim 60^{\circ}\text{C}$
6. STORAGE TEMP: $-20^{\circ}\text{C} \sim 70^{\circ}\text{C}$
7. DRIVER IC: COG(IC:S6D7AA6X11)
8. UNMARKED TOLERANCES: ± 0.2



Prod No.	Prod Name
1	LEDA
2	LEDA
3	LEDR
4	LEDR
5	GND
6	IOWCC1.8V
7	VCCV2.8V
8	RESET
9	TE
10	LCI_ID
11	GND
12	TCN
13	TCN
14	GND
15	TDP0
16	TDP0
17	GND
18	TDP1
19	TDP1
20	GND
21	TDP2
22	TDP2
23	GND
24	TDP3
25	TDP3

CHANGE	DATE	TITLE: JTF模组图 物料编码: HCT546017HDA			
		PART NO. :	MODULE NO. : A	SCALE : N.T.S.	
		DRAWN BY :	DATE :	UNIT : mm	
		CHECKED BY :	DATE :		
		APPROVED BY :	DATE :	PRO.(3): 	

NO.	SYMBOL	Description
1	LED A	+ LED Anode
2	LED A	+ LED Anode
3	LED K	- LED Cathode
4	LED K	- LED Cathode
5	GND	Ground
6	IOVCC	Power 1.8 V
7	VCI	Power 2.8 V
8	RESET	Reset input pin
9	TE	Serves TE (Tearing Effect) pin
10	ID	ID Pin
11	GND	Ground
12	CLKP	MIPI-DSI CLOCK differential signal input pins
13	CLKN	MIPI-DSI CLOCK differential signal input pins
14	GND	Ground
15	D0P	MIPI-DSI Data differential signal input pins. (Data lane 0)
16	D0N	MIPI-DSI Data differential signal input pins. (Data lane 0)
17	GND	Ground
18	D1P	MIPI-DSI Data differential signal input pins. (Data lane1)
19	D1N	MIPI-DSI Data differential signal input pins. (Data lane1)
20	GND	Ground
21	D2P	MIPI-DSI Data differential signal input pins. (Data lane2)
22	D2N	MIPI-DSI Data differential signal input pins. (Data lane2)
23	GND	Ground
24	D3P	MIPI-DSI Data differential signal input pins. (Data lane3)
25	D3N	MIPI-DSI Data differential signal input pins. (Data lane3)

CHARACTERISTICS:

2.1: DC CHARACTERISTICS

Parameter	Symbol	Min	TYP	Max	Unit
Supply voltage	VCC-VSS	2.7	2.8	2.9	V
Input Current	Idd		TBD	TBD	mA
Input voltage H level	VIH	0.8Vcc	Vcc	Vcc	V
Input voltage L level	VIL	0	0	0.2Vcc	V
Output voltage H level	VOH	0.8Vcc	Vcc	Vcc	V
Output voltage L level	VOL	0	0	0.2Vcc	V

2.2: Backlight CHARACTERISTICS (IF = 20 MA/LED)

Parameter	Symbol	Min	TYP	Max	Unit
Forward voltage	Vf	-	22.4	-	V
Luminance(white display)	Lv		350		Cd/m ²
Brightness uniformity(white display)	Bu	40			%
Number of LED		14			pieces
Connection mode		Parallel			

3. ABSOLUTE MAXIMUM RATINGS:

Parameter	Symbol	Min	Max	Unit
Supply voltage	VCC	-0.3	3.3	V
Input	Vin	-0.3	Vcc+0.3	V
Operating temperature	Top	-10	60	°C
Storage temperature	Tst	-20	70	°C
Humidity	RH	-	90%(Max60°C)	Dot
Backlight Current	IBL	-	25	mA(each Led)

4. Timing Characteristics

4.1 High Speed Mode – Rise and Fall Timings

Ta = -20 °C to +70 °C, VCC = 2.80V, GND=0V.

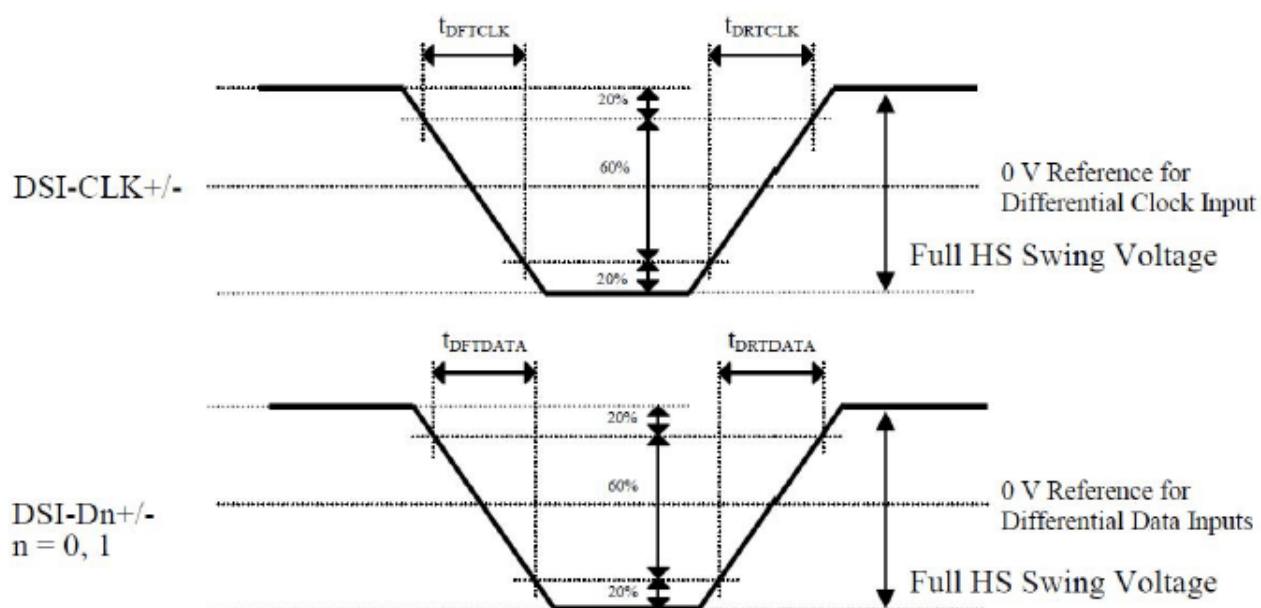


Figure 116 Rise and Fall Timings on Clock and Data Channels

Table 47 Rise and Fall Timings on Clock and Data Channels

Parameter	Symbol	Condition	Specification			Unit
			Min	Typ	Max	
Differential Rise Time for Clock	t_{DRTCLK}	DSI-CLK+/-	-	-	150 (Note)	ps
Differential Rise Time for Data	$t_{DRTDATA}$	DSI-Dn+/- n=0 and 1	-	-	150 (Note)	ps
Differential Fall Time for Clock	t_{DFTCLK}	DSI-CLK+/-	-	-	150 (Note)	ps
Differential Fall Time for Data	$t_{DFTDATA}$	DSI-Dn+/- n=0 and 1	-	-	150 (Note)	ps

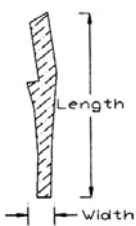
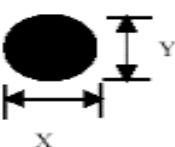
Note: The display module has to meet timing requirements, what are defined for the transmitter (MPU) on MIPI

5. RELIABILITY TEST

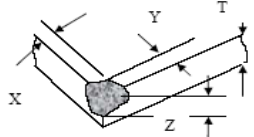
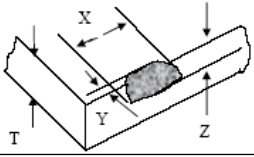
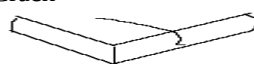
5.1 Environment test

Test Item	Test Condition	Inspection after test Inspection after 2~4hr storage at room temperature, the samples shall be free from defects: 1. Air bubble in the LCD 2. Sealleak. 3. Non-display 4. Glass crack 5. Missing segments; 6. Current Idd is twice higher than initial value. 7. Structure distortion
High Temperature Storage	70 °C 48hr	
Low Temperature Storage	-20°C 48hr	
HighTemperature Operating	60°C 48 hr	
Low Temperature Operating	-10°C 48hr	
Temperature Cycle	-10°C→ 25°C →70°C →25°C (30min) (5min) (30min) (5min) 20 cycles	
Dropping Test	Drop to the ground from 1m height, one time , every side of carton (Packing condition)	
ESD Test	Air discharge Voltage: ±8Kv / Touch mode Voltage: ±4Kv	

5.2 Cosmetic defects of LCM (Include Touch Panel and TFT) out of acceptable criteria are listed in below table

Inspection item	Criterion			Remark															
Liner matter	<table><tr><td>Width (mm)</td><td>Length (mm)</td><td>Q'ty</td></tr><tr><td>$W \leq 0.1$</td><td>/</td><td>Ignore</td></tr><tr><td>$0.1 < W \leq 0.2$</td><td>$L \leq 5$</td><td>3</td></tr><tr><td>$W > 0.2$</td><td>/</td><td>0</td></tr></table>			Width (mm)	Length (mm)	Q'ty	$W \leq 0.1$	/	Ignore	$0.1 < W \leq 0.2$	$L \leq 5$	3	$W > 0.2$	/	0				
	Width (mm)	Length (mm)	Q'ty																
	$W \leq 0.1$	/	Ignore																
	$0.1 < W \leq 0.2$	$L \leq 5$	3																
	$W > 0.2$	/	0																
Scratch	<table><tr><td>Width (mm)</td><td>Length (mm)</td><td>Q'ty</td></tr><tr><td>$W \leq 0.03$</td><td>/</td><td>Ignore</td></tr><tr><td>$0.03\text{mm} < W \leq 0.05$</td><td>$L \leq 5$</td><td>2</td></tr><tr><td>$0.05\text{mm} < W \leq 0.1$</td><td>$L \leq 2$</td><td>2</td></tr><tr><td colspan="2">$W > 0.1\text{mm}$ or $L > 2\text{mm}$</td><td>0</td></tr></table>			Width (mm)	Length (mm)	Q'ty	$W \leq 0.03$	/	Ignore	$0.03\text{mm} < W \leq 0.05$	$L \leq 5$	2	$0.05\text{mm} < W \leq 0.1$	$L \leq 2$	2	$W > 0.1\text{mm}$ or $L > 2\text{mm}$		0	As liner
	Width (mm)	Length (mm)	Q'ty																
	$W \leq 0.03$	/	Ignore																
	$0.03\text{mm} < W \leq 0.05$	$L \leq 5$	2																
	$0.05\text{mm} < W \leq 0.1$	$L \leq 2$	2																
$W > 0.1\text{mm}$ or $L > 2\text{mm}$		0																	
Fish eye on film/ Dent on film and Air bubble	<table><tr><td>Size (mm)</td><td>Q'ty</td></tr><tr><td>$D \leq 0.5$</td><td>Ignore</td></tr><tr><td>$0.5 < D < 1.0$</td><td>2</td></tr><tr><td>$D > 1.0$</td><td>0</td></tr></table>			Size (mm)	Q'ty	$D \leq 0.5$	Ignore	$0.5 < D < 1.0$	2	$D > 1.0$	0	Size: $D = (X + Y) / 2$ 							
	Size (mm)	Q'ty																	
	$D \leq 0.5$	Ignore																	
	$0.5 < D < 1.0$	2																	
	$D > 1.0$	0																	
Dot	<table><tr><td>Size (mm)</td><td>Q'ty</td></tr><tr><td>$D \leq 0.15$</td><td>Ignore</td></tr><tr><td>$0.15 < D \leq 0.25$</td><td>2</td></tr><tr><td>$0.25 < D \leq 0.35$</td><td>1</td></tr><tr><td>$D > 0.35$</td><td>0</td></tr></table>			Size (mm)	Q'ty	$D \leq 0.15$	Ignore	$0.15 < D \leq 0.25$	2	$0.25 < D \leq 0.35$	1	$D > 0.35$	0	As fish eye					
	Size (mm)	Q'ty																	
	$D \leq 0.15$	Ignore																	
	$0.15 < D \leq 0.25$	2																	
	$0.25 < D \leq 0.35$	1																	
$D > 0.35$	0																		

Newton's ring	Rules  1 環連性 $\leq 1/3$ TP area irregular  2 判別難性 Function OK	As fish eye

Chip and crack	Corner chip 	$X \leq 3\text{mm}$ $Y \leq 3\text{mm}$ $Z \leq T$
	General chip 	$X \leq 3\text{mm}$ $Y \leq 3\text{mm}$ $Z \leq T$ Or $X \leq 5\text{mm}$ $Y \leq 1\text{mm}$ $Z \leq T$
	Crack 	0

5.3 TFT Pixel Inspection

- 1) Pixel
b-pixels (R+G+B) 
- 2) DOT
1 sub-pixel (R or G or B / or or)   
- 3) Bright/Dark Dot
A sub-pixel (R,G, B dot) stuck off/on (electrical)
Bright dots shall be counted on a black pattern and black dots on a pure R,G, B and white pattern.
- 4) Adjacent Dot
2 or 3 dots connected with neighboring dot. (R,G or G,B or B,R or R,G,B)

5.4 TFT Pixel Dot Defect Criteria

Defect Mode	Acceptable Judgment Criteria	
	Dot Type	Quantity (ea)
Bright Dot	Random (Red, Blue, Green)	1
	2 or more adjacent dot defects	0
Dark Dot	Dark dot	3
	2 adjacent dots	1
	3 or more adjacent dots	0

END