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1 Revision History

Date	Changes
2015-03-13	First release

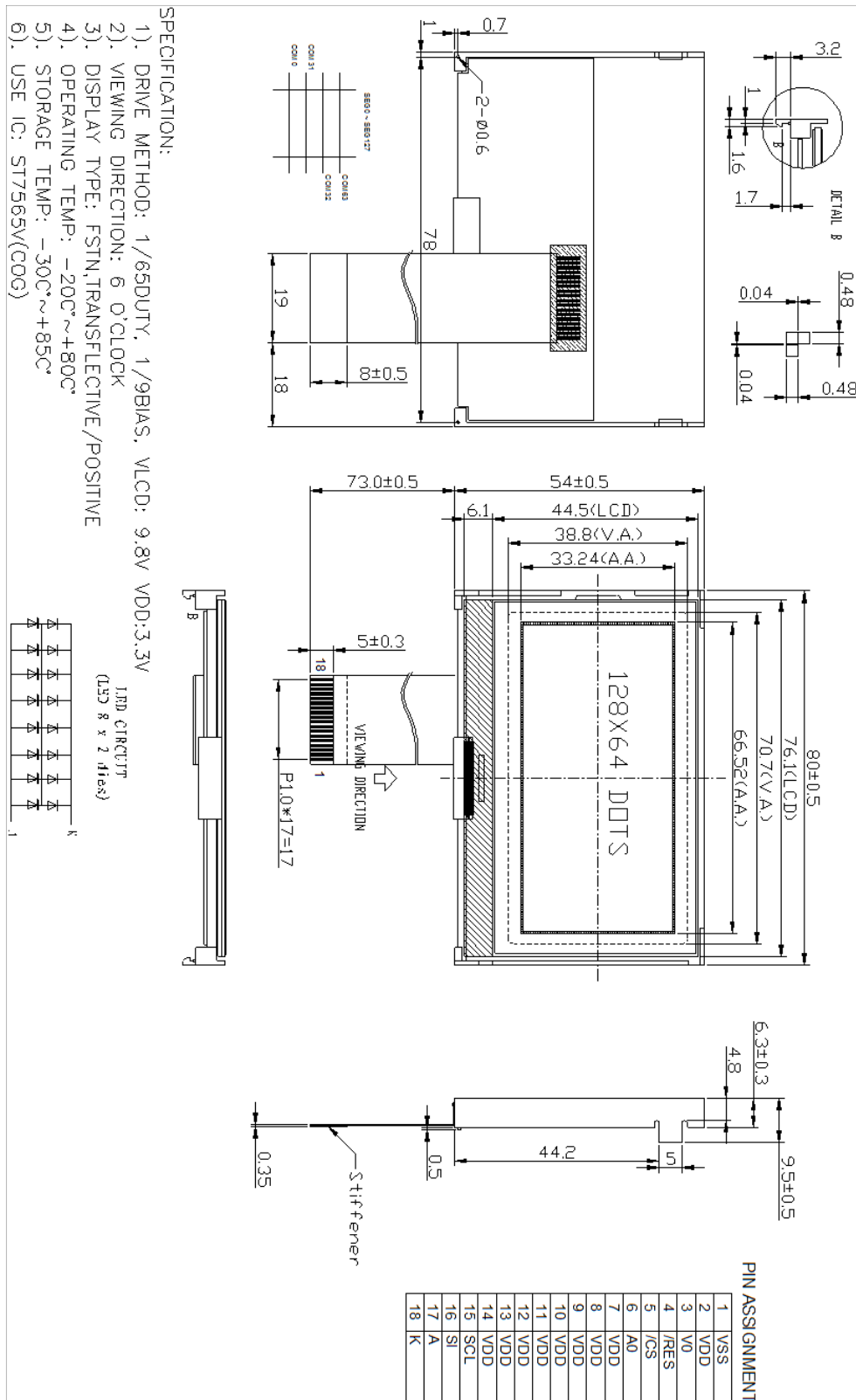
2 Main Features

Item	Specification	Unit
Resolution	128 x 64	pixel
Driver Mode	FSTN, Transflective	-
Controller IC	ST7565	-
Interface	4-SPI	-
Power Supply	3.3V	V
View Direction	6:00	-
Duty	1/65 duty, 1/9 bias	
Backlight	Edge White LED	-
Weight	31.2	g

3 Pin Description

Pin No.	Symbol	Function Description
1	VSS	Power supply for LCM (GND)
2	VDD	Signal ground for logic (+3.3V)
3	NC	No Connect
4	/RESET	Controller reset (module reset)
5	/CS	Used to enter chip select signal
6	A0	Register select signal
7~14	VDD	Power supply for logic (+3.3V) for LCM
15	SCL	Serial clock input
16	SI	Serial data input
17	A-	Power supply for BKL (+4.2V)
18	K	Signal ground

4 Mechanical Drawing



5 Electrical Characteristics

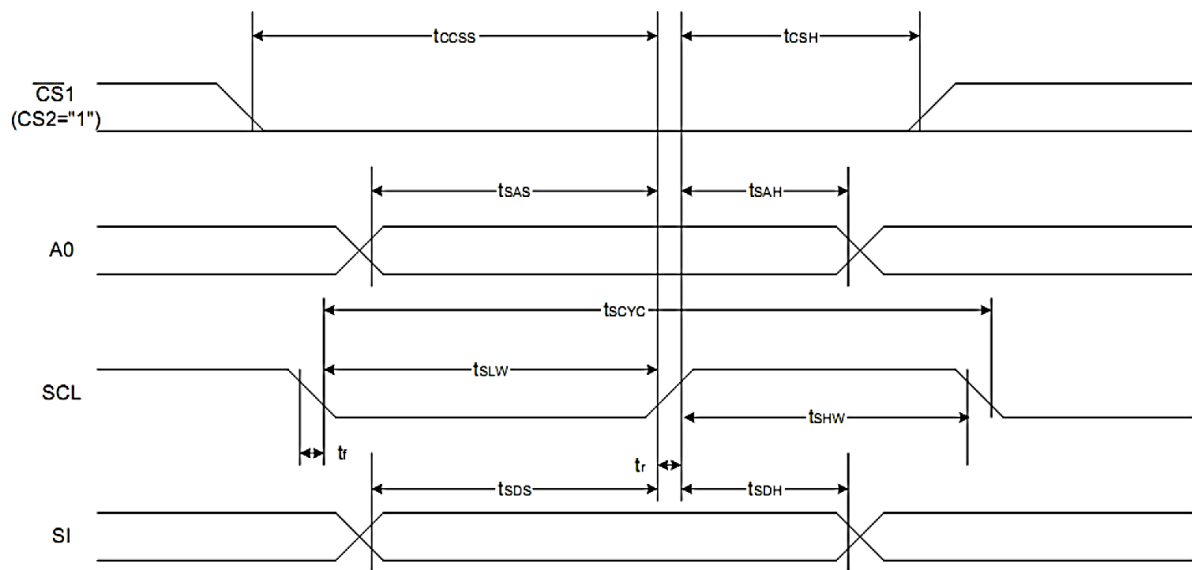
Item	Symbol	Condition	Min	Typ.	Max	Unit
Supply Voltage	VDD		2.4		3.3	V
Supply Current	IDD	Ta=25°C VDD=3.3V	-		147	uA
Low Level Input Voltage	V _{IL}		0	-	0.6	V
High Level Input Voltage	V _{IH}		2.2	-	VDD	V
Low Level Output Voltage	V _{OL}		-		0.4	V
High Level Output Voltage	V _{OH}		2.4		-	V
Backlight Forward Voltage	V _{LED}			4.2		V
Backlight Forward Current	I _{LED}	VLED=3.3V		80		mA
Operating Temperature	TOP	Absolute Max	-20		70	°C
Storage Temperature	TST	Absolute Max	-30		85	°C

6 Optical Characteristics

Item	Symbol	Min	Typ	Max	Unit
View Angles-Vertical	AV	-60		35	°
View Angles-Horizontal	AH	-40		40	°
Response Time (25°C)	Tr + Tf		300	500	us
Contrast Ratio	CR		6		
Luminance	L _y				cd/m ²

7 Timing Characteristics

The Serial interface



VDD=3.3V, Ta=-30 to 85 °C

Symbol	Item	Min	Typ	Max	Unit
t_{SCYC}	Serial Clock Period	50	-	-	ns
t_{SHW}	SCL 'H' pulse width	25	-	-	ns
t_{SLW}	SCL 'L' pulse width	25	-	-	ns
t_{SAS}	Address setup time	20	-	-	ns
t_{SAH}	Address hold time	10	-	-	ns
t_{SDS}	Data setup time	20	-	-	ns
t_{SDH}	Data hold time	10	-	-	ns
t_{CSS}	CS-SCL time	20	-	-	ns
t_{CSH}	CS-SCL time	40	-	-	ns

VDD=2.7V, Ta=-30 to 85 °C

Symbol	Item	Min	Typ	Max	Unit
t_{SCYC}	Serial Clock Period	100	-	-	ns
t_{SHW}	SCL 'H' pulse width	50	-	-	ns
t_{SLW}	SCL 'L' pulse width	50	-	-	ns
t_{SAS}	Address setup time	30	-	-	ns
t_{SAH}	Address hold time	20	-	-	ns
t_{SDS}	Data setup time	30	-	-	ns
t_{SDH}	Data hold time	20	-	-	ns
t_{CSS}	CS-SCL time	30	-	-	ns
t_{CSH}	CS-SCL time	60	-	-	ns

8 Table of Commands

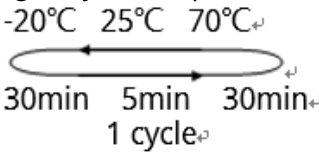
Command	Command Code									Function		
	A0	/RD	/WR	D7	D6	D5	D4	D3	D2		D1	D0
(1) Display ON/OFF	0	1	0	1	0	1	0	1	1	1	0	1
(2) Display start line set	0	1	0	0	1	Display start address						0
(3) Page address set	0	1	0	1	0	1	1	Page address				0
(4) Column address set upper bit	0	1	0	0	0	0	1	Most significant column address				0
Column address set lower bit	0	1	0	0	0	0	0	Least significant column address				0
(5) Status read	0	0	1	Status				0	0	0	0	0
(6) Display data write	1	1	0	Write data								0
(7) Display data read	1	0	1	Read data								0
(8) ADC select	0	1	0	1	0	1	0	0	0	0	0	1
(9) Display normal/reverse	0	1	0	1	0	1	0	0	1	1	0	1
(10) Display all points ON/OFF	0	1	0	1	0	1	0	0	1	0	0	1
(11) LCD bias set	0	1	0	1	0	1	0	0	0	1	0	1
(12) Read/modify/write	0	1	0	1	1	1	0	0	0	0	0	0
(13) End	0	1	0	1	1	1	0	1	1	1	0	0
(14) Reset	0	1	0	1	1	1	0	0	0	1	0	0
(15) Common output mode select	0	1	0	1	1	0	0	0	*	*	*	1
(16) Power control set	0	1	0	0	0	1	0	1	Operating mode			0
(17) Vs voltage regulator internal resistor ratio set	0	1	0	0	0	1	0	0	Resistor ratio			0
(18) Electronic volume mode set	0	1	0	1	0	0	0	0	0	0	0	1
Electronic volume register set	0	1	0	0	0	Electronic volume value						0
(19) Static indicator ON/OFF	0	1	0	1	0	1	0	1	1	0	0	1
Static indicator register set	0	1	0	0	0	0	0	0	0	0	Mode	1
(20) Power saver												
(21) NOP	0	1	0	1	1	1	0	0	0	1	1	1
(22) Test	0	1	0	1	1	1	1	*	*	*	*	*

9 Driver/Controller Information

Built-in ST7565 Controller

<https://drive.google.com/file/d/0Bxu0OURUiyL5T0tzaGYxNGFtaVE/view?usp=sharing>

10 Reliability

Test Item	Content of Test	Test Condition	Note
High Temperature Storage	Endurance test applying the high storage temperature for a long time.	85°C 200hrs	2
Low Temperature Storage	Endurance test applying the high storage temperature for a long time.	-30°C 200hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	70°C 200hrs	-
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	-20 °C 200hrs	1
High Temperature/ Humidity Operation	The module should be allowed to stand at 60°C,90%RH max, for 96hrs under no-load condition excluding the polarizer. Then taking it out and drying it at normal temperature.	60°C,90%RH 96hrs	1,2
Thermal Shock Resistance	The sample should be allowed stand the following 10 cycles of operation 	-20°C/70°C 10 cycles	-
Vibration Test	Endurance test applying the vibration during transportation and using	Total fixed amplitude: 15mm; Vibration: 10~55Hz; One cycle 60 seconds to 3 directions of X, Y, Z, for each 16 minutes.	3
Static Electricity Test	Endurance test apply the electric stress to the terminal.	VS=800V, RS=1.5kΩ, CS=100pF, 1 time.	-

Note1: No dew condensation to be observed.

Note2: The function test shall be conducted after 4 hours storage at the normal. Temperature and humidity after remove from the rest chamber.

Note3: Test performed on product itself, not inside a container.

11 Warranty and Conditions

<http://www.displaymodule.com/pages/faq>