

Specification For TFT LCD MODULE

MODEL NO: **WA54HC032I**

Customer Project:

Approval by Customer

☐ OK

☐ NG, Problem survey:

Approved By:

PREPARED BY	CHECKED BY	APPROVED BY

ISSUED DATE: 2018/5/19

1. Introduction

The **WA54HC032I** model is a Color TFT LCD supplied by Shenzhen WOLECONN Technology co.,ltd

This Module has a **1.54** inch diagonally measured active display area with 240(RGB)*240resolution. Each pixel is divided into Red, Green and Blue sub-pixels and dots which are arranged in vertical stripes.

LCD color is determined with 65,000 colors signal for each pixel.

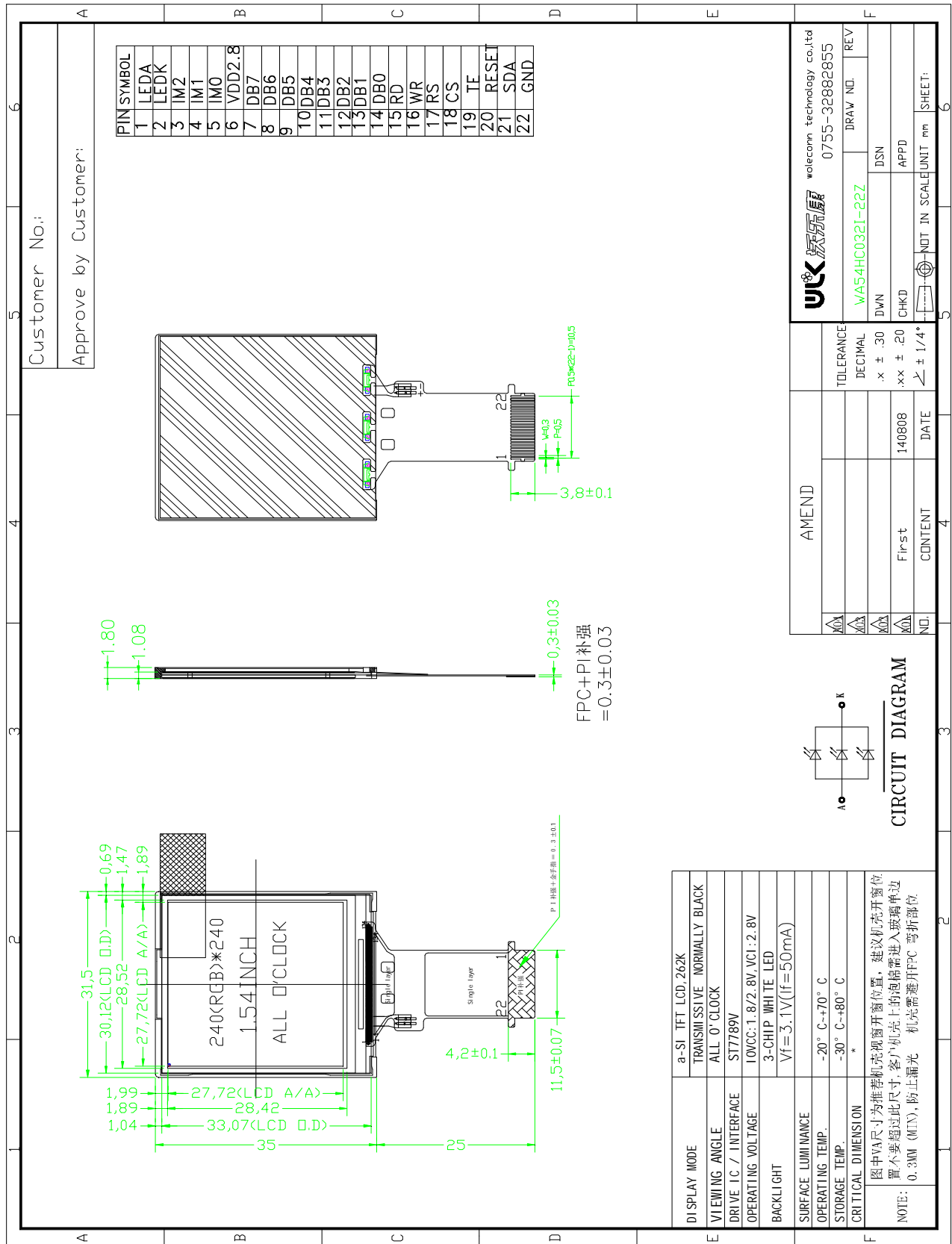
The **WA54HC032I** has been designed to apply the interface method that enables low power, high speed, and high contrast.

The **WA54HC032I** is intended to support applications where thin thickness, wide viewing angle and low power are critical factors and graphic displays are important.

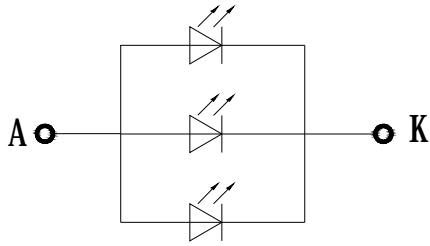
2. General specification

ITEM	Standard value	UNIT
LCD Type	TFT Positive Transmissive	---
Driver element	a-Si TFT Active matrix	
Number of Dots	240*(RGB)*240	Dots
Pixel Arrangement	RGB Stripe	
Dot Pitch (W*H)	0.1155(W)*0.1155(W)	mm
Active Area	27.72*27.72	mm
Glass Area (W*H)	30.12*33.12	mm
Viewing Direction	ALL O' clock	
Control IC	ST7789V	
Module Size(W*H*T)	31.5*35*2.0±0.1	mm
Approx. Weight	TBD	g
Back Light	3 White LED	
Interface Mode	I8080 Parallel 8bit or 3wire SPI 4wire SPI Optional	

3. Mechanical drawing



6. Backlight Charasterics.



CIRCUIT DIAGRAM

Item	Symbol	MIN	TYP	MAX	UNIT	Test Condition	Note
Supply Voltage	Vf	2.9	3.0	3.3	V	If=20 mA	-
Supply Current	If	-	20	-	mA	-	-
Reverse Voltage	Vr	-	-	5	V	10uA	
Power dissipation	Pd	-	140	-	mW	-	
Luminous Intensity for LCM			200		Cd/m ²	If=20 mA	
Uniformity for LCM	-	80	-	-	%	If=20 mA	
Life Time	-	50000	-	-	Hr	If=20 mA	-
Backlight Color	White						

6.1 DC Characteristics

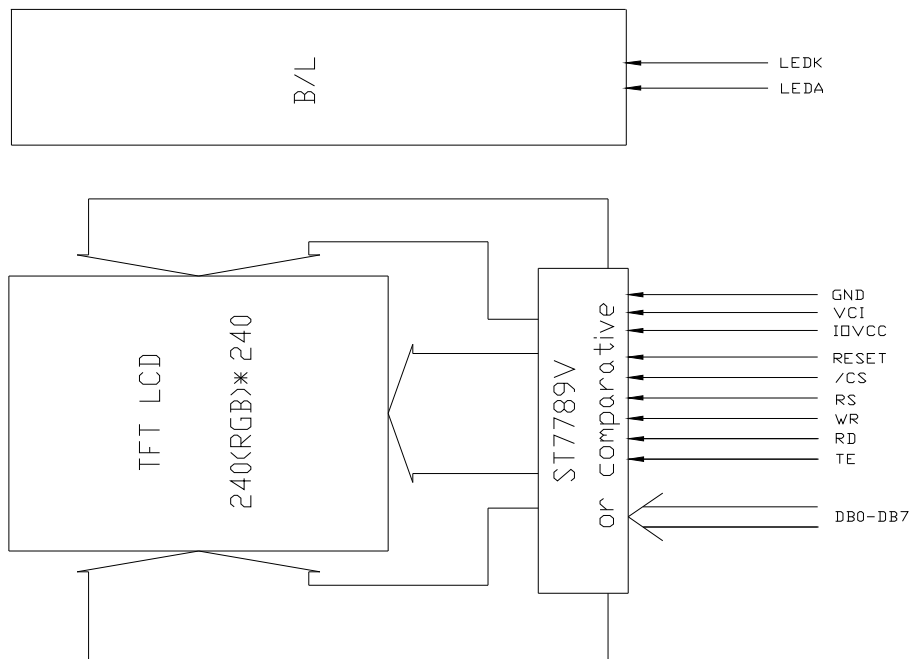
Parameter	Symbol	Condition	Specification			Unit	Related Pins
			MIN.	TYP.	MAX.		
Power & Operation Voltage							
System Voltage	VDD	Operating voltage	2.4	2.75	3.3	V	
Interface Operation Voltage	VDDI	I/O Supply Voltage	1.65	1.8	3.3	V	

8. MCU Interface Pin Function

Input Signal and Power(22 Pins FPC PAD)

Pin NO.	Symbol	Description	Remark
1	LEDA	P	Power supply for LED backlight Anode input
2	LEDK	P	Power supply for LED backlight Cathode input
3-5	IM2-IM0	I	The parallel or serial interface selection PIN IM[2:0]=000 parallel 8BIT IM[2:0]=101 3Wire 9BIT serial SPI I/F or 2data lane serial I/F IM[2:0]=110 4Wire 8BIT serial SPI I/F
6	VDD(2.8V)	P	Power supply for analog(2.8V)
7-14	DB7-DB0	I/O	I8080 Parallel Interface 8BIT data PIN If not use connect to GND
15	RD	I	Read data PIN If not use connect to GND or IOVCC
16	WR	I	When parallel I/F :Write data PIN When Serial 4Wire SPI I/F: use command or data select pin When 2data lane SPI I/F: use serial data2
17	RS	I	When parallel I/F :Register select pin I/F When Serial I/F: use for serial colok sck pin
18	CS	I	Chip Select pin
19	TE	I	Tearing effect signal is used to synchronize MCU to frame memory
20	RESET	I	Reset Pin
21	SDA	P-	SPI interface input/output pin The data is latched on the rising edge of the SCL signal
22	GND	P	Ground

9. BLOCK DIAGRAM



10.TIMING CHARACTERISTICS

10.1 I8080 Parallel Interface operation

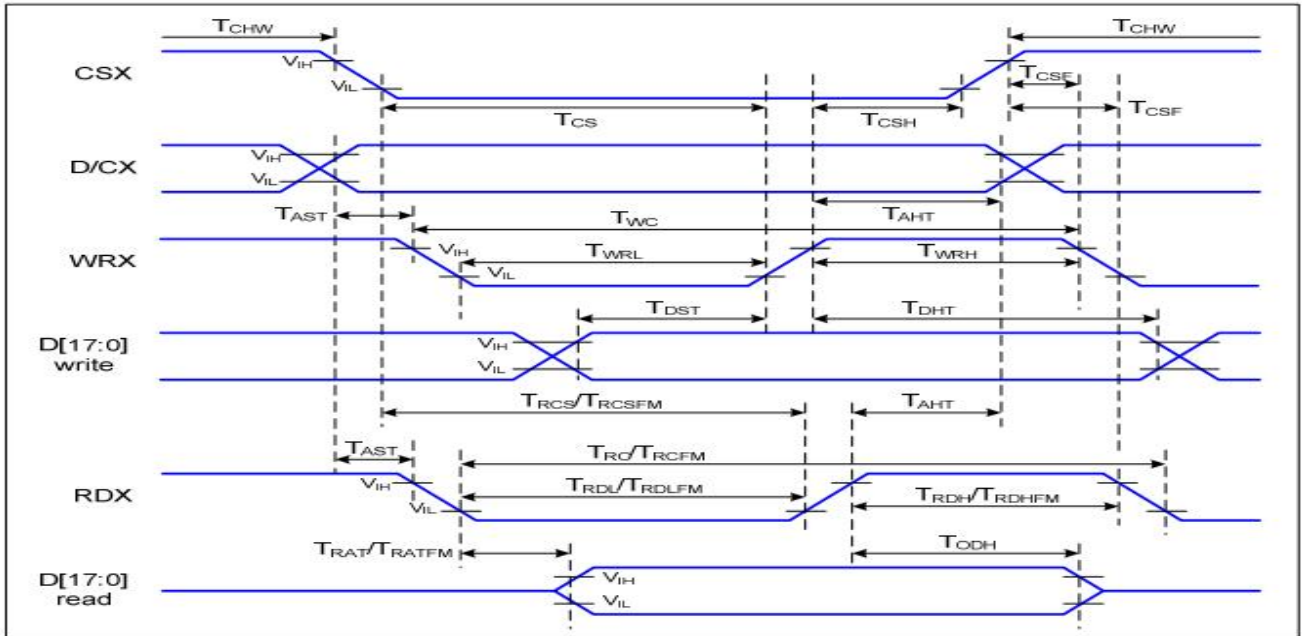


Figure 1 Parallel Interface Timing Characteristics (8080 Series MCU Interface)

10.2. Timing Characteristics

Signal	Symbol	Parameter	Min	Max	Unit	Description
D/CX	TAST	Address Setup Ttime	0		ns	
	TAHT	Address Hold Time (Write/Read)	10		ns	
CSX	TCHW	Chip Select "H" Pulse Width	0		ns	
	TCS	Chip Select Setup Time (Write)	15		ns	
	TRCS	Chip Select Setup Time (Read ID)	45		ns	
	TRCSFM	Chip Select Setup time (Read FM)	355		ns	
	TCSF	Chip Select Wait Time (Write/Read)	10		ns	
	TCSH	Chip Select Hold Time	10		ns	
WRX	TWC	Write Cycle	66		ns	
	TWRH	Control Pulse "H" Duration	15		ns	
	TWRL	Control Pulse "L" Duration	15		ns	
RDX (ID)	TRC	Read Cycle (ID)	160		ns	When Read ID Data
	TRDH	Control Pulse "H" Duration (ID)	90		ns	
	TRDL	Control Pulse "L" Duration (ID)	45		ns	
RDX (FM)	TRCFM	Read Cycle (FM)	450		ns	When Read from Frame Memory
	TRDHFM	Control Pulse "H" Duration (FM)	90		ns	
	TRDLFM	Control Pulse "L" Duration (FM)	355		ns	
D[17:0]	TDST	Data Setup Time	10		ns	For CL=30pF
	TDHT	Data Hold Time	10		ns	
	TRAT	Read Access Time (ID)		40	ns	
	TRATFM	Read Access Time (FM)		340	ns	
	TODH	Output Disable Time	20	80	ns	

Table 4 8080 Parallel Interface Characteristics