



**SPECIFICATIONS
FOR
LCM+CTP+USBC Module**

MODULE No:	KD101UXFID008-01-C014A_USBC
CUSTOMER:	

STARTEK	INITIAL	DATE
PREPARED BY		
CHECKED BY		
APPROVED BY		

CUSTOMER	INITIAL	DATE
APPROVED BY		



Revision History

Date	Rev. No.	Page	Summary
2019.10.26	V1.0	ALL	First version
2019.01..08	V1.1	Drawing	7

Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 2 of 23
	常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range



Contents

1. Scope.....	4
1.1 Basic Description.....	4
1.2 Mechanical Information.....	5
1.3 Recommended Resolution.....	5
1.4 Plug & Play.....	5
1.5 Power Supply Rating.....	5
1.6 Block Diagram.....	6
1.7 Outline Dimension.....	7
2. Input Terminal Pin Assignment.....	8
2.1 Emergency supply_MICRO USB& PIN Definition.....	8
2.2 POWER ON/OFF AND Backlight PWM extensions key PIN Definition & Signal Connector.....	9
2.3 Type-C PIN Definition & Signal Connector.....	10
2.4 Audio headphone socket PIN Define & Input Signal Connector.....	12
2.5 Two speaker outputs PIN Define & Input Signal Connector.....	12
3. Operating Instructions:.....	13
3.1 This product supports the following operating systems: Windows 10, Andriod.....	13
3.2 Connect the Type-C.....	13
3.3 Connect the Power to micro USB.....	13
4. LCD Optical Characteristics.....	13
4.1 Optical specification.....	13
5. Electrical Characteristics:.....	14
5.1 Absolute Maximum Rating.....	14
5.2 LED Backlight Characteristics.....	14
6. LCD Module Out-Going Quality Level.....	16
6.1 VISUAL & FUNCTION INSPECTION STANDARD.....	16
6.1.1 Inspection conditions.....	16
7. Reliability Test Results.....	21
8. Cautions and Handling Precautions.....	22
8.1 Handling and Operating the Module.....	22
8.2 Storage and Transportation.....	22
9. Packing.....	23

Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 3 of 23
	常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range



1. Scope

This specifications cover the requirements of 10.1” TFT-LCD module with TYPE-C interface. This module is consist of a Transmissive TFT-LCD Panel, driver circuit, a capacitive touch panel, backlight unit. The LCD module can meet the requirement of RoHS compliance.

1.1 Basic Description

General Information	Items	Specifications	Unit	Note
		Main Panel		
	Display area(AA)	135.36(H)*216.58(V) (10.1 inch)	mm	
	Driver element	TFT active matrix		
	Display colors	16.7M	colors	
	Number of pixels	1200(RGB)*1920	Pixels	
	Pixel arrangement	RGB vertical stripe		
	Pixel pitch	0.1128(H)*0.1128(V)	mm	
	Viewing angle	Free	o'clock	
	LCM Interface	TYPE-C		
	Display mode	Transmissive /Normally Black		
	Operating temperature	-10~+50	°C	
	Storage temperature	-20~+60	°C	
	Lamination	Use optical bonding between LCM and CTP		
	LCM+CTP Luminance	450 nits (Typ.)		
	CTP Interface/	TYPE-C		
	CTP Firmware Version	KDK101_008-01-C014A_CTP_V01		
	Touch Cover Thickness	1.1mm with chemical strengthening		
	Touch Point	10 points and Gestures		
	Video Input	TYPE-C		
	TYPE-C it Firmware Version	KD101UXFID008-01_USBC_V01		

Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 4 of 23
	常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range



1.2 Mechanical Information

Item		Min.	Typ.	Max.	Unit	Note
Module size	Horizontal(H)	-	159	-	mm	
	Vertical(V)	-	244.6	-	mm	
	Depth(D)	-	16.11	-	mm	
Weight		-	350	-	g	

1.3 Recommended Resolution

Recommended Resolution	1200(RGB)*1920
------------------------	----------------

1.4 Plug & Play

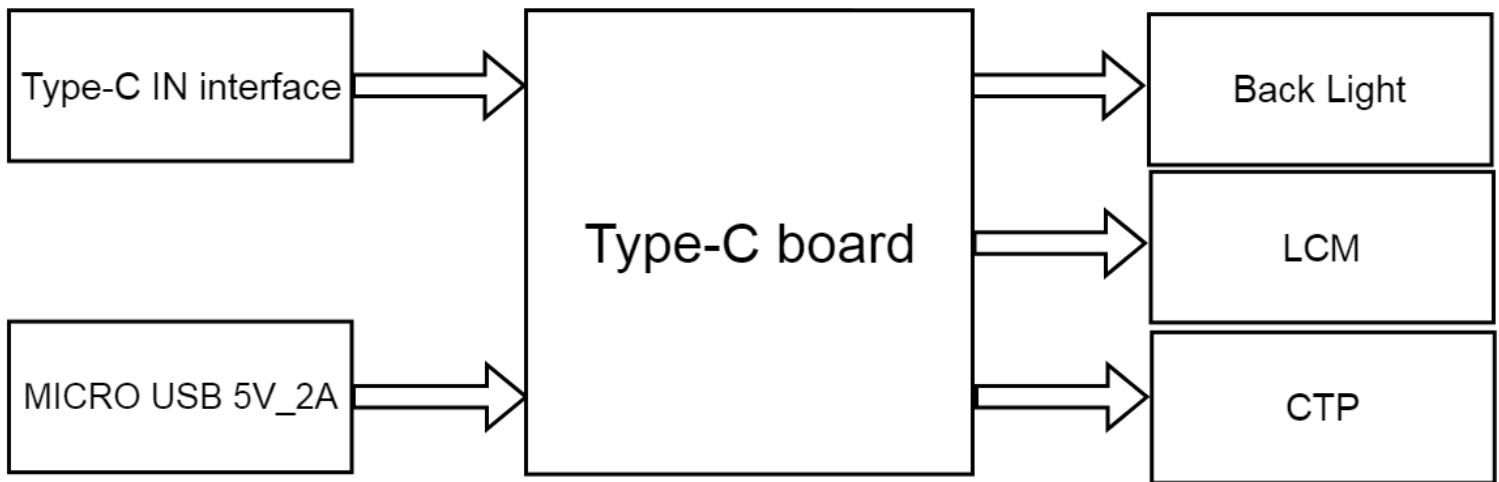
DDC2B /VESA Standard

1.5 Power Supply Rating

Power Consumption	4 Watt (Typ.)
DC POWER	5V 2A(Typ.)



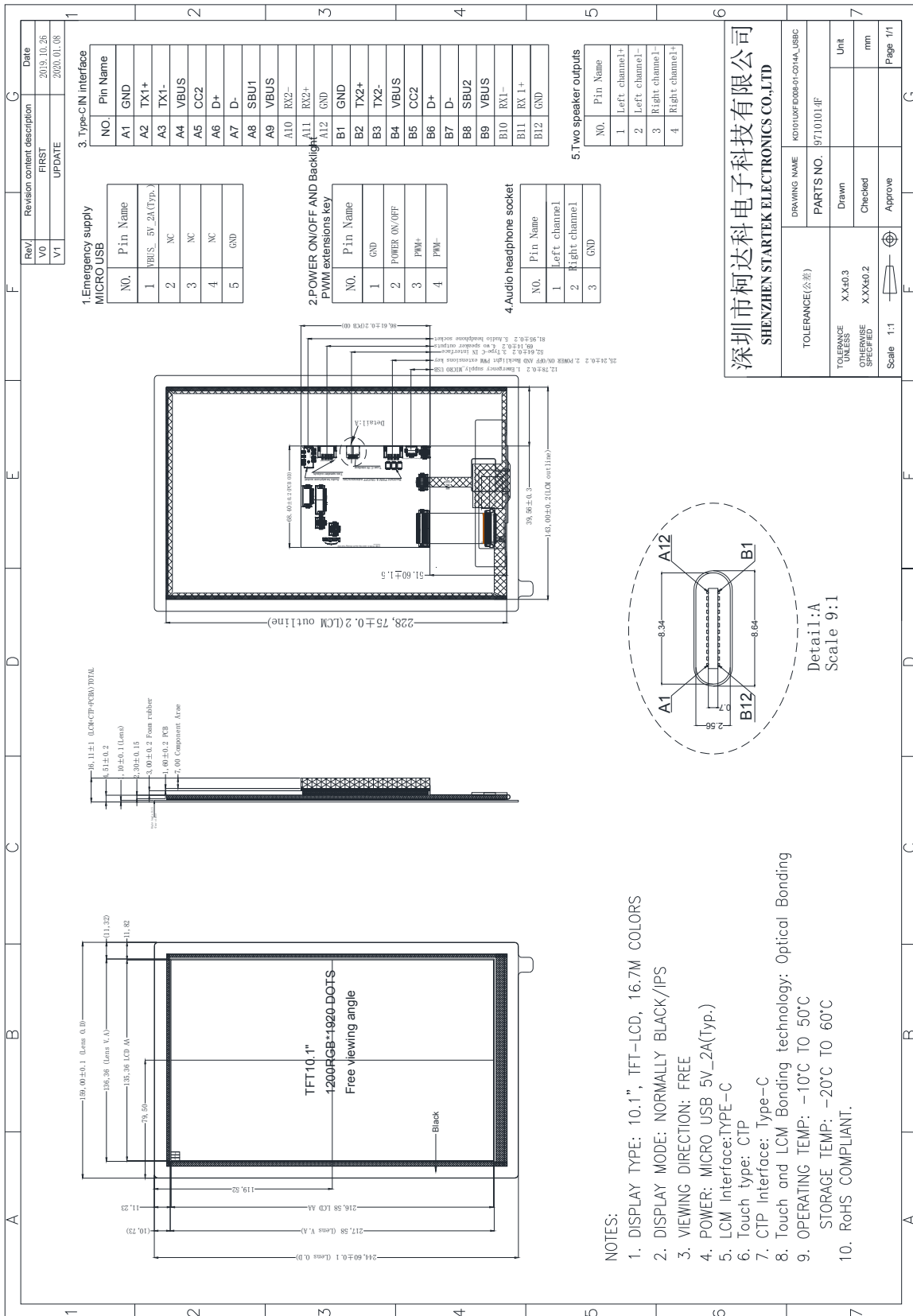
1.6 Block Diagram



Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 6 of 23
常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	



1.7 Outline Dimension



深圳市柯达科电子科技有限公司
SHENZHEN STARTEK ELECTRONICS CO.,LTD

TOLERANCE (公差)	DRAWING NAME	KD101UXFID008-01-C014A_USBC
TOLERANCE UNLESS OTHERWISE SPECIFIED	PARTS NO.	97101014F
X.XX±0.3	Drawn	
X.XX±0.2	Checked	
Scale 1:1	Approve	

Unit: mm
Page 1/1

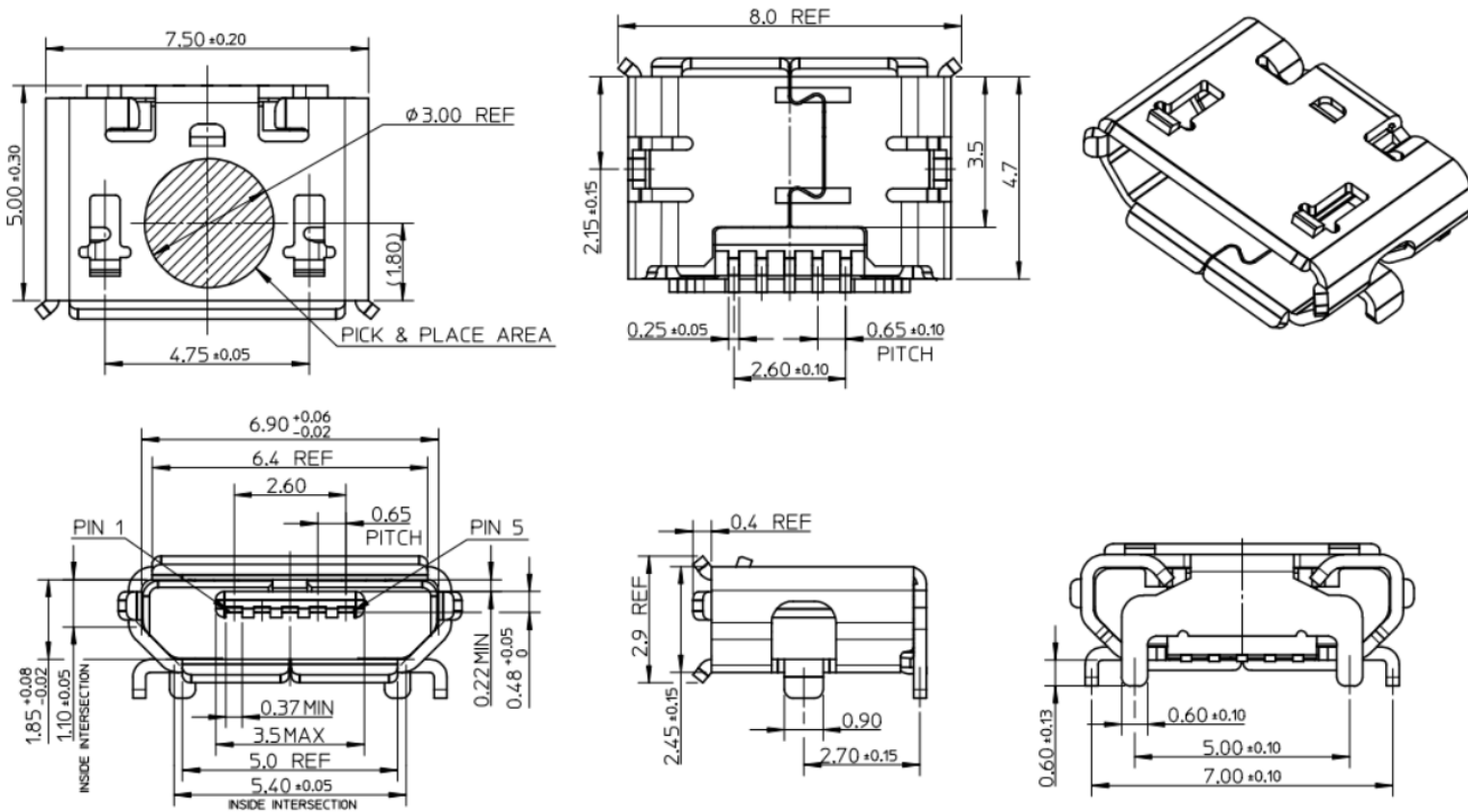
Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 7 of 23
常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	



2. Input Terminal Pin Assignment

2.1 Emergency supply_MICRO USB& PIN Definition

NO.	SYMBOL	DISCRIPTION	I/O
1	DC:5V,0.5A(Typ.)	Supply voltage(5.0V,2A Typ.).	P
2	NC	No Connection.	I/O
3	NC	No Connection.	I/O
4	NC	No Connection.	I
5	GND	Ground.	P



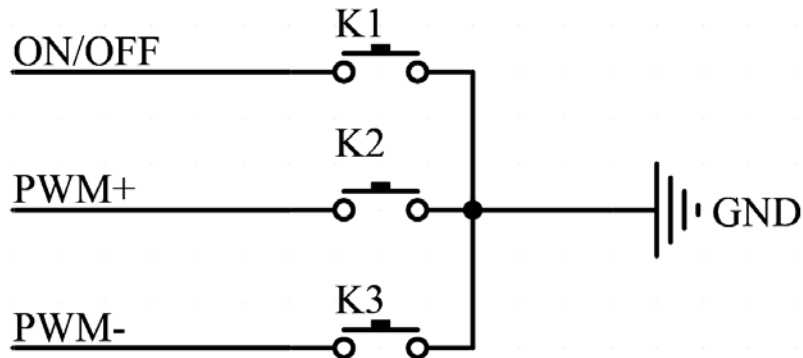
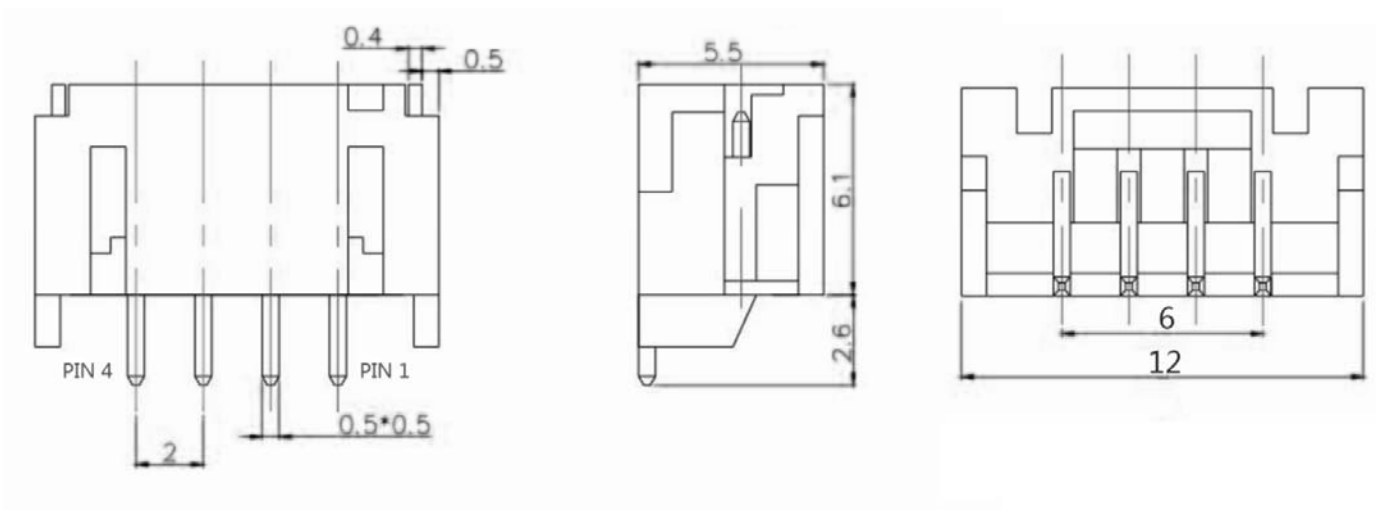
Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 8 of 23
常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	



2.2 POWER ON/OFF AND Backlight PWM extensions key PIN Definition & Signal Connector

note: SMT PH2.0mm spacing connector 4p

NO.	SYMBOL	DISCRIPTION
1	GND	Ground
2	POWER ON/OFF	ON/OFF KEY
3	PWM+	The backlight brightness of each button is increased by one level until the maximum brightness reaches (9 level).
4	PWM-	The backlight brightness of each button is reduced by one level until the lowest brightness reaches (level 9).



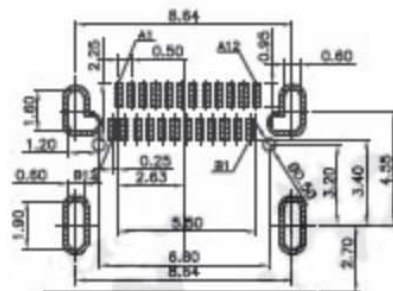
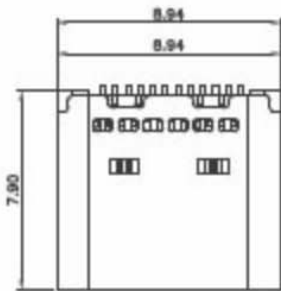
Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 9 of 23
常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	



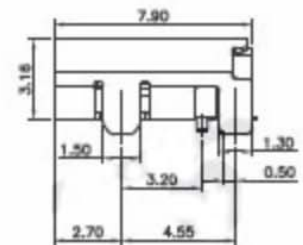
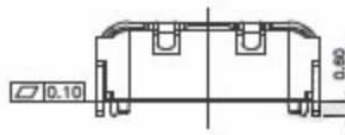
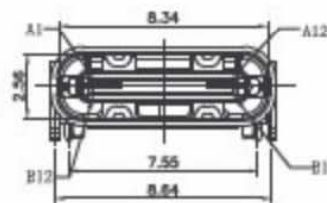
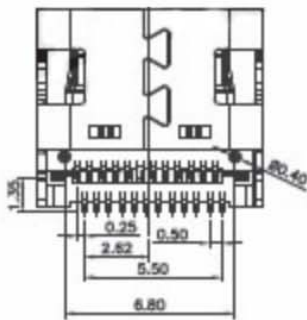
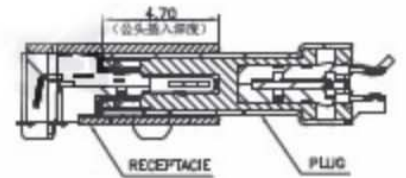
2.3 Type-C PIN Definition & Signal Connector

NO.	SYMBOL	DISCRIPTION
A1	GND	Ground
A2	TX1+	Superspeed transmitter differential pair
A3	TX1-	
A4	VBUS	Power
A5	CC2	Configuration
A6	D+	USB 2.0 differential pair
A7	D-	
A8	SBU1	Reserved
A9	VBUS	Power
A10	RX2-	Superspeed receiver differential pair
A11	RX2+	
A12	GND	Ground
B1	GND	Ground
B2	TX2+	Superspeed transmitter differential pair
B3	TX2-	
B4	VBUS	Power
B5	CC2	Configuration
B6	D+	USB 2.0 differential pair
B7	D-	
B8	SBU2	Reserved
B9	VBUS	Power
B10	RX1-	Superspeed receiver differential pair
B11	RX1+	
B12	GND	Ground

Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 10 of 23
	常备库存 Stock For Sale	长期供货 Long Time supply	支持少量 NO MOQ	品种齐全 In Full Range



RECOMMENDED P.C.B. LAYOUT
TOLERANCE UNSPECIFIED ±0.05mm

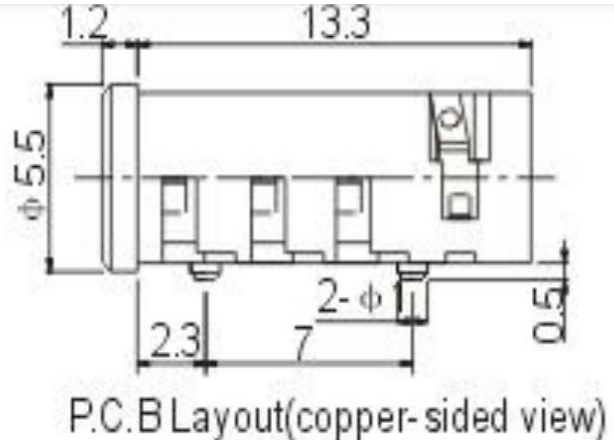
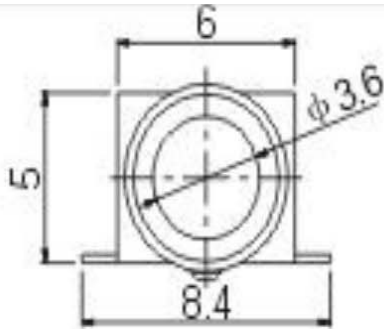


Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 11 of 23
常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	



2.4 Audio headphone socket PIN Define & Input Signal Connector

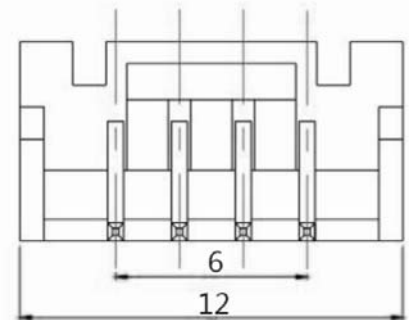
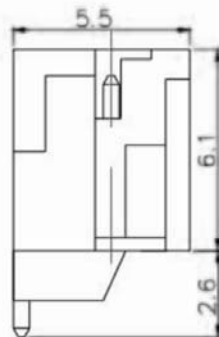
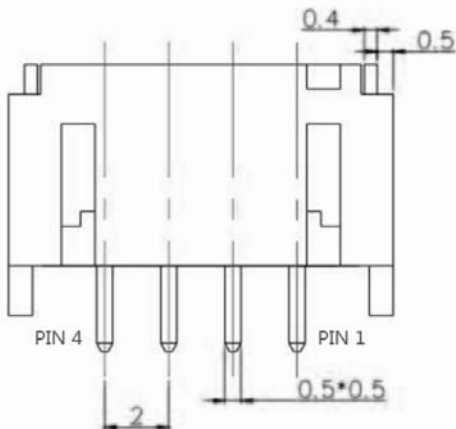
NO.	SYMBOL	DISCRIPTION
1	Left channel	Audio output left channel
2	Right channel	Audio output right channel
3	GND	Ground
4	GND	Ground



2.5 Two speaker outputs PIN Define & Input Signal Connector

note: SMT PH2.0mm spacing connector 4p

NO.	SYMBOL	DISCRIPTION
1	Left channel+	Audio output left channel
2	Left channel-	
3	Right channel-	Audio output right channel
4	Right channel+	



Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 12 of 23
	常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range



3. Operating Instructions:

- 3.1 This product supports the following operating systems: Windows 10, Android.
- 3.2 Connect the Type-C
- 3.3 Connect the Power to micro USB.

4. LCD Optical Characteristics

4.1 Optical specification

Item		Symbol	Condition	Min.	Typ.	Max.	Unit.	Note
Contrast Ratio		CR	Θ=0 Normal viewing angle	600	800	--		
Response time	Rising	T _R +T _F		--	25	50	msec	
	Falling							
Uniformity		S(%)		--	80	--	%	
Color Filter Chromaticity	White	W _X		0.246	0.286	0.326		
		W _Y		0.281	0.321	0.361		
	Red	R _X		0.579	0.619	0.659		
		R _Y		0.289	0.329	0.369		
	Green	G _X		0.261	0.301	0.341		
		G _Y		0.560	0.600	0.640		
	Blue	B _X		0.110	0.150	0.190		
		B _Y		0.019	0.059	0.099		
Viewing angle	Hor.	Θ _L	CR>10	--	85	--		
		Θ _R		--	85	--		
	Ver.	Θ _U		--	85	--		
		Θ _D		--	85	--		
Option View Direction		ALL VIEW						



5. Electrical Characteristics:

5.1 Absolute Maximum Rating

Characteristics	Symbol	Min.	Max.	Unit	Note
Digital Supply Voltage	VDD	-0.3	4.0	V	Note1
Operating temperature	T _{OP}	-10	+50	°C	
Storage temperature	T _{ST}	-20	+60	°C	

NOTE1: If the products are exceeding the above range, they may be permanently damaged.

5.2 LED Backlight Characteristics

The back-light system is edge-lighting type with 28 chips LED

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Forward Current	I _F	140	160	--	mA	
Forward Voltage	V _F	--	24	--	V	
LCM Luminance	LV	400	450	--	cd/m ²	Note3
LED life time	Hr	--	50000	--	Hour	Note1,2
Uniformity	Avg	80	--	--	%	Note3

Note1: LED life time (Hr) can be defined as the time in which it continues to operate under the condition:

T_a=25±3 °C, typical IL value indicated in the above table until the brightness becomes less than 50%.

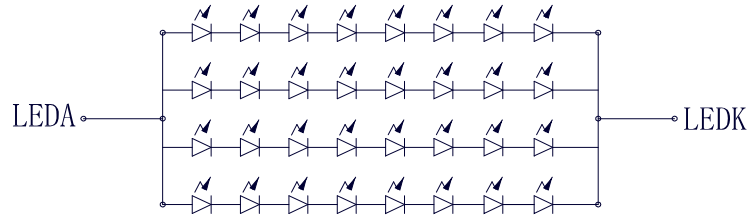
Note 2: The “LED life time” is defined as the module brightness decrease to 50% original brightness at

T_a=25°C and IL=160mA. The LED lifetime could be decreased if operating IL is larger than 160mA. The constant current driving method is suggested.

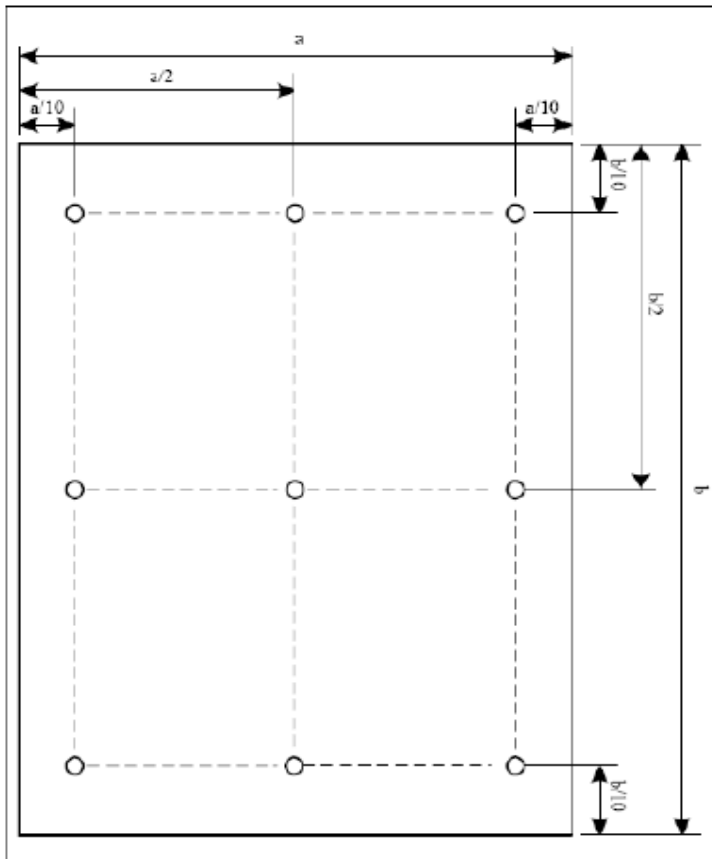
Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 14 of 23
常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	



Note (3) Luminance Uniformity of these 9 points is defined as below:



B/L Circuit



$$\text{Uniformity} = \frac{\text{minimum luminance in 9 points (1-9)}}{\text{maximum luminance in 9 points (1-9)}}$$

$$\text{Luminance} = \frac{\text{Total Luminance of 9 points}}{9}$$

Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 15 of 23
常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	



6. LCD Module Out-Going Quality Level

6.1 VISUAL & FUNCTION INSPECTION STANDARD

6.1.1 Inspection conditions

Inspection performed under the following conditions is recommended.

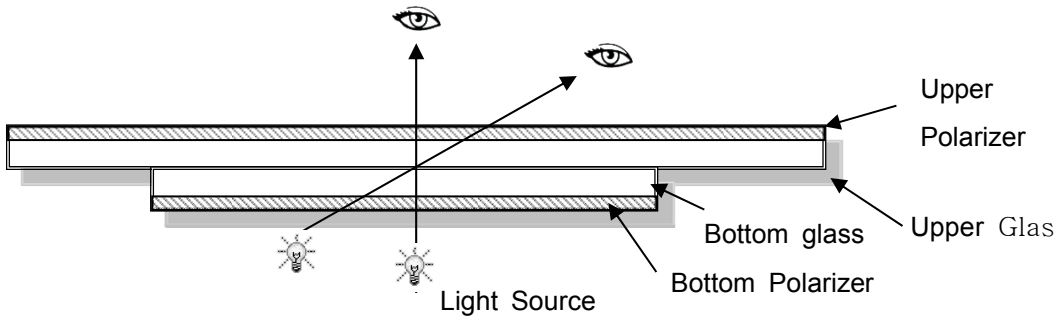
Temperature : 25±5°C

Humidity : 65%±10%RH

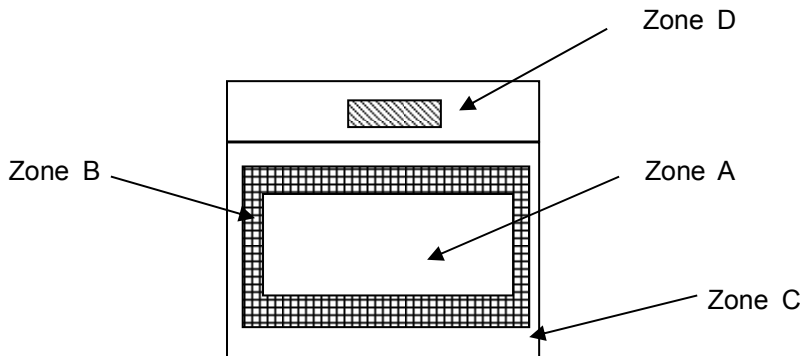
Viewing Angle : Normal viewing Angle.

Illumination: Single fluorescent lamp (300 to 700Lux)

Viewing distance:30-50cm



6.1.2 Definition



Zone A : Effective Viewing Area(Character or Digit can be seen)

Zone B : Viewing Area except Zone A

Zone C : Outside (Zone A+Zone B) which can not be seen after assembly by customer .)

Zone D : IC Bonding Area

Note:As a general rule ,visual defects in Zone C can be ignored when it doesn't effect product function or appearance after assembly by customer

Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 16 of 23
常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	



6.1.3 Sampling Plan

According to GB/T 2828.1-2003 ; , normal inspection, Class II

AQL:

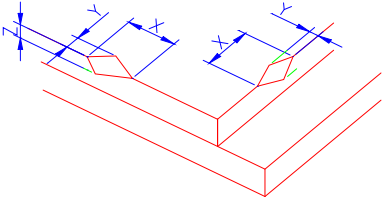
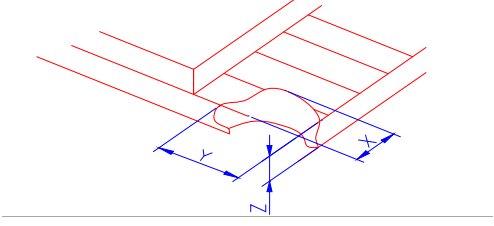
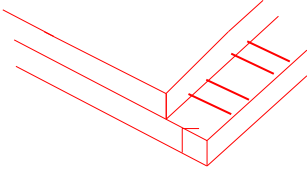
Major defect	Minor defect
0.65	1.5

LCD: Liquid Crystal Display , TP: Touch Panel , LCM: Liquid Crystal Module

No	Items to be inspected	Criteria	Classification of defects
1	Functional defects	1) No display, Open or miss line 2) Display abnormally, Short 3) Backlight no lighting, abnormal lighting. 4) TP no function	Major
2	Missing	Missing component	
3	Outline dimension	Overall outline dimension beyond the drawing is not allowed	
4	Color tone	Color unevenness, refer to limited sample	Minor
5	Spot Line defect	Light dot, Dim spot, Polarizer Bubble ; Polarizer accidented spot.	
6	Soldering appearance	Good soldering , Peeling off is not allowed.	
7	LCD/Polarizer/TP	Black/White spot/line, scratch, crack, etc.	



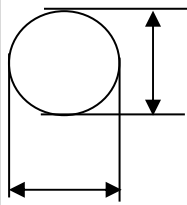
6.1.4 Criteria (Visual)

Number	Items	Criteria(mm)						
1.0 LCD Crack/Broken NOTE: X: Length Y: Width Z: Height L: Length of IT O, T: Height of LCD	(1) The edge of LCD broken	 <table border="1" data-bbox="756 667 1453 815"> <tr> <td>X</td> <td>Y</td> <td>Z</td> </tr> <tr> <td>≤3.0mm</td> <td><Inner border line of the seal</td> <td>≤T</td> </tr> </table>	X	Y	Z	≤3.0mm	<Inner border line of the seal	≤T
X	Y	Z						
≤3.0mm	<Inner border line of the seal	≤T						
	(2)LCD corner broken	 <table border="1" data-bbox="836 1122 1374 1220"> <tr> <td>X</td> <td>Y</td> <td>Z</td> </tr> <tr> <td>≤3.0mm</td> <td>≤L</td> <td>≤T</td> </tr> </table>	X	Y	Z	≤3.0mm	≤L	≤T
X	Y	Z						
≤3.0mm	≤L	≤T						
	(3) LCD crack	 <p style="text-align: center;">Crack Not allowed</p>						



2.0

Spot defect



Y

X

$$\Phi = (X+Y)/2$$

① light dot (LCD/TP/Polarizer black/white spot , light dot, pinhole, dent, stain)

Zone Size (mm)	Acceptable Qty		
	A	B	C
$\Phi \leq 0.10$	Ignore		
$0.10 < \Phi \leq 0.25$	4(distance $\geq 10\text{mm}$)		
$0.25 < \Phi \leq 0.35$	3		
$\Phi > 0.4$	0		

② Dim spot (LCD/TP/Polarizer dim dot, light leakage, dark spot)

Zone Size (mm)	Acceptable Qty		
	A	B	C
$\Phi \leq 0.1$	Ignore		
$0.10 < \Phi \leq 0.25$	4(distance $\geq 10\text{mm}$)		
$0.25 < \Phi \leq 0.35$	3		
$\Phi > 0.4$	0		

③ Polarizer accidented spot

Zone Size (mm)	Acceptable Qty		
	A	B	C
$\Phi \leq 0.2$	Ignore		
$0.3 < \Phi \leq 0.5$	3(distance $\geq 10\text{mm}$)		
$\Phi > 0.5$	1		

④ Pixel bad points (light dot, Dim dot, color dot)

Zone Size (mm)	Acceptable Qty		
	A	B	C
$\Phi \leq 0.15$	Ignore		
$0.2 < \Phi \leq 0.3$	2(distance $\geq 10\text{mm}$)		
$\Phi > 0.4$	1		

⑤ Polarizer Bubble

Zone Size (mm)	Acceptable Qty		
	A	B	C
$\Phi \leq 0.2$	Ignore		
$0.3 < \Phi \leq 0.4$	4(distance $\geq 10\text{mm}$)		
$0.4 < \Phi \leq 0.5$	3		



3.0	Line defect (LCD/TP /Polarizer backlight black/white line, scratch, stain)	Width(mm)	Length(m)	Acceptable Qty		
				A	B	C
		$\Phi \leq 0.05$	Ignore	Ignore		Ignore
		$0.05 < W \leq 0.06$	$L \leq 5.0$	$N \leq 3$		
		$0.07 < W \leq 0.08$	$L \leq 4.0$	$N \leq 2$		
$0.08 < W$	Define as spot defect					
4.0	Electronic Components SMT	Not allow missing parts, solderless connection, cold solder joint, mismatch, The positive and negative polarity opposite				
5.0	Display color & Brightness	1. Color: Measuring the color coordinates, The measurement standard according to the datasheet or samples. 2. Brightness: Measuring the brightness of White screen, The measurement standard according to the datasheet or Samples.				
6.0	LCD Mura	By 5% ND filter invisible.				

Criteria (functional items)

Number	Items	Criteria (mm)
1	No display	Not allowed
2	Missing segment	Not allowed
3	Short	Not allowed
4	Backlight no lighting	Not allowed
5	TP no function	Not allowed



7. Reliability Test Results

Item	Condition	Inspection after test
High Temperature Operating	50 °C, 96H	Inspection after 2~4hours storage at room temperature, the sample shall be free from defects: 1.Air bubble in the LCD; 2.Non-display; 3.Missing segments/line; 4.Glass crack; 5.Current IDD is twice higher than initial value.
Low Temperature Operating	-10 °C, 96HR	
High Temperature Storage	60 °C, 96HR	
Low Temperature Storage	-20 °C, 96HR	
High Temperature & High Operating	+60 °C, 90% RH ,96 hours.	
Thermal Shock (Non-operation)	-30 °C, 30 min ↔ 80 °C, 30 min, Change time: 5min 20CYC.	
ESD test	Air: ±6KV, 5times; Contact: ±4KV, 5 times; 5points/panel.	
Vibration (Non-operation)	Frequency range: 10~55Hz, Stroke: 1.5mm Sweep: 10Hz~55Hz~10Hz 2 hours for each direction of X.Y.Z. (6 hours for total) (Package condition).	
Box Drop Test	1 Corner 3 Edges 6 faces, 80cm (MEDIUM BOX)	

Remark:

- 1.The test samples should be applied to only one test item.
- 2.Sample size for each test item is 5~10pcs.
- 3.For Damp Proof Test, Pure water(Resistance > 10MΩ) should be used.
- 4.In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judged as a good part.
- 5.Failure Judgment Criterion: Basic Specification, Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.

Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 21 of 23
常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	



8. Cautions and Handling Precautions

8.1 Handling and Operating the Module

- (1) When the module is assembled, it should be attached to the system firmly.
Do not warp or twist the module during assembly work.
- (2) Protect the module from physical shock or any force. In addition to damage, this may cause improper operation or damage to the module and back-light unit.
- (3) Note that polarizer is very fragile and could be easily damaged. Do not press or scratch the surface.
- (4) Do not allow drops of water or chemicals to remain on the display surface.
If you have the droplets for a long time, staining and discoloration may occur.
- (5) If the surface of the polarizer is dirty, clean it using some absorbent cotton or soft cloth.
- (6) The desirable cleaners are water, IPA (Isopropyl Alcohol) or Hexane.
Do not use ketene type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanent damage to the polarizer due to chemical reaction.
- (7) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, legs, or clothes, it must be washed away thoroughly with soap.
- (8) Protect the module from static; it may cause damage to the CMOS ICs.
- (9) Use finger-stalls with soft gloves in order to keep display clean during the incoming inspection and assembly process.
- (10) Do not disassemble the module.
- (11) Protection film for polarizer on the module shall be slowly peeled off just before use so that the electrostatic charge can be minimized.
- (12) Pins of I/F connector shall not be touched directly with bare hands.
- (13) Do not connect, disconnect the module in the "Power ON" condition.
- (14) Power supply should always be turned on/off by the item 6.1 Power On Sequence & 6.2 Power Off Sequence

8.2 Storage and Transportation.

- (1) Do not leave the panel in high temperature, and high humidity for a long time.
It is highly recommended to store the module with temperature from 0 to 35 °C and relative humidity of less than 70%
- (2) Do not store the TFT-LCD module in direct sunlight.
- (3) The module shall be stored in a dark place. When storing the modules for a long time, be sure to adopt effective measures for protecting the modules from strong ultraviolet radiation, sunlight, or fluorescent light.
- (4) It is recommended that the modules should be stored under a condition where no condensation is allowed. Formation of dewdrops may cause an abnormal operation or a failure of the module.
In particular, the greatest possible care should be taken to prevent any module from being operated where condensation has occurred inside.
- (5) This panel has its circuitry FPC on the bottom side and should be handled carefully in order not to be stressed.

Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 22 of 23
	常备库存 Stock For Sale	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range



9. Packing

----TBD----

Part. No	KD101UXFID008-01-C014A_USBC	REV	V1.1	Page 23 of 23
	常备库存 Stock For Sale	长期供货 Long Time supply	支持少量 NO MOQ	品种齐全 In Full Range