

# PRODUCT SPECIFICATION

# VGY25664A-S001

256 × 64 GRAPHICS

OLED DISPLAY MODULE

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## 1 Overview

VGY25664A-S001 is an OLED monochrome 256×64 dot matrix display module. The characteristics of this display module are high brightness, self-emission, high contrast ratio, slim/thin outline, wide viewing angle, wide temperature range, and low power consumption.

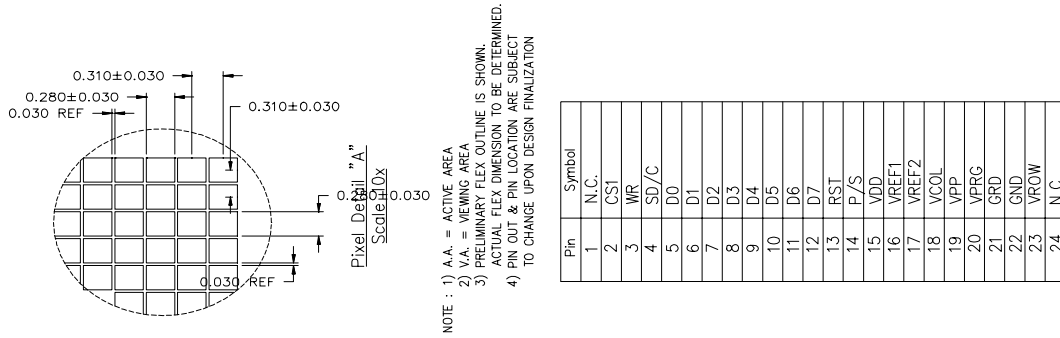
## 2 Features

- Color: Yellow
- High contrast ratio
- 256×64 pixels
- Wide viewing angle
- Wide range of operating temperature
- 8-bit 8080-Databus or 8-bit 6800-series parallel interface or series peripheral interface.
- Built-in STV8105 standard OLED controller

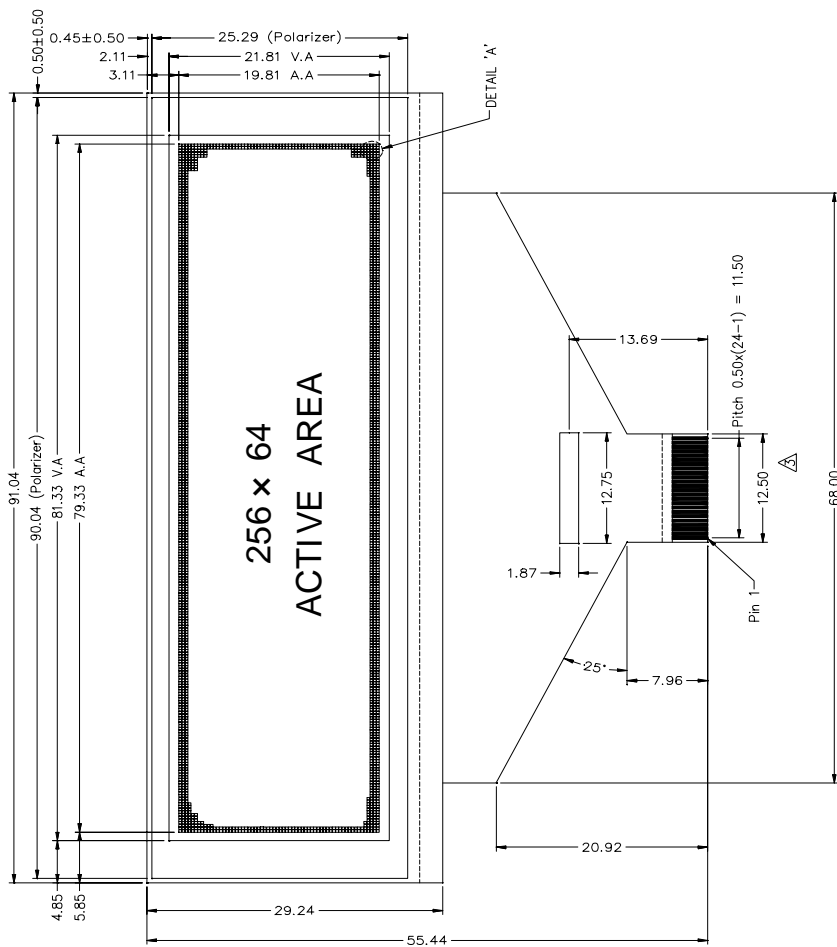
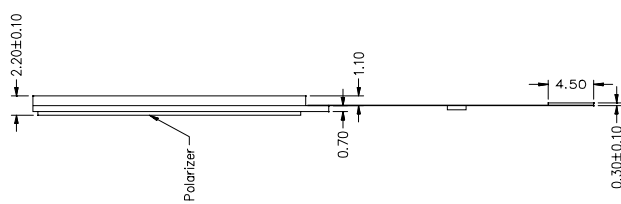
## 3 Mechanical Data and Part Number

NO.	ITEM	SPECIFICATION	UNIT
1	Dot Matrix	256(W) x 64(rows)	-
2	Dot Size	0.28 (W) x 0.28 (H)	mm <sup>2</sup>
3	Dot Pitch	0.31 (W) x 0.31 (H)	mm <sup>2</sup>
4	Aperture Rate	81	%
5	Active Area	79.33 (W) x 19.81 (H)	mm <sup>2</sup>
6	Display Diagonal	3.2	inch
7	Panel Size	91.04 (W) X 29.24 (H) X 2.2 (T)	mm <sup>3</sup>
8	Polarizer	with	-
9	Duty	1/64	-

### 4 Mechanical Drawing



Pin	Symbol
1	N.C.
2	CS1
3	WR
4	SD/C
5	D0
6	D1
7	D2
8	D3
9	D4
10	D5
11	D6
12	D7
13	RST
14	P/S
15	VDD
16	VREF1
17	VREF2
18	VCOL
19	VPP
20	VPRG
21	GRD
22	GND
23	VROW
24	N.C.



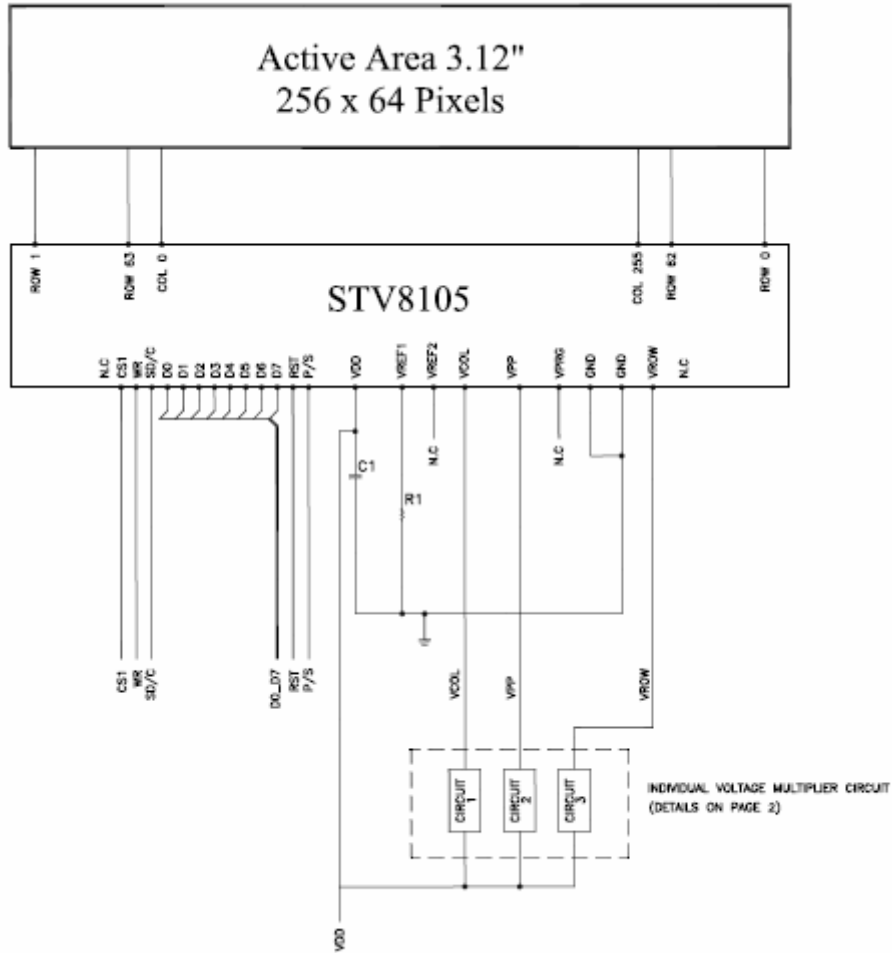
GENERAL SPECIFICATIONS
FORMAT: 256(W) x 64(H)
DIAGONAL SIZE: 3.2 INCH
IC: STV8105
INTERFACE: 8-BIT PARALLEL, 4-WIRE SPI

## 5 Module Interface

PIN	Name	DESCRIPTION
1	NC	No connected
2	CS1	Chip Select 1 Input. <i>This pin is Master Device Chip Select. The chip is enabled for MCU communication only when CS1 is pulled low.</i>
3	WR	Write <i>This pin should be pulled low to enable write mode.</i>
4	SD/C	Data/Command control. <i>This pin is Data/Command Control pin. When this pin is pulled High, the input D0~D7 is treated as Display Data. When this pin is pulled Low, the input D0~D7 will be transferred to the command register.</i>
5	D0	Parallel Data 0
6	D1	Parallel Data 1
7	D2	Parallel Data 2
8	D3	Parallel Data 3
9	D4	Parallel Data 4
10	D5	Parallel Data 5
11	D6	Parallel Data 6 (Serial : SCLK – Serial clock Input)
12	D7	Parallel Data 7 (Serial : SDATA – Serial Data)
13	RST	System Reset Input. <i>When the pin is pulled Low, initialization of the chip is executed</i>
14	P/S	Communicating Protocol Select. <i>When this pin is pulled High, Parallel interface is selected When this pin is pulled Low, Serial interface is selected</i>
15	VDD	Power Supply for logic circuit. <i>This is Analog/Digital low-voltage controller supply. It must be connected to external source.</i>
16	VREF1	Reference Voltage. <i>A resistor should be connected to each of the Pin to Gnd.</i>
17	VREF2	
18	VCOL	Column Supply Voltage. <i>This is Odd and Even column supply voltage. It must be connected to external source</i>
19	VPP	Column Driver Power Supply. <i>This is Odd and Even column supply voltage. It must be connected to external source</i>
20	VPRG	OTP Power Supply. <i>This is non-volatile OTP memory program power supply. It must be connected to external source</i>
21	GRD	Analog/Digital Ground. <i>It also acts as reference for the logic pin, the OEL driving voltage and analog circuit. It must be connected to external source.</i>
22	GND	
23	VROW	Row Driver Supply. <i>This is Odd and Even row power supply. It must be connected to external source.</i>
24	NC	No connect

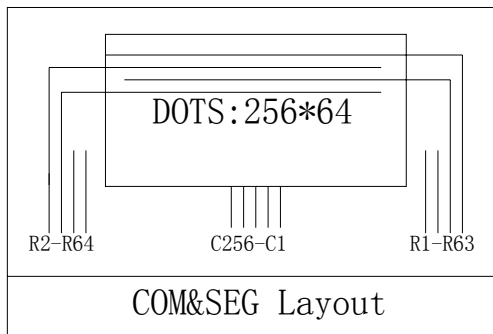
## 6 Function Block Diagram

### 6.1 Function Block Diagram



Recommended Component				
Part name	Part number	Description	Case	Qty
C1	F921C105MBA	Chip Cap 10uF 16V	1210	1
R1	RMC1/16-882FTP	Chip Resistor 6.8K ohm	0603	1

### 6.2 PANEL LAYOUT DIAGRAM



## 7 Absolute Maximum ratings

ITEM	Symbol	MIN	MAX	Unit	Note
Logic supply voltage	V <sub>DD</sub>	-0.3	+4.6	V	1,2
DC/DC Supply Voltage	V <sub>DC</sub>	-0.3	+12	V	1,2
Diver Supply voltage	V <sub>PP</sub>	-0.3	+16	V	1,2
Program Voltage	V <sub>PRG</sub>	-0.3	20	V	1,2
Operating Temp.	Top	-20	+70	°C	
Storage Temp	Tstg	-30	+80	°C	

Note 1: All the above voltages are on the basis of “GND = 0V”.

Note 2: When this module is used beyond the above absolute maximum ratings, permanent breakage of the module may occur. Also, for normal operations, it is desirable to use this module under the conditions according to Section 8. “Electrical Characteristics”. If this module is used beyond these conditions, malfunctioning of the module can occur and the reliability of the module may deteriorate.

## 8 Electrical Characteristics

### 8.1 DC Electrical Characteristics

ITEM	Symbol	Test condition	MIN	TYPE	MAX	Unit
Logic Supply Voltage	V <sub>DD</sub>		3.0	3.3	3.6	V
DC/DC Supply Voltage	V <sub>DC</sub>		3.0	5	10	V
OLED Driver Supply Voltage	V <sub>PP</sub>		-	14	-	V
Program Voltage	V <sub>PRG</sub>		14		18	V
High-level Input Voltage	V <sub>IH</sub>	Logic	0.8*V <sub>DD</sub>	-	-	V
Low-level Input Voltage	V <sub>IL</sub>	Logic	-	-	0.2*V <sub>DD</sub>	V
High-level Output Voltage	V <sub>OH</sub>	Sinking Current>-1mA	0.8*V <sub>DD</sub>	-	V <sub>DD</sub>	V
High-level Output Voltage	V <sub>OL</sub>	Sinking Current<1mA	-	-	0.2*V <sub>DD</sub>	V

Note : The V<sub>CC</sub> input must keep in a stable value; ripple and noise are not allowed.

### 8.2 Electro-optical Characteristics

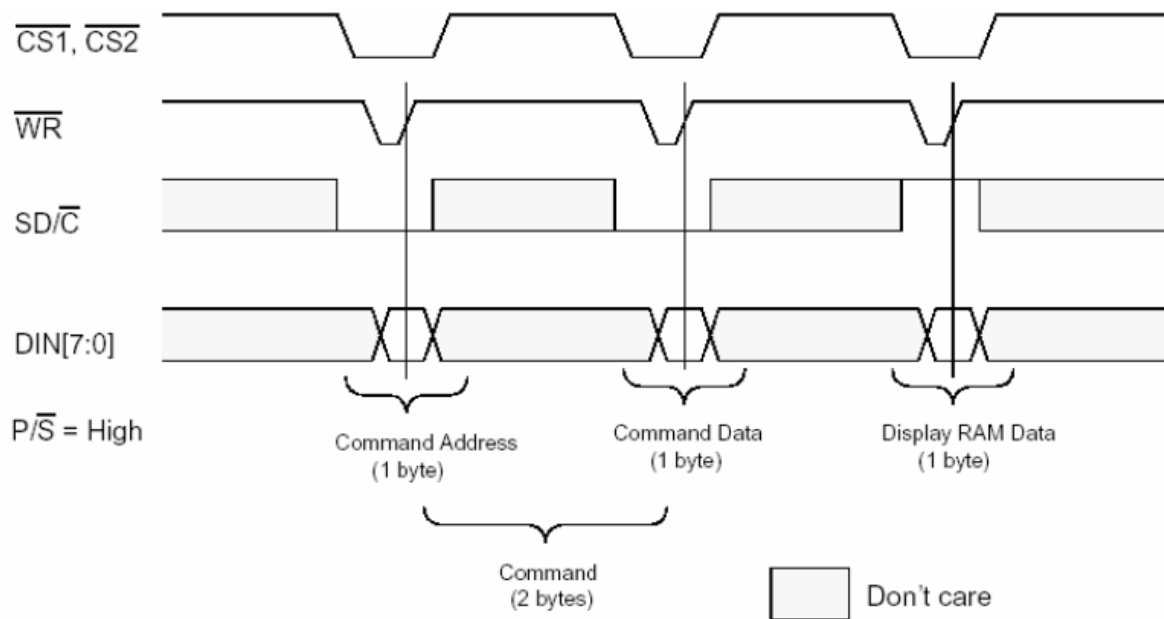
Item	Symbol	Test condition	MIN	TYPE	MAX	Unit
Normal mode Power consumption		All pixels on(1)		TBD	TBD	mW
Brightness	L <sub>br</sub>	With polarizer	60	80	-	cd/m <sup>2</sup>
C.I.E(Yellow)	(x)	x,y	0.12	0.16	0.20	
	(y)		0.22	0.1	0.30	
Dark room contrast	CR		-	>100:1	-	
View angle			>160			degree

### 8.3 AC Electrical Characteristics

Parallel Interface Timing Characteristics:

Symbol	Description	Min	Max	Unit
$T_{ah}$	Address Hold Time	10	-	ns
$T_{aw}$	Address Setup Time	0	-	ns
$T_{cyc}$	System Cycle Time	200	-	ns
$T_{ds}$	Data Setup Time	60	-	ns
$T_{dh}$	Data Hold Time	10	-	ns
$T_{cclw}$	Write Pulse Width	60	-	ns

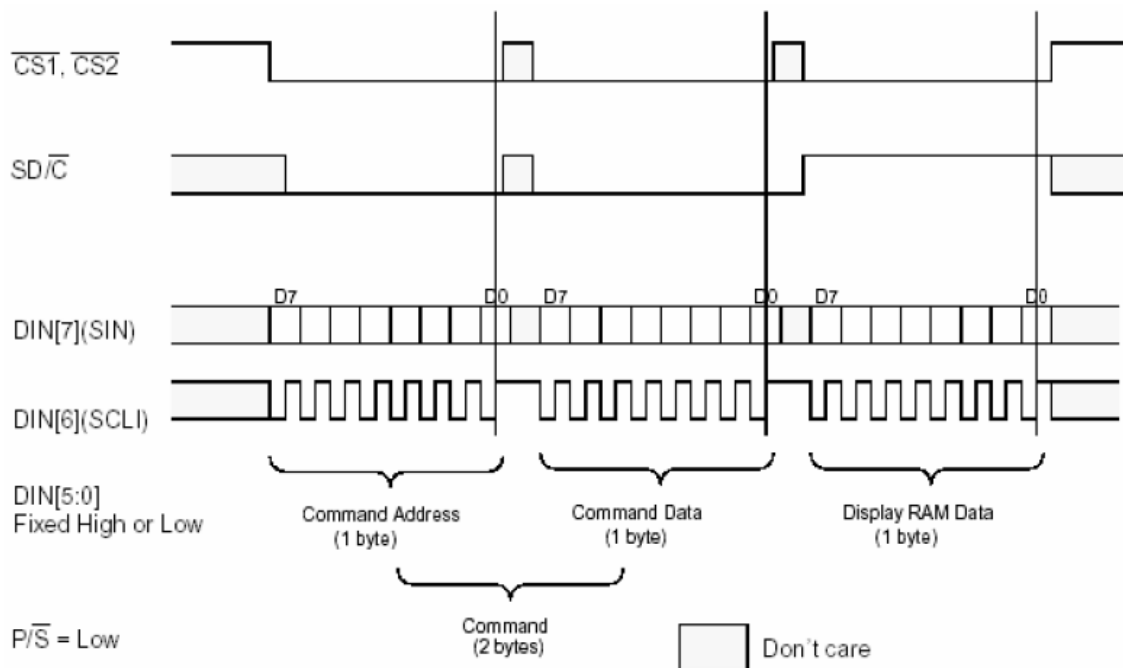
\* All the timings should be based on 30% and 70% of  $V_{DD}$ -GND.



Serial Interface Timing Characteristics:

Symbol	Description	Min	Max	Unit
T <sub>scyc</sub>	Serial Clock Cycle Time	200	-	ns
T <sub>sas</sub>	Address Setup Time	20	-	ns
T <sub>sah</sub>	Address Hold Time	20	-	ns
T <sub>css</sub>	Chip Select Setup Time	20	-	ns
T <sub>csH</sub>	Chip Select Hold Time	20	-	ns
T <sub>sds</sub>	Data Setup Time	20	-	ns
T <sub>sdh</sub>	Data Hold Time	20	-	ns
T <sub>slw</sub>	Pulse Width (Low)	90	-	ns
T <sub>shw</sub>	Pulse Width (High)	90	-	ns

\* All the timings should be based on 30% and 70% of V<sub>DD</sub>-GND.



## 9 Application

### 9.1 Initial software

TBD

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## 10 Precautions for operation and Storage

### 10.1 Precautions for Operation

- (1) Since OLED panel is made of glass, in order to prevent from glass broken, please do not apply any mechanical shock or impact or excessive force to it when installing the OLED module. Any strong mechanical impact due to falling dropping etc. may cause damage (breakage or cracking).
- (2) The polarizer on the OLED surface is made of soft material and is easily scratched. Please take most care when handing.
- (3) If OLED surface is contaminated, please wipe it off gently by using moisten soft cloth with normal ethanol, do not use acetone, ketone, isopropyl alcohol or water. If there is saliva or water on the OLED surface, please wipe it off immediately.
- (4) When handling OLED module, please be sure that the body and the tools are properly rounded. And do not touch I/O pins with bare hands or contaminate I/O pins, it will cause disconnection or defective insulation of terminals.
- (5) Do not attempt to disassemble or process the OLED module.
- (6) OLED module should be used under recommended operating conditions shown in the specification. Since the higher voltage leads to the shorter lifetime, be sure to use the specified operating voltage.
- (7) Foggy dew, moisture condensation or water droplets deposited on surface and contact terminals will cause polarizer stain or damage, the deteriorated display quality and electrochemical reaction then leads to the shorter life time and permanent damage to the module probably. Please pay attention to the environmental temperature and humidity.

### 10.2 Soldering

- (8) Use the high quality solder. (60-63% tin mixed with lead)
- (9) Iron: no higher than 260°C and less than 3~4 sec during soldering.
- (10) Soldering: only to the I/O terminals.
- (11) Rewiring: no more than 3 times.

### 10.3 Precautions for Storage

- (12) Please store OLED module in a dark place, avoid exposure to sunlight, the light of fluorescent lamp or any ultraviolet ray.
- (13) Keep the environment temperature at between 10°C and 35°C and the relative humidity less than 60%. Avoid high temperature, high humidity.
- (14) That keeps the OLED modules stored in the container shipped from supplier before using them is recommended.
- (15) Do not leave any article on the OLED module surface for an extended period of time.

### 10.4 Warranty period

Visionox Technology Co. Ltd. warrants for a period of 12 months from the shipping date when stored or used under normal condition

## 11 Test Status

### 11.1 Content of Reliability Tests

TEST ITEM	TEST CONDITION	Criteria
High temperature storage	90°C, 120 hours	The brightness should be greater than 50% of the initial brightness.
Low temperature storage	-40°C, 120 hours	
Humidity (storage)	60°C, 90%RH, 120hours	
High temperature (operating)	85°C, 120hours	The operational functions work
Low temperature (operating)	-30°C, 120 hours	

\* The samples used for the above tests do not include polarizer.

\* No moisture condensation is observed during tests.

\* All operation tests are conducted in all display on pattern.

### 11.2 Lifetime

End of lifetime is specified as 50% of initial brightness.

An estimated operating lifetime of more than 10,000 hrs at room temperature is approached by Arrhenius model's evaluation & 500 hrs @ 85°C operating.

## 12 Contact us

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