

Product Specification

Customer P/N: _____
Nice Profit P/N: GMT144-03

For Customer Approved

Approve	Check	Prepare
		Ovind

深圳市金逸晨电子有限公司

Version	Date	Description	Modification	Check
A	09-04-13	New Version		

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Specification of LCD Module Type

Model No: GMT144-03

General Description

MAIN:

Display type (Color): 128(R.G. B)×128Dots Matrix TFT LCD Module]
Polarizer Mode: [transmissive]
Display colors: 65K
Pixel arrangement: MCU vertical stripes
View Direction: [12 O'clock]
IC: [COG 7735S]
Backlight: [1 LED B/L White]
INTERFACE: [SPI]

1. Mechanical Specifications

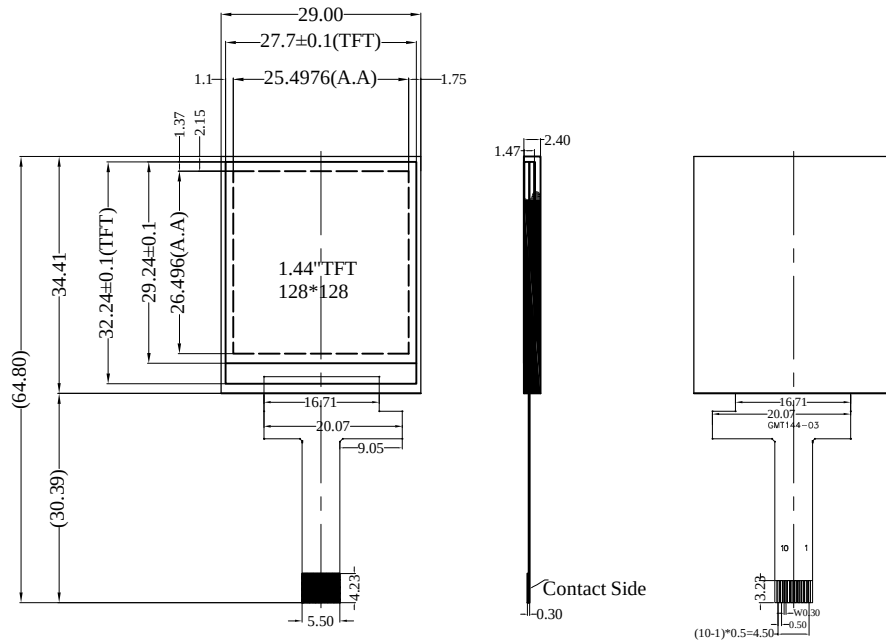
The mechanical detail is shown in Fig 1 and summarized in Table 1 below.

Table 1

ITEM	STANDARD VALUES	UNITS
LCD type	TFT	-
Dot arrangement	128R.G.B)×128	dots
Module size	29 (W) ×34.41(H)×2.25(T)	mm
Active area(TP)	NA	mm
Active area(LCD)	25.5(W) X 26.5H)	mm
Dot pitch	0.198(W) X 0.198(H)	mm
Viewing direction	12 O'clock	

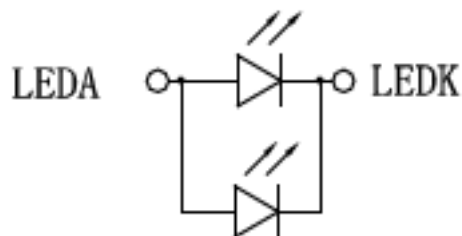
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VER.	REVISED RECORD	DATA
V1.0	First Issue	2023-03-23



技术要求:

- 1) 液晶显示模式: 1.44"TFT transmissive
- 2) 显示颜色: 65K COLORS
- 3) 视角: 12'CLOCK
- 4) 点阵: 128 (RGB) X 128 DOTS
- 5) 驱动芯片型号: ST7735s
- 6) 背光: LED WHITE(2)
- 7) 工作温度: -20° -----60°
- 8) 储存温度: -30° -----70°
- 9) 材料及工艺要求无铅
- 10) 带*为重点尺寸



NO.	Symbol
1	A
2	K
3	SPI4W
4	VDD
5	GND
6	CS
7	RESET
8	SDA
9	SCL
10	RS

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SHEET: 1 of 1		MODEL NUMBER : GMT144-03	
APPROVALS		SCALE:	
DWN	ZJP	UNSPECIFIED TOL:± 0.2	
CHK		DO NOT SCALE THIS DRAWING.	
APP		UNITS: MM	

FIG 1

3. Absolute Maximum Ratings (Ta=25°C)

Table 2

ITEM	SYMBOL	MIN	MAX	UNITS	NOTE
Power Supply Voltage (1)	VDD	-0.3	+4.0	V	
Power Supply Voltage (2)	VGH	+9.0	+16.5	V	
Power Supply Voltage (3)	VGL	-16.5	-4.0	V	
Input Voltage	VI	-0.3	VDD+0.3	V	
Operating Temperature	Topr	-20	70	°C	
Storage Temperature	Tstg	-30	80		

Notes:

1. If the LSI is used above these absolute maximum ratings, it may become permanently damaged. Using the LSI within the following electrical characteristics limit is strongly recommended for normal operation. If these electrical characteristic conditions are also exceeded, the LSI will malfunction and cause poor reliability.
2. VDD, GND must be maintained
3. DC characteristics and AC characteristics of shipping chips and shipping wafer are guaranteed at 85°C.

4. Electrical Specifications

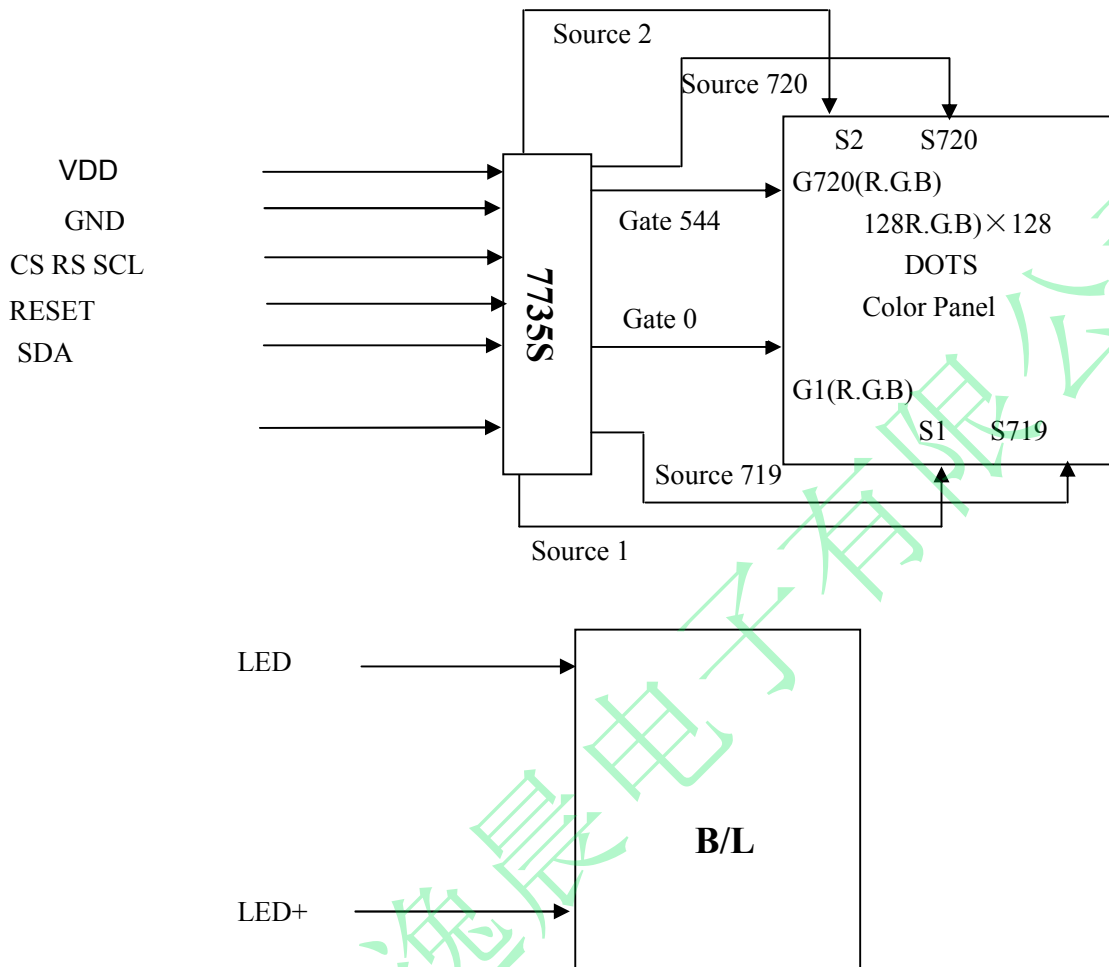
4.1 Interface signals

Table 3: Pin description of FPC interface

PIN NO.	PIN NAME	DESCRIPTION
1	LED+	Backlight positive input pin
2	LED-	Backlight positive OUT pin
3	SPI4W	SPI4W=0 4SPI SPI4W=1 3SPI
4	VDD	power supply (TYP=2.8V)
5	GND	Ground pin
6	CS	Chip select input pin
7	RESET	Reset pin. Setting either pin low initializes the LSI. Must be reset after power is supplied
8	SDA	SPI INPUT
9	SCL	Write strobe signal input pin
10	RS	Instruction /data select input Pin

4.2 BLOCK DIAGRAM

Fig 2



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4.3 Typical Electrical Characteristics

Table 4:

ITEM	SYMBOL		CONDITIONS	MIN	TYP	MAX	UNITS
Power-supply voltage For LCD	TFT LCD	VGH	At 25°C	9.0	--	16.5	V
		VGL		-16.5	--	-4	
	VDD-GND			-	3.3	3.6	
Input voltage for LCD	V _{IH}		“High” level	0.8VDD	—	VDD	
	V _{IL}		“Low” level	GND	—	0.2VDD	
Supply current for LCD	VDD		VDD=3.3V	—	TBD	-	mA

Note 1: The supply voltage for VLCD has to be adjusted by software.

4.4 B/L Characteristics

Table 5:

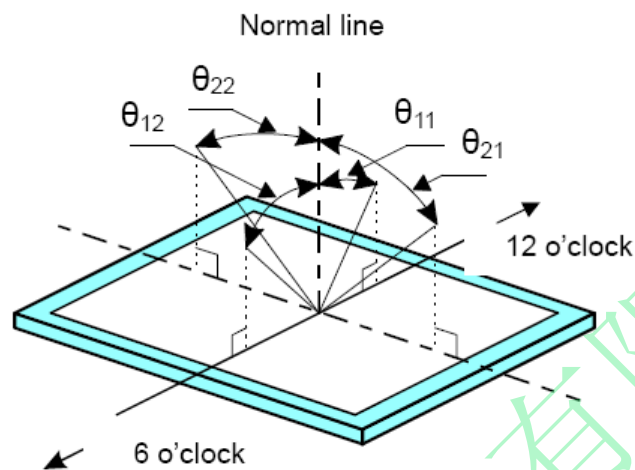
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	CONDITION
Lamp Voltage	V _L	3.0	3.2	3.2	V	Each ILED=15mA
Back Light	--	3000		--	Cd/m ²	

※ LEDs in 1- series of B/L module

5. Optical Characteristics Definition

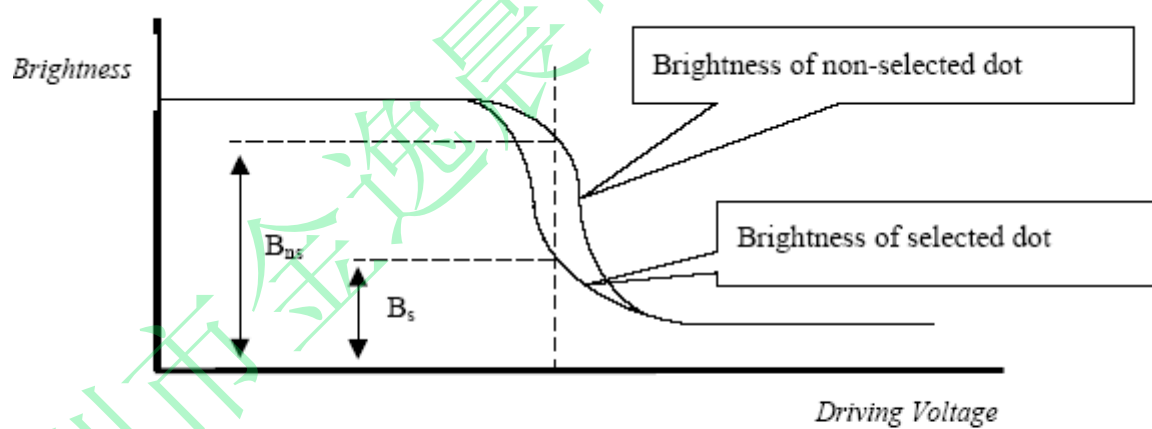
a.) Viewing Angle θ and ϕ

Fig 3



b.) Contrast Ratio

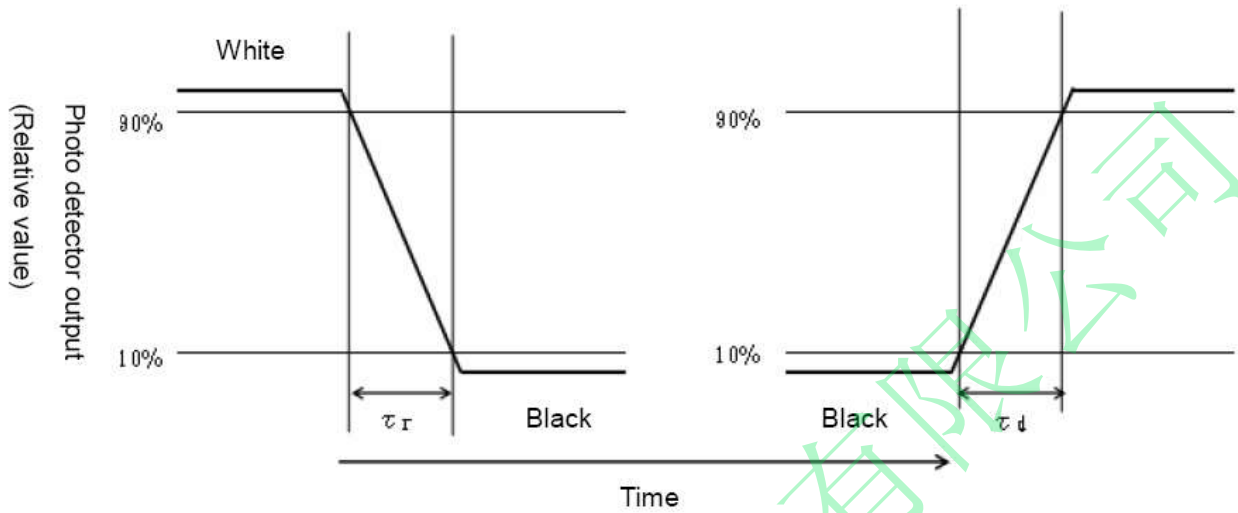
Fig 4



$$\text{Contrast Ratio: } C_r = B_{ns} / B_s$$

c.) Response Time

Fig 5
Negative TYPE



NOTE:

- 1、 τ_r is the time it takes to change from non-selected state with relative luminance 0% to selected state with relative luminance 90%.
- 2、 τ_d is the time it takes to change from selected state with relative luminance 100% to non-selected state with relative luminance 10%.

5. OPTICAL SPECIFICATION

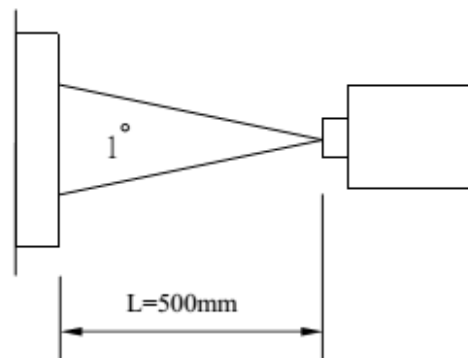
(Note1 , Note2)

(Using CPT LC+ CPT Polarizer+Corresponding Backlight, reference only)

ITEM		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	REMARK
Transmittance		T		-	6	-	%	
Contrast Ratio		CR	*1)	-	350	-	--	Note 3
Response Time		Tr+ Tf	*3)	-	25	-	ms	Note 4
Viewing Angle	Vertical	θ *2)	$CR \geq 10$	-	35	-	°	Note 5
		-		15	-			
	Horizontal	ϕ *2)		-	45	-		
		-		45	-			
Color Filter Chromaticity	White	x	$\theta = \phi = 0^\circ$	0.285	0.305	0.325	-	Note 6
		y		0.314	0.334	0.354		
		Y		29.9	32.9	35.9		
	Red	x	$\theta = \phi = 0^\circ$	0.588	0.608	0.628		
		y		0.296	0.316	0.336		
		Y		17.8	20.8	23.8		
	Green	x	$\theta = \phi = 0^\circ$	0.285	0.305	0.325		
		y		0.536	0.556	0.576		
		Y		57.6	61.6	65.6		
	Blue	x	$\theta = \phi = 0^\circ$	0.115	0.135	0.155		
		y		0.117	0.137	0.157		
		Y		13.2	16.2	19.2		
	NTSC			-	53	-	%	

Note 1.Ambient condition : $25^\circ\text{C} \pm 2^\circ\text{C}$, $60 \pm 10\% \text{RH}$, under 10 Lux in the darkroom .

Note 2.Measure device : BM-5A (TOPCON) , viewing cone= 1° , $I_L=20\text{mA}$.



Note 3. Definition of Contrast Ratio :

$CR = \text{White Luminance (ON)} / \text{Black Luminance (OFF)}$

Note 4. Definition of response time : The response time is defined as the time interval between the 10% and 90% amplitudes.

6 RELIABILITY CONDITIONS

Table 7:

ITEM	CONDITIONS	CRITERIA
High temperature operation	70℃,120Hr	1. No defect in cosmetic and operational functions except for polarizer. 2. Total current consumption below double of initial value 3. Optical characteristics value must be in initial spec. range.
High temperature storage	80℃,120Hr	
Low temperature operation	-20℃,120Hr	
Low temperature storage	-30℃,120Hr	
High humidity storage	40℃,90%RH,120Hr	
Peeling Off (Storage)	≥ 500gf/cm	
FPC Bending Test	≥ 6,000 times, 2/sec	
Vibration Test(Storage)	50HZ, 30min, Amplitude: 2 cm, X/Y/Z directions	
Drop Test	60cm/ 3Corner/ 8Face, 1Cycle	

NOTE:

- 1、Operation test should be mounted with the driver IC, we hereby provide the operation test conditions with the square ac waveform.
- 2、The test LCD cell shall be inspected 2hrs latter storage at room temperature & humidity after it was removed from the chambers.
- 3、No dew condensations would be observed.

7. Important Notice

The information presented in this specification has been carefully checked and is believed to be accurate, however, no responsibility is assumed for inaccuracies. reserves the right to make changes to nay specifications without further notice for performance, reliability, production technique and other considerations. does not assume any liability arising out of the application or use of products herein. Please see Limited Warranty in the previous section.

I Limited reserves the right to change this specification. ”

- END -