

TFT LCD MODULE

1.3 inch 240RGB*240DOTS

MODULE NUMBER: IE-C-2531CS04S-00-1

REVISION: A

RevisedHistory

Part Number	Revision	Revision Content	Revised on
IE-C-2531CS04S00-1	A	New	2020616

Contents

RevisionHistory

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1. GeneralDescription

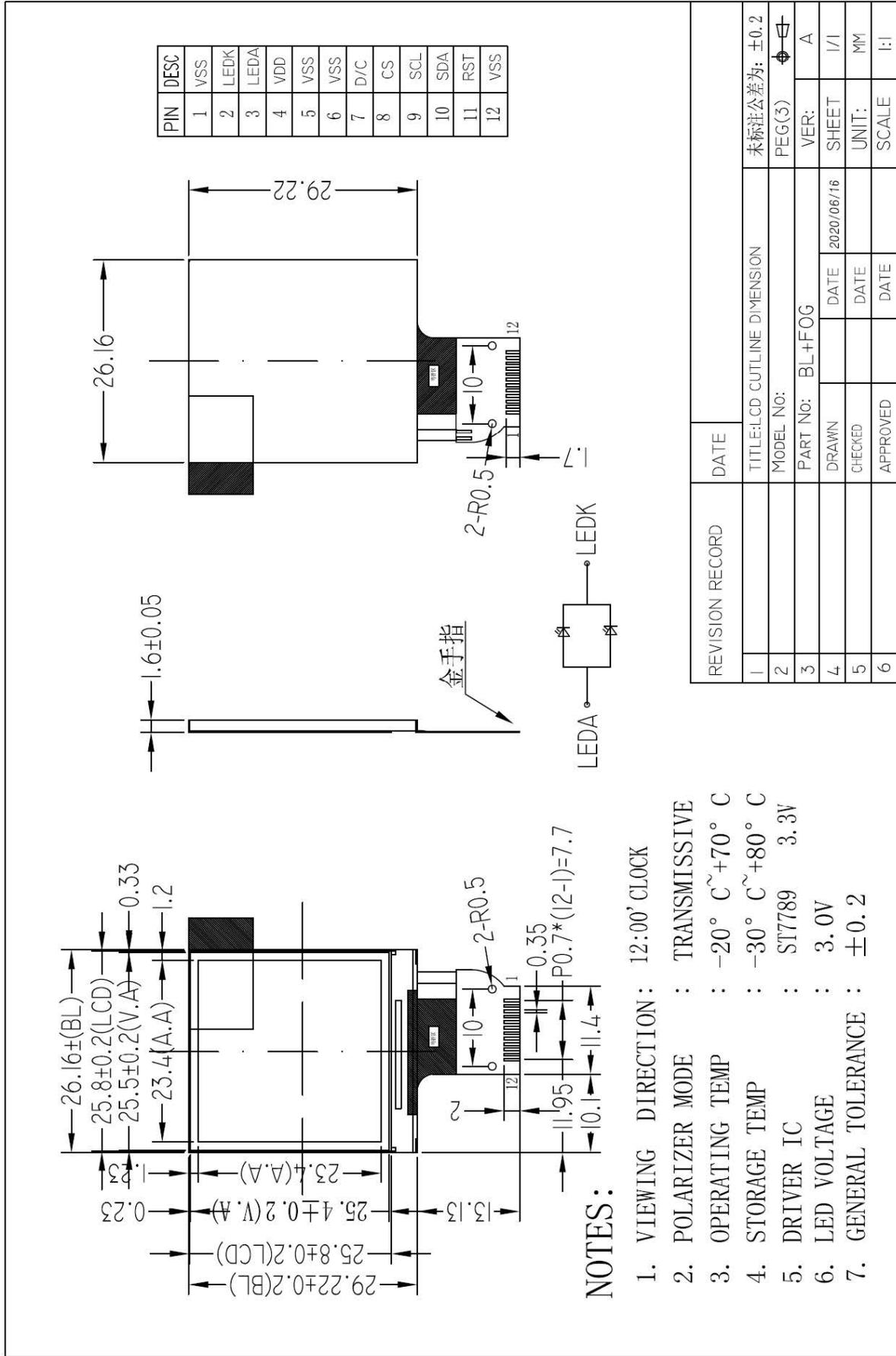
1.1 Description

IE-C-2531CS04S-00-1 is a 240RGBX240 dot-matrix TFT LCD module. This module is composed of a TFT LCD Panel, driver ICs, FPC and a Backlight unit.

1.2 Features

NO.	Item	Contents	Unit
1	LCD Size	1.3 inch(Diagonal)	-
2	Display Mode	Normally black	-
3	Resolution	240(H)RGB x 240(V)	-
4	Dot pitch	0.0975(H) x 0.0975(V) mm	-
5	Active area	23.4(H) x 23.4(V) mm	-
6	Module size	26.16(H) x 29.22(V) x1.5(D) mm	-
7	Color arrangement	RGB Vvertical stripe	-
8	Interface	4 Line SPI	-
9	Drive IC	ST7789	-
10	Luminance(cd/m2)	350 (TYP)	
11	Viewing Direction	All View	
12	Backlight	2 White LED	
13	Operating Temp.	-20°C~+ 70°C	°C
14	Storage Temp.	-30°C~+ 80°C	°C
15	Weight	TBD	g

2. Mechanical Drawing

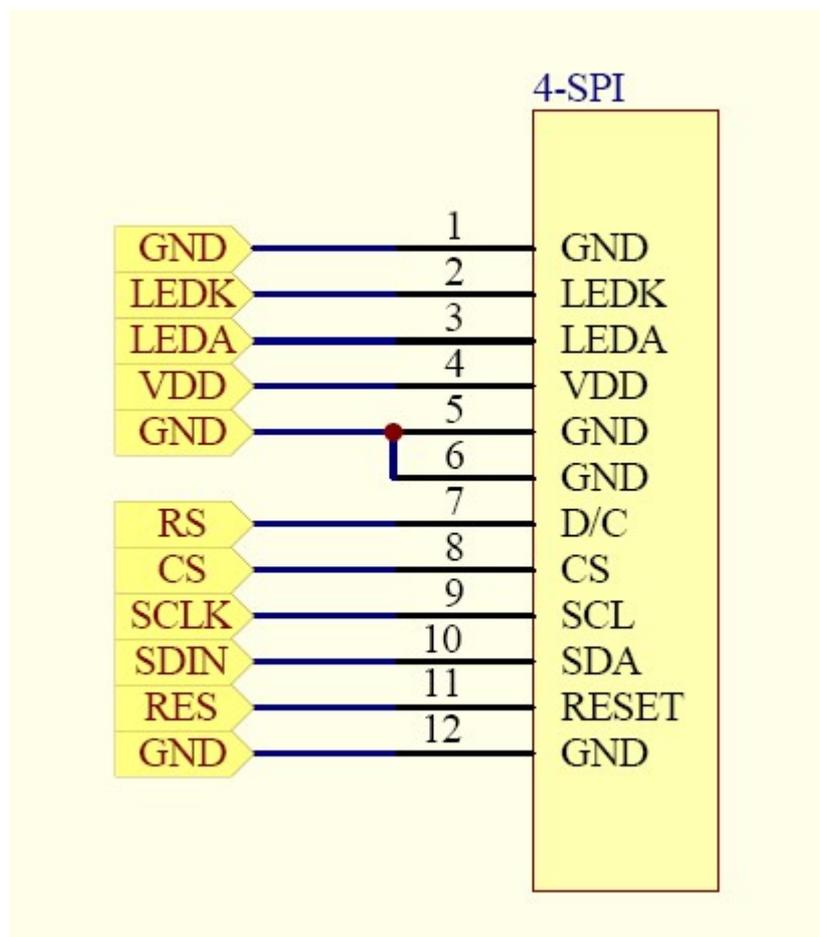


3. Pin Definition

FPC Connector is used for the module electronics interface.

NO.	Symbol	Description
1	GND	Power Ground
2	LEDK	LED Cathode
3	LEDA	LED Anode
4	VDD	Power Supply for Analog
5	GND	Power Ground
6	GND	Power Ground
7	D/C	Display data/command selection pin in 4-line serial interface.
8	CS	Chip selection pin; Low enable, high disable.
9	SCL	This pin is used to be serial interface clock
10	SDA	SPI interface input/output pin. the data is latched on the rising edge of the SCL signal.
11	RESET	This signal will reset the device and it must be applied to properly initialize the chip. Signal is active low.
12	GND	Power Ground

Note:



4. Electrical Characteristics

4.1 Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
Supply Voltage (I/O)	VDD	-0.3	4.6	V	
Analog Supply Voltage	VDDIO	-0.3	4.6	V	
Logic Input Voltage	VIN	-0.3	VDD+0.3	V	
Operation Temperature	Top	-20	70	°C	
Storage Temperature	Tst	-30	80	°C	

4.2 Operating Conditions

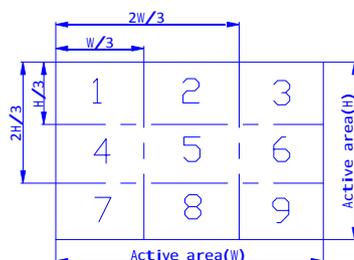
Parameter	Symbol	Min	TYP	MAX	Unit	Notes
Voltage for LED backlight	VLED	2.9	3.0	3.1	V	
System Voltage	VDD 2.4	2.8	3.3	V Interface		
Operation Voltage	VDDIO	1.65	1.8	3.3	V	
Gate Driver High Voltage	VGH	12.2	-	14.97	V	
Gate DriverLowVoltage	VGL	-12.5	-	-7.16	V	
Operating Current for V _{DD}	I _{DD}	-	8	10	mA	
Current for LED backlight	I _{LED}	30	-	40	mA	2 LED
Brightness	L _{br}	300	350	-	cd/m ²	
Sleep_In Mode VDD	I _{dd}	-	15	30	uA	
Sleep_In Mode VDDIO	I _{ddio}	-	5	10	uA	

1 Test condition is:

- a:Center point on active area
- b:Best Contrast

2 Uniform measure condition:

- a:Measure 9 point,Measure location is show below:
- b:Uniform=(Min brightness/Max.brightness)x100%
- c:Best Contrast.



5. OPTICAL CHARACTERISTICS

Item	Symbol	Measuring Conditions		Min.	Typ.	Max.	Unit	Remark
		= 0°	25 °C					
Response Time	Tr+Tf	= 0°	25 °C	-	30	35	ms	
Viewing Angle		= 0°	25 °C	-	80	-	Deg	Note (b)
		=180°	25 °C	-	80	-		
		= 90°	25 °C	-	80	-		
		=270°	25 °C	-	80	-		
Contrast Ratio	CR	-	25 °C	640	800	-	-	Note (c)
Color of CIE Coordinate	White	X	25 °C	0.300	0.302	0.304	-	-
		Y	25 °C	0.323	0.325	0.327		
	Red	X	25 °C	0.622	0.624	0.626		
		Y	25 °C	0.327	0.329	0.331		
	Green	X	25 °C	0.286	0.288	0.290		
		Y	25 °C	0.520	0.522	0.524		
	Blue	X	25 °C	0.134	0.136	0.138		
		Y	25 °C	0.135	0.137	0.139		
	--	--	-	4.18	4.65	-	%	-

Transmittance

(with polarizer)

Note1:Definition of Response Time.(white-black)

The response time is defined as the time interval between the 10% and 90% amplitudes

6. Reliability

6.1 Contents of Reliability Tests

Item	Conditions	Criteria
High Temperature Operation	70 C, 120 hrs	The operational functions work.
Low Temperature Operation	-20 C, 120 hrs	
High Temperature Storage	80 C, 120 hrs	
Low Temperature Storage	-30 C, 120 hrs	
High Temperature/Humidity Operation	50 C, 85% RH, 120 hrs	
Temperature Cycling	-10 C 25 C 60 C 25 C	

Note:

No moisture condensation is observed during tests.

Condition of image sticking test : 25 C±2 C.

6.2 Shock and Vibration

Test Item	Conditions
Packing Vibration	Frequency range 10~50HZ, Stroke:1.0mm, sweep:10~50Hz, X,y,z - 2 hours for each direction

6.3 ESD

Test Item	Conditions
ESD	150pF , 330Ω , Contact: +2KV
	150pF , 330Ω , Air: ±4KV

7. PackageSpecifications

Item	Quantity
Module	540 per Primary Box
Holding Trays (A)	15 per Primary Box
Total Trays (B)	16 per Primary Box (Including 1 Empty Tray)
Primary Box (C)	1~4 per Carton (4 as Major / Maximum)

