



# LCD MODULE SPECIFICATION

Customer: \_\_\_\_\_

Model Name: LCM-TFT014T1QQS4LN08D-V01

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Version: 1.0

Approved by	Reviewed by	Prepared by

Approved by	Comment

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## 1. General Specifications

No.	Item	Specification	Unit	Remark
1	LCD Size	1.44"	inch	-
2	Panel Type	a-si TFT	-	-
3	Resolution	128x(RGB)x128	pixel	-
4	Display Mode	Normally white, Transmissive	-	-
5	Display Number of Colors	262K	-	-
6	Viewing Direction	12 o'clock	-	Note 1
7	Contrast Ratio	300	-	-
8	Luminance	260	cd/m <sup>2</sup>	
9	Module Size	30.0(W)x46.5(L)x3.4 (T)	mm	Note 1
12	Weight	TBD	g	-
13	Driver IC	ST7735S	-	-
14	Driver IC RAM Size	128x16x128	bit	-
15	Light Source	2 LEDs in Parallel	-	-
16	Interface	4-Line SPI	-	-
17	Operating Temperature	-20~70	°C	-
18	Storage Temperature	-30~80	°C	-

Note 1: Please refer to the mechanical drawing.

**2. Pin Assignments**

Pin No.	Pin Name	Function
1	VSS	Ground.
2	VCC	Power Supply for Analog.
3	SCLK	Clock signal.
4	SDA	Serial input data.
5	RES	Power Reset for Controller and Driver
6	D/C	Data/command selection.
7	CS	Chip Select
8	BLC	Backlight control H: 0N L: 0FF

## 3. Electrical Specifications

### 3.1. Absolute Maximum Rating

(T<sub>a</sub>=+25°C)

Item	Symbol	Values		Unit	Remark	
		Min.	Max.			
TFT Module	I/O Circuit Supply Voltage	VDD	-0.3	4.6	V	Note 1
	Analog/Logic Supply Voltage	VCI	-0.3	4.6	V	Note 1
Backlight Unit	Current	I <sub>B</sub>	-	120	mA	Note 2
	Power Consumption	P <sub>BL</sub>	-	480	mW	Note 2

Note1: Permanent damage to the device may occur if maximum values are exceeded or reverse voltage is applied.

Note2: Without LED driver IC, please refer to 4.3.

### 3.2. Typical Operation Conditions

#### 3.2.1 DC Characteristics

(T<sub>a</sub>=+25°C, VCI=+2.8V)

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Logic Supply Voltage	VDD	2.6	3.0	3.3	V	Ta=25°C
Analog Supply Voltage	VCI	2.6	3.0	3.3	V	
Input High Voltage	V <sub>IH</sub>	0.7VDD	-	VDD	V	
Input Low Voltage	V <sub>IL</sub>	0		0.3VDD	V	
Output High Voltage	V <sub>OH</sub>	0.8VDD	-	VDD	V	
Output Low Voltage	V <sub>OL</sub>	0	-	0.2VDD	V	
Frame Frequency	f <sub>FRAME</sub>	-	65	-	Hz	

Note: To prevent IC latch up or DC operation in LCD panel, the power on/off sequence should follow the driver IC specification.

### 3.2.2 Current Consumption

Item	Symbol	Values		Unit	Remark
		Typ.	Max.		
MCU Interfscce (8080 16-bit parallel Interface)					
Still Mode	VDD	-	TBD	uA	Note1
	VCI	-	TBD	mA	
Sleep Mode	VDD	-	TBD	uA	Note1, Note3
	VCI	-	TBD	uA	

Note1: Test Condition

Typ: VDD=2.8V

VCI=2.8V

Display Pattern: 8 Color Bar

Frame Rate=80Hz at Line Inversion

Operating Temperature: 25°C

Max: VDD=3.0V

VCI=3.3V

Display: Pattern:All Pixel Black

Frame Rate=80Hz at Line Inversion

Operating Temperature: 25°C

**Typ. current check pattern:**

**Max. current check pattern:**

## Backlight Unit

The backlight system is an edge lighting type with 8 white LEDs.

( $T_a=+25^{\circ}\text{C}$ )

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current	$I_B$	-	30	-	mA	Note 1
Power Consumption	$P_{BL}$	-	270	-	mW	Note 2

Note1: 8 LEDs are connected in parallel; each LED's current consumption is 20mA.

Note2: Where  $I_B=15\text{ mA}$ ,  $P_{BL}=I_B \times V_{BL}$ ,  $V_{BL}$  is backlight forward voltage.

## 4. Optical Specifications

( $T_a=+25^{\circ}\text{C}$ ,  $V_{CI}=2.8\text{V}$ ,  $V_{DD}=1.8\text{V}$ ,  $I_B=46\text{mA}$ )

Item	Symbol	Condition	Values			Unit	Remark	
			Min.	Typ.	Max.			
Viewing Angle Range	Left	$\theta_L$	CR $\geq 10$	-	45	-	degree	Note 1,2
	Right	$\theta_R$		-	45	-		
	Top	$\theta_T$		-	50	-		
	Bottom	$\theta_B$		-	20	-		
Response Time	$T_{on} + T_{off}$	Normal $\theta=\phi=0^{\circ}$	-	30	50	ms	Note 2,3	
Contrast Ratio	CR	Normal $\theta=\phi=0^{\circ}$	200	300	-	-	Note 2,4	
Luminance	L	Normal $\theta=\phi=0^{\circ}$	160	200	-	cd/m <sup>2</sup>	Note 2,5	
Flicker	-	-	No Visible			-	Note 8	
Crosstalk	-	-	No Visible			-	Note 9	
Color Chromaticity (CIE1931)	White	$W_x$	Normal $\theta=\phi=0^{\circ}$	-	0.30	-	-	Note 2,6
		$W_y$		-	0.31	-		
	Red	$R_x$		-	0.59	-		
		$R_y$		-	0.32	-		
	Green	$G_x$		-	0.31	-		
		$G_y$		-	0.56	-		
	Blue	$B_x$		-	0.15	-		
		$B_y$		-	0.08	-		
Color Gamut	NTSC	CIE1931	-	58	-	%	-	
Luminance Uniformity	$U_L$	Normal $\theta=\phi=0^{\circ}$	-	80	-	%	Note 2,7	
Package Drop Test	Height :76cm(Weight $\leq 10\text{kg}$ ); 60cm(Weight $> 10\text{kg}$ ) 1 corner, 3 edges, 6 surfaces					-	-	

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## 5. Mechanical Drawing

