7.6 inch
TFT Display Series

GDTL076RL-S01

MODEL NAME: GDTL076RL-S01

Version:2.0

Customer: Common

APPROVED BY   **SIGNATURE**

Name / Title

Note

Please return 1 copy for your confirmation with your signature and comments.

Approved By	Checked By	Prepared By
刘玉宝印	温馨之印	刘晗之印

RECORDS OF REVISION

Date	Rev.	Description	Note	Page
2018-3-20	1.0	First issue.		
2018-5-07	2.0	Update the mold composition drawing.		

Contents

1. Technology Specifications

1.1   Features

Item	Standard Value
Display Type	1280(R+G+B) * 240 Dots
LCD Type	a-Si TFT, Positive, Transmissive
Viewing Direction	ALL
Backlight	36 LED White Color
Interface	LVDS

1.2   Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	206.24(L) ×51.93(W) ×15.05(T)	mm
Active Area	191.62(H) x 35.93(V)	mm
Pixel pitch	0.1497(H) X0.1497 (V)× RGB	mm
LCM Luminance	6500(Typ)	Cd/m^2

Note：For detailed information please refer to LCM drawing

1.3   Absolute Maximum Ratings

Item	Symbol	Condition	Min.	Max.	Unit
Power Voltage	VDD	-	-0.3	4.0	V
	VGH		-0.3	40	V
	VGL		-20	0.3	V
Operating Temperature	T_{OP}	-	-30	+80	°C
Storage Temperature.	T_{ST}	-	-40	+85	°C
Storage Humidity	H_D	Ta < 60 °C	-	90	%RH

Note: The absolute maximum rating values of this product not allowed to be exceeded at any times.Should be module be used with any of absolute maximum ratings exceeded. The characteristics ofthe module may not be recovered, or in an extreme case, the module may be permanently destroyed.

1.4 Electrical Characteristics

V_{CC} = 2.4~5.0V, VDD3=1.65~3.3V,V_{SS} = 0V, Ta = 25°C

Item	Symbol	Min.	Type	Max.	Unit	Remark
Power voltage	DVDD	3.0	3.3	3.6	V	Note 2
	VGH	17	18	19	V	
	VGL	-12.0	-11.0	-10.0	V	
Input signal voltage	V_{COM}	---	---	---	V	
Input logic high voltage	V_{IH}	0.7DVDD	-	DVDD	V	Note 3
Input logic low voltage	V_{IL}	0	-	0.3DVDD	V	

1.5 Optical Characteristics

Ta = 25°C

Item	Symbol	Conditions	Min.	Typ.	Max.	Reference
View Angle	θX+, θX-	C≥10,∅=0°	75	85	--	(1)(2)(3)(4)
	θY+		75	85	--	
	θY-		75	85	--	
Contrast Ratio	C	θ=0°, ∅=0°	800	1000	--	(1)(2)
Response Time(rise+falling)	Trt	θ=0°, ∅=0°	--	25ms	30ms	(1)(3)
LCM Luminance	B	θ=0°, ∅=0°	5500	6500	--	cd/m²
CF Color Chromaticity (CIE1931)	Red	x	(Typ. -0.05)	(0.600)	(Typ. +0.05)	(1),(2),(3) θx=θy=0°
		y		(0.330)		
	Green	x		(0.330)		
		y		(0.560)		
	Blue	x		(0.140)		
		y		(0.110)		
	White	x		(0.320)		
		y		(0.330)		
NTSC		-	(45)	(50)	-	(1) θx=θy=0°

Note (1) Measurement Setup:
The LCD module should be stabilized at given ambient temperature (25℃) for 30 minutes to avoid abrupt temperature changing during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 30 minutes in the windless room.

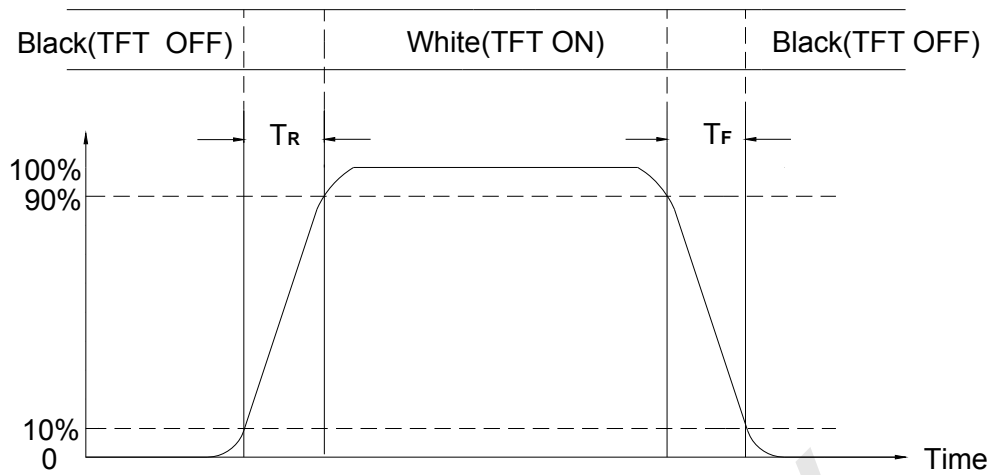**Note (2) Definition of Contrast Ratio (CR):**

The contrast ratio can be calculated by the following expression:
Contrast Ratio (CR) = L255 / L0
L255: Luminance of gray level 255,L0: Luminance of gray level 0

Note (3) Definition of Response Time (T$_R$, T$_F$)

Note (4) Definition of Viewing Angle
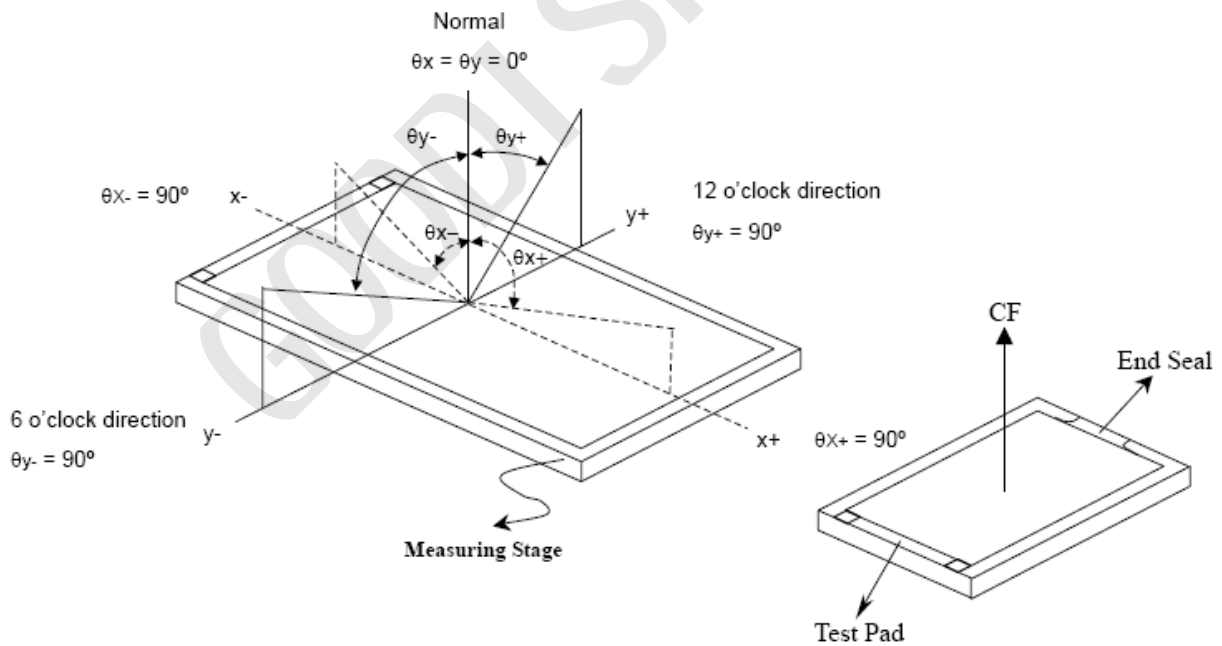
1.6 Backlight & LED Characteristics

Electrical / Optical Characteristics   (36White Chips)

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	VF	IF= 110mA*4	-	27.6	-	V
Average Brightness (without LCD)	IV	IF= 110mA*4	60000	70000	-	cd/m^2
Color	WHITE					
LED Life Time			30,000	100,000	-	Hrs

*1 This value will be changed while mass production.

2. MODULE STRUCTURE

2.1 Counter Drawing

见附页

2.2 Interface Pin Description

Pin No.	Symbol	Description	Remarks
1	GND	Ground	-
2	TEST	connect 10k resistance to GND	-
3	NC	No connect	-
4	RESETB	Global reset pin, active low.If it connected to VSS, the controller is in reset state.	3.3V
5	STBYB	Standby mode setting pin, active low.Timing controller, output buffer, DAC and power circuit all off when STBYB is low.	3.3V
6	GND	Ground	-
7	BIST	LCD Panel Self Test Enable,When it is not used, Connecting to GND	3.3V
8	MODE	Input timing mode selection.H：HS+VS;L:DE mode	3.3V
9	VCC	Power input for main and I/O power	-
10	VCC	Power input for main and I/O power	-
11	NC	No connect	-
12	GND	Ground	-
13	GND	Ground	-
14	GND-LVDS	Ground	-
15	V0N	Negative LVDS differential data input(Chanel 0)	-
16	V0P	Positive LVDS differential data input(Chanel 0)	-
17	GND-LVDS	Ground	-
18	V1N	Negative LVDS differential data input(Chanel 1)	-
19	V1P	Positive LVDS differential data input(Chanel 1)	-
20	GND-LVDS	Ground	-
21	V2N	Negative LVDS differential data input(Chanel 2)	-
22	V2P	Positive LVDS differential data input(Chanel 2)	-
23	GND-LVDS	Ground	-
24	CLKN	Negative LVDS differential clock input	-
25	CLKP	Positive LVDS differential clock input	-

26	GND-LVDS	Ground	-
27	V3N	Negative LVDS differential data input(Chanel 3)	-
28	V3P	Negative LVDS differential data input(Chanel 3)	-
29	GND-LVDS	Ground	-
30	GND-VGH/VGL	Ground	-
31	NC	No connect	-
32	VGL	Negative power supply for TFT	'-11V
33	VGL	Negative power supply for TFT	'-11V
34	NC	No connect	-
35	GND-VGH/VGL	Ground	-
36	NC	No connect	-
37	VGH	Positive power supply for TFT	18V
38	VGH	Positive power supply for TFT	18V
39	NC	No connect	-
40	GND-VGH/VGL	Ground	-

BL PIN

1	2	3	4	5
LED-A1	LED-A2	NC	LED-K1	LED-K2
6	7	8	9	10
LED-K3	LED-K4	NC	NTC1	NTC2

3. Signal timing diagram

3.1 Signal Timing Diagram

3.1.1 Power ON/OFF Sequence

Interface signals are also shown in the chart. Signals from any system shall be Hi- resistance state or low level when VCC voltage is off.
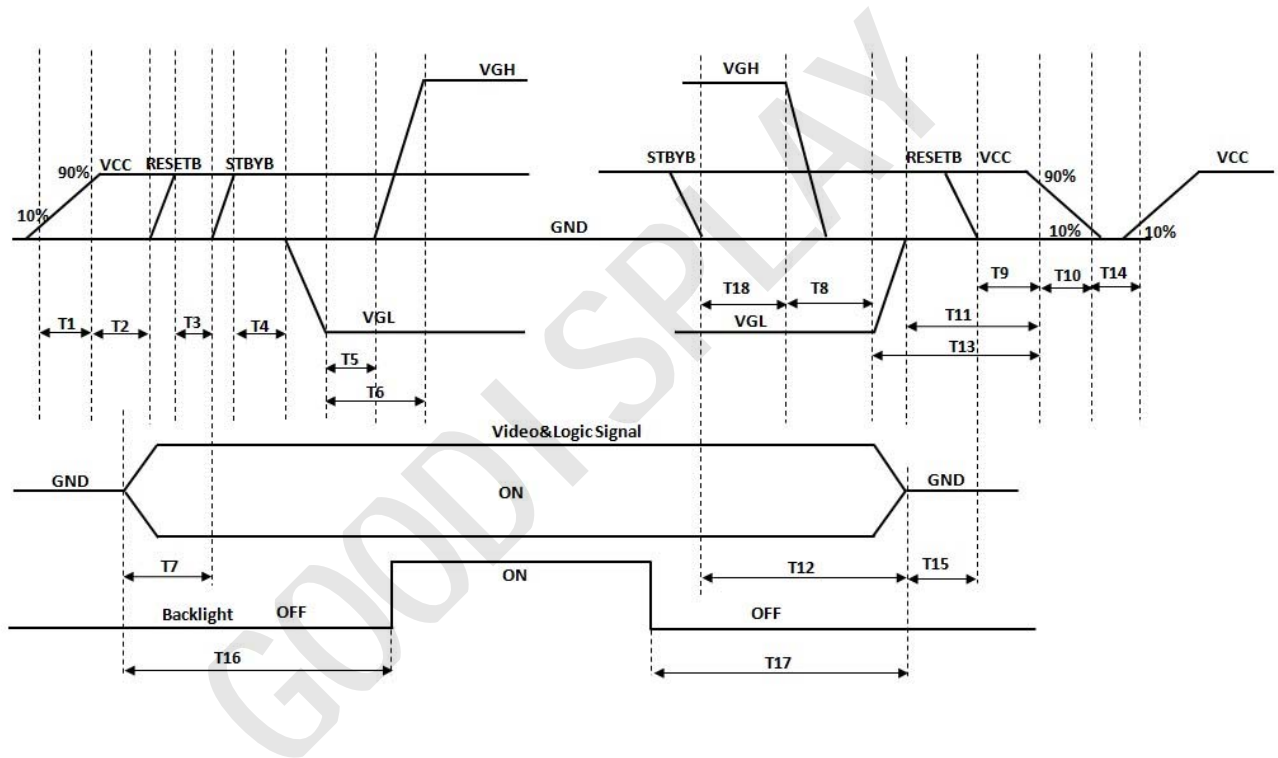
Parameter	Symbol	Unit	Min.	Typ.	Max.
VCC Rising Time from 10% to 90%	T1	ms	0.5	-	3
VCC Good to RESETB On	T2	Us	10	-	-
RESETB Good to STBYB ON	T3	ms	0	-	-
STBYB Good to VGL On	T4	ms	30	-	-
VGL Good to VGH ON	T5	ms	0	-	-
VGL GOOD to VGH GOOD	T6	ms	10	-	20
Signal Valid to STBYB On	T7	ms	0	-	10
VGH Down to VGL Down	T8	ms	0	-	-
RESETB OFF to VCC Down	T9	ms	0	-	-
VCC Falling Time	T10	ms	0	-	3
VGL OFF TO VCC DOWN	T11	ms	0	-	-
STBYB Off to Signal disable	T12	ms	140	-	-
VGL DOWN TO VCC DOWN	T13	ms	0	-	-
Power Off Time	T14	ms	1000	-	-
Signal disable TO RESETB OFF	T15	ms	0	-	-
Signal Valid to Backlight Power On	T16	ms	200	-	-
Backlight Power Off to Signal disable	T17	ms	200	-	-
STBYB OFF TO VGH DOWN	T18	ms	50	-	-

3.1.2 Signal Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Differential Input High Threshold	Vth	(+100)	-	-	mV	V_{CM}=+1.2V
Differential Input Low Threshold	Vtl	-	-	(-100)	mV	V_{CM}=+1.2V
Magnitude Differential Input Voltage	$|V_{ID}|$	(300)	-	(600)	mV	-
Common Mode Voltage	V_{CM}	(1)	(1.2)	(1.7-|VID|/2)	V	-
Common Mode Voltage Offset	ΔV_{CM}	-	-	(200)	mV	-

Note (1) Input signals shall be low or Hi- resistance state when VCC is off.
Note (2) All electrical characteristics for LVDS signal are defined and shall be measured at the interface connector of LCD.
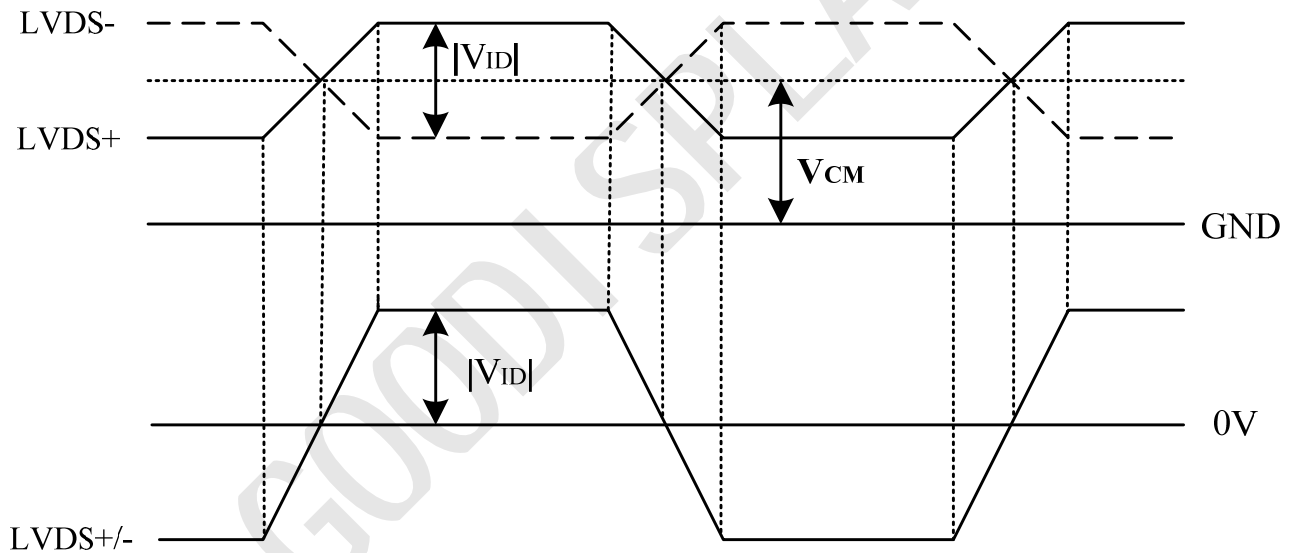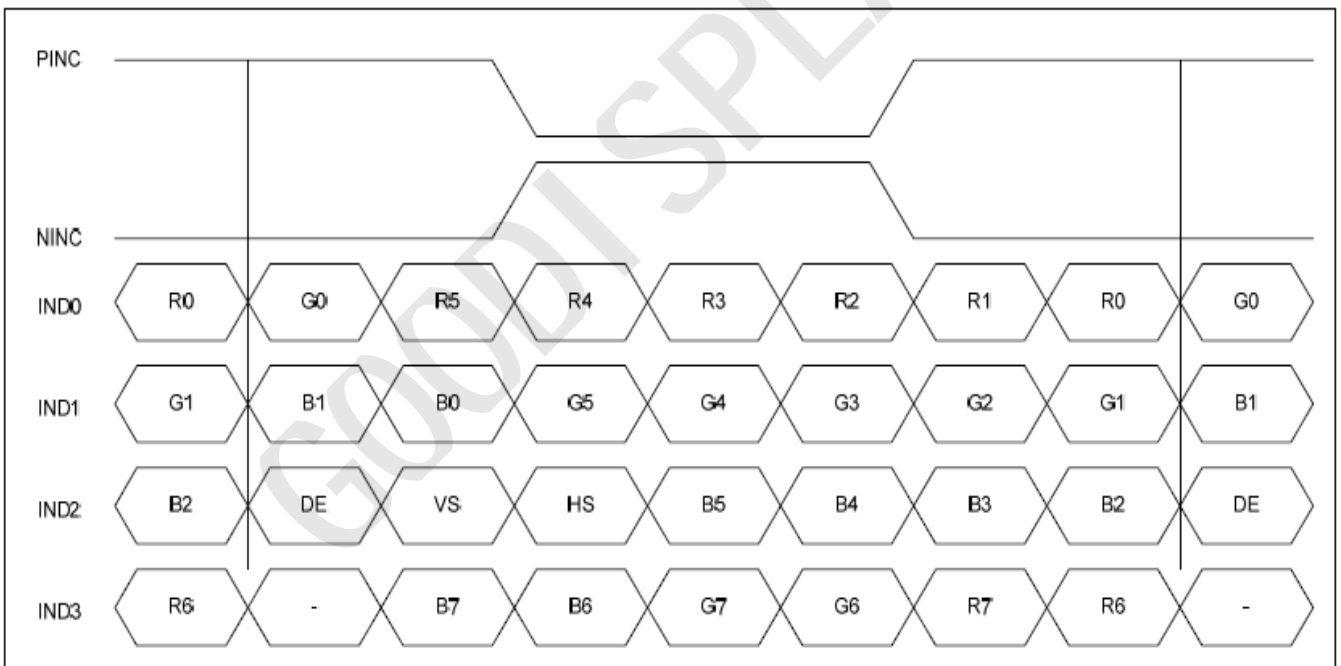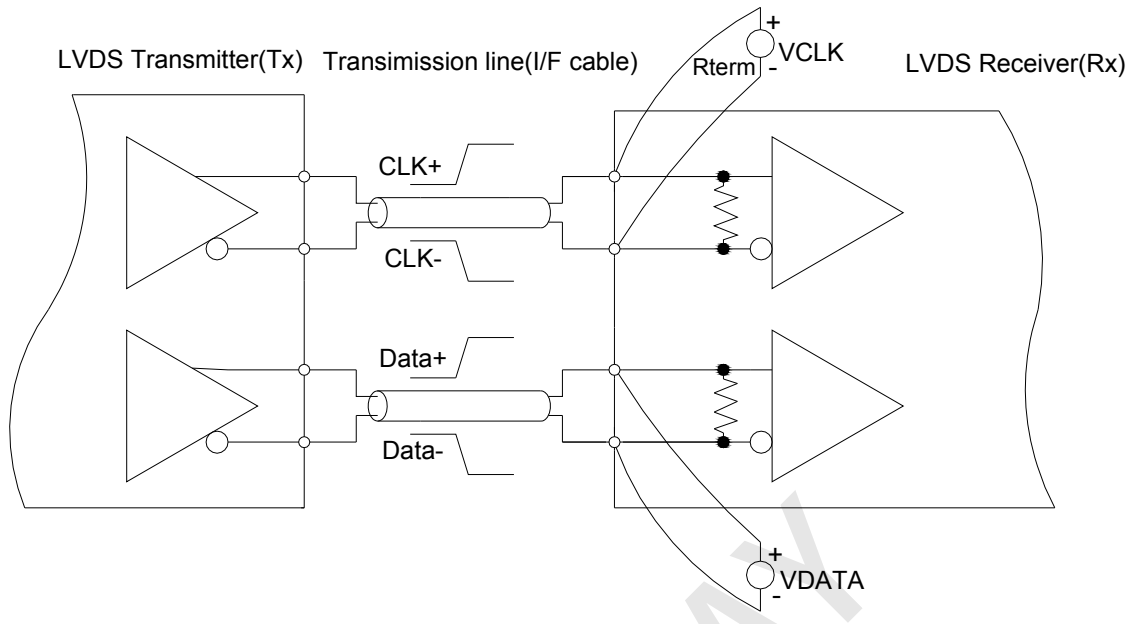
3.1.3 Timing Diagram（**DE Mode**）

Interface Timings

Parameter	Symbol	Min.	Typ.	Max.	Unit
LVDS Clock Frequency	Fclk	TBD	(20.78)	TBD	MHz
H Total Time	HT	(1304)	(1312)	(1536)	Clocks
H Active Time	HA		(1280)		Clocks
V Total Time	VT	(250)	(264)	(288)	Lines
V Active Time	VA		(240)		Lines
Frame Rate	FV	TBD	(60)	TBD	Hz

Note1： HT * VT *Frame Frequency< TBD MHz
Note2: All reliabilities are specified for timing specification based on refresh rate of 60Hz. However,
GDTL076RL-S01 has a good actual performance even at lower refresh rate (e.g. TBD Hz) for
power saving mode, whereas E076AWW1 R0 is secured only for function under lower refresh rate;
 60Hz at Normal mode, TBD Hz at Power save mode.

4 Reliability Test Conditions And Methods

NO	Item	Condition	Method
1	High / Low Temperature Storage	85℃/-40℃240hrs	Check and record every 48Hrs
2	High / Low Temperature Life	80℃/-30℃240hrs (operating mode)	Check and record every 48Hrs
3	High Temperature、High Humidity Operating	60℃,90% RH, 240Hrs	Check and record every 48hrs
4	Thermal Shock （Non operating mode）	-40℃(30Min) 25℃(5Min)85℃(30Min), 48 cycles	Each 10 cycles end , check
5	Static Electricity	Gap mood: ±1KV~±15KV (10 times air discharge with positive/negative voltage voltage gap : 1kv) Touch mood: ±1KV~±8KV	Each discharge end,Check the Electrical Characteristics

5. INSPECTION SPECIFICATIONN

5.1 Point Defect Specification

Item	Feature Declaration	Definition of Points defects
Bright Points	Visible bright points with unchanged size when viewed in black	Points defect size≥50% of a single pixel is judged as a bright or dark Points
Dark Points	Visible dark points with unchanged size in RGB images	
Poor Connection Points	Poor display of adjacent 2 sub pixels simultaneously (defined as 2Dot poor)	

6. PRECAUTION RELATING PRODUCT HANDLING

6.1 SAFETY
6.1.1　If the LCD panel breaks , be careful not to get the liquid crystal to touch your skin.

6.1.2　If the liquid crystal touches your skin or clothes , please wash it off immediately by using soap and water.

6.2 HANDLING
6.2.1　Avoid any strong mechanical shock which can break the glass.

6.2.2　Avoid static electricity which can damage the CMOS LSI—When working with the module, be sure to ground your body and any electrical equipment you may be using.

6.2.3　Do not remove the panel or frame from the module.

6.2.4　The polarizing plate of the display is very fragile. So , please handle it very carefully, Do not touch, push or rub the exposed polarizing with anything harder than an HB pencil lead (glass , tweezers , etc.)

6.2.5　Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the Surface of plate.

6.2.6　Do not touch the display area with bare hands , this will stain the display area.

6.2.7　Do not use ketonic solvent & aromatic solvent. Use with a soft cloth soaked with A cleaning naphtha solvent.

6.2.8　To control temperature and time of soldering is 280 ± 10°C and 3-5 sec.

6.2.9　To avoid liquid (include organic solvent) stained on LCM.

6.3 STORAGE
6.3.1　Store the panel or module in a dark place where the temperature is 25°C ± 5°C and the humidity is below 65% RH.

6.3.2　Do not place the module near organics solvents or corrosive gases.

6.3.3　Do not crush, shake , or jolt the module.

汽车TS16949产品

AUTO

注：

1. 符合RoHS要求。
2. "△"为版本修改标号。
3. ( )参考尺寸，"*"重点尺寸。
4. 拔模角度±1°，测试方法：
5. 未注拔模角度±1°，测试方法：
5. 未注倒圆角 R0.3,未注公差：±0.25
6. 背光寿命：30K小时 min
7. 翘曲度≤0.35mm

B

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Forward Voltage	Vf	25.2	27.9	30.6	V	
Forward Current	If		440		mA	
LCM Luminance	Lv	5500	6500		cd/m²	
Backlight Luminance (参考)	Lv	60000	70000		cd/m²	
Luminous Uniformity	Avg	75			%	
LCM Color Chromaticity	X	0.27	0.32	0.37		
	Y	0.28	0.33	0.38		
Operating Temperature	Topr	-30		+80	℃	
Storage Temperature	Tstg	-40		+85	℃	

1. 定电流If=104I=440mA
2. Aperture:1°
3. instrument is:IM-7A 9 point
4. Uniformity=min/max*100%

A

测试点(Scale: 1:2)

PIN ASSIGNMENT:

BACKLIGHT CIRCUIT DIAGRAM:
(LED 9X4=36PCS)

NTC CIRCUIT DIAGRAM

NTC1
NTC2

NTC品牌：科田；
型号：NCP18WB473F0RB；
电阻值：47k±1.0% @um

Dimensions

37.3±0.25
*51.93±0.2
*35.93±0.2
8.54±0.2
*206.24±0.25
*191.62±0.25
2-2.3
5(ALL)

*9.15±0.25
13.05±0.25
15.55±0.25
17.55±0.25
(2.3)
2.58±0.25
9.12±3
11.08±0.3
19.75±3

SECTION D-D

4±0.2
攻牙深度5.5mm(MAX)
标准孔φ2.9;范围: 2.113-2.238mm
*4-M2.6
1.3±0.2
0.45
3.5
2.6

1.4±0.1
1.4±0.1
*5.5±0.1
*7.1±0.1
0.3
4.2±0.3

*169.8±0.5
*175±0.5
*185±0.3

See Detail B

3.8±0.3
2.2±0.05
1.5±0.05
1.1±0.05
0.3±0.03(Lead)
0.5±0.03(pitch)
0.5±0.05
R0.2
R0.3

See Detail A

*37±0.3
*37±0.3
7.08±0.3
15.78±0.3
10.78±0.3

39.25±3
10.35±3

Detail A Scale 10:1

8.00(不压合)
6(压合)
*6.3±0.05
*3.5±0.3
*4.5±0.1
Pin 1
0.3±0.07

GOOD DISPLAY
GDTL076RL-S01

Detail A Scale 10:1

背部螺丝孔需止、通
规全检出货

Amendment Table

ISSUE	QUANTITY	AMENDMENT	DATE
	0	首次发行	20180129
△	2	增加螺钉规格及检验要求	20180507
△	2	增加螺钉规格和防护垫。	20181214

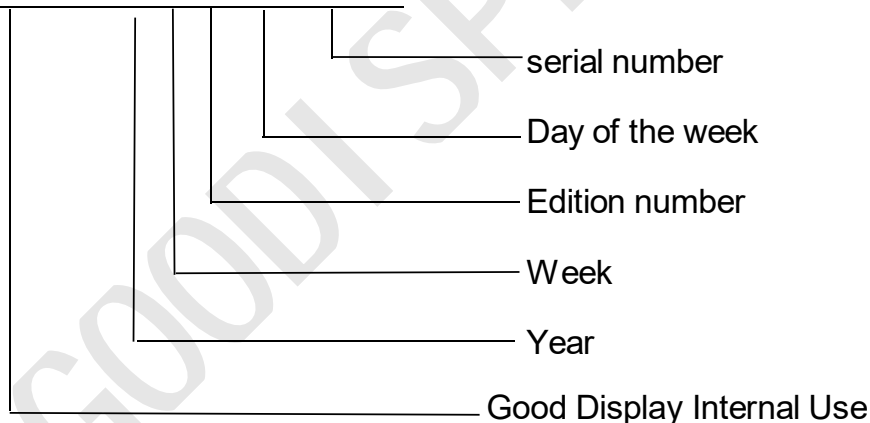| TYPE	CUSTOM	CUSTOM NO.			
模组成品图	GDTL076RL-S01				
		THIRD ANGLE PROJECTION 第三角法	DIXIAN MODE	PAGE	SCALE
				1/1	1:1
	EDITION A2	UNIT MM	DESIGNED	CHECK	AUDITING	APPROVED

DALIAN GOOD DISPLAY CO., LTD.

7.PACKAGING

TBD

8.DEFINITION OF LABELS

The barcode nameplate is pasted on each module as illustration, and its definitions are as following explanation.

```
┌─────────────────────────────────────────────────────────────┐
│                                                             │
│   GOOD DISPLAY                                              │
│   GDTL076RL-S01                                            │
│         ║▌║▌│║▌║│▌║║▌│║║▌│▌║             MADE IN CHINA     │
│                                              RoHS          │
│   XXXXXYWXXXXXXX                                            │
└─────────────────────────────────────────────────────────────┘
```

(a)Model Name: GDTL076RL-S01
(b)Serial ID: X X X X X Y W X X X X X X X

        serial number

        Day of the week

        Edition number

        Week

        Year

        Good Display Internal Use

Serial ID includes the information as below:

    (a)Manufactured Date:
        Year:00~99,…2019=19, 2020=20, 2021=21…,2028=28.
        Week:01~56,first week of the year=01;second week of the year=02;...
        Day of the week:A~G=Monday~Sunday

    (b) Edition number: cover all the change; A1,A2...Sample order;
             C for mass production, C1, C2... change of order
    (c) Serial No.: Manufacturing sequence of product