



深圳市正晶浩电子有限公司

SHENZHEN ZJH DISPLAYER TECHNOLOGYCO., LTD

电话TEL:0755-29355801 传真FAX:0755-29355801

SPECIFICATION

LCD MODULE

P035C018-TP

REVISION RECORD

DESIGN	CHECK	REVIEW
VERSION	DATE	CONTENTS
A	2015-02-28	First Release

CUSTOMER

Customer company:

Date:

Customer signature:

Date:

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GENERAL INFORMATION

Item	Contents	Unit
Driver element	a-Si 3.5 TFT active matrix	--
Viewing direction	12 O' CLOCK	O' Clock
LCM OUTLINE DIMENSIONS	54.48(W) x 84.71(H) x 3.4(T)	mm
Active area (W×H)	48.96(H) × 73.44(V)MM	mm
Number of Dots	320RGB(H)×480(V)	Pixel
Driver IC	ILI9488	--
Colors	262K	--
Weight	TBD	g
Backlight Type	LED	--
Interface Type	RGB or 8/9/16/18 Parallel Interface	--
Input voltage	2.8	V

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Supply voltage for analog	VDD	-0.3	3.3	V
Input voltage	VIN	-0.3	VDD+0.3	V
Operating temperature	TOP	-20	70	°C
Storage temperature	TST	-30	80	°C
Humidity	RH		90% (Max60°C)	RH

ELECTRICAL CHARACTERISTICS

DC CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit
Supply voltage for analog	VDD	2.3	2.8	3.3	V
Input Current	Idd	—	—	—	mA
Supply voltage for I/O circuit	IOVCC	1.65	1.8	3.3	V
Input voltage ' H' level	VIH	0.7 IOVCC	—	—	V
Input voltage ' L' level	VIL	—	—	0.3 IOVCC	V
Output voltage ' H' level	VOH	0.8 IOVCC	—	—	V
Output voltage ' L' level	VOL	—	—	0.2 IOVCC	V

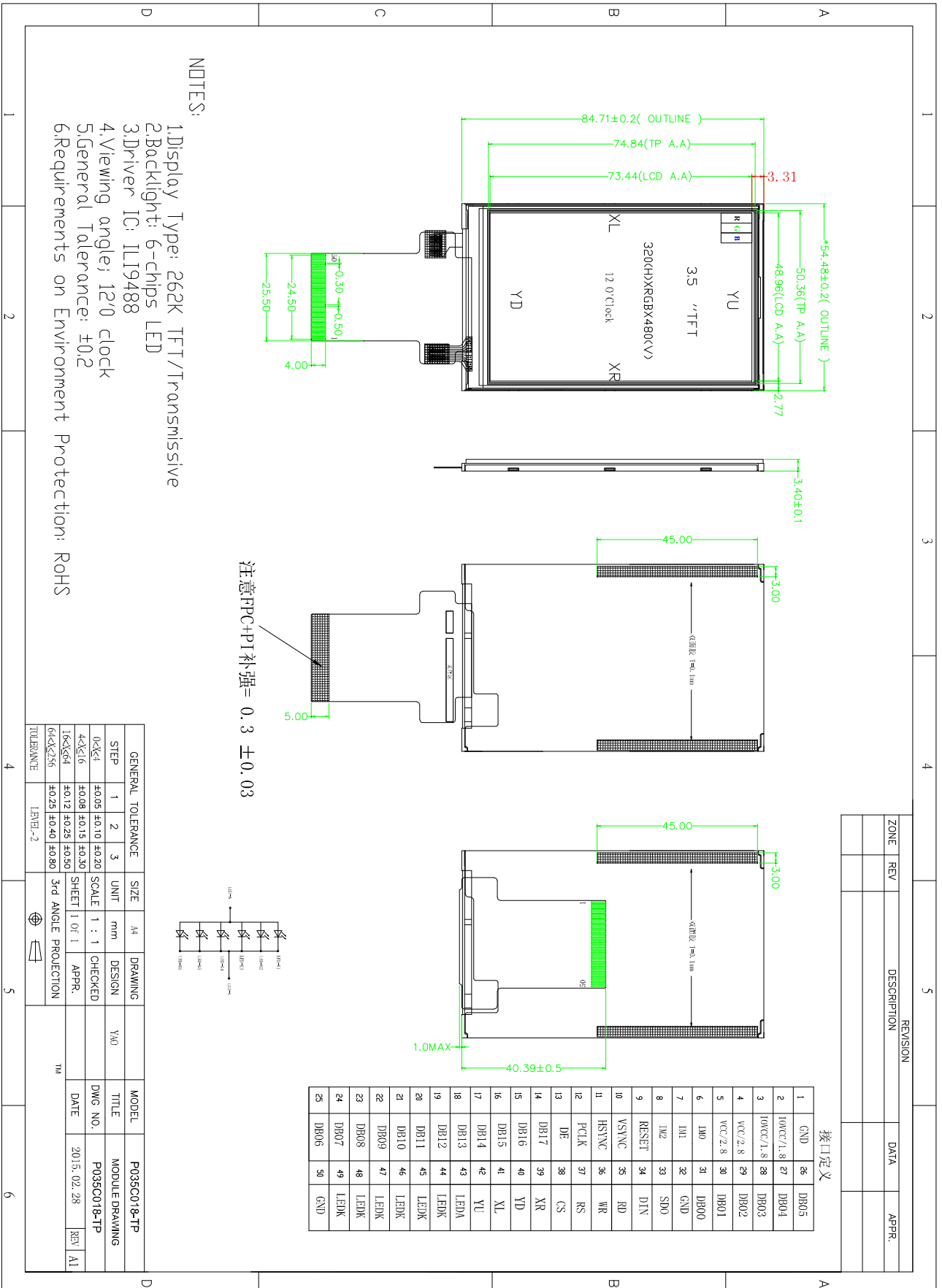
TIMING OF POWER SUPPLY

PLEASE REFER TO THE DRIVER IC SPECIFICATION.

BACKLIGHT CHARACTERISTICS

Item	Symbol	Min	Typ	Max	Unit	Condition
Forward voltage	Vf	2.9	3.2	3.3	V	If=120 mA
Luminance	Lv	6000	--	--	cd/m ²	
Number of LED	—	6			Piece	—
Connection mode	p	Parallel			—	—

EXTERNAL DIMENSION



Interface Signals

Pin No.	Symbol	Description			
1	GND	Groud			
2-3	IOVCC	Power supply for interface(compatible 1.8V and 2.8V)			
4-5	VCC	Power supply (2.8V)			
6	IM0	IM2	IM1	IM0	Interface mode
		0	0	0	DBI Type B 18-bit bus(DB_EN=0)
7	IM1	0	0	1	DBI Type B 9-bit bus
8	IM2	0	1	0	DBI Type B 16-bit bus
		0	1	1	DBI Type B 8-bit bus
		1	0	1	DBI Type C Option 1(3-line SPI)
		1	1	1	DBI Type C Option 1(4-line SPI)
9	RESET	Reset input pin. Signal is active low.			
10	VSYNC	Vertical Sync Signal			
11	HSYNC	Horizontal Sync Signal			
12	PCLK	Pixel clock signal for DPI I/F mode.			
13	DE	Data Enable signal.			
14-31	DB17-DB1	Data bus			
32	GND	Groud			
33	SDO	Serial data output			
34	SDI	Serial data input pin.			
35	RD	LCD driver read enable			
36	WR/SCL	DBI Type B:WRX pin, serves as a write signal			
		DBI Type C:SCL pin as Serial Clock when operates in the serial interface			
37	RS	Command/Display data selection signal			
38	CS	Chip select signal			
39	XR	TP PIN			
40	YU	TP PIN			
41	XL	TP PIN			
42	YD	TP PIN			
43	LEDA	Anode for back light driver voltage			
44-49	LEDK	Cathode for back light driver voltage			
50	GND	Groud			

APPLICATION CIRCUIT

Please consult our technical department for detail information.

INITIAL CODE

Please consult our technical department for detail information.

ELECTRO-OPTICAL CHARACTERISTICS

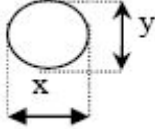
Item	Symbol	Condition	Min	Typ	Max	Unit	Remark	Note
Response time	Tr+Tf	$\theta = 0^\circ$ $\varnothing = 0^\circ$ Ta=25°C	-	20	30	ms	FIG 1.	4
Contrast ratio	Cr		-	400	500	-	FIG 2.	1
Luminance uniformity	δ WHITE		-	-	-	%	FIG 2.	3
Surface Luminance	Lv		300	-	-	cd/m ²	FIG 2.	2
Viewing angle range	CR>10	\varnothing 3	60	70	-	deg	FIG 3.	6
		\varnothing 9	60	65	-	deg	FIG 3.	
		\varnothing 12	60	70	-	deg	FIG 3.	
		\varnothing 6	50	65	-	deg	FIG 3.	
CIE(x, y) chromaticity	Red	x	0.586	0.636	0.686	FIG 2.	5	
		y	0.273	0.323	0.373			
	Green	x	0.252	0.277	0.297			
		y	0.529	0.549	0.569			
	Blue	x	0.122	0.142	0.162			
		y	0.102	0.122	0.142			
	White	x	0.283	0.303	0.323			
		y	0.305	0.325	0.345			

4. Standards of inspection items

4.1 Major Defect

Item No	Items to be inspected	Inspection Standard	Classification of defects
4.1.1	All functional defects	1.No display 2.Display abnormally 3.Missing vertical, horizontal segment 4.Short circuit 5. Back-light no lighting, flickering and abnormal lighting.	Major
4.1.2	Missing	Missing component	
4.1.3	Outline dimension	Overall outline dimension beyond the drawing is not allowed.	
4.1.4	linearity	No more than 1.5%	

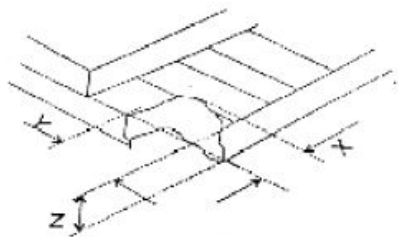
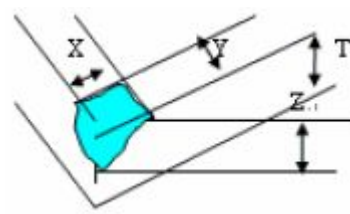
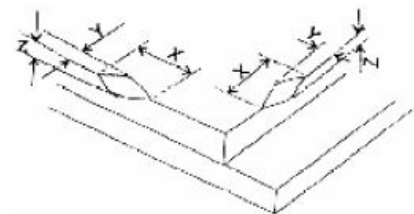
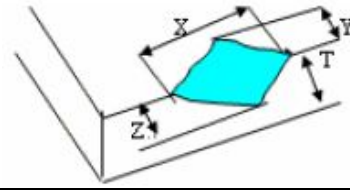
4.2 Cosmetic Defect

Item No	Items to be inspected	Inspection Standard	Classification of defects																					
4.21	Clear Spots Black and white Spot defect Pinhole, Foreign Particle, polarizer Dirt	For dark/white spot, size Φ is defined as $\Phi = \frac{x + y}{2}$ 	Minor																					
		1		<table border="1"> <thead> <tr> <th rowspan="2">Zone</th> <th colspan="3">Acceptable Qty</th> </tr> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Size(mm)</td> <td colspan="3">Ignore</td> </tr> <tr> <td colspan="3">2</td> </tr> <tr> <td colspan="3">1</td> </tr> <tr> <td colspan="3">0</td> </tr> </tbody> </table>	Zone	Acceptable Qty			A	B	C	Size(mm)	Ignore			2			1			0		
		Zone				Acceptable Qty																		
				A	B	C																		
		Size(mm)		Ignore																				
				2																				
				1																				
	0																							
	$\Phi \leq 0.15$	Ignore																						
	$0.15 < \Phi \leq 0.20$	2																						
	$0.20 < \Phi \leq 0.30$	1																						
	$\Phi > 0.30$	0																						
	Clear Spots TP Dirt	2	<table border="1"> <thead> <tr> <th rowspan="2">Zone</th> <th colspan="3">Acceptable Qty</th> </tr> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Size(mm)</td> <td colspan="3">Ignore</td> </tr> <tr> <td colspan="3">2</td> </tr> <tr> <td colspan="3">1</td> </tr> <tr> <td colspan="3">0</td> </tr> </tbody> </table>	Zone	Acceptable Qty			A	B	C	Size(mm)	Ignore			2			1			0			Minor
		Zone			Acceptable Qty																			
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$0.15 < \Phi \leq 0.20$	2																							
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$\Phi > 0.30$	0																							
Dim Spots Circle shaped and dim edged defects	3	<table border="1"> <thead> <tr> <th rowspan="2">Zone</th> <th colspan="3">Acceptable Qty</th> </tr> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Size(mm)</td> <td colspan="3">Ignore</td> </tr> <tr> <td colspan="3">2</td> </tr> <tr> <td colspan="3">1</td> </tr> <tr> <td colspan="3">0</td> </tr> </tbody> </table>	Zone	Acceptable Qty			A	B	C	Size(mm)	Ignore			2			1			0			Minor	
	Zone			Acceptable Qty																				
			A	B	C																			
	Size(mm)		Ignore																					
			2																					
			1																					
0																								
$\Phi \leq 0.2$	Ignore																							
$0.20 < \Phi \leq 0.40$	2																							
$0.40 < \Phi \leq 0.60$	1																							
$\Phi > 0.60$	0																							

2 Cosmetic Defect

Item No	Items to be inspected	Inspection Standard				Classification of defects		
4.2.2	Line defect Black line, White line, Foreign material on polarizer	Size(mm)		Acceptable Qty			Minor	
		L(Length)	W(Width)	Zone				
				A	B	C		
		Ignore	$W \leq 0.01$	Ignore				Ignore
		$L \leq 3.0$	$0.01 < W \leq 0.03$	2				
		$L \leq 3.0$	$0.03 < W \leq 0.05$	1				
	$W > 0.05$	0						
4.2.2	Foreign material on TP film	The line can be seen after mobile phone in the operating condition:				Minor		
		Size(mm)		Acceptable Qty				
		L(Length)	W(Width)	Zone				
				A	B		C	
		Ignore	$W \leq 0.03$	Ignore			Ignore	
		$L \leq 5.0$	$0.03 < W \leq 0.05$	3				
	$W > 0.05$	0						
4.2.3	Dim line defect Polarizer scratch TP film scratch	If the scratch can be seen after mobile phone cover assembling or in the operating condition, judge by the line defect of 4.2.2.				Minor		
		If the scratch can be seen only in non-operating condition or some special angle, judge by the following.						
		Size(mm)		Acceptable Qty				
		L(Length)	W(Width)	Zone				
				A	B		C	
		Ignore	$W \leq 0.03$	Ignore			Ignore	
$5.0 < L \leq 10.0$	$0.03 < W \leq 0.05$	2						
$L \leq 5.0$	$0.05 < W \leq 0.08$	1						
	$W > 0.08$	0						
4.2.4	Polarize Air bubble	Air bubbles between glass & polarizer				Minor		
		Size(mm)	Zone	Acceptable Qty				
				A	B		C	
		$\Phi \leq 0.25$		Ignore			Ignore	
		$0.25 < \Phi \leq 0.5$		2				
$\Phi > 0.50$		0						

Item No	Items to be inspected	Inspection Standard	Classification of defects
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4.35	Glass defect	<p>(i) Chips on corner A:LCD Glass defect</p> 	Minor						
		<table border="1"> <tr> <td>X(mm)</td> <td>Y(mm)</td> <td>Z(mm)</td> </tr> <tr> <td>≤2.0</td> <td>≤S</td> <td>Disregard</td> </tr> </table>		X(mm)	Y(mm)	Z(mm)	≤2.0	≤S	Disregard
		X(mm)		Y(mm)	Z(mm)				
		≤2.0		≤S	Disregard				
		<p>Notes: S=contact pad length Chips on the corner of terminal shall not be allowed to extend into the ITO pad or expose perimeter seal. B:TP Glass defect</p> 							
		<table border="1"> <tr> <td>X(mm)</td> <td>Y(mm)</td> <td>Z(mm)</td> </tr> <tr> <td>≤3.0</td> <td>≤3.0</td> <td>Disregard</td> </tr> </table>		X(mm)	Y(mm)	Z(mm)	≤3.0	≤3.0	Disregard
		X(mm)		Y(mm)	Z(mm)				
		≤3.0		≤3.0	Disregard				
		<p>(ii) Usual surface cracks A:LCD Glass defect</p> 							
		<table border="1"> <tr> <td>X(mm)</td> <td>Y(mm)</td> <td>Z(mm)</td> </tr> <tr> <td>≤3.0</td> <td><Inner border line of the seal</td> <td>Disregard</td> </tr> </table>		X(mm)	Y(mm)	Z(mm)	≤3.0	<Inner border line of the seal	Disregard
		X(mm)		Y(mm)	Z(mm)				
		≤3.0		<Inner border line of the seal	Disregard				
<p>B:TP Glass defect</p> 									
<table border="1"> <tr> <td>X(mm)</td> <td>Y(mm)</td> <td>Z(mm)</td> </tr> <tr> <td>≤6.0</td> <td><2.0</td> <td>Disregard</td> </tr> </table>	X(mm)	Y(mm)	Z(mm)	≤6.0	<2.0	Disregard			
X(mm)	Y(mm)	Z(mm)							
≤6.0	<2.0	Disregard							
<p>(iii) Crack Cracks tend to break are not allowed.</p> 