THE DATASHEET OF

O12832A-GW-TW3

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TFT | OLED | GRAPHIC | CHARACTER | UWVD | SEGMENT | CUSTOM

Graphic OLED Module

Part Number

O12832A-GW-TW3

Overview:

- 128x32 Graphic OLED
- White Pixel Color
- Overall Size: 30.00mm x 11.50mm
- I2C Interface
- -40C to 70C Operating Temperature
- 2.8V
- Controller: SSD1306
- RoHS Compliant

Graphic OLED Features:

Resolution: 128 x 32

Interface: I2C

Controller: SSD1306

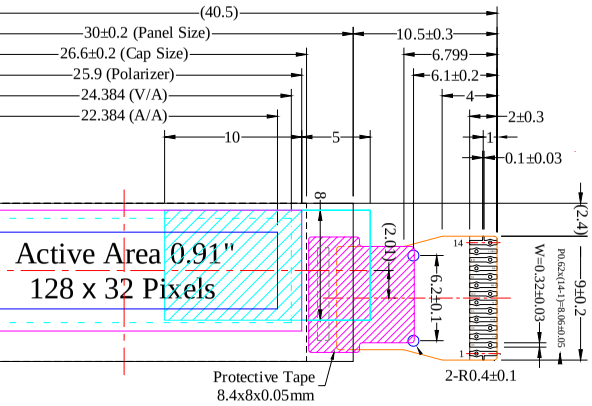
RoHS Compliant

General Information Items	Specification	Unit	Note
	Main Panel		
Viewing Area	24.384 x 7.584	mm	-
Pixel Color	White	-	-
Viewing Direction	Full	-	-
Voltage	2.8	V	-
Resolution	128x32	-	-
Controller IC	SSD1306	-	-
Interface	I2C	-	-
Operating temperature	-40～+70	℃	-
Storage temperature	-40～+85	℃	-

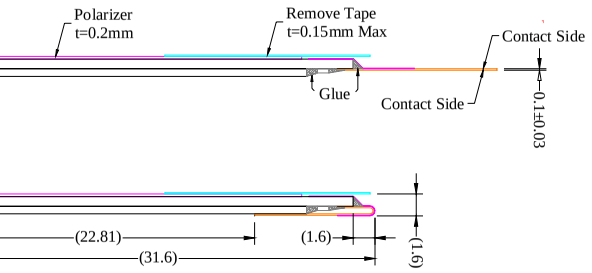
Mechanical Information

Item		Min	Typ.	Max	Unit	Note
Module size	X (Width)	-	30.00	-	mm	-
	Y (Height)	-	11.50	-	mm	-
	Z (Depth)	-	-	1.45	mm	-

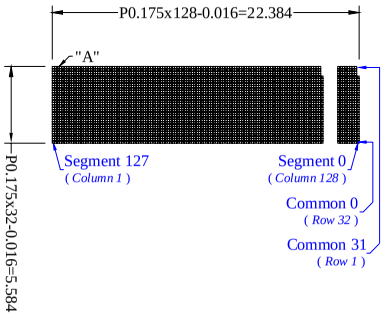
nensions

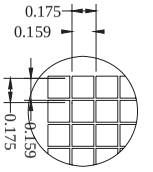


Pin	Symbol
1	C2P
2	C2N
3	C1P
4	C1N
5	VDDB
6	N.C.
7	VSS
8	VDD
9	RES#
10	SCL
11	SDA
12	IREF
13	VCOMH
14	VCC



(Reference Mechnical Design)





Detail "A"
Scale (10:1)

:
e: Wide

306

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	PARTS NO.	O12832A-GW-TW3	
TOLERANCE UNLESS X.X±0.3	Drawn		Unit
OTHERWISE SPECIFIED X.XX±0.2	Checked		mm
Scale 1:1	Approve		Page 1/1

2. Input Terminal Pin Assignment

NO.	Symbol	Description	I/O
1	C2P	Positive Terminal of the Flying Inverting Capacitor	I
2	C2N	Negative Terminal of the Flying Boost Capacitor	I
3	C1P	Positive Terminal of the Flying Inverting Capacitor	I
4	C1N	Negative Terminal of the Flying Boost Capacitor	I
5	VDDB	Power Supply for DC/DC Converter Circuit	P
6	NC	No Connection / Reserved Pin	-
7	VSS	Ground of OEL System	P
8	VDD	Power Supply for Logic	P
9	RES#	Power Reset for Controller and Driver	I
10	SCL	I2C Bus Clock Signal	I
11	SDA	I2C Bus Data Signal	I/O
12	IREF	Current Reference for Brightness Adjustment	I
13	VCOMH	Votage Output High Level for COM Signal	O
14	VCC	Power Supply for OEL Panel	P

I: Input, O: Output, P: Power

3. Block Diagram

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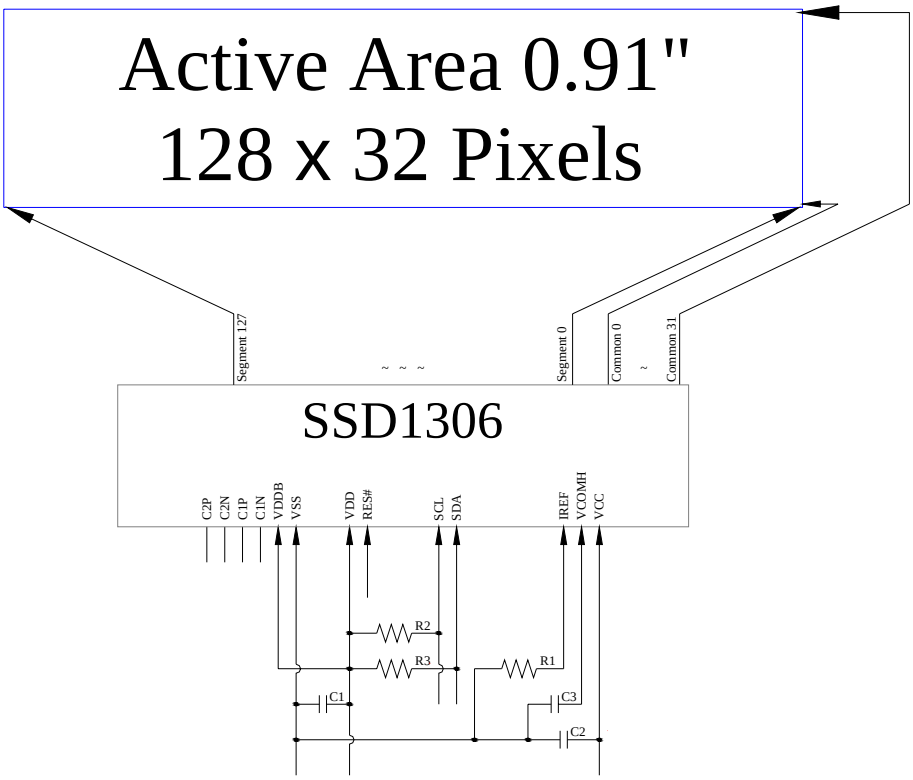
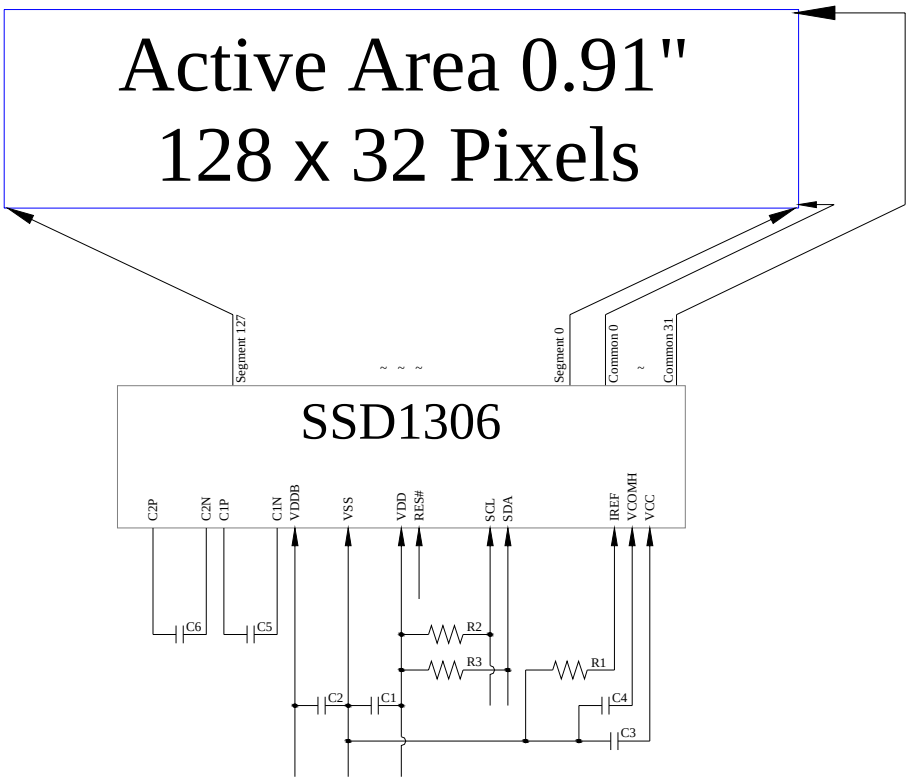


Pins connected to MCU interface: RES#, SCL, and SDA

C1: 1µF
C2: 4.7µF
C3: 4.7µF / 16V X7R
R1: 390kΩ, R1 = (Voltage at IREF - VSS) / IREF
R2, R3: 2kΩ

3.2 VCC Generated by Internal DC/DC Circuit



Pins connected to MCU interface: RES#, SCL, and SDA

C1, C2: 1μF
C3: 2.2μF
C4: 4.7μF / 16V X7R
C5, C6: 1μF / 16V X5R
R1: 390kΩ, R1 = (Voltage at IREF - VSS) / IREF
R2, R3: 2kΩ

4. Optical Characteristics

Item	Symbol	Condition	Min	Typ.	Max	Unit
Contrast Ratio	CR	-	-	10000:1	-	-
Peak Emission Wavelength	CIE (White)	-	X = 0.25 Y = 0.27	X = 0.29 Y = 0.31	X = 0.33 Y = 0.35	-
Brightness	L_{br}	V_{DD} = 2.8V V_{CC} = 7.25V	120	150	-	cd/m^2
Viewing Angle		CR≥10000:1	Full			degrees

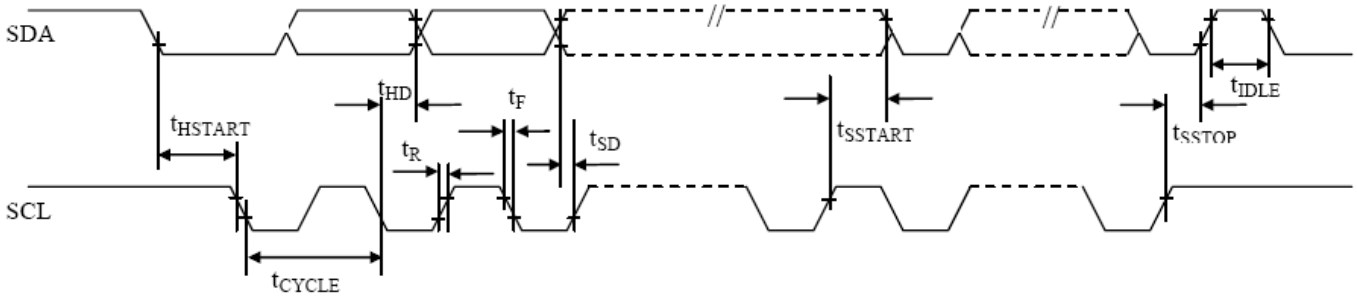
5. DC Electrical Characteristics

Characteristics	Symbol	Conditions	Min	Typ.	Max	Unit
Supply Voltage for Logic	V_{DD}	-	1.65	2.8	3.3	V
Supply Voltage for Display (Supplied Externally)	V_{CC}	Internal DC/DC Disable	7.0	7.25	7.5	V
Supply Voltage for DC/DC	V_{DDB}	Internal DC/DC Enable	3.3	-	4.2	V
Supply Voltage for Display (Generated by Internal DC/DC)	V_{CC}	Internal DC/DC Enable	7.0	-	7.5	V
High Level Input	V_{IH}	I_{out}=100µA, 3.3 MHz	0.8V_{DD}	-	V_{DD}	V
Low Level Input	V_{IL}	I_{out}=100µA, 3.3 MHz	0	-	0.2V_{DD}	V
High Level Output	V_{OH}	I_{out}=100µA, 3.3 MHz	0.9V_{DD}	-	V_{DD}	V
Low Level Output	V_{OL}	I_{out}=100µA, 3.3 MHz	0	-	0.1V_{DD}	V
Operating Current for V_{DD}	I_{DD}	-	-	180	300	µA
Operating Current for V_{CC} (V_{CC} Supplied Externally)	I_{CC}	-	-	7.8	9.8	mA
Operating Current for V_{DDB} (V_{CC} Generated by Internal DC/DC)	I_{DDB}	-	-	21.7	27.1	mA
Sleep Mode Current for V_{DD}	$I_{DD, SLEEP}$	-	-	1	5	µA
Sleep Mode Current for V_{CC}	$I_{CC, SLEEP}$	-	-	2	10	µA

NOTE: If the maximum rating of the above parameters is exceeded, even momentarily, the quality of the product may be degraded. The maximum ratings specify the values which the product may be physically damaged if exceeded. Be sure to use the product within the range of the specified parameters.

6. I²C Interface Timing Characteristics

Parameter	Symbol	Min	Max	Unit
Clock Cycle Time	t_{cycle}	2.5	-	µs
Start Condition Hold Time	t_{HSTART}	0.6	-	µs
Data Hold Time (for "SDA_{OUT}" Pin)	t_{HD}	0	-	ns
Data Hold Time (for "SDA_{IN}" Pin)		300		
Data Setup Time	t_{SD}	100	-	ns
Start Condition Setup Time (Only relevant for a repeated Start Condition)	t_{SSTART}	0.6	-	µs
Stop Condition Setup Time	t_{SSTOP}	0.6	-	µs
Rise Time for Data and Clock Pin	t_r	-	300	ns
Fall Time for Data and Clock Pin	t_f	-	300	ns
Idle Time before a New Transmission can Start	t_{IDLE}	1.3	-	µs



7. Cautions and Handling Precautions

7.1 Handling and Operating the Module

1. When the module is assembled, it should be attached to the system firmly. Do not warp or twist the module during assembly work.
2. Protect the module from physical shock or any force. In addition to damage, this may cause improper operation or damage to the module and back-light unit.
3. Note that polarizer is very fragile and could be easily damaged. Do not press or scratch the surface.
4. Do not allow drops of water or chemicals to remain on the display surface. If you have the droplets for a long time, staining and discoloration may occur.
5. If the surface of the polarizer is dirty, clean it using some absorbent cotton or soft cloth.
6. The desirable cleaners are water, IPA (Isopropyl Alcohol) or Hexane. Do not use ketene type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanent damage to the polarizer due to chemical reaction.
7. If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, legs, or clothes, it must be washed away thoroughly with soap.
8. Protect the module from static, it may cause damage to the CMOS ICs.
9. Use finger-stalls with soft gloves in order to keep display clean during the incoming inspection and assembly process.
10. Do not disassemble the module.
11. Protection film for polarizer on the module shall be slowly peeled off just before use so that the electrostatic charge can be minimized.
12. Pins of I/F connector shall not be touched directly with bare hands.
13. Do not connect, disconnect the module in the “Power ON” condition.
14. Power supply should always be turned on/off by the item Power On Sequence & Power Off Sequence.

7.2 Storage and Transportation

1. Do not leave the panel in high temperature, and high humidity for a long time. It is highly recommended to store the module with temperature from 0 to 35 ℃ and relative humidity of less than 70%
2. Do not store the OLED module in direct sunlight.
3. The module shall be stored in a dark place. When storing the modules for a long time, be sure to adopt effective measures for protecting the modules from strong ultraviolet radiation, sunlight, or fluorescent light.
4. It is recommended that the modules should be stored under a condition where no condensation is allowed. Formation of dewdrops may cause an abnormal operation or a failure of the module. In particular, the greatest possible care should be taken to prevent any module from being operated where condensation has occurred inside.
5. This panel has its circuitry FPC on the bottom side and should be handled carefully in order not to be stressed.

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